

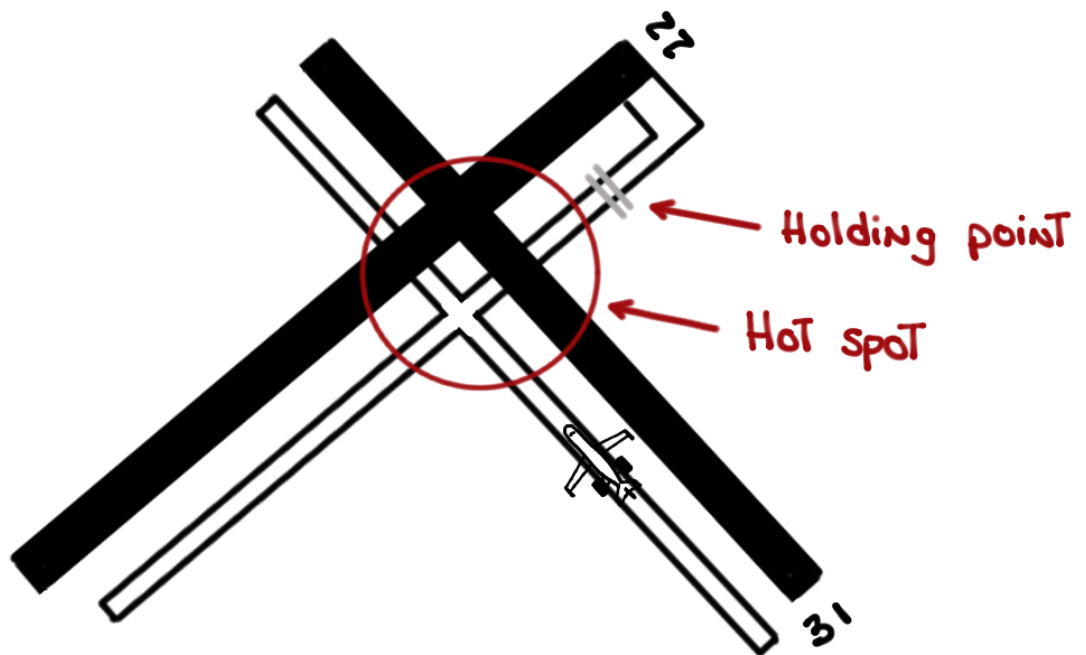
SIMULATOR SESSION 1

Cold WEATHER OPERATIONS

Low visibility conditions

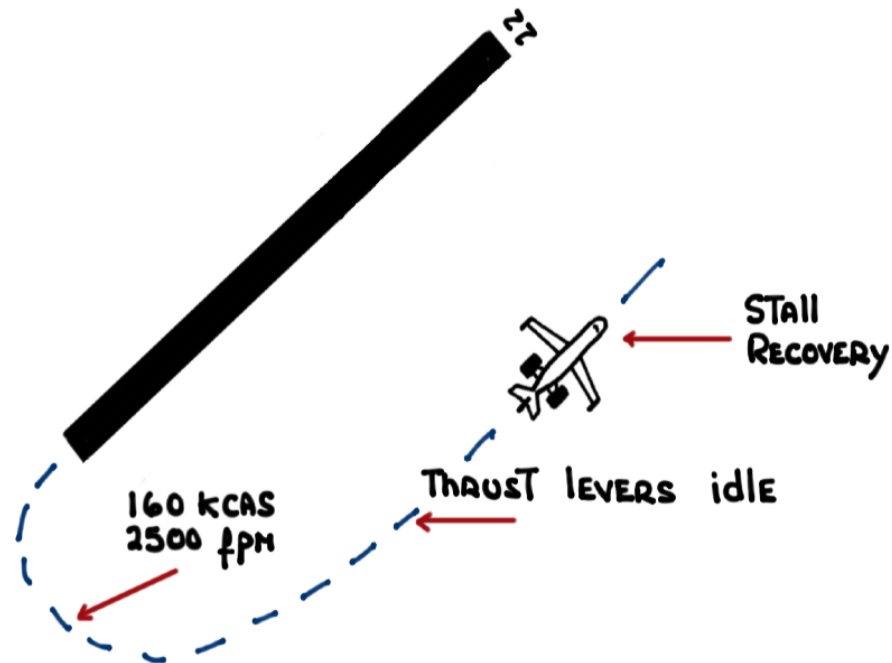
NIGHTTIME CONDITIONS

Black cockpit



"Cleared To JFK/JUTES 3 RNAV DEPARTURE, TNNIS
TRANSITION, MAINTAIN 5000, EXPECT 10,000 :10 MINUTES
AFTER DEPARTURE, NY 120.4, SQUAWK 2315, MAINTAIN
160 KNOTS AND 2,500 fpm IN THE TURN DUE TRAFFIC"

1. ENGINE START MALFUNCTION (NO FAN ROTATION)
2. AFTER ENGINE START (JAMMED ELEVATOR)
3. REJECTED TAKEOFF (BLOWN TIRES)
4. TAKEOFF AND DEPARTURE STALL (flaps 20°)



5. Climb 10,000'

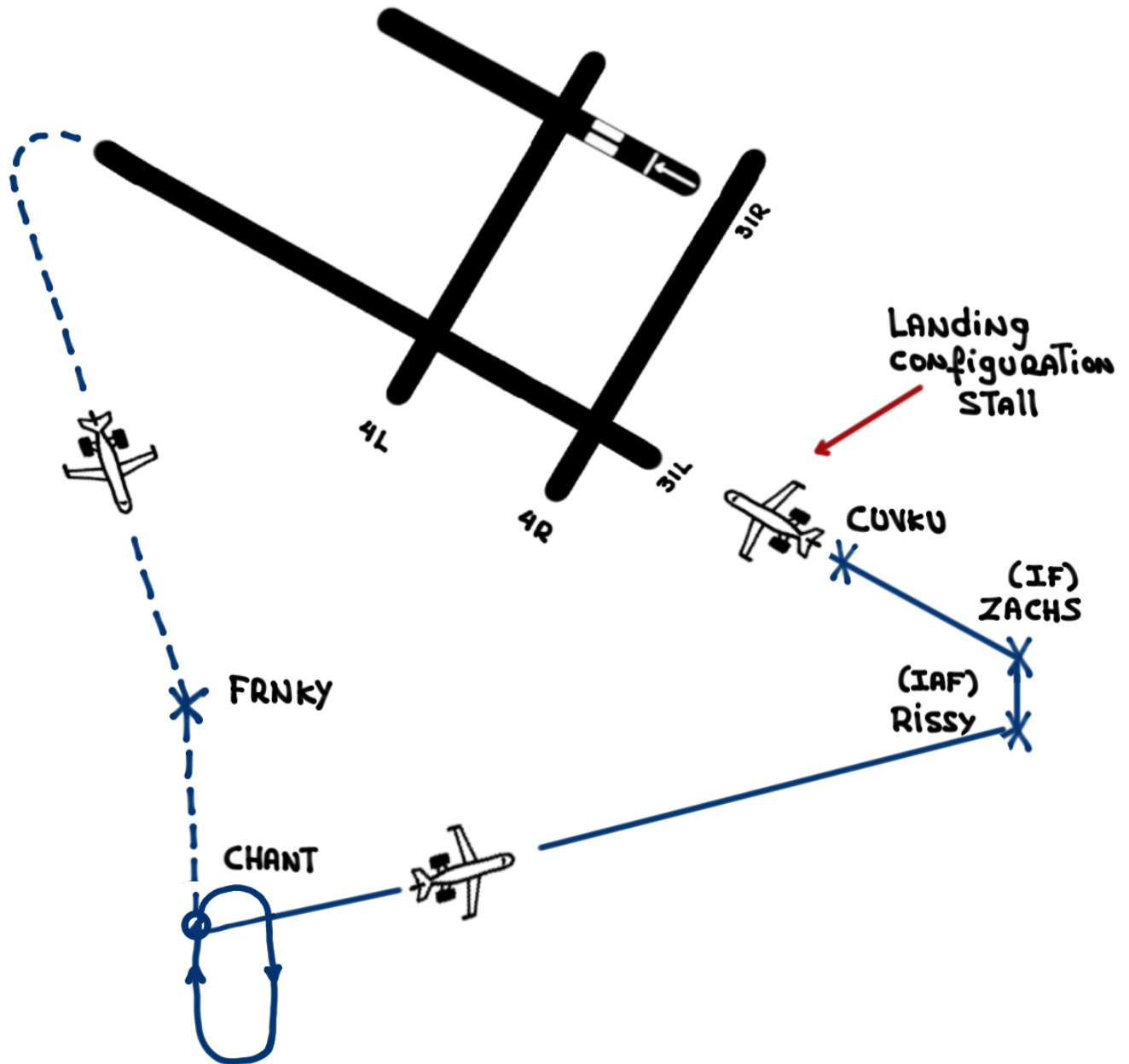
- CLEAN STALL
- STEEP TURNS
- UNUSUAL ALTITUDES

6. DESCEND 3,000'

- TCAS RA
- ENGINE FLAMEOUT/RESTART/AUTO RELIGHT

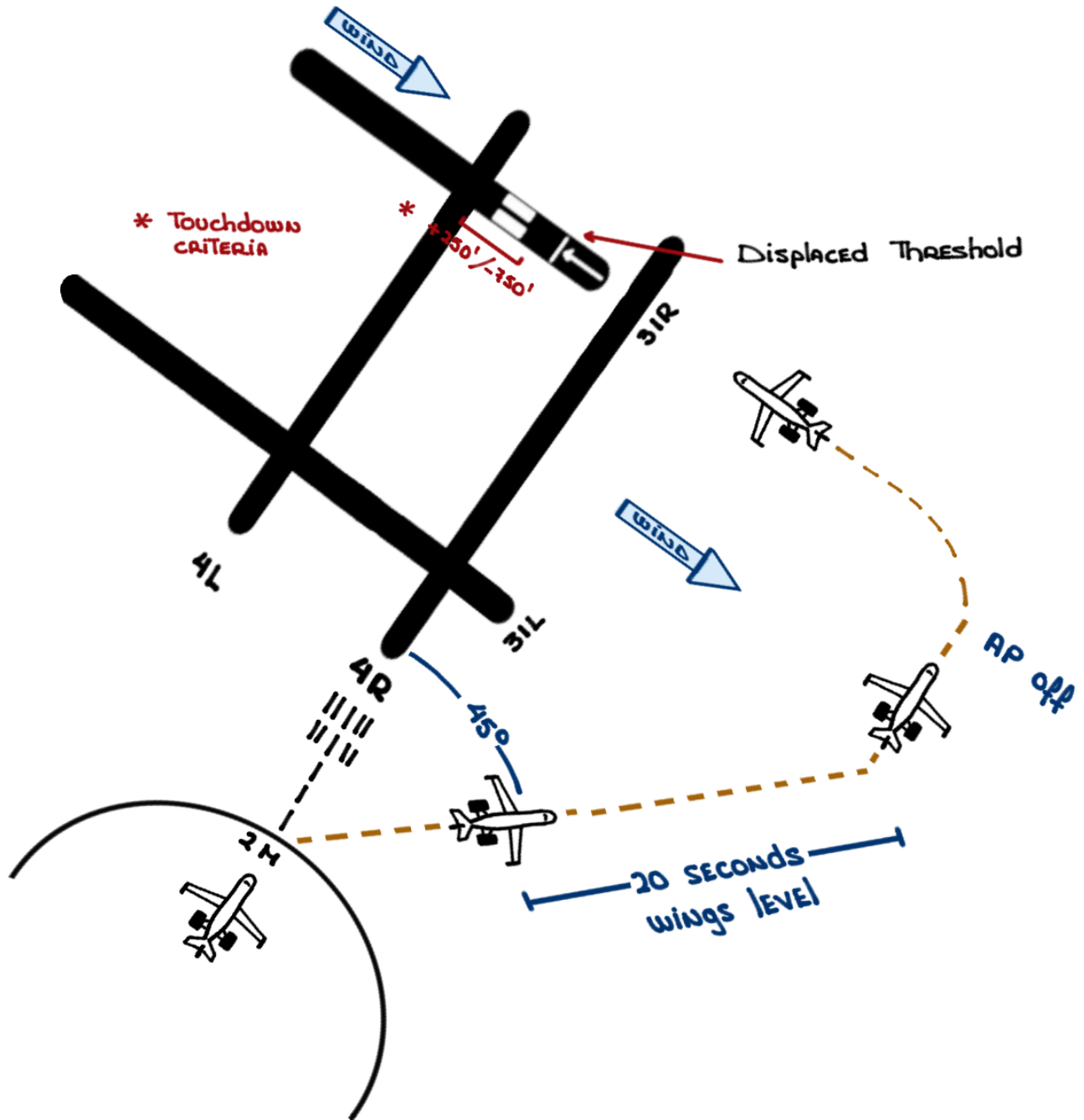
7. CLEARANCE TO JFK

- RNAV (GPS) Y 31L (LNAV/VNAV) CHANT
(TEMP COMPENSATION/RAIN CHECK)
- LANDING CONFIGURATION STALL AND RECOVERY
- MISSED APPROACH PROCEDURE AND HOLDING



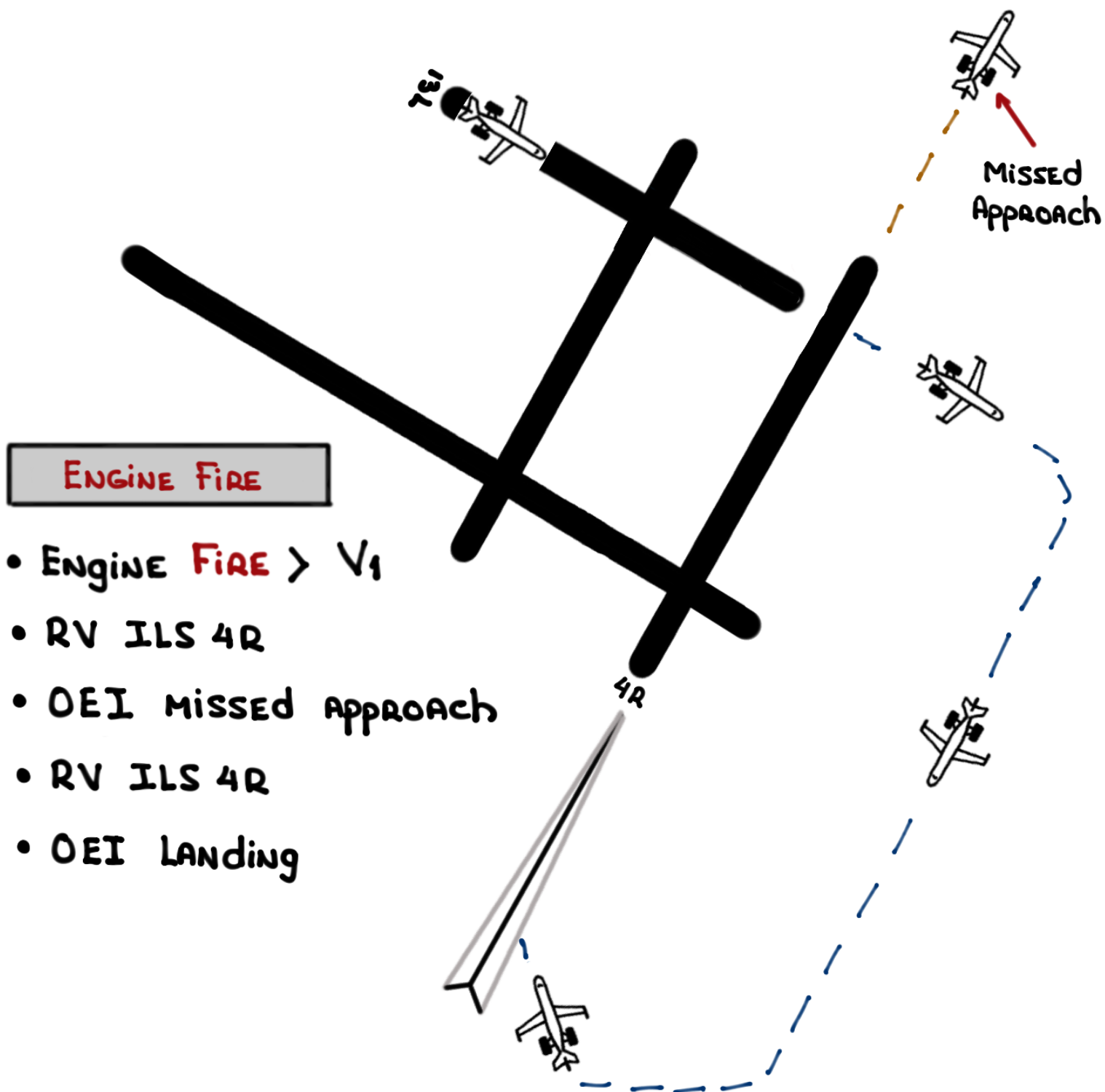
8. LOC 4R circle 31R

- MAXIMUM BRAKING LANDING, THEN
- TAXI TO THE END FOR 13L DEPARTURE



9. DEPARTURE RUNWAY 13L

CLEARANCE: "RUNWAY heading, climb 2,000,
RADAR VECTORS ILS 4R"

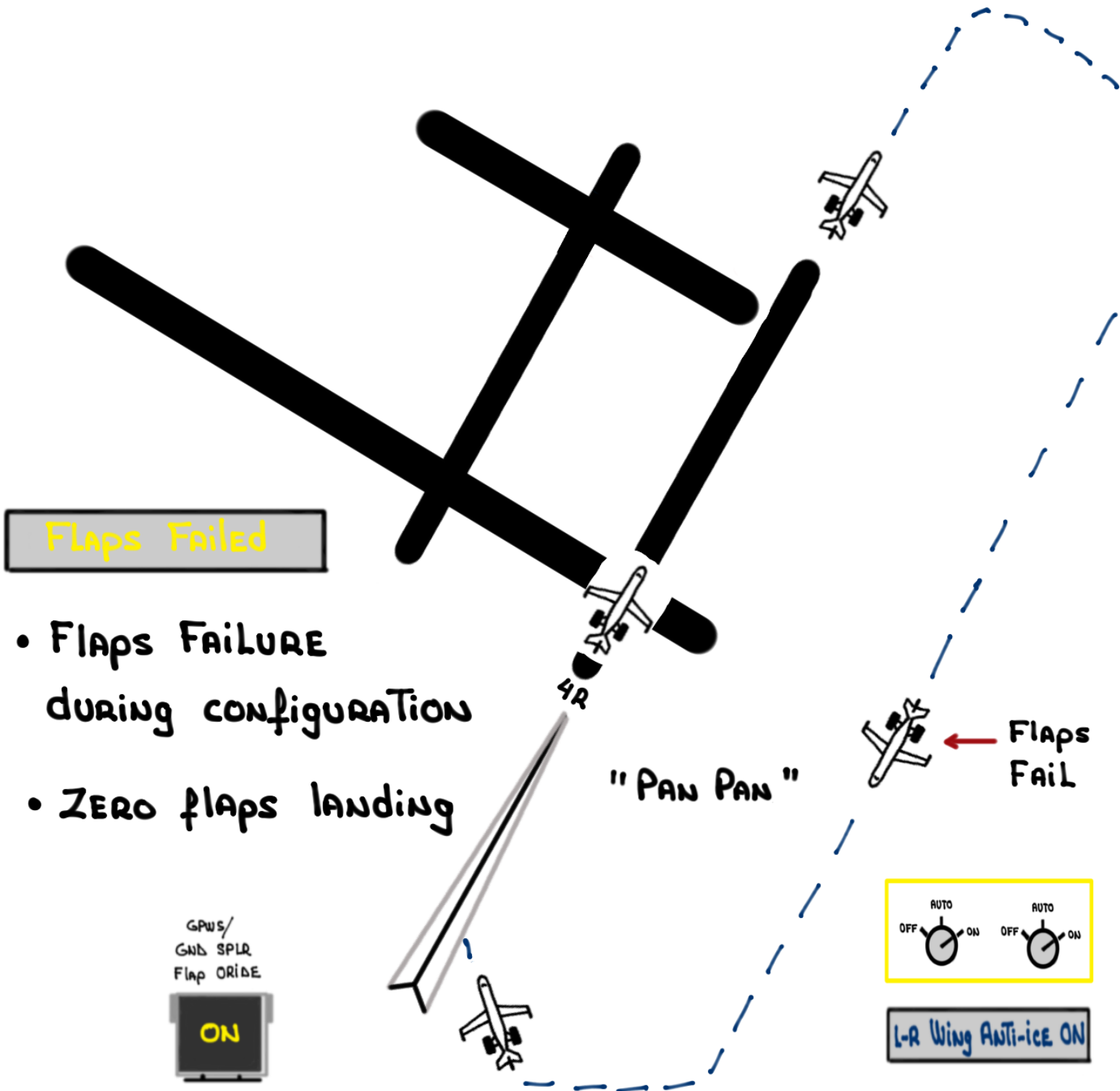


ENGINE FIRE

- ENGINE FIRE > V_1
- RV ILS 4R
- OEI MISSED APPROACH
- RV ILS 4R
- OEI LANDING

10. DEPARTURE RUNWAY 4R

CLEARANCE: "RUNWAY heading, climb 2,000,
RADAR VECTORS ILS 4R"

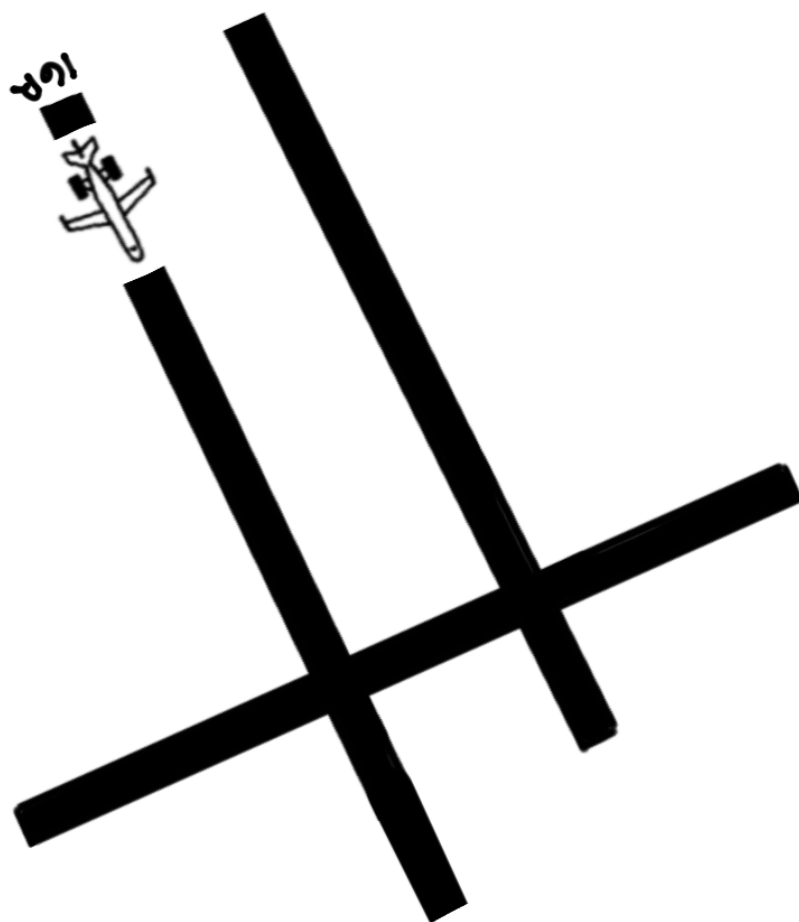


SIMULATOR SESSION 2

SIMULATOR SESSION # 2 KRNO - KSFO

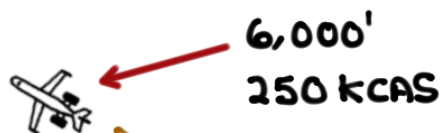
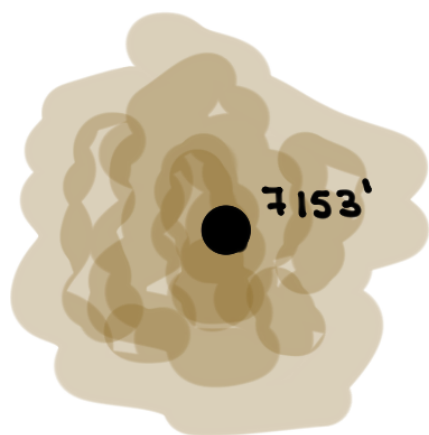
High, hot, heavy, and MOUNTAINOUS TERRAIN
DAYTIME/IMC

MAXIMUM GROSS WEIGHT TAKEOFF
(10,000 lbs fuel)



"CLEARED TO RENO, RUNWAY HEADING, MAINTAIN
6,000'"

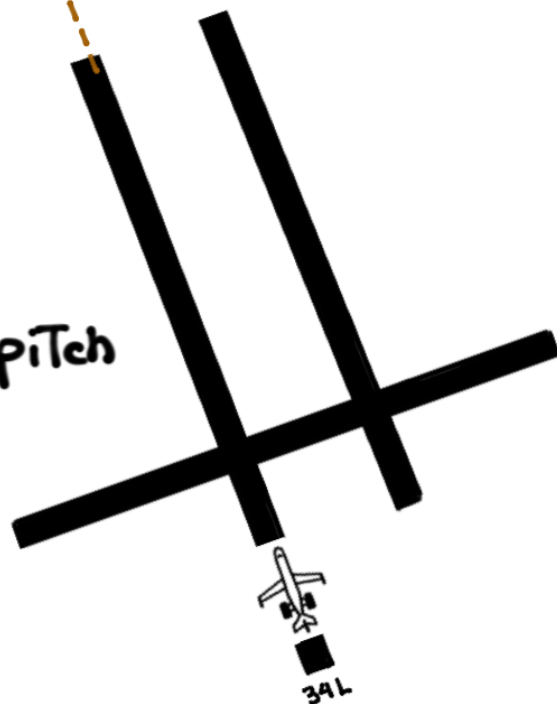
1. ENGINES RUNNING ON RUNWAY 16R / REJECTED TAKEOFF
2. REPOSITION 34L FOR ANOTHER TO
3. LEFT TURN AFTER DEPARTURE TOWARDS TERRAIN FOR CFIT ESCAPE MANEUVER



"TERRAIN, TERRAIN"

"Pull up, Pull up"

- AP AND A/T OFF
- Pitch up **30°** @ **3-4°/SECOND**
- Full power to MECHANICAL limit
- FPV slightly below PLI
- If stick shaker ACTIVATES REDUCE pitch to $V_2/V_{REF} \pm 10$
- No configuration changes
- Climb to MSA



4. ILS 16R

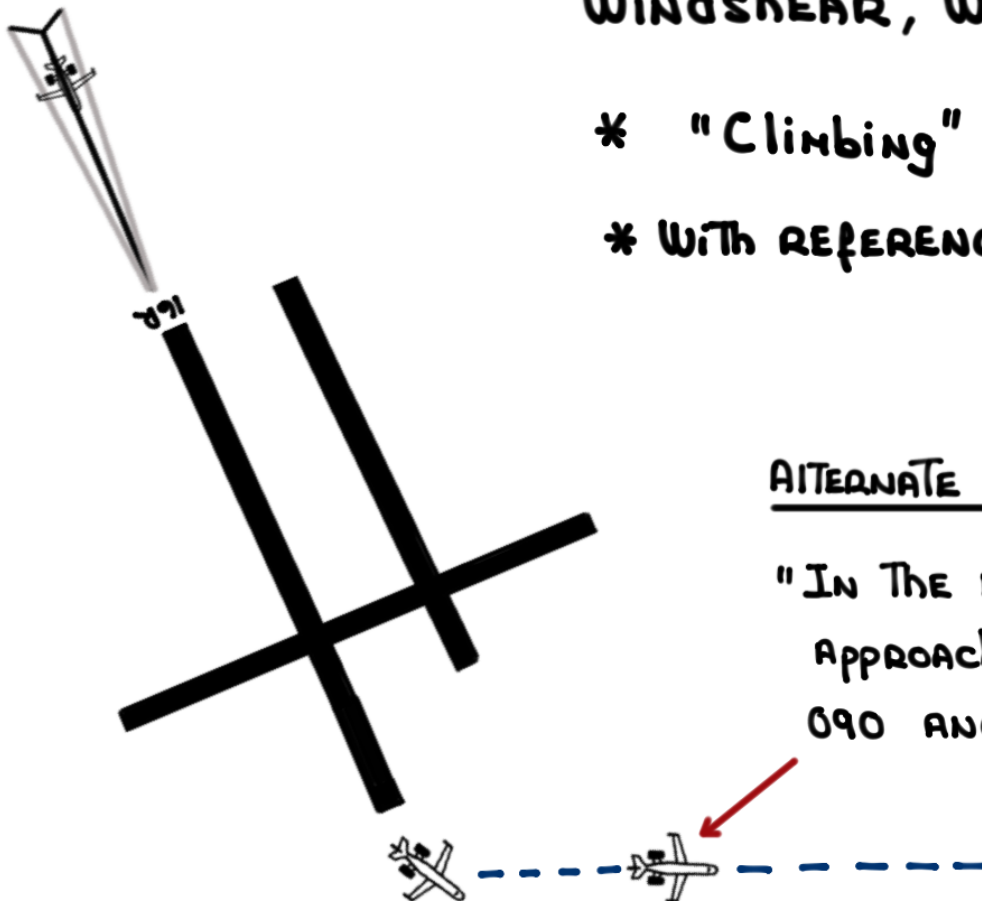
- THUNDERSTORMS SOUTH OF THE AIRPORT AND ACROSS MAP PATH

"NORCAL APPROACH, DUE TO WEATHER SOUTH OF THE AIRPORT REQUEST ALTERNATE MISSED APPROACH PROCEDURE"

"WINDSHEAR, WINDSHEAR" (GPWS)

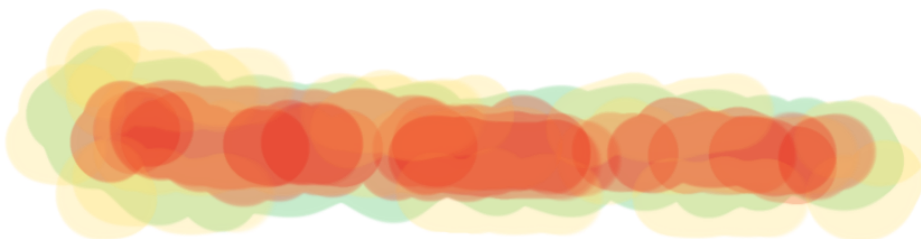
* "Climbing" "Climbing" (PM)

* WITH REFERENCE TO RAD ALT



ALTERNATE MAP CLEARANCE:

"IN THE EVENT OF A MISSED APPROACH TURN LEFT HEADING 090 AND CLIMB 10,000'"



5. TAKEOFF RUNWAY 16R

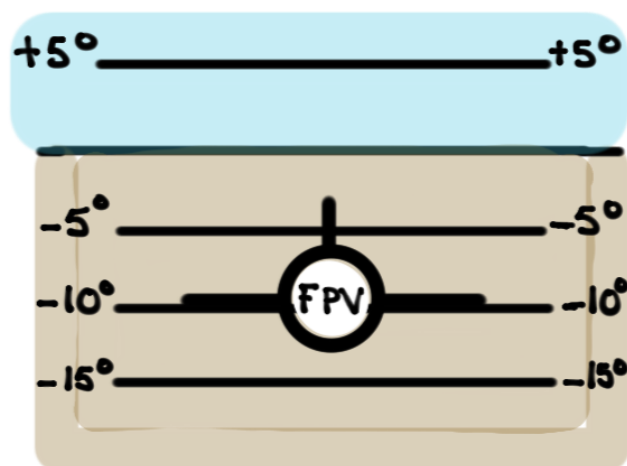
- BIRD STRIKE. RIGHT ENGINE VIBRATION. PM RETARDS THRUST LEVER UNTIL VIBRATION STOPS
 - "PAN PAN, PAN PAN, PAN PAN"
- RETURN TO THE AIRPORT (ILS 2 RWY 16R)
- AFFECTED ENGINE AT IDLE:
 - DO NOT ENGAGE AUTO THROTTLE
 - START THE APU
 - BALANCE FUEL
- VIBRATIONS CONTINUE AND ENGINE NEEDS TO BE SHUT DOWN

ENGINE EXCEEDANCE

"Mayday, Mayday, Mayday"

6. REPOSITION FL450/0.60M FOR high ALTITUDE STALL RECOVERY. EXPECT TO LOSE 5,000'

- NOSE DOWN PITCH CONTROL (-5° TO -10°)
- APPLY FULL POWER
- ACCEPT ALTITUDE LOSS
- DON'T ATTEMPT TO CLIMB UNTIL SPEED INCREASES TO $\geq 0.83M$



7. FL400/0.90M AUTOPILOT OFF

MANUAL EMERGENCY DESCENT ENTRY AND AP ENGAGEMENT ONCE ESTABLISHED

8A MALFUNCTIONS - ENGINE VIBRATION (FAN BLADE)

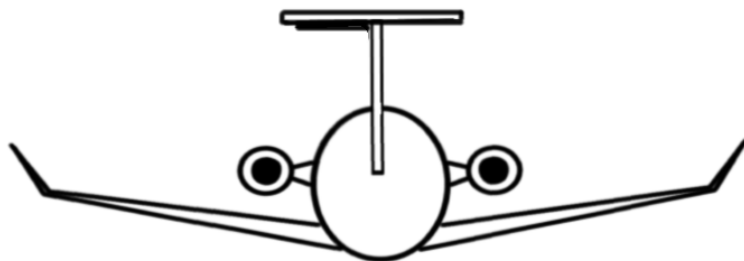
ENGINE SURGES ACCOMPANIED BY HIGH VIBRATION ARE LIKELY DUE TO A FAN BLADE(S) OFF

- FL400 / 0.90M
- RAPID SURGES AND HIGH VIBRATION
- INITIATED AN EMERGENCY DESCENT
- WITH BOTH THRUST LEVERS AT IDLE IT BECOMES VERY DIFFICULT TO TELL WHICH ONE IS THE AFFECTED ENGINE
- BE ABSOLUTELY CERTAIN OF ACCURATELY IDENTIFYING AFFECTED ENGINE PRIOR TO SHUTTING IT DOWN
 - 0.85 - 0.92M / 320 - VMO
 - 10,000' OR MEA, IF HIGHER, 240 - 220 KCAS

8B Malfunctions - Flight Controls

JAMMED ELEVATOR SURFACE

- NO CAS MESSAGE
- USE 2/3 FLIGHT CONTROL SYNOPSIS PAGE TO BETTER DETERMINE WHICH SURFACE IS JAMMED



- "PAN PAN" "PAN PAN" "PAN PAN"
- "JAMMED ELEVATOR CHECKLIST"
- AP OFF / 285 KCAS / 0.90 M



- LANDING CONTROLLABILITY CHECK AS PER QRH

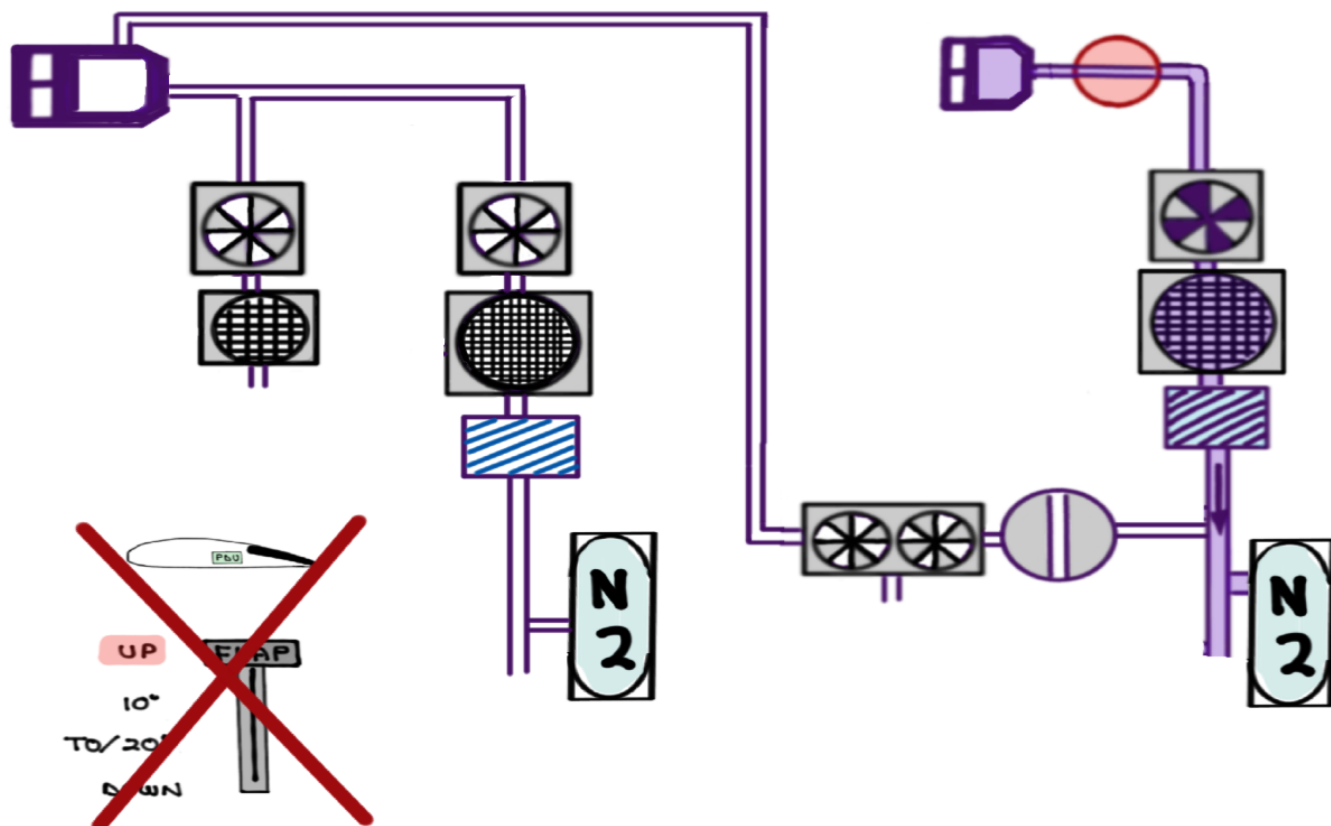
8C Malfunctions - Hydraulics

DIVERSION TO KSFO:

"CLEARED TO SFO, RISTI 1 RNAV ARRIVAL,
DIRECT ORRCA, MAINTAIN FL 260, EXPECT
RNAV 2 Rwy 28R ARCHI TRANSITION."

L Hyd SYSTEM Fail

LEFT Hydraulic SYSTEM



• ALTERNATE LANDING GEAR EXTENSION

(Slow down to 175 KCAS OR LESS EARLY)

FLAPS ARE NOT AVAILABLE. With ANY flight CONTROL SURFACE FAILURE:

"PAN PAN" "PAN PAN" "PAN PAN"

- LAND ON RUNWAY 28R, VACATE TO THE RIGHT AND INTO THE SIGNATURE FLIGHT SUPPORT RAMP

8d MALFUNCTIONS - NOSE WHEEL STEERING FAILURE

- NWS FAILURE WHILE TAXIING TO THE STAND
 - STOP, PARKING BRAKE ON AND QRH

STEER BY WIRE FAIL

#3206 SSPC

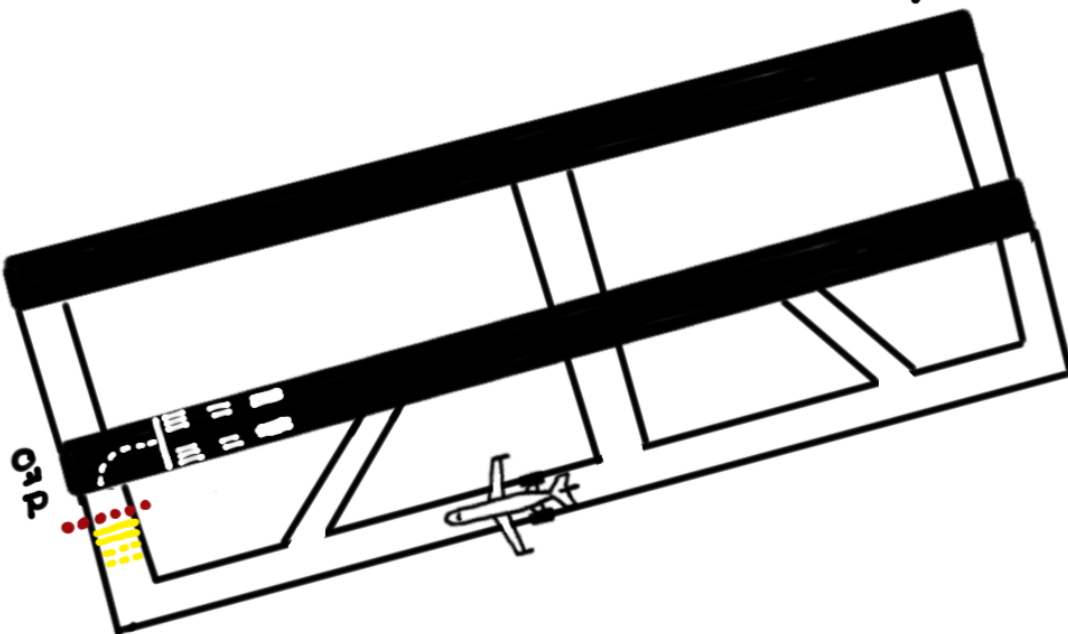
- TAXI TO STAND AND SHUTDOWN

SIMULATOR SESSION 3

NIGHTTIME / IMC

TAXIWAY K / ENGINES RUNNING / RUNWAY 07R

"CLEARED TO VMHC, PECAN 1B, EXPECT RV HAZEL, RNAV LOC/DME X RUNWAY 16, Q6123"



1. CLEARED TO "LINE UP AND WAIT"



DO NOT CROSS RED STOP BAR LIGHTS EVEN WHEN THE TOWER CLEARS YOU TO LINE UP AND WAIT OR FOR TAKEOFF

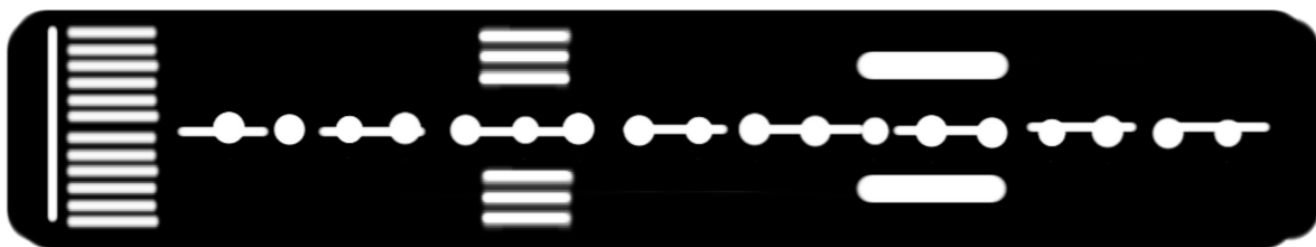
2. RUNWAY LIGHTS DEMO UNDER VARIOUS RVR

- CLEARED TO LINE UP AND WAIT
- INSTRUCTOR THEN PROCEEDED TO DEMONSTRATE WHAT VARIOUS RVR CONDITIONS LOOKED LIKE

RVR 450, 300 AND 150

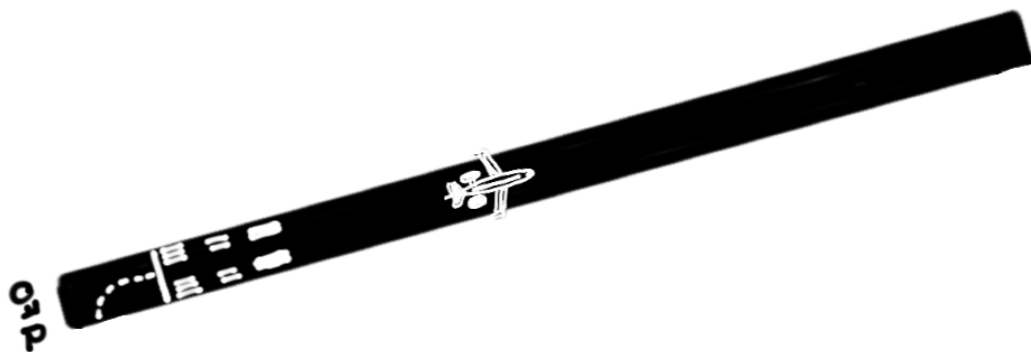
- INSTRUCTOR THEN PROCEEDED TO DEMONSTRATE WHAT THE RUNWAY LOOKED LIKE WITH CENTER LIGHTS AND/OR RUNWAY LIGHTS ON AND OFF

RUNWAY CENTERLINE LIGHTS ARE SPACED 15 METERS APART



COUNT THE NUMBER OF CENTERLIGHTS YOU CAN SEE AND MULTIPLY THAT NUMBER BY 15

3. REJECTED TAKEOFF



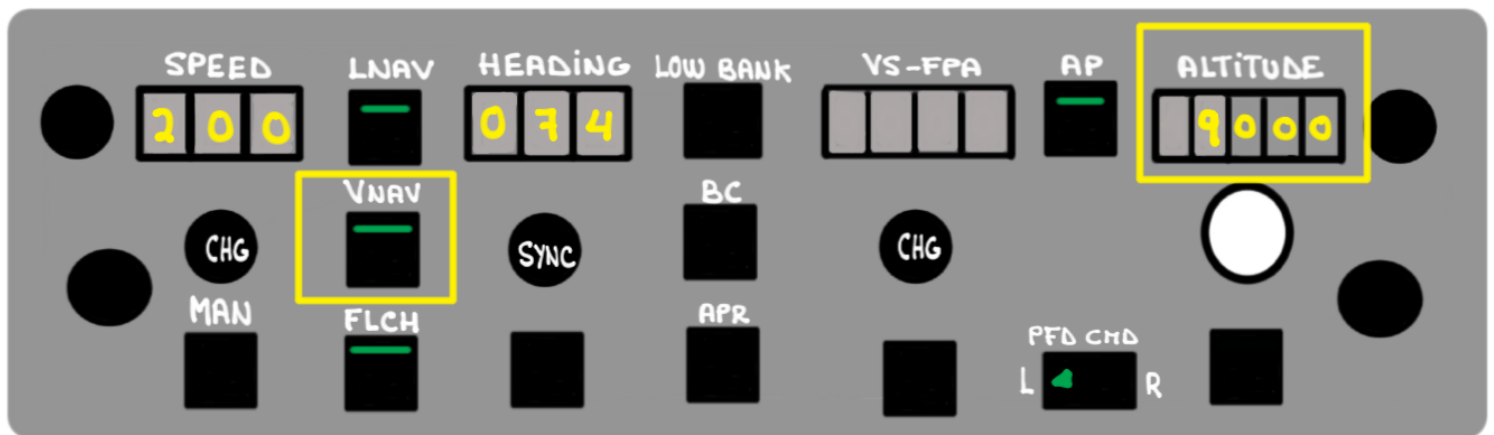
- TO ATC: "VP-CXX, ABORT, ABORT"
- ASSESSED CONDITION TO DETERMINE WHETHER TO EVACUATE PAX, VACATE RUNWAY OR REQUEST A TUG (E.G., BLOWN TIRES)
- ADVISED ATC THAT WE COULD VACATE THE RUNWAY AND TAXI BACK TO THE APRON
- CALLED FOR "REJECTED TAKEOFF CHECKLIST"

QRH - MISCELLANEOUS - E1

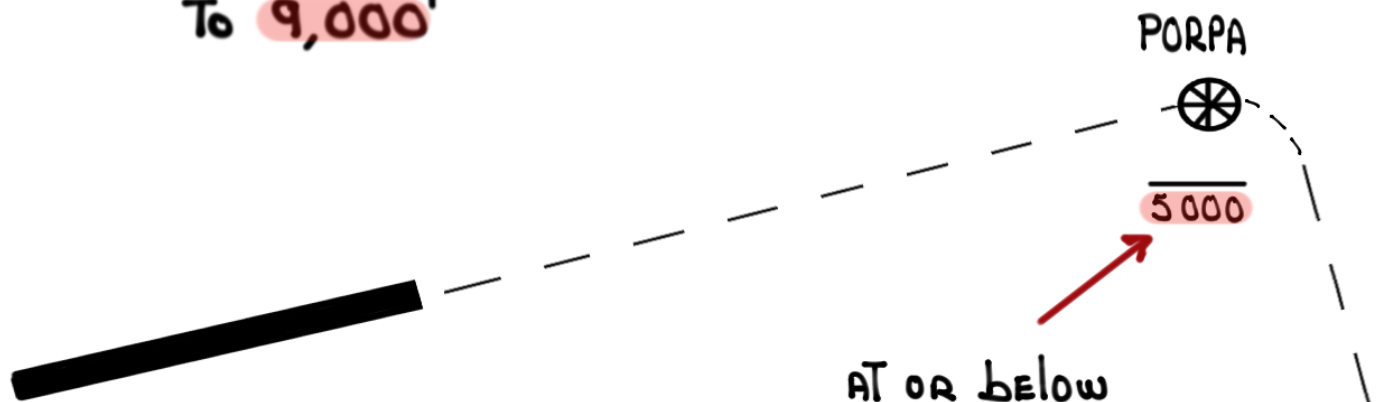
INSTRUCTOR THEN REPOSITIONED AIRCRAFT ON THE THRESHOLD FOR ANOTHER DEPARTURE AND FIXED ALL DISCREPANCIES

4. SID AND CLEARANCE TO CLIMB TO 9,000'

THE USE OF VNAV IN THE CLIMB (VFLCH) ENSURES THAT SID ALTITUDE RESTRICTIONS WON'T BE VIOLATED REGARDLESS OF WHAT'S SET ON THE ALTITUDE PRE SELECT WINDOW

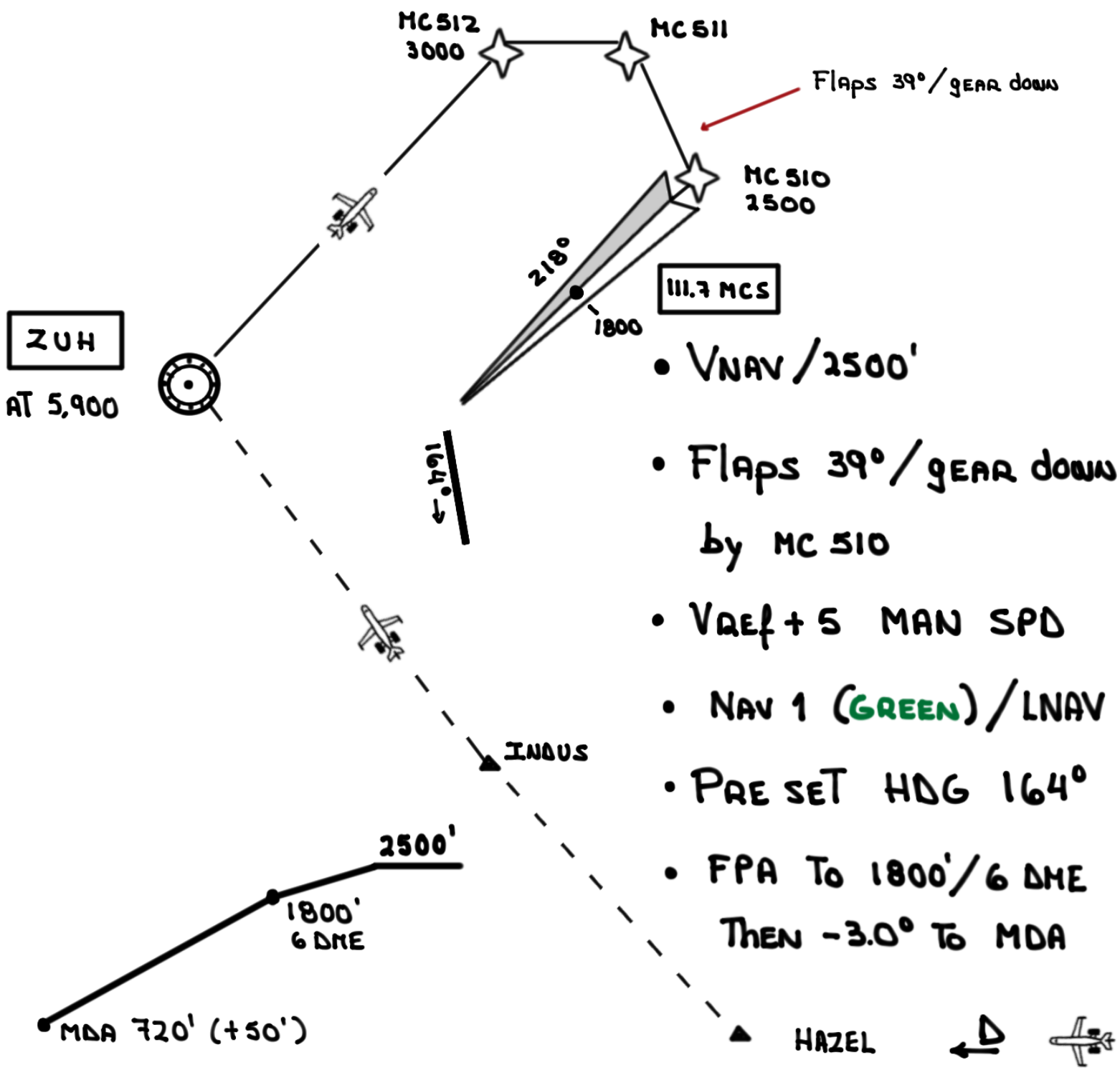


- "climb via SID to 9,000"
- If NOT, THEN CONFIRM UNRESTRICTED climb to 9,000'



5. HAZEL > INDUS cleared for the approach

RNAV LOC DME X RWY 16



- VNAV / 2500'
- Flaps 39° / gear down by MC 510
- VREF + 5 MAN SPD
- NAV 1 (GREEN) / LNAV
- PRE SET HDG 164°
- FPA TO 1800' / 6 DME THEN -3.0° TO MDA

6. WINDSHEAR ESCAPE MANEUVER APPROACHING MDA

- PRIOR TO MAP SPOTTED THE RUNWAY
- SELECTED HDG TO THE PREVIOUSLY SET RUNWAY HEADING (164°) AND V/S
- WHILE ON FINAL EXPERIENCED RAPID SPEED OSCILLATIONS THEN AN AURAL ALERT PLUS A **WINDSHEAR** WARNING ON THE PFD
- EXECUTED ESCAPE MANEUVER AS FOLLOWS:

- AP AND A/T OFF
- Pitch up **30°** @ **3-4°/SECOND**
- Full power to MECHANICAL limit
- FPV slightly below PLI
- If stick shaker REDUCE pitch to $V_2/V_{REF} \pm 10$
- No configuration changes

- PM, REFERENCING THE RAD ALT, CALLED OUT:
"CLIMBING" OR "DESCENDING"

7. MISSED APPROACH PROCEDURE

AFTER EXECUTING THE WINDSHEAR ESCAPE MANEUVER AND REPORTING THE EVENT TO ATC WE WERE INSTRUCTED TO MAINTAIN RUNWAY HEADING AND TO LEVEL OFF AT 2,000 (MAP: 4,000')

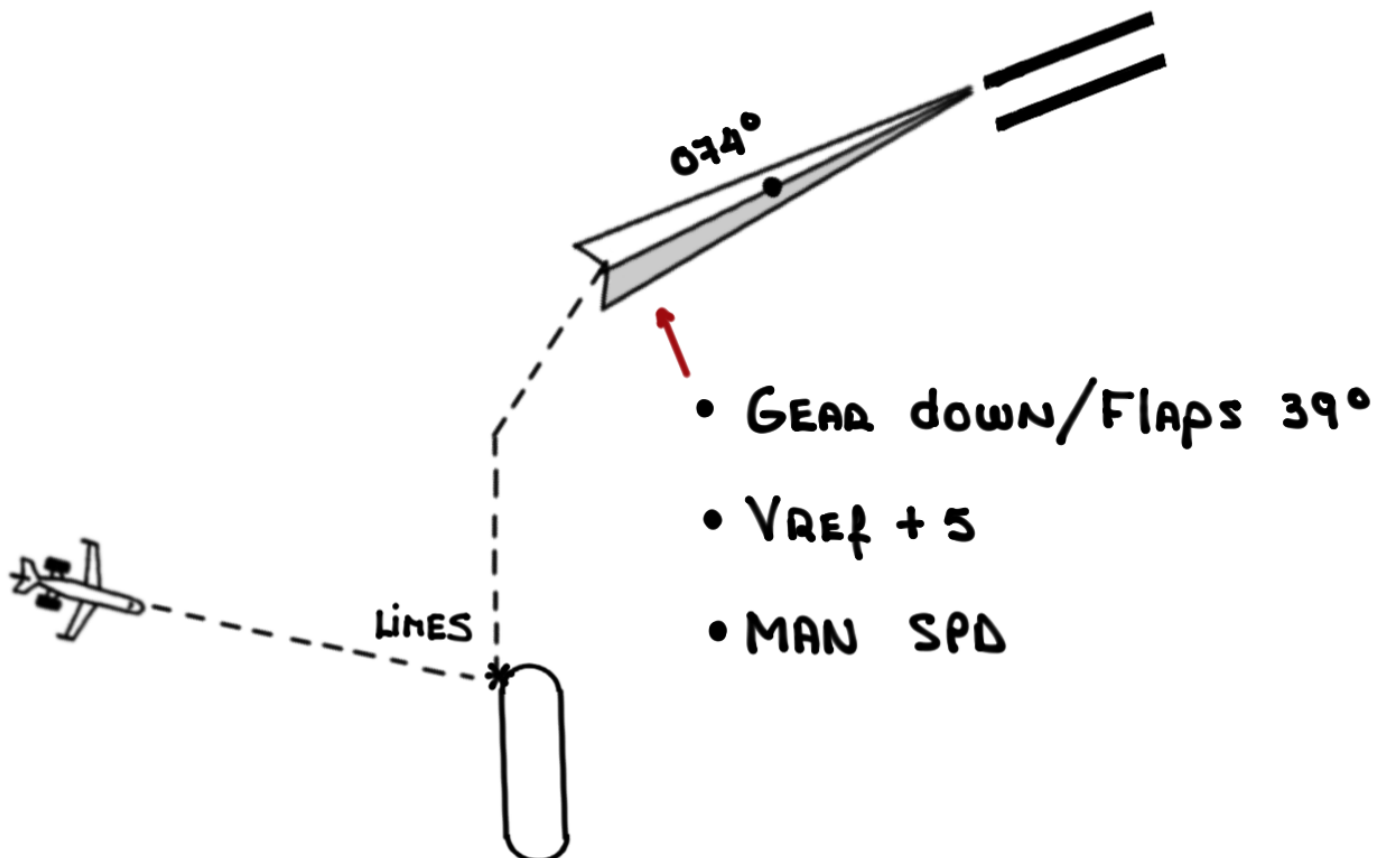
WE HAD ALREADY CROSSED 3,000 AND WERE RETRACTING GEAR/FLAPS AS WE ACCELERATED TO 200 KCAS



- CONFIRM HDG MODE SELECTED / 164°
- ALT PRESELECT: 2,000'
- MAN SPD 200 KCAS
- FLIGHT LEVEL CHANGE (FLCH)
- AUTO THROTTLES ON
- AUTOPILOT ON
- CLIMB CHECKLIST

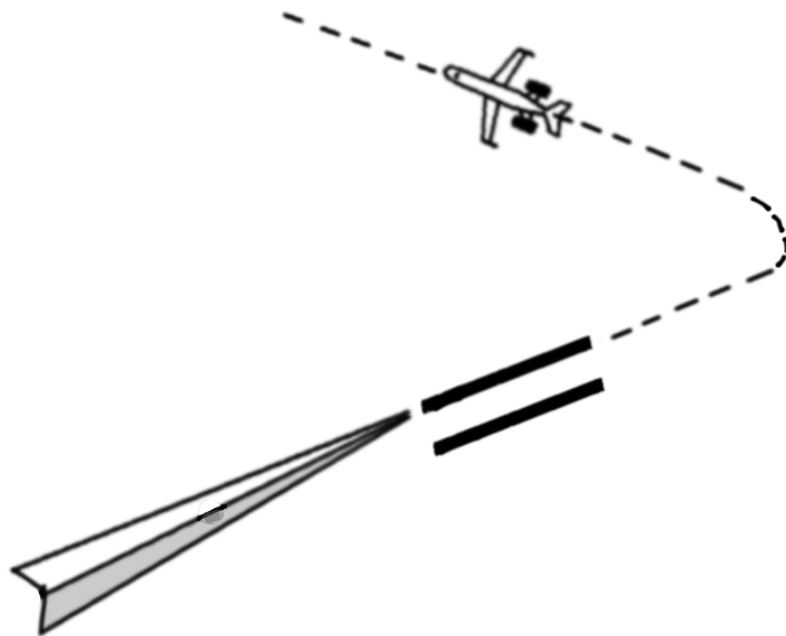
8. ENGINE FLAMEOUT/NO LP

- ATC CLEARED US DIRECT TO LIMES AND TO EXPECT THE ILS APPROACH RUNWAY 07L
- WHILE ENROUTE TO LIMES AN ENGINE FLAMED OUT
- A MAYDAY WAS DECLARED AND CLEARANCE RECEIVED TO HOLD AT LIMES IN ORDER TO SECURE FAILED ENGINE AND SET UP FOR A OEI APPROACH AND LANDING



9. OEI go-around

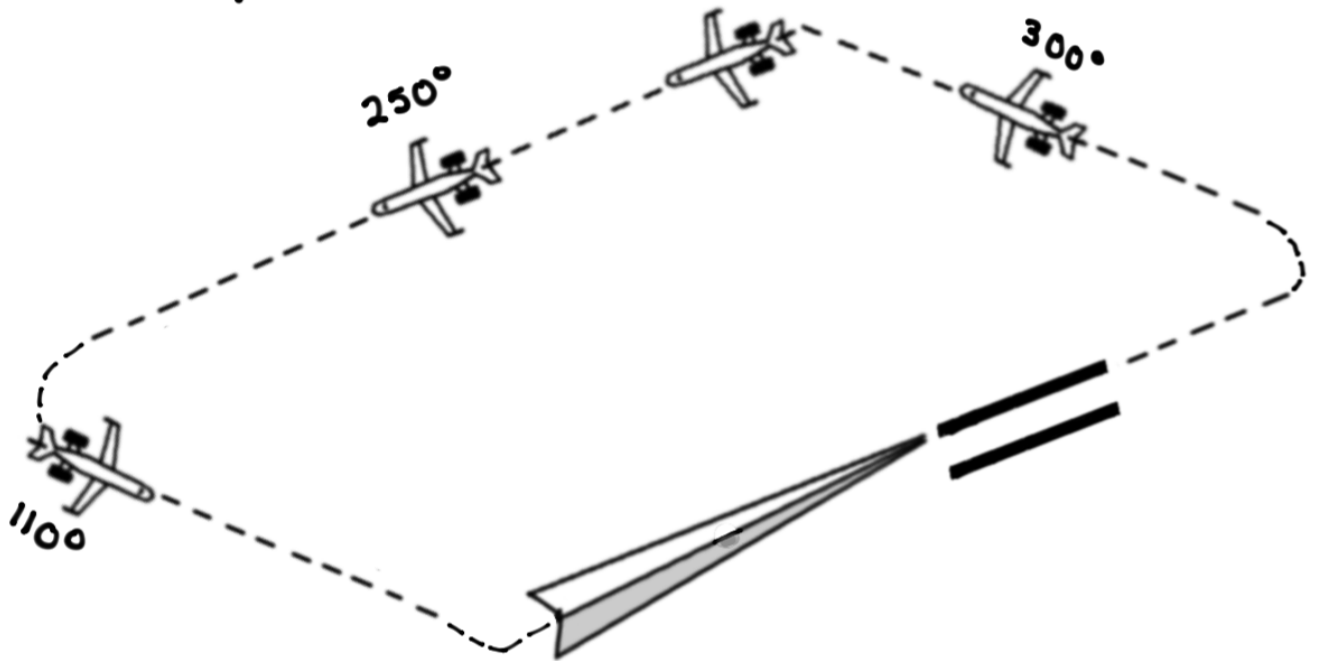
- ALTERNATE MISSED APPROACH PROCEDURE WAS REQUESTED PRIOR TO COMMENCING THE APPROACH
- AT MINIMUMS A MISSED APPROACH WAS INITIATED. CLEARANCE WAS GIVEN TO TURN LEFT HEADING 300° WHEN ABLE AND TO MAINTAIN 2,000'



"ONE ENGINE INOPERATIVE go-around checklist"

10. ILS 07L OEI LAND / AFT CABIN SMOKE

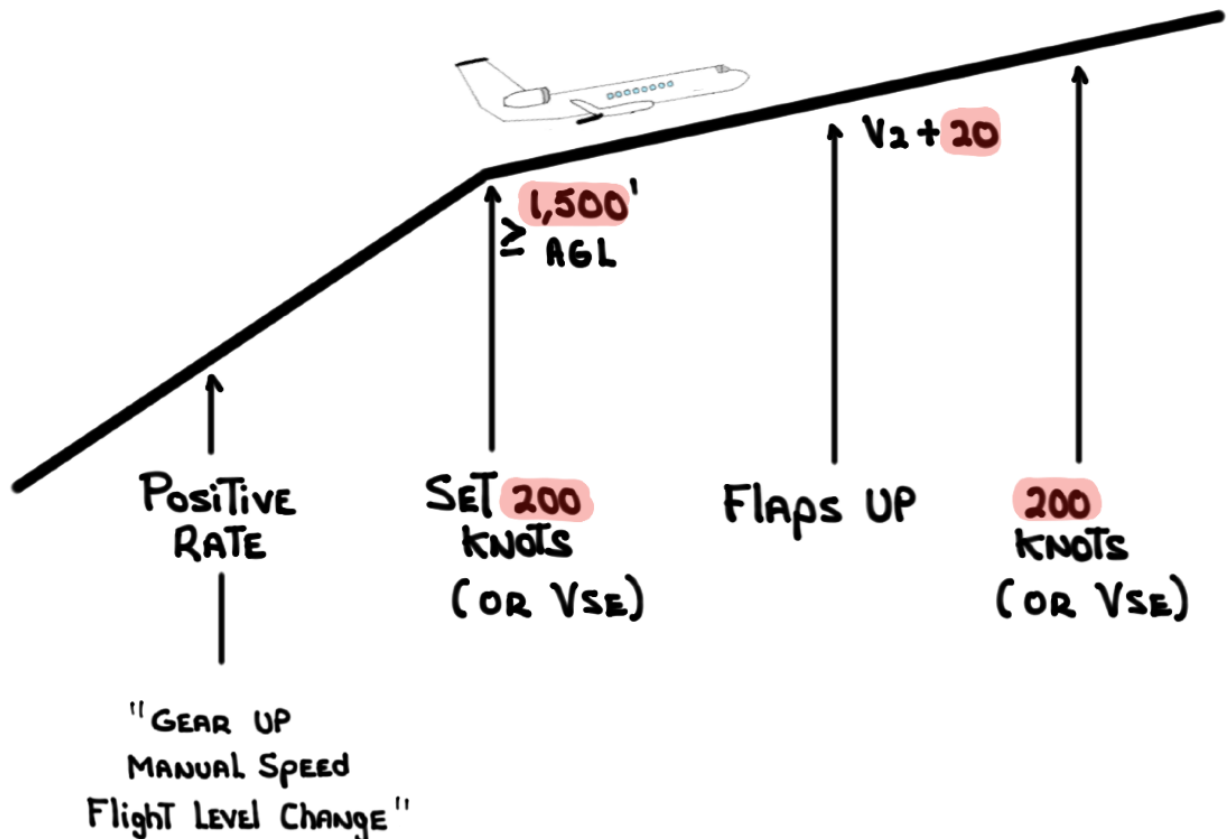
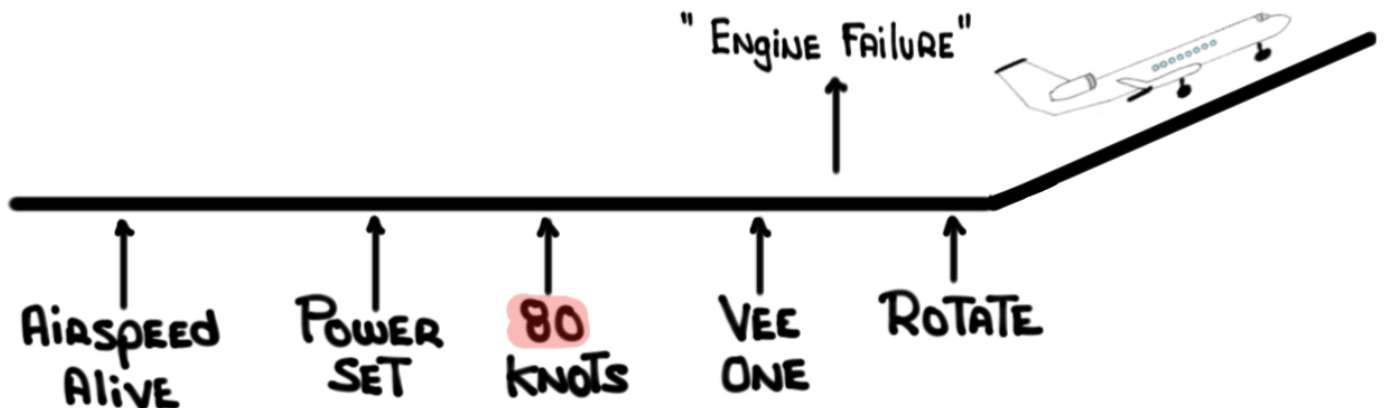
- Following The OEI go-around ATC provided RADAR VECTORS AND ADVISED WEATHER CONDITIONS HAD IMPROVED



- ON SHORT FINAL **L AFT FLOOR HOT**
- BROUGHT AIRCRAFT TO A COMPLETE STOP AS THE TOWER ADVISED THERE WAS SMOKE COMING OUT OF THE AIRCRAFT
- COMMENCED AN EVACUATION PROCEDURE
"EZ VICTOR"

11. Right HAND SEAT work AS Pilot Flying (PF)

- TAKE off, ENGINE FAILURE below V_1 , ABORT
- TAKE off, ENGINE FAILURE ABOVE V_1



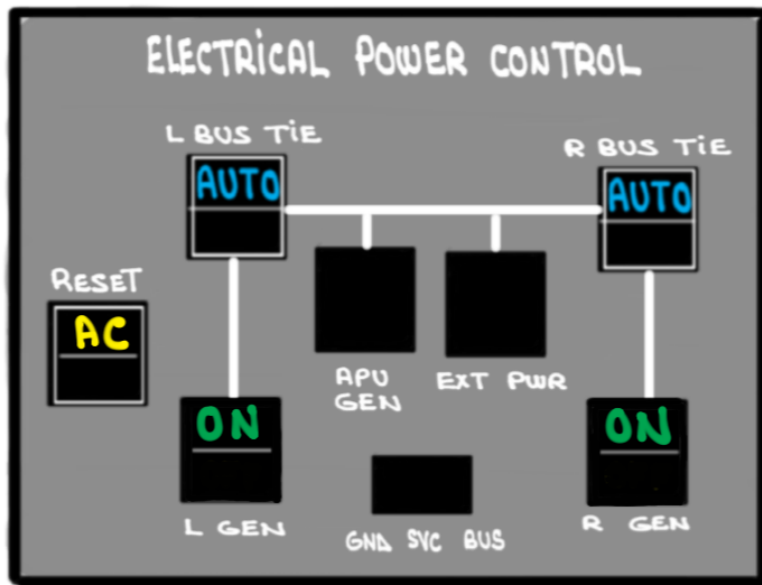
- OEI go-around
- PM incapacitated

To ATC: "Pilot incapacitated. Will bring aircraft to a stop on the runway. Request ambulance to be standing by."

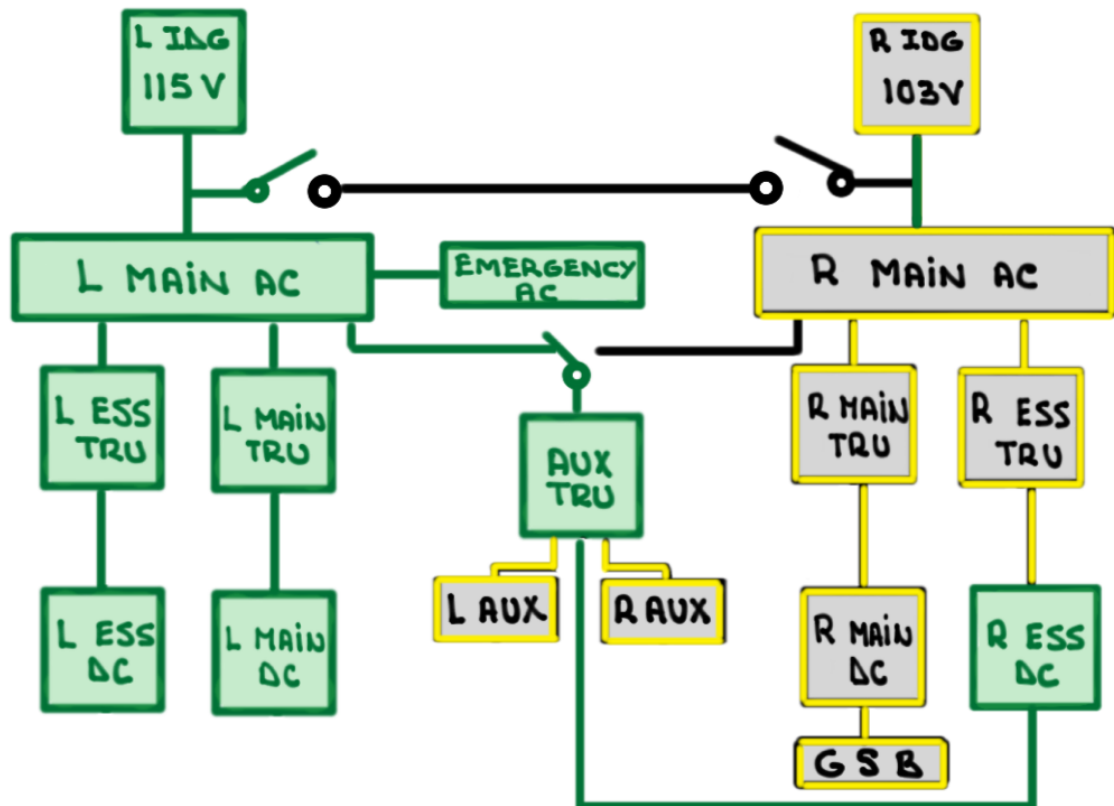
To FA: "Captain is not responding. We'll be on the ground in a few minutes. Please slide his seat all the way back and secure his arms behind his shoulder harness."

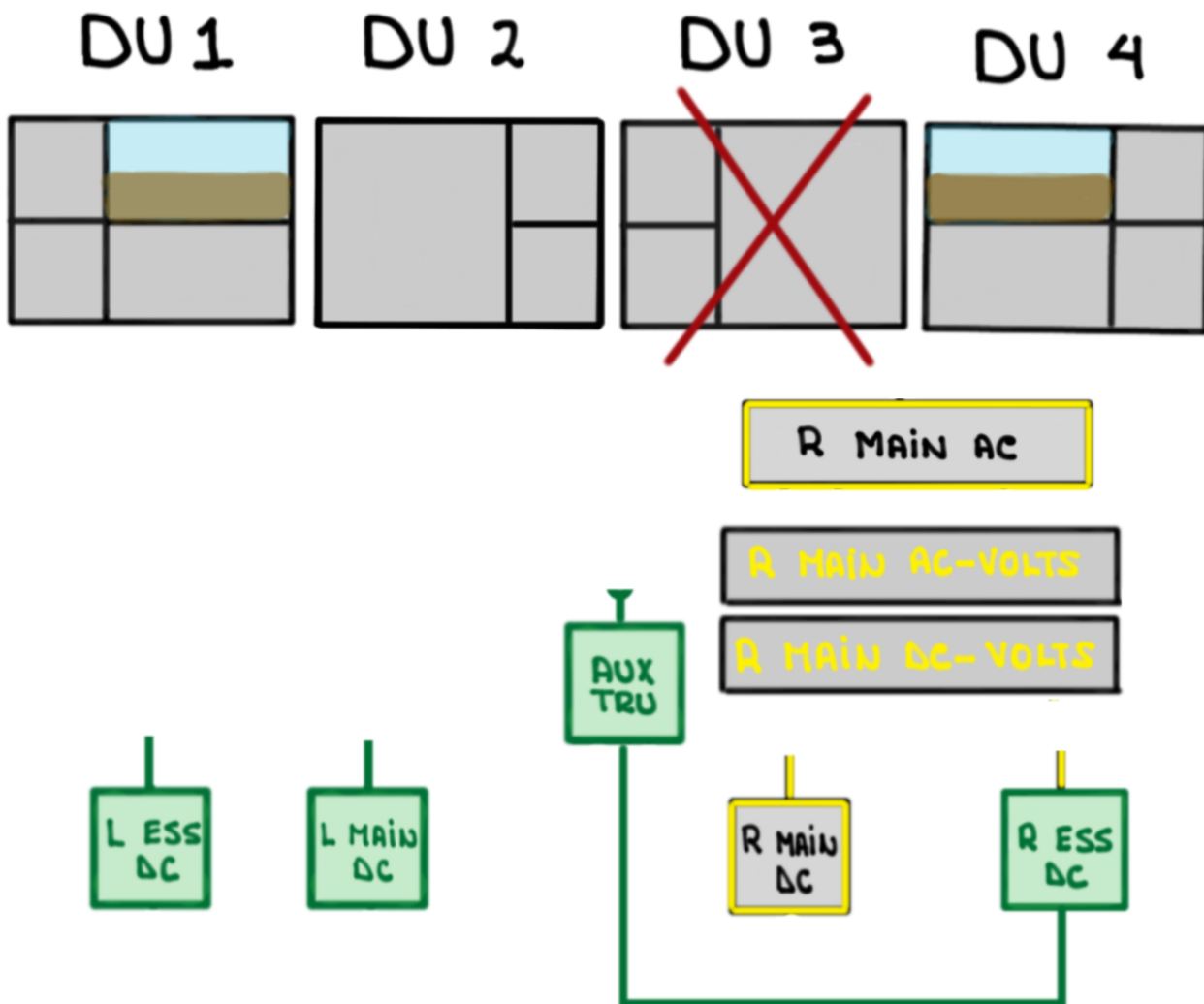
- OEI landing and stop on the runway

12A Malfunctions - Electrical



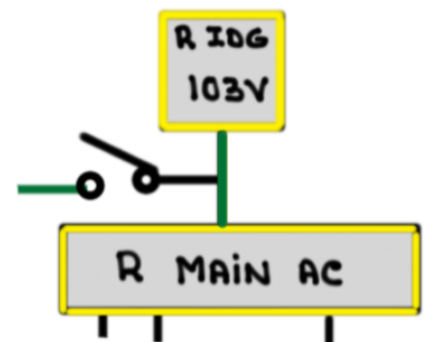
- C R BATTERY CHARGER FAIL C
- SSPC PWR Tiles 5-6-7-8 FAIL
- R MAIN AC-VOLTS
- R MAIN DC-VOLTS
- R MAIN TRU FAULT
- R ESS TRU FAULT
- R AC RESET
- R AC POWER FAULT





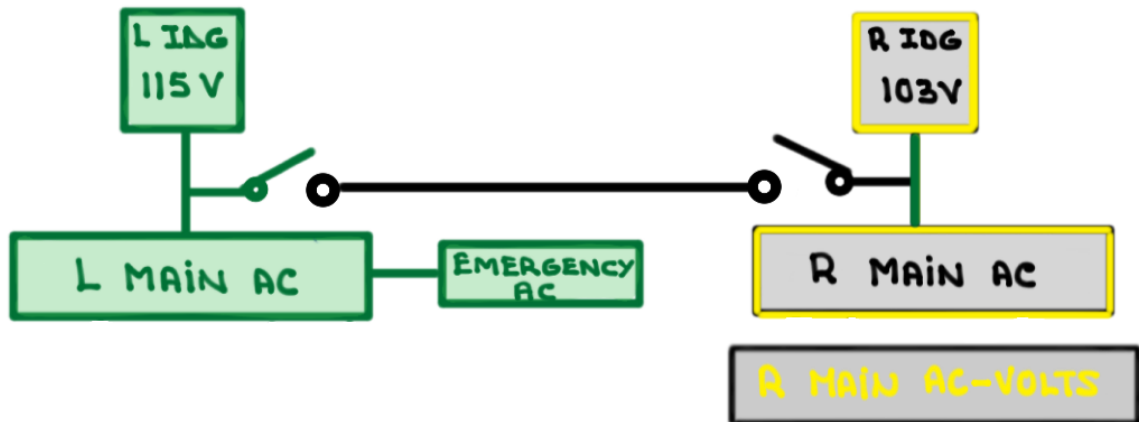
THREE (3) OPERATIVE AND ONE (1) INOPERATIVE DU INDICATE A MAIN AC BUS FAULT

THERE IS NO **R AC POWER FAIL** CAS MESSAGE WHICH WOULD INDICATE A GEN FAILURE

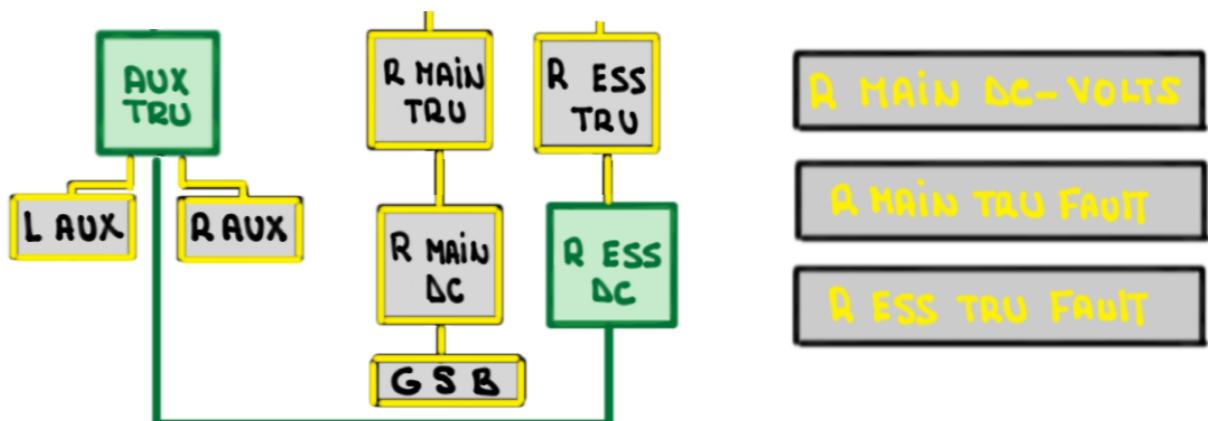


The R IDG is generating 103V AC which is NOT ENOUGH TO POWER THE R MAIN AC BUS

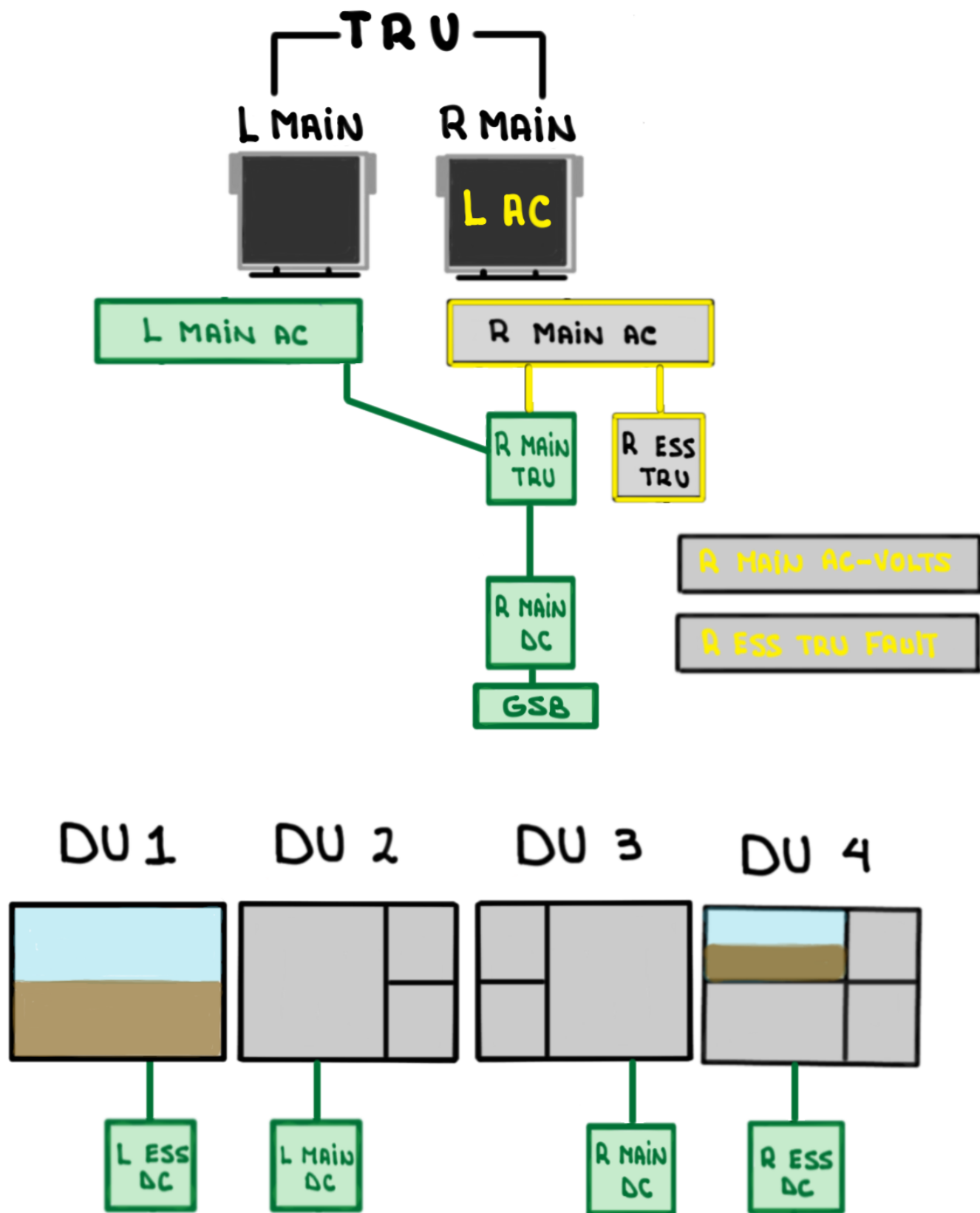
The IDG HAS NOT failed sufficiently to be TAKEN offline by its GCU, which would have ALLOWED THE BPCU TO close THE bus TIE RELAYS AND allow THE OPPOSITE IDG TO power THE R MAIN AC BUS

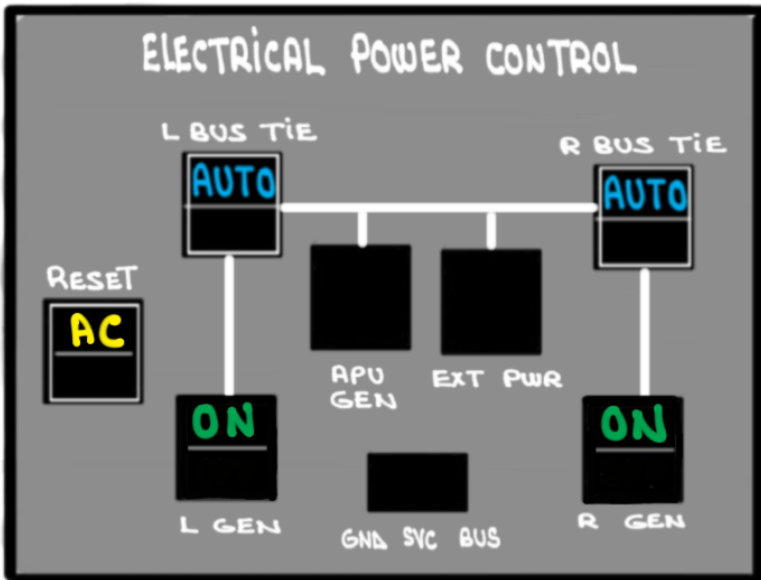
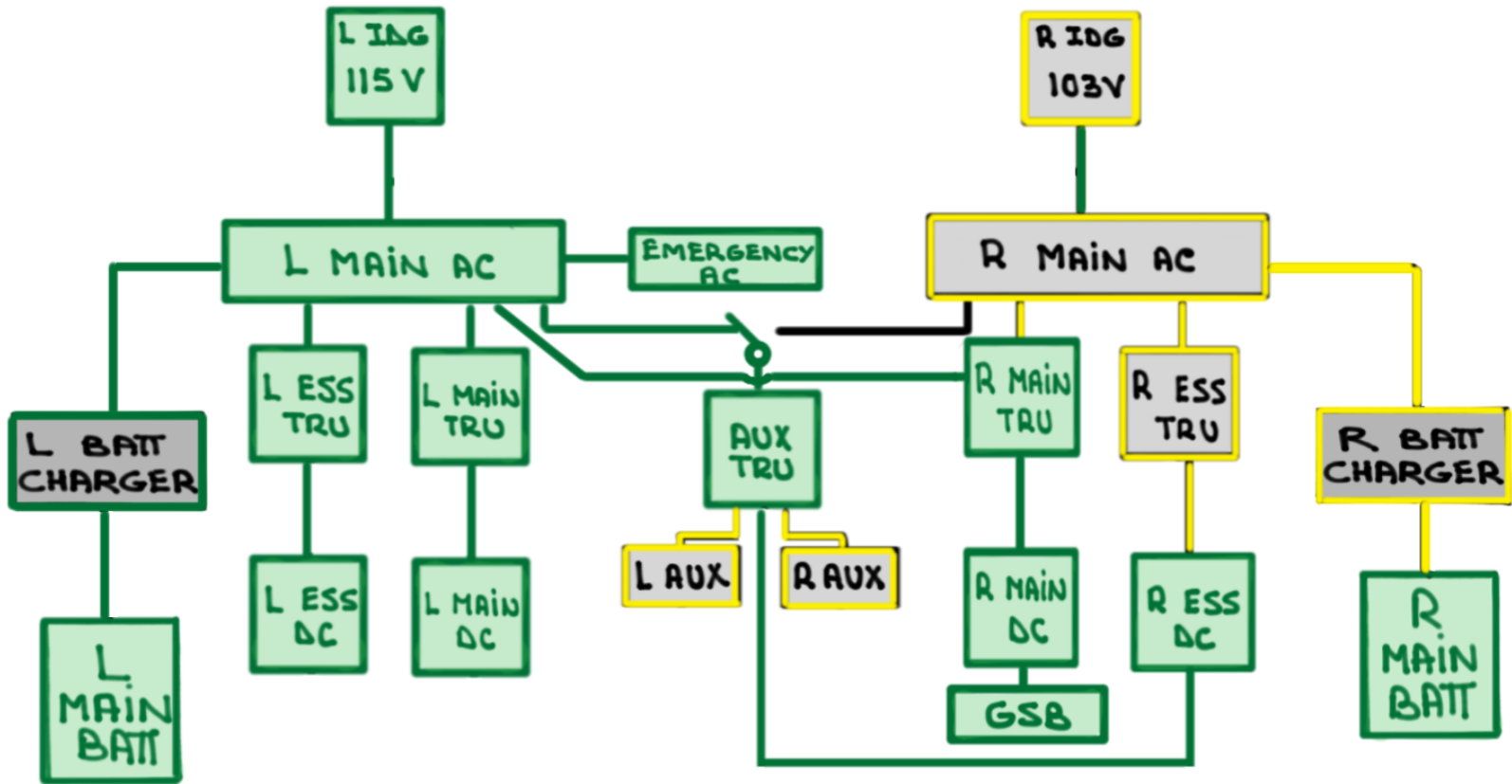


The AUX TRU shed its L-R AUX buses AND is NOW POWERING THE R ESS DC BUS



SELECTING THE R MAIN TRU SWITCH TO L AC would RESTORE R MAIN DC BUS AND DU 3

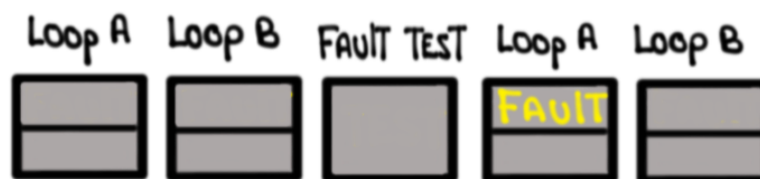




- R BATTERY CHARGER FAIL
- SSPC PWR Tiles 5-6-7-8 FAIL
- R MAIN AC-VOLTS
- R ESS TRU FAULT
- R AC RESET

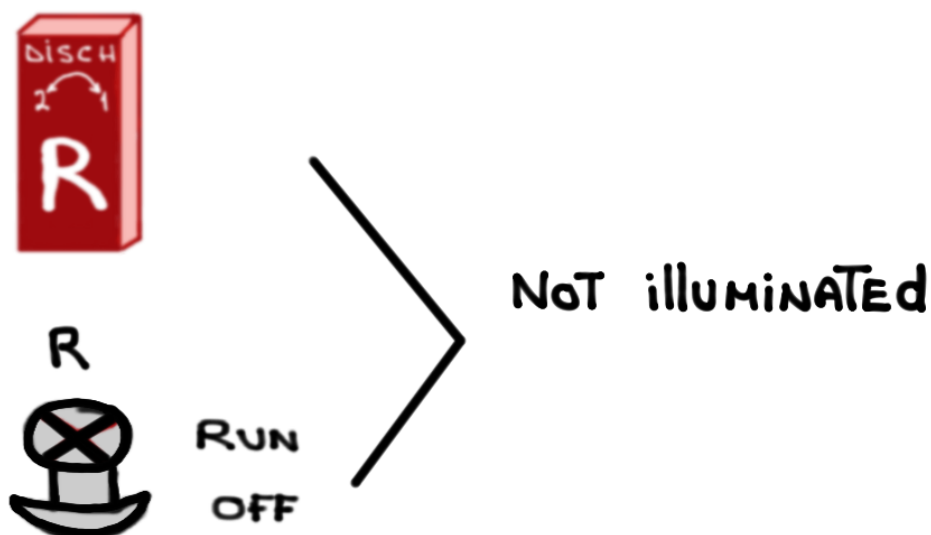
126 Malfunctions - FIRE DETECTION

C FIRE DETECTION LOOP FAULT **C**

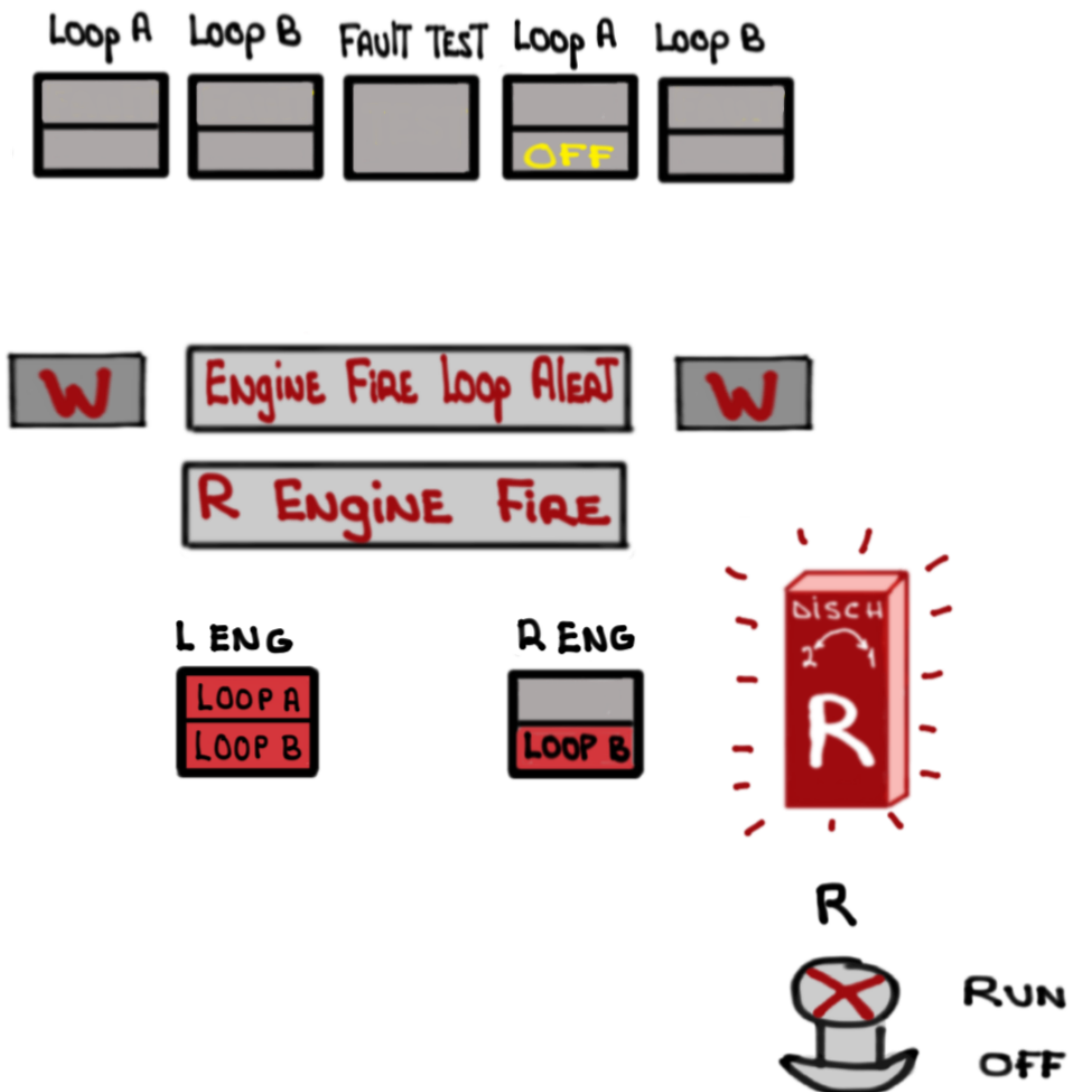


THE ABOVE CAS MESSAGE AND INDICATION WERE FOLLOWED, ALMOST IMMEDIATELY, BY THE FOLLOWING CAS MESSAGE AND INDICATIONS:

W R ENGINE FIRE **W**



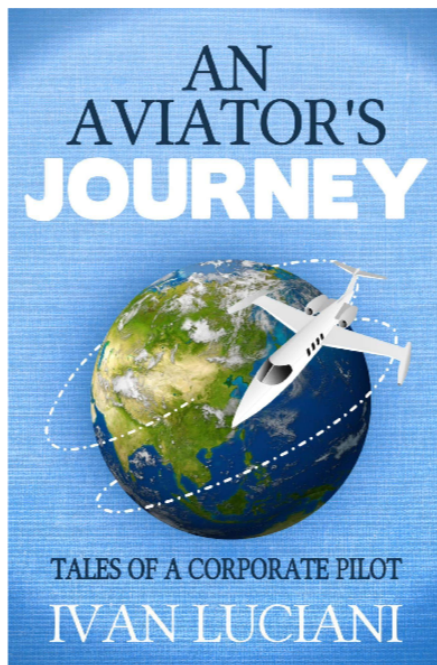
- The **FIRE** DETECTION SYSTEM is a dual loop system
- Both loops NEED TO DETECT A FIRE FOR THE FIRE HANDLE AND FUEL CONTROL SWITCH TO ILLUMINATE
- Deselecting a faulty loop TURNS IT INTO A SINGLE loop system able to DETECT AN ENGINE FIRE ON ITS OWN



REMINDER: these simulator training notes are intended for study purposes only. Always refer to official Gulfstream manuals and other approved references when operating your aircraft.

NOTE: these notes are updated from time to time and what is posted on Code450.com will always be the most recent version.

Questions, comments or errors...please do send me an email:
ivan@code7700.com



Thank you!