Pilot Initial

CRJ-550 Instructor Whiteboard

Session 4

Flight Number 4504

Briefing Items

- Winter Ops
  - Holdover/Allowance Times
  - DE□ICE Configuration Checklist
  - Anti□Ice System
  - Anti-Ice System Abnormalities
- Fire Detection and Protection
- Fire Checklists
- SE Missed Approach
- LOC BC Approach
- GPS Approach
- Rejected Takeoff

Winter Ops
Frost, Ice or Snow Adhering to Aircraft

No person may take off an aircraft with frost, ice, snow or slush adhering to any critical surface (wings, upper fuselage, horizontal stabilizer, vertical stabilizer, control surfaces and engine inlet(s).

Note: Takeoff is permitted with frost adhering to:

- The upper surface of the fuselage if it is possible to distinguish surface features; and/or
- The underside of the wing, maximum 3mm (1/8 inch), that is caused by cold soaked fuel.

WARNING: Even small amounts of frost, ice, snow or slush on the wing leading edges and forward upper wing surface may adversely change the stall speeds, stall characteristics and the protection provided by the stall protection system, which may result in loss of control on take-off.

SOP 3-6 COLD WEATHER OPERATIONS

Winter Ops
Holdover/Allowance Times

WOP 4.4.2.1: Holdover Charts Usage, Crew Considerations and Checks

14 CFR 121.629(c)(3)

A. The following sections are an overview of information needed when using the **holdover charts in this manual and/or the Sure WX Sure App** to determine the applicable Holdover/Allowance Time during periods of “Ground Icing Conditions”.

B. When issues arise with the SureWX SureAPP that causes the validity of the information presented to be questioned, or the application malfunctions rendering it unusable, discontinue the use of the application and resume use of the FAA Holdover Time Tables published in this manual.

Note: After encountering an issue with the SureWX application, the crewmember shall complete an EFB Irregularity Report. (SAM 1-9.2)

Winter Ops
Holdover/Allowance Times

When a choice of aluminum or composite charts or data are provided, crews shall use aluminum data (WOP 2.7.1)

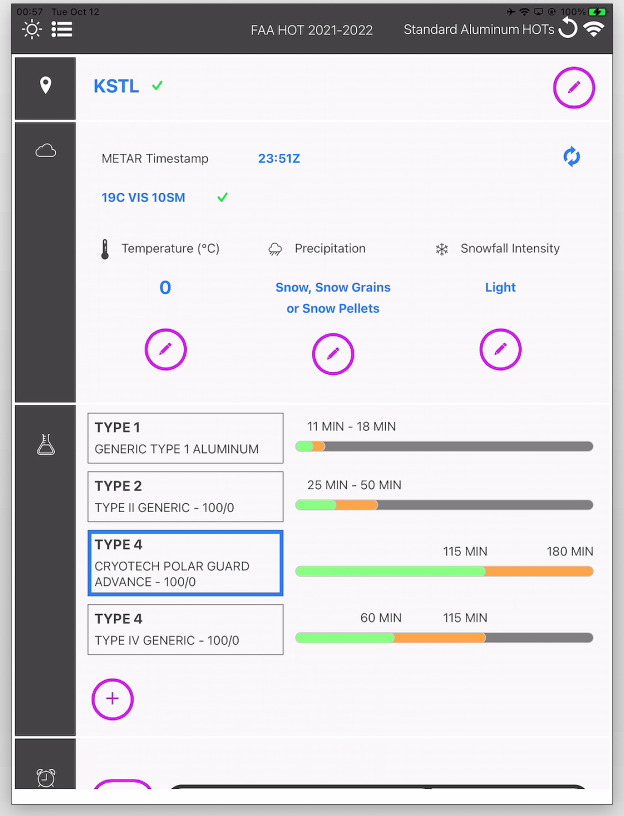


TABLE 29: TYPE IV HOLDOVER TIMES FOR CRYOTECH POLAR GUARD® ADVANCE

Outside Air Temperature[1]	Fluid Concentration Fluid/Water By % Volume	Freezing Fog or Ice Crystals	Very Light Snow, Snow Grains or Snow Pellets[2,3]	Light Snow, Snow Grains or Snow Pellets[2,3]	Moderate Snow, Snow Grains or Snow Pellets[2]	Freezing Drizzle[4]	Light Freezing Rain	Rain on Cold Soaked Wing[5]	Other[6]
-3 °C and above (27 °F and above)	100/0	2:50 - 4:00	3:00 - 3:00	1:55 - 3:00	1:05 - 1:55	1:35 - 2:00	1:15 - 1:30	0:15 - 2:00	
	75/25	2:30 - 4:00	3:00 - 3:00	1:25 - 3:00	0:40 - 1:25	1:40 - 2:00	0:40 - 1:10	0:09 - 1:40	
	50/50	0:50 - 1:25	1:10 - 1:35	0:25 - 1:10	0:10 - 0:25	0:20 - 0:45	0:09 - 0:20	CAUTION: No holdover time guidelines exist	
below -3 to -8 °C (below 27 to 18 °F)	100/0	0:55 - 2:30	2:25 - 2:50	1:25 - 2:25	0:50 - 1:25	0:35 - 1:35	0:35 - 0:45		
	75/25	0:40 - 1:30	2:20 - 3:00	1:05 - 2:20	0:30 - 1:05	0:25 - 1:05	0:35 - 0:45		
below -8 to -14 °C (below 18 to 7 °F)	100/0	0:55 - 2:30	2:00 - 2:20	1:10 - 2:00	0:40 - 1:10	0:35 - 1:35[7]	0:35 - 0:45[7]		
	75/25	0:40 - 1:30	2:00 - 2:30	0:55 - 2:00	0:25 - 0:55	0:25 - 1:05[7]	0:35 - 0:45[7]		
below -14 to -18 °C (below 7 to 0 °F)	100/0	0:25 - 0:50	1:35 - 2:15	0:35 - 1:35	0:10 - 0:35				
below -18 to -25 °C (below 0 to -13 °F)	100/0	0:25 - 0:50	0:40 - 0:55	0:15 - 0:40	0:04 - 0:15				
below -25 to -30.5 °C (below -13 to -23 °F)	100/0	0:25 - 0:50	0:25 - 0:30	0:07 - 0:25	0:02 - 0:07				

NOTES

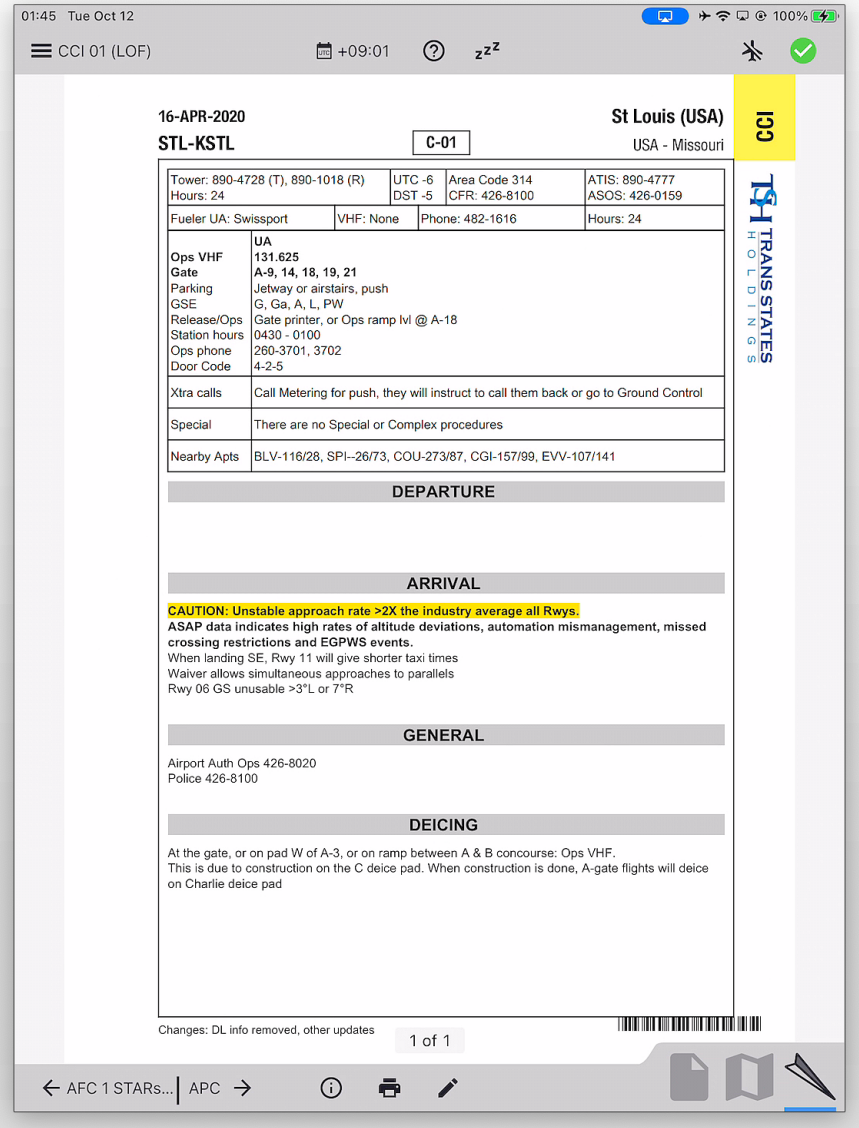
1 Ensure that the lowest operational use temperature (LOUT) is respected. Consider use of Type I fluid when Type IV fluid cannot be used.
2 To determine snowfall intensity, the Snowfall Intensities as a Function of Prevailing Visibility table (Table 42) is required.
3 Use light freezing rain holdover times in conditions of very light or light snow mixed with light rain.
4 Includes light, moderate and heavy freezing drizzle. Use light freezing rain holdover times if positive identification of freezing drizzle is not possible.
5 No holdover time guidelines exist for this condition for 0 °C (32 °F) and below.
6 Heavy snow, ice pellets, moderate and heavy freezing rain, small hail and hail (Table 41 provides allowance times for ice pellets and small hail).
7 No holdover time guidelines exist for this condition below -10 °C (14 °F).

CAUTIONS

- The responsibility for the application of these data remains with the user.
- The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates or high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when aircraft skin temperature is lower than outside air temperature.
- Fluids used during ground de/anti-icing do not provide in-flight icing protection.
- This table is for departure planning only and should be used in conjunction with pretakeoff check procedures.

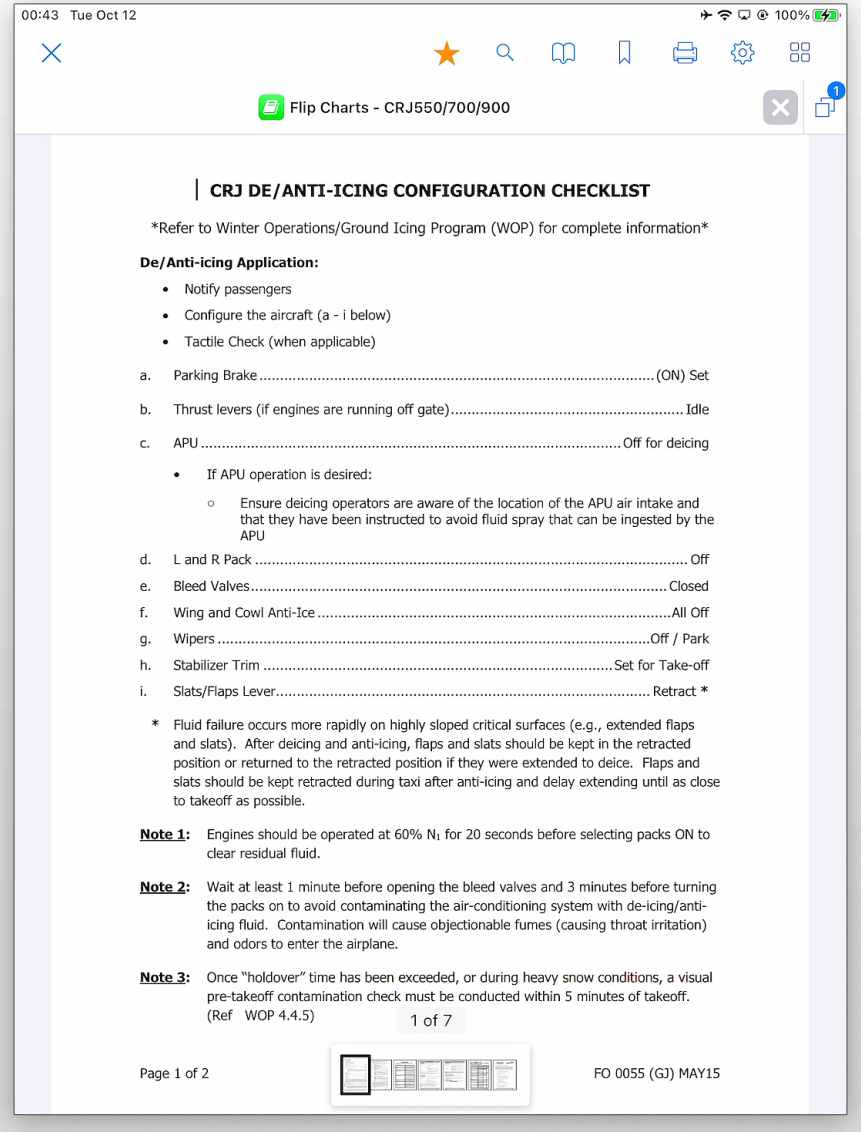
Winter Ops Station Information

- At a minimum, the C-01 CCI page will have a short description of local deicing Procedures
- However, at some stations ORD for example, there are many pages of local deicing Procedures.
- Always review the station information prior to push-back to avoid delays.



Winter Ops
CRJ DE/ANTI-ICING Configuration Checklist

- If Flip Charts are not a favorite on your EFB, Open COMPLY on your EFB and search for Flip Charts – recommend adding the current version to your favorites.
- Pages 1 and 2 contact the CRJ DE/ANTI-ICING CONFIGURATION CHECKLIST
- Please open it on your iPad for group discussion



CRJ DE/ANTI-ICING CONFIGURATION CHECKLIST

Refer to Winter Operations/Ground Icing Program (WOP) for complete information

De/Anti-icing Application:

- Notify passengers
- Configure the aircraft (a - i below)
- Tactile Check (when applicable)

a. Parking Brake ..... (ON) Set

b. Thrust levers (if engines are running off gate) ..... Idle

c. APU ..... Off for deicing

- If APU operation is desired:
  - Ensure deicing operators are aware of the location of the APU air intake and that they have been instructed to avoid fluid spray that can be ingested by the APU

d. L and R Pack ..... Off

e. Bleed Valves ..... Closed

f. Wing and Cowl Anti-Ice ..... All Off

g. Wipers ..... Off / Park

h. Stabilizer Trim ..... Set for Take-off

i. Slats/Flaps Lever ..... Retract *

* Fluid failure occurs more rapidly on highly sloped critical surfaces (e.g., extended flaps and slats). After deicing and anti-icing, flaps and slats should be kept in the retracted position or returned to the retracted position if they were extended to deice. Flaps and slats should be kept retracted during taxi after anti-icing and delay extending until as close to takeoff as possible.

Note 1: Engines should be operated at 60% N_1 for 20 seconds before selecting packs ON to clear residual fluid.

Note 2: Wait at least 1 minute before opening the bleed valves and 3 minutes before turning the packs on to avoid contaminating the air-conditioning system with de-icing/anti-icing fluid. Contamination will cause objectionable fumes (causing throat irritation) and odors to enter the airplane.

Note 3: Once "holdover" time has been exceeded, or during heavy snow conditions, a visual pre-takeoff contamination check must be conducted within 5 minutes of takeoff. (Ref WOP 4.4.5)

1 of 7

Page 1 of 2

FO 0055 (GJ) MAY15

Winter Ops
Anti-Ice System Ground Operations

Cowl anti-ice system must be ON when the OAT is 10°C (50°F) or below (SOP 3-5.1.1):

• and visible moisture in any form is present (such as fog with visibility of 1,500 meters [1 mile] or less, rain, snow, sleet and ice crystals)

• when operating on runways, ramps or taxiways where surface snow, ice, standing water, or slush is present

Wing anti-ice system must be ON for takeoff when the OAT is 5°C (41°F) or below (SOP 3-5.3.1) and:

• visible moisture in any form is present (such as fog with visibility of 1,500 meters [1 mile] or less, rain ,snow, sleet and ice crystals)

• the runway is contaminated with surface snow, slush or standing water

When Type II or Type IV anti-icing fluids have been applied:

• wing anti-ice system must only be selected ON, if required, just prior to thrust increase for takeoff

Winter Ops
Anti-Ice System Flight Operations

NOTE: **Icing conditions exist in-flight at a TAT of 10°C (50°F) or below, and visible moisture in any form is encountered (such as clouds, rain, snow, sleet or ice crystals), except when the SAT is -40°C (-40°F) or below (SOP 3-5.1.3, 3-5.3.3).**

The engine cowl anti-ice system must be ON when:

- in icing conditions, or
- ICE is annunciated by the ice detection system

The wing anti-ice system must be ON when:

- ICE is annunciated by the ice detection system, or
- in icing conditions and the airspeed is less than 230 KIAS

NOTE: Do not hold in icing conditions with Slats/Flaps extended.

Continued operation in areas where supercooled large droplet (SLD) icing conditions exist is prohibited. SLD icing conditions are indicated by ice accretion on the flight deck side windows.

- wing and cowl anti-icing systems must be ON in SLD icing conditions
- leave icing conditions when side window icing occurs

Winter Ops
Anti-Ice System Warnings

ICE AND RAIN PROTECTION

- WING OVHT ..... EMER 12–2
- ANTI-ICE DUCT ..... EMER 12–2
- L COWL A/I DUCT or R COWL A/I DUCT ..... EMER 12–4

QRH2 EMER 12

Winter Ops
Anti-Ice System Cautions

ICE DISPERSAL

- Ice Dispersal Procedure ..... ABNORM 11–3

COWL/WING ANTI-ICE

- ANTI-ICE DUCT ..... ABNORM 11–4
- L COWL A/I or R COWL A/I ..... ABNORM 11–4
- L COWL A/I OPEN or R COWL A/I OPEN.... ABNORM 11–5
- ANTI-ICE LOOP (On Ground Only) ..... ABNORM 11–6
- L COWL LOOP or R COWL LOOP (On Ground Only) ..... ABNORM 11–6
- L WING A/I or R WING A/I..... ABNORM 11–6
- L WING A/I and R WING A/I ..... ABNORM 11–7
- WING A/I SNSR..... ABNORM 11–8
- WING XBLEED ..... ABNORM 11–9

ICE DETECTOR

- ICE ..... ABNORM 11–10
- ICE DET FAIL (Caution Message) or ICE DET 1 FAIL or ICE DET 2 FAIL ..... ABNORM 11–10

PROBE HEATERS

- L AOA HEAT or R AOA HEAT ..... ABNORM 11–11
- L AOA HEAT and R AOA HEAT ..... ABNORM 11–11
- L PITOT HEAT ..... ABNORM 11–12
- R PITOT HEAT ..... ABNORM 11–13
- L STATIC HEAT ..... ABNORM 11–14
- R STATIC HEAT ..... ABNORM 11–15
- STBY PITOT HEAT ..... ABNORM 11–15
- TAT PROBE HEAT ..... ABNORM 11–16

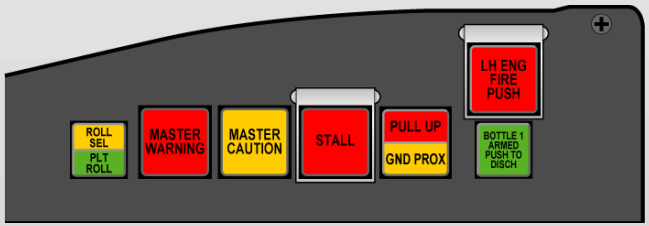
WINDSHIELD/WINDOW HEAT FAILURE

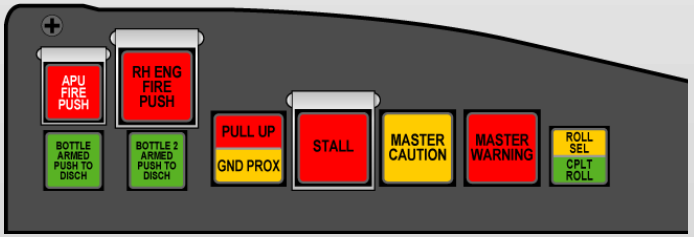
- L WINDOW HEAT or R WINDOW HEAT... ABNORM 11–17
- L WSHLD HEAT or R WSHLD HEAT ..... ABNORM 11–17

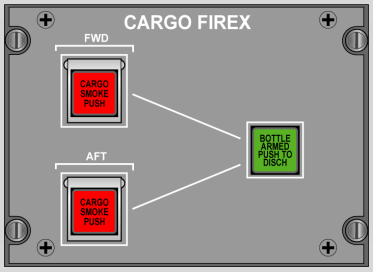
Windshield or Window Cracking, Shattering, Arcing or Delamination ..... ABNORM 11–18

QRH2 EMER 12

Fire Detection and Protection







Fire Checklists

Time is critical during smoke/fire/fumes emergencies. The flight crew should consider an immediate landing anytime the situation cannot be controlled. (QRH2 EMER 2-2)

Passenger masks should not be deployed when performing smoke or fire procedures

L (R) ENG FIRE Msg or Severe Engine Damage (In Flight)

At a safe altitude, affected engine:
(1) Thrust lever ..... CONFIRM and IDLE
(2) Thrust lever .....CONFIRM and SHUT OFF
(3) ENG FIRE PUSH..... CONFIRM and SELECT
(4) Fuel Boost Pump .....CONFIRM and OFF

After 10 seconds and fire warning persists:
(5) Affected engine BOTTLE..... SELECT to discharge

After another 30 seconds and fire warning still persists:
(6) Other engine BOTTLE ..... SELECT to discharge

EMER 1-3

L (R) ENG FIRE Msg or Severe Engine Damage (On Ground)

Attempt to face the airplane into the wind.
(1) PARKING BRAKE ..... ON

Affected engine:
(2) Thrust lever ..... SHUT OFF
(3) ENG FIRE PUSH ..... SELECT
(4) L and R FUEL BOOST PUMPS..... OFF

If after 10 seconds fire warning persists:
(5) Both engine BOTTLES..... SELECT, to discharge

EMER 1-3

IAC

Smoke/Fire/Fumes Procedure

(1) Oxygen masks/goggles .....ON, 100%
(2) Crew and cabin communications.....ESTABLISH

EMER 2-2

APU FIRE Msg

(1) APU FIRE PUSH .....SELECT

After 5 seconds and APU FIRE warning message persists:
(2) APU BOTTLE ..... SELECT TO DISCHARGE

EMER 5-2

SMOKE AFT CARGO or SMOKE FWD CARGO

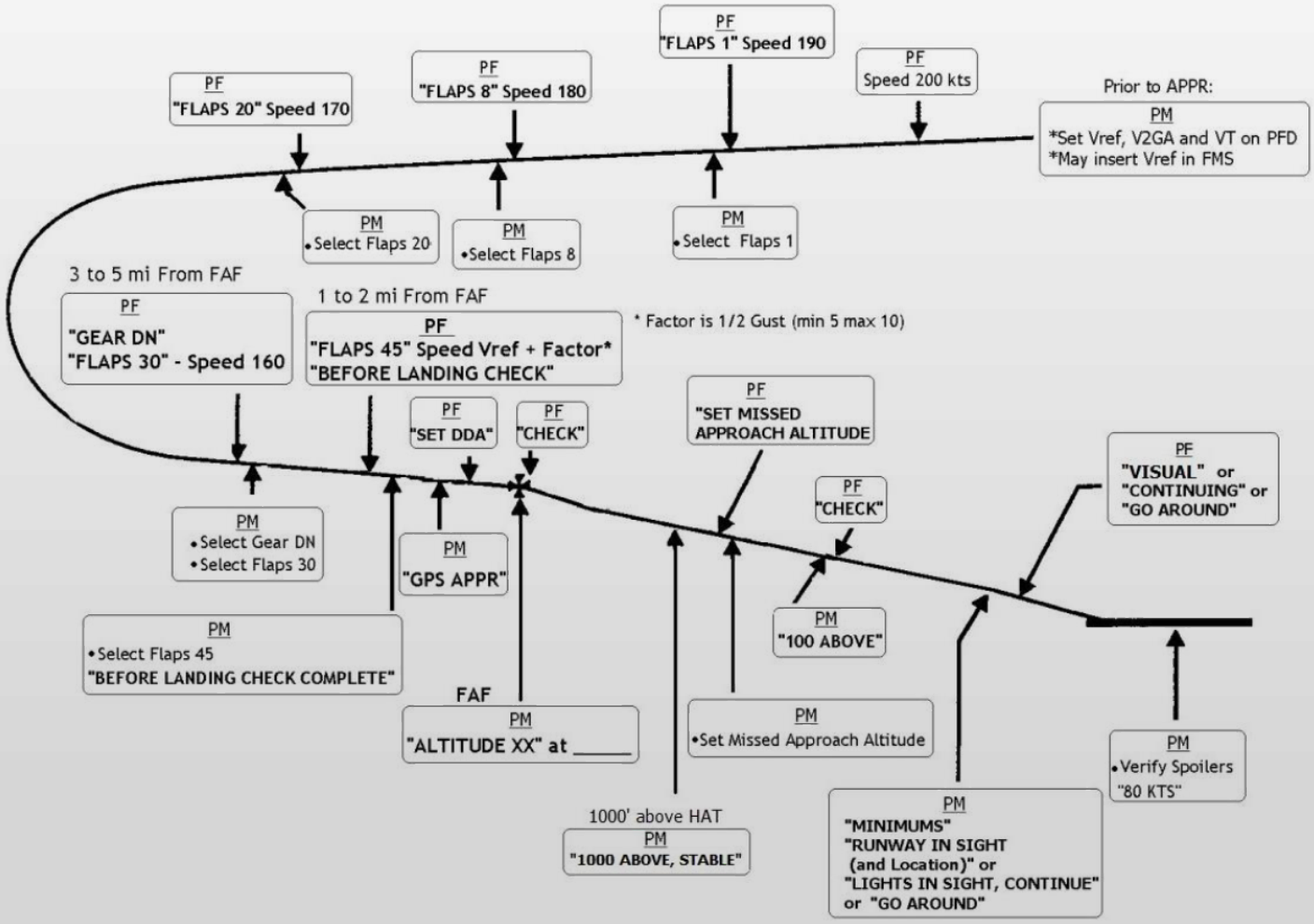
(1) Affected CARGO FIREX, CARGO SMOKE PUSH.....SELECT
(2) CARGO FIREX, BOTTLE ARMED PUSH TO DISCH.....SELECT

EMER 2-15

SMOKE AFT LAV or SMOKE FWD LAV

QRH 2 EMER 2

Two Engine CANPA Approaches

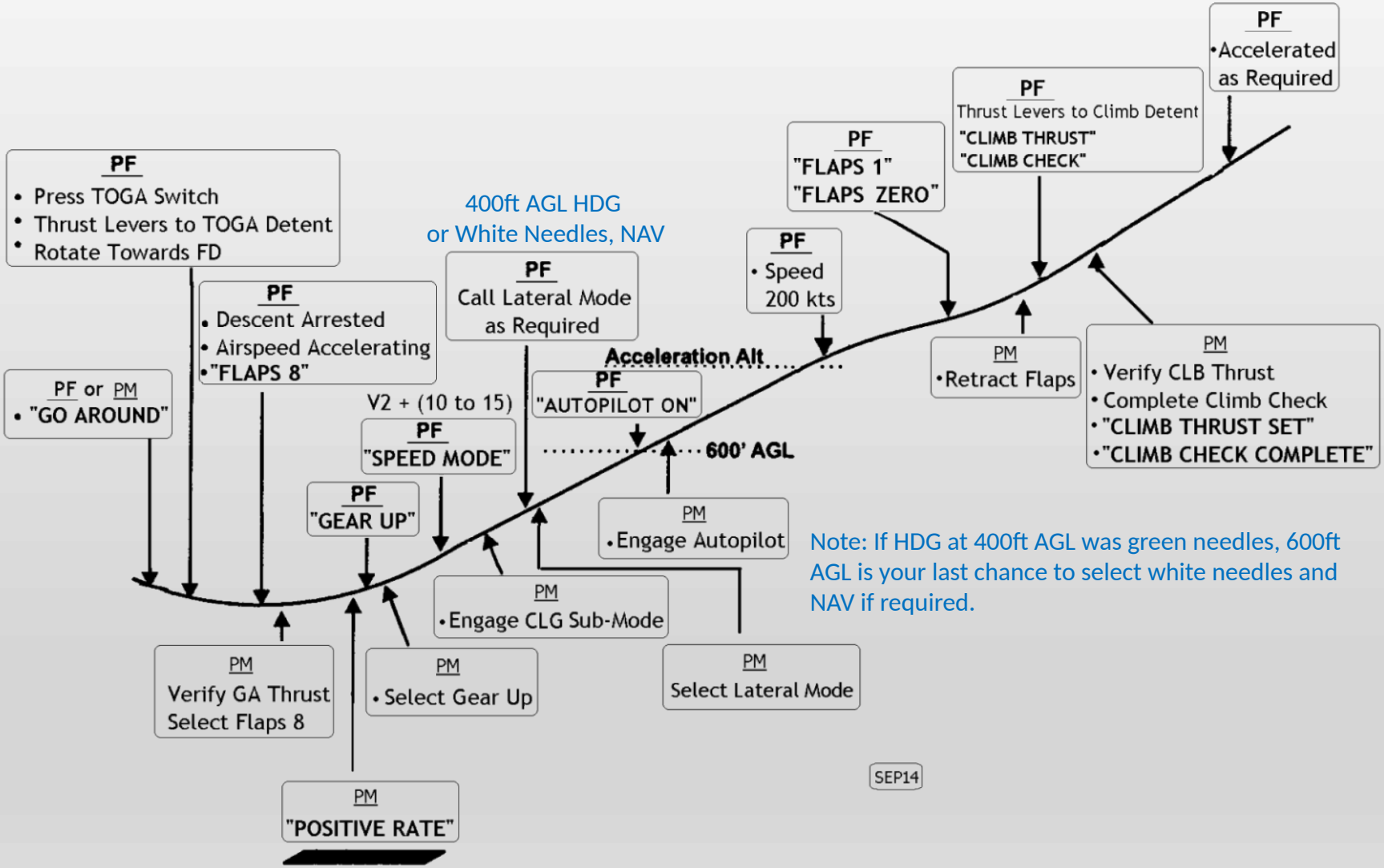


Note: Pilot Flying may request the preselect of next altitude when cleared for the approach, established on a segment of the approach, and FMA in ALTS CAP.

AP must be disengaged by 400 ft

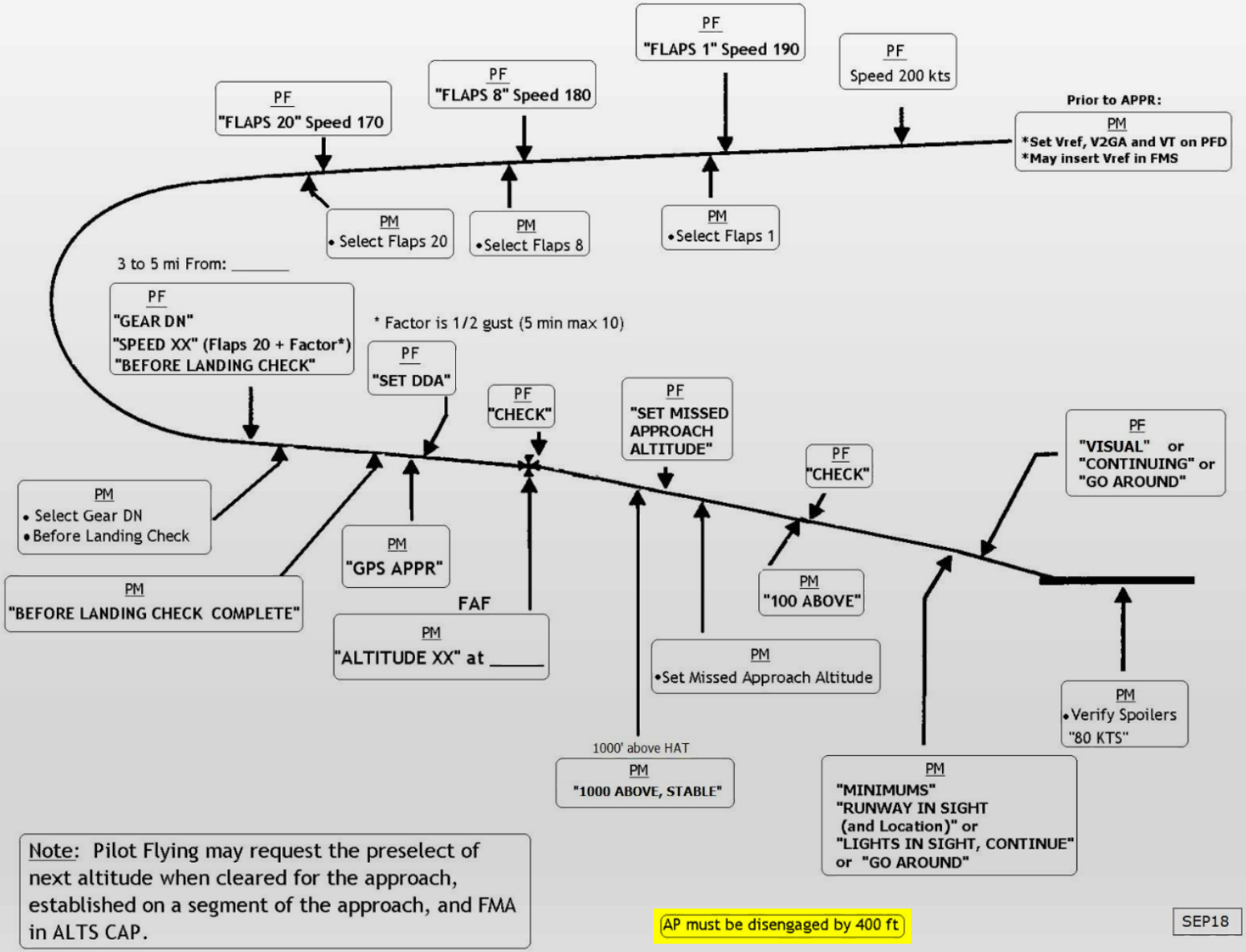
SEP18

Two Engine Missed Approach

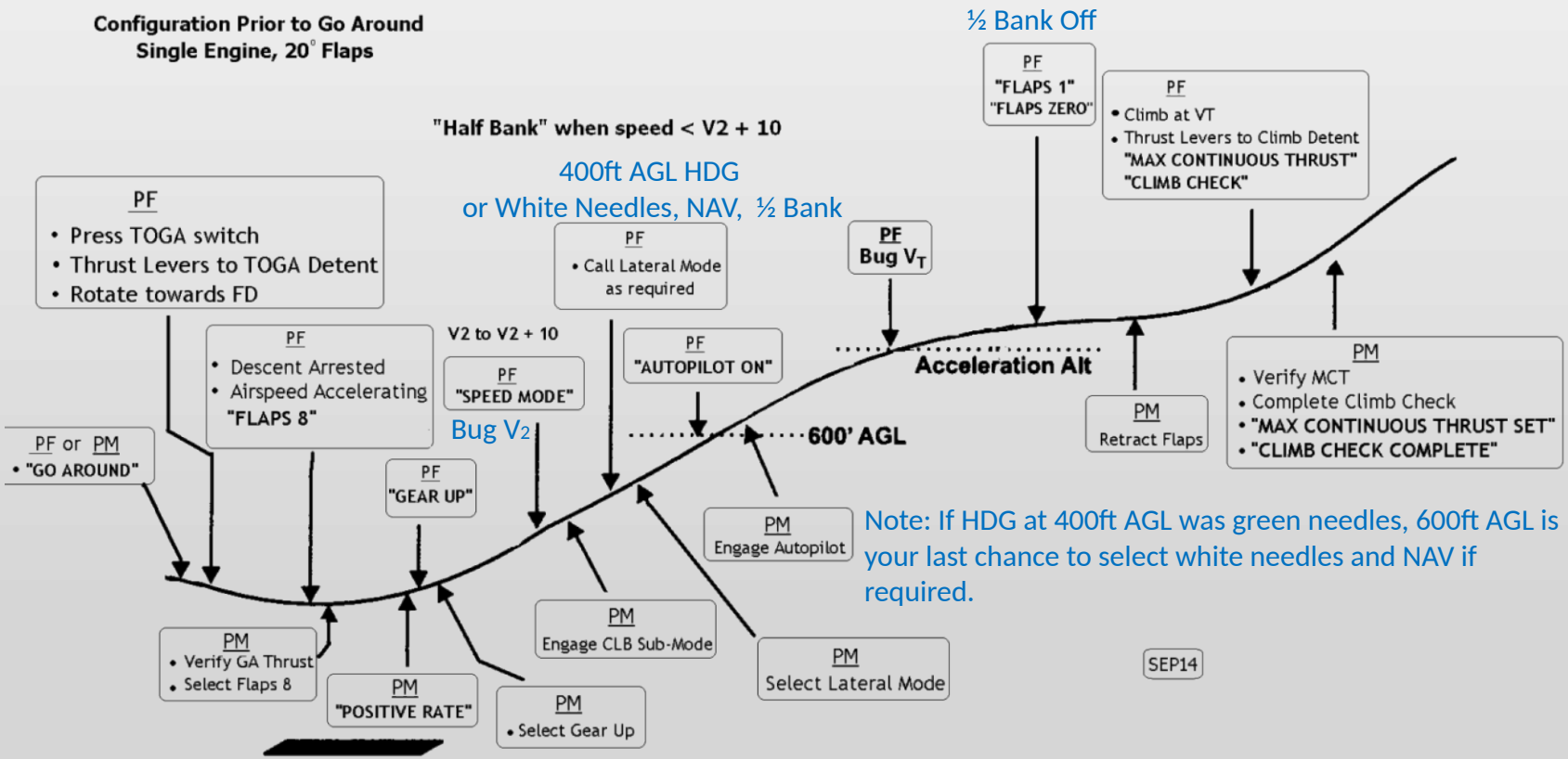


Note: If HDG at 400ft AGL was green needles, 600ft AGL is your last chance to select white needles and NAV if required.

Single Engine CANPA Approaches



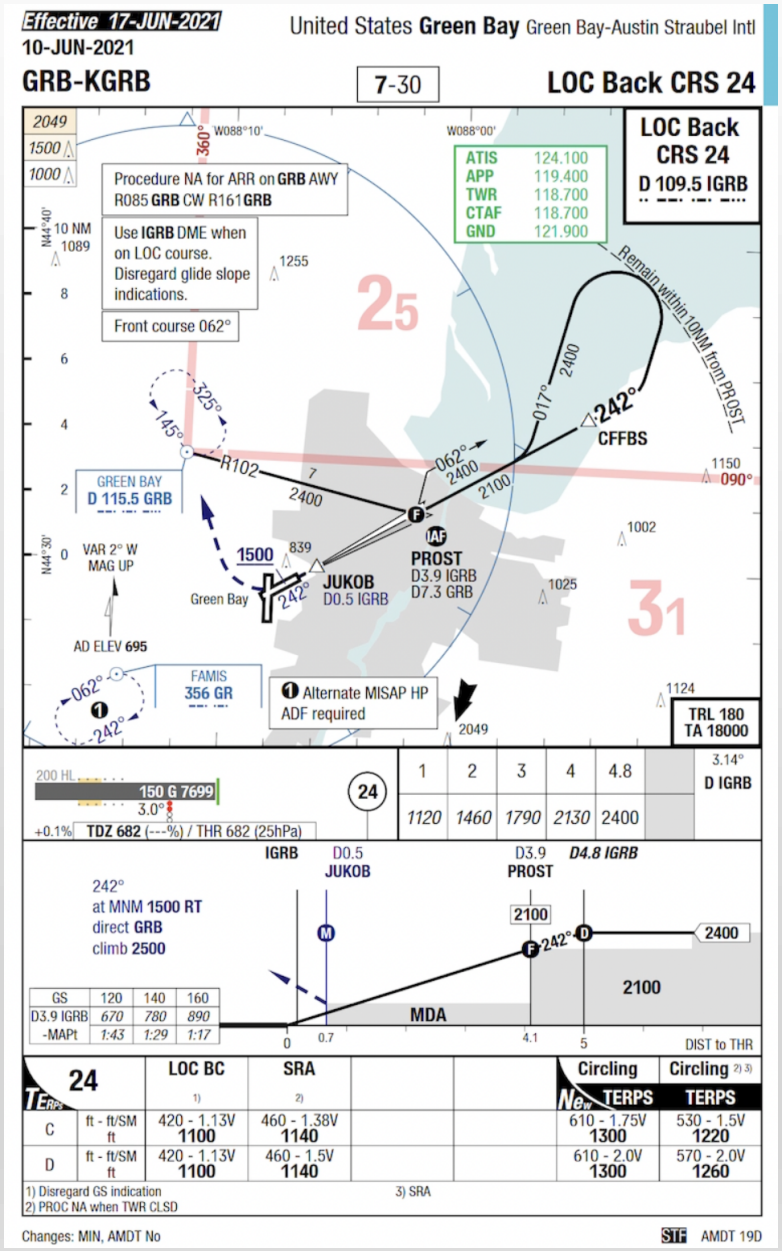
Single Engine Missed Approach



LOC BC Approach

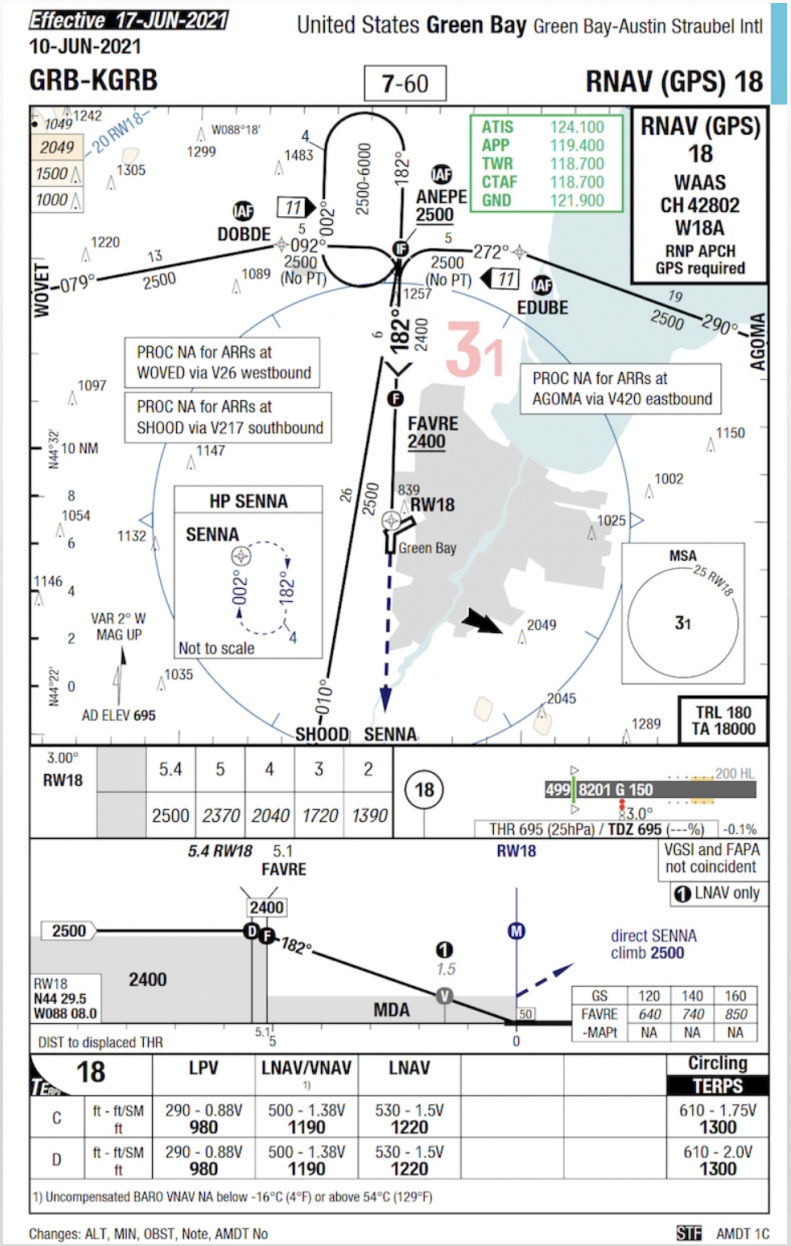
The FCP B/C button arms the flight director to capture a localizer back course.

The front course should be selected on the HSI. If you are in white needles, load the approach in the FMS, get blue needles, then switch to green. The front course will be automatically dialed in. Otherwise, make sure the front course is dialed in.



GPS Approach

- Flown as CANPA with DDA (MDA + 50)
- White Needles
- DO NOT SET the DDA in the altitude selector until GPS Approach is annunciated in the PFD.



Rejected Takeoffs

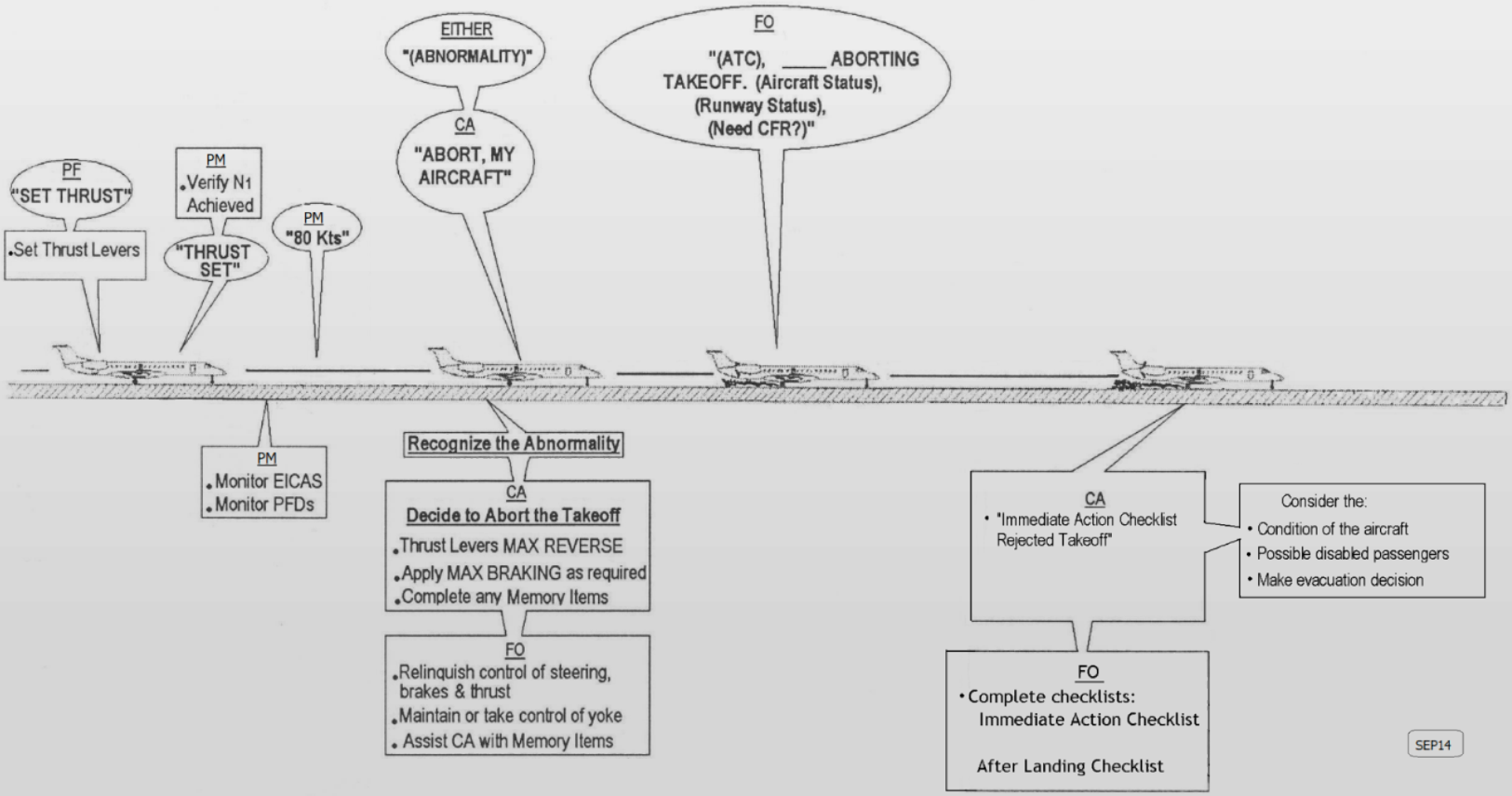
- A rejected takeoff is a maneuver performed during the takeoff roll to expeditiously stop the aircraft on the runway.
- The decision to reject a takeoff be made so that brake application can be made by V_1 , not after.
- As the aircraft accelerates, energy increases rapidly. At low speeds, up to approximately 80 KIAS, the energy developed is not sufficient to cause difficulty in stopping the aircraft. **Below 80 KIAS, any Master Caution (amber), Master Warning (red), or abnormality will be cause for a rejected takeoff.** Above 80 KIAS, the aircraft is increasingly difficult to stop. GoJet uses 80 KIAS to mark the beginning of the high speed regime, and only a Master Warning (red) or the aircraft unable/unsafe to fly shall be cause for a rejected takeoff.
- As airspeed approaches V_1 , on a balanced field (FLEX Takeoffs), the effort required to stop the aircraft in the event of a rejected takeoff approaches maximum. The decision to reject the takeoff must therefore be made so that the maneuver can be initiated no later than V_1 .
- CAUTION: On a balanced field, making a decision to reject a takeoff after V_1 may result in the aircraft NOT being able to stop on the runway remaining.

Rejected Takeoffs

Rejected Takeoff	
Either pilot state the emergency	
Captain	First Officer
"**ABORT, MY AIRCRAFT**"	Take control of the yoke Advise tower of intentions and requirements
Simultaneously: • thrust levers idle/max reverse as required (RESPECT SPEED RESTRICTIONS) • apply maximum brakes • apply maximum reverse thrust	For a high speed Rejected Takeoff, during deceleration, calls: **"80 KNOTS"**
Bring the aircraft to a complete stop on the runway (or exit the runway if feasible) and set the Parking Brake. Advise passengers to remain in their seats if an evacuation is NOT required.	
Call **"IMMEDIATE ACTION CHECKLIST REJECTED TAKEOFF"**	Read Immediate Action Checklist Rejected Takeoff
	After Landing Checklist

If an Emergency Evacuation is required, See SOP 1-10.11

Rejected Takeoffs



Rejected Takeoffs
Emergency Evacuation

An emergency evacuation is initiated for a condition potentially endangering the life or physical well-being of passengers and crew.

In the majority of cases, this procedure will follow another Immediate Action Checklist or QRH procedure. This requires a great deal of coordination on the part of the crew members.

Time permitting, brief flight attendant(s):

- nature of emergency
- evacuation signals
- specific directions regarding exits to be used

When the decision to evacuate the passengers has been made, the captain shall call for the Immediate Action Checklist Passenger Evacuation. The Passenger Evacuation Checklist includes eight (8) items for the CA and 3 items for the FO to complete. These items are required to be completed concurrently. The Immediate Action Checklist and the QRH must be consulted; however, the next slide illustrates the actions and callouts required.

Rejected Takeoffs
Emergency Evacuation

Captain	First Officer
Stop aircraft, set PARKING BRAKE and verify the problem.	
Command: "Immediate Action Checklist Passenger Evacuation"	Notify ATC: The condition and intention to evacuate.
GND LIFT DUMPING switch: Select MAN DISARM.	EMER DEPRESS switchlight: Select ON.
Both thrust levers: Select SHUT OFF.	
PA announcement: "Easy Victor" "Easy Victor" "Easy Victor".✸	EMER LTS switch: Select ON. (should coincide with PA announcement)
APU FIRE PUSH & LH & RH ENG FIRE PUSH switchlights: Select and PUSH.	Proceed to cabin to assist in evacuation. Evaluate if safe to open Type I Forward Service Door (if not already open)
BATTERY MASTER switch: Select OFF.	
Assist in evacuation.	

✸ If an evacuation is to be made through a particular exit, the captain should state the exit first, followed by the evacuate command.

Debrief

- ✓ How did you do as Pilot Flying?
- ✓ How did you do as Pilot Monitoring?
- ✓ Instructor Feedback
- ✓ Review and Initial Training Forms

Next Lesson – HOMEWORK!

- ❑ Review KCOS, KDCA, KIAD. Set up your LIDO as KCOS Direct KDCA with KIAD as alternate and save the trip as KCOS-KDCA Lesson 5.
- ❑ Do a chart review of KCOS, what are the threats?
- ❑ Review the KDCA CCI pages, LDA 19 and River Visual 19 Approaches
- ❑ Review QRH 2 EMER 10-1 Flight Controls
- ❑ Review QRH 2 ABNORM 8-1 Flight Controls