Circle to land at high and hot airports

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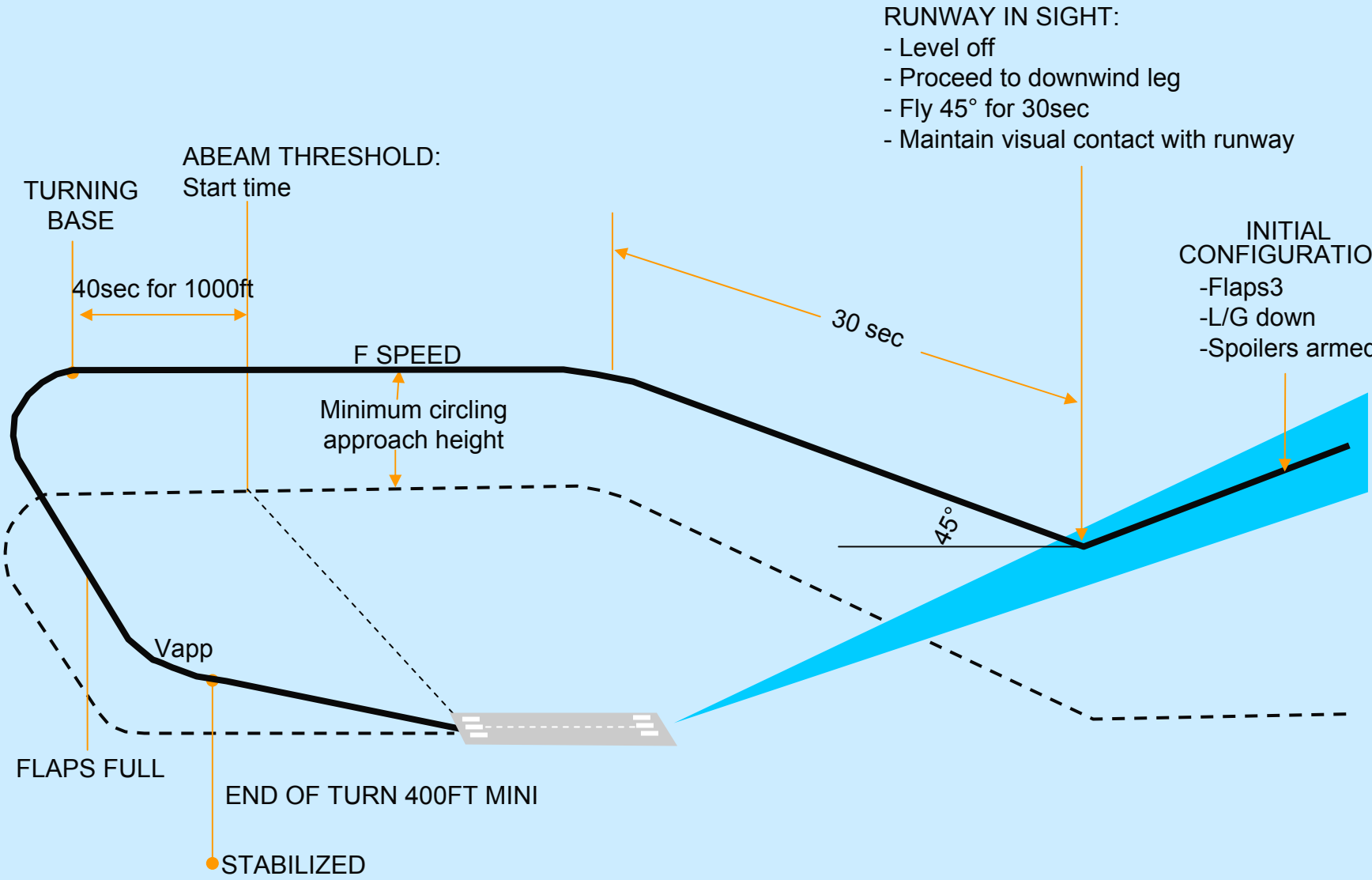
Introduction

- Airbus has been asked by some operators to study the case of a circling approach at high altitude airports with one engine failed.

- This study has shown that the published procedure may not be adequate at high altitude, but also at high temperature.

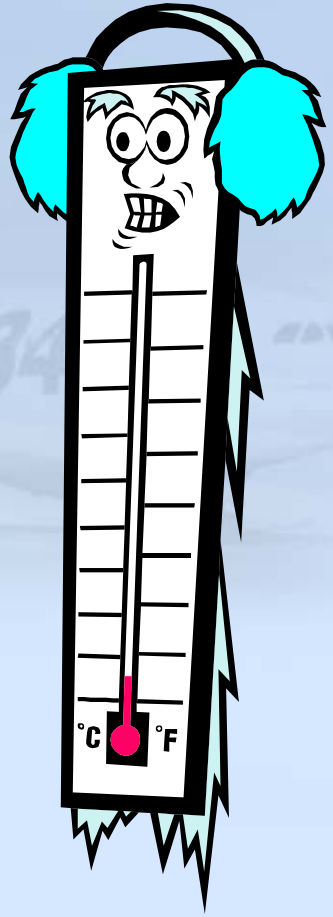
Published circling approach procedure



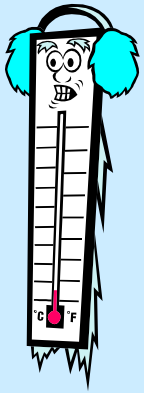
Circling approach with one engine failed

Circling approach with one engine failed

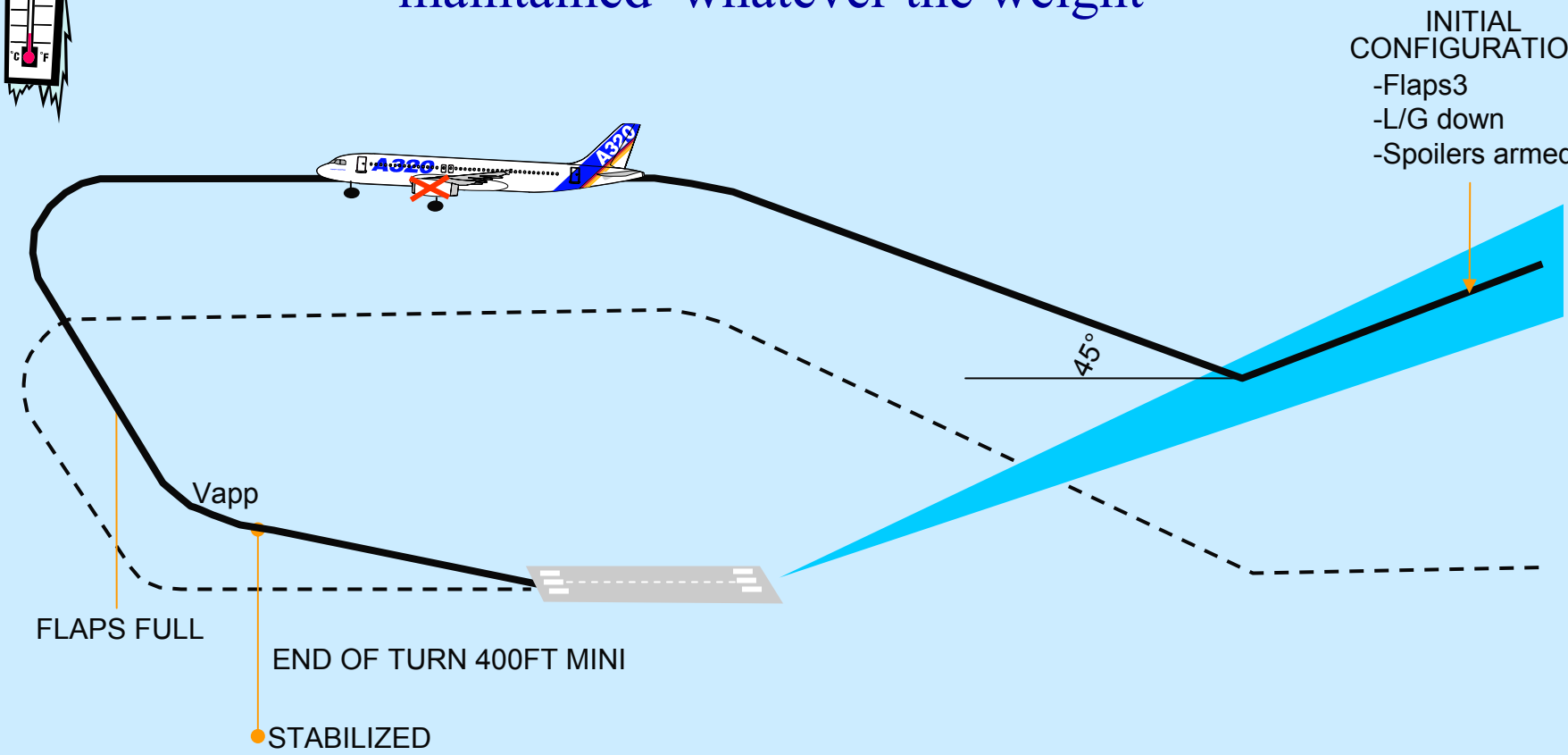
- “Cold conditions”:



Circling approach with one engine failed

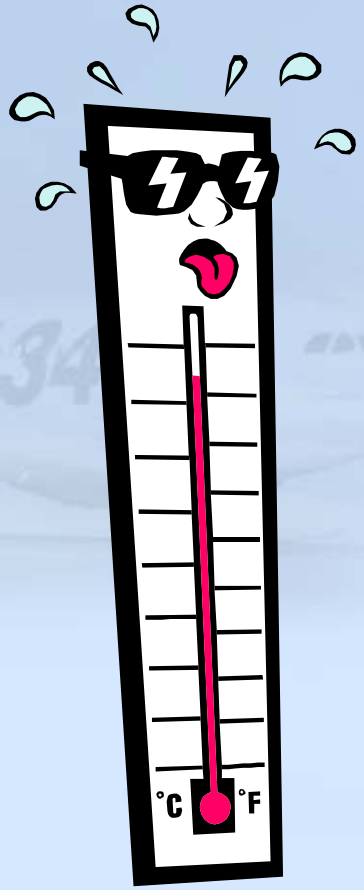


In “cold “ conditions, with one engine failed, in CONF3 with L/G down, level flight can be maintained whatever the weight

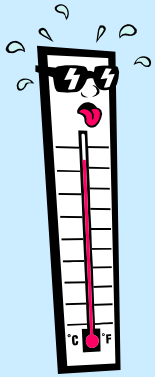


Circling approach with one engine failed

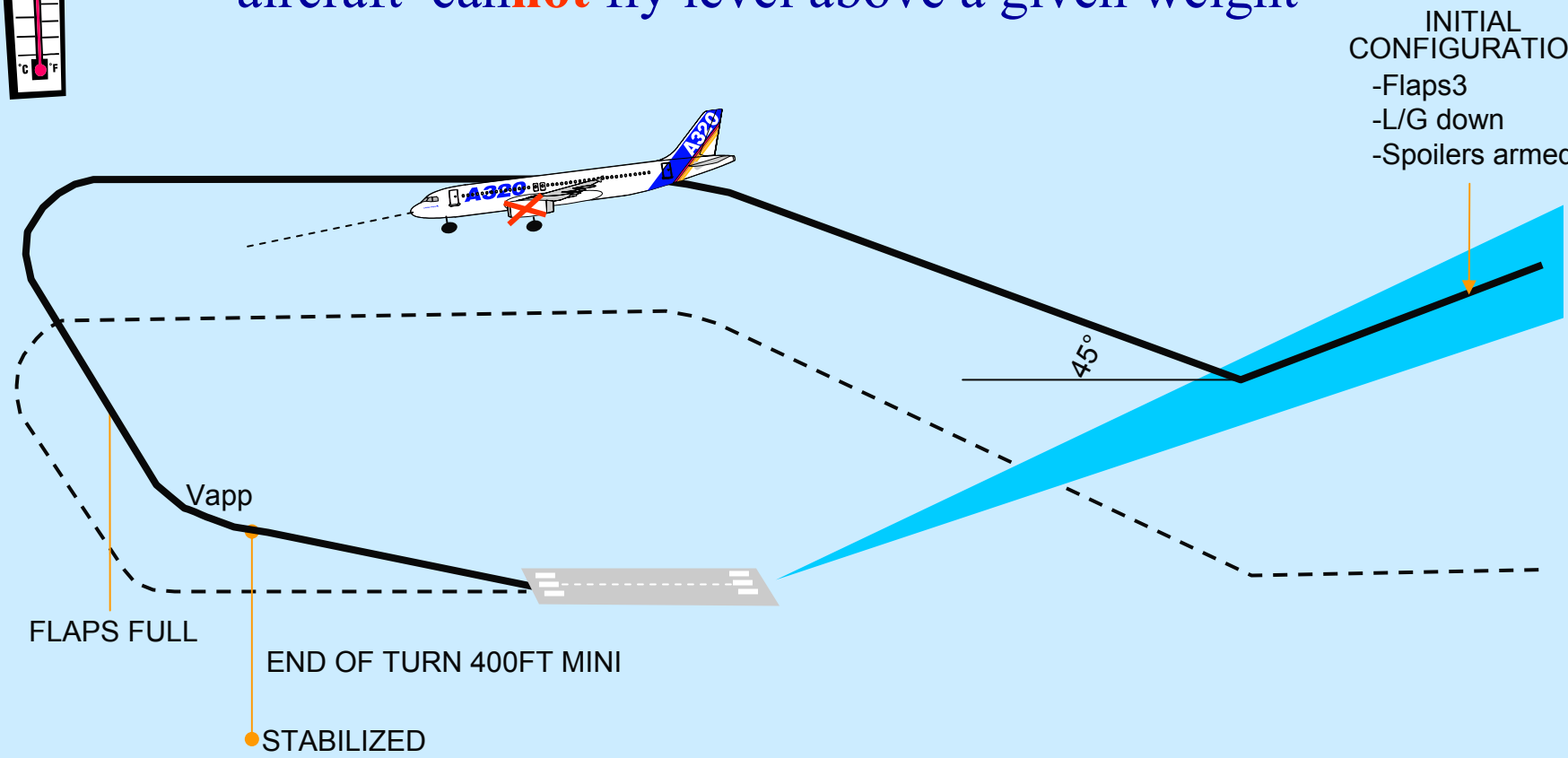
- “Hot conditions”:



Circling approach with one engine failed



In “hot “ conditions, with one engine failed, in CONF3 with L/G down, the Airbus twin-engine aircraft cannot fly level above a given weight



Limit external conditions

- The following temperatures are the maximum conditions under which level flight during the downwind leg can be maintained at maximum landing weight,with one engine out:
  - For the A320-233:
    - 31°C at 2000ft
    - 6°C at 10000ft and above
  - For the A319-132:
    - 26°C at 2000ft
    - 11°C at 7000ft and above
  - For the A330-243:
    - 31°C at 7000ft
    - 0°C at 13000ft
  - For the A340,the failure of one engine does not prevent to maintain the level flight during a circling approach

Limit external conditions

- These conditions are marginal for the A330.A specific procedure should be established for very specific airports at high altitude,such as Lhassa or La Paz.To our knowledge, presently no A330 is operated at such airports.

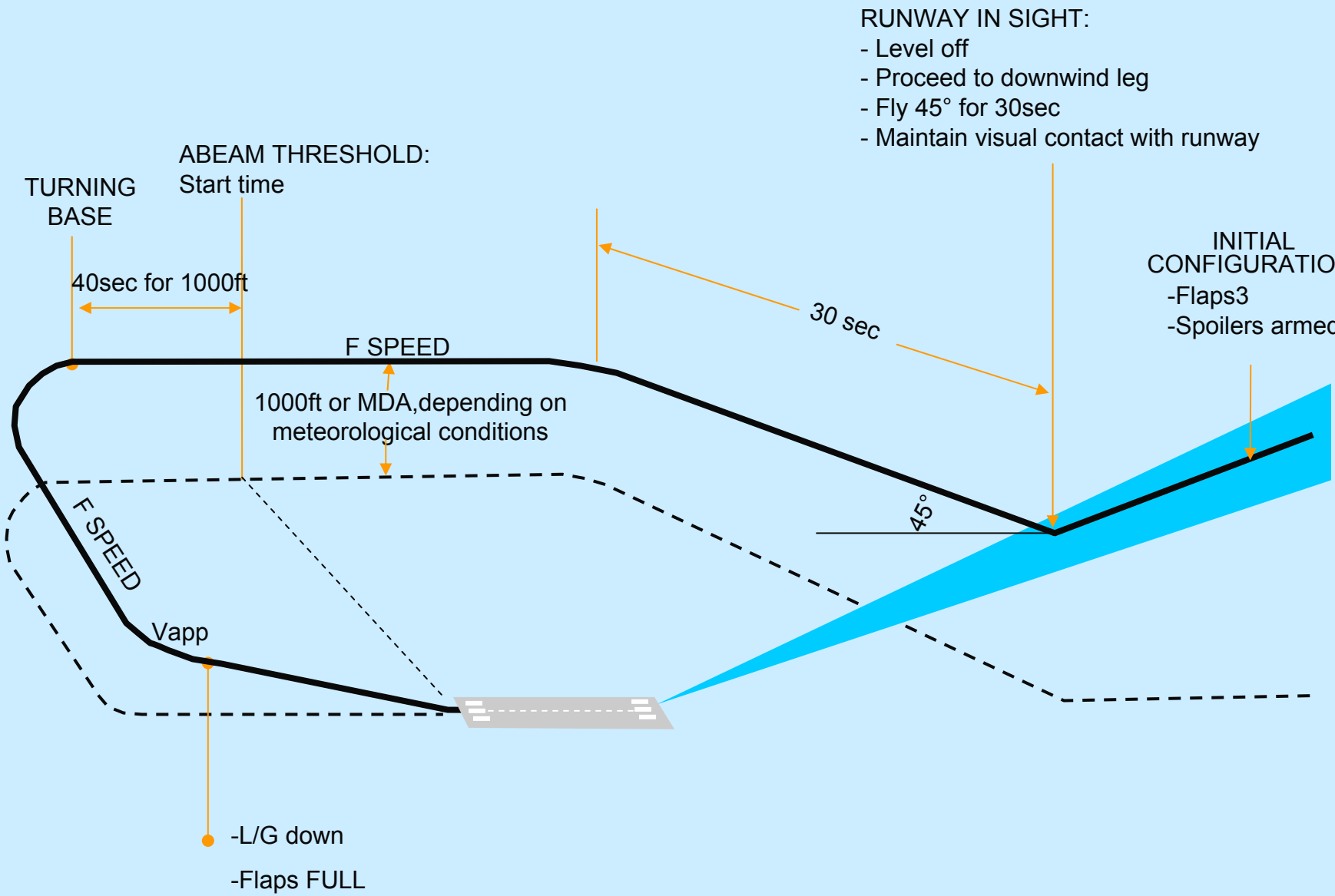
- These conditions are not unusual ones for the A320 family: They are usual at high altitude airports such as La Paz, Quito, Lhassa, Kathmandu, but also at lower altitudes such as Sanaa,Tehran,and at many airfields at sea level in hot countries (Dubai,Bahrein,…).

A320F circling approach with one engine failed

- For the A320 family,the circle to land procedure in case of engine inoperative must then be revised.

- It must be emphasised that extending the flaps to flaps2 instead of 3 would not solve the problem,as both configurations are not very different .

A320F circling approach with one engine failed



A320F circling approach with one engine failed

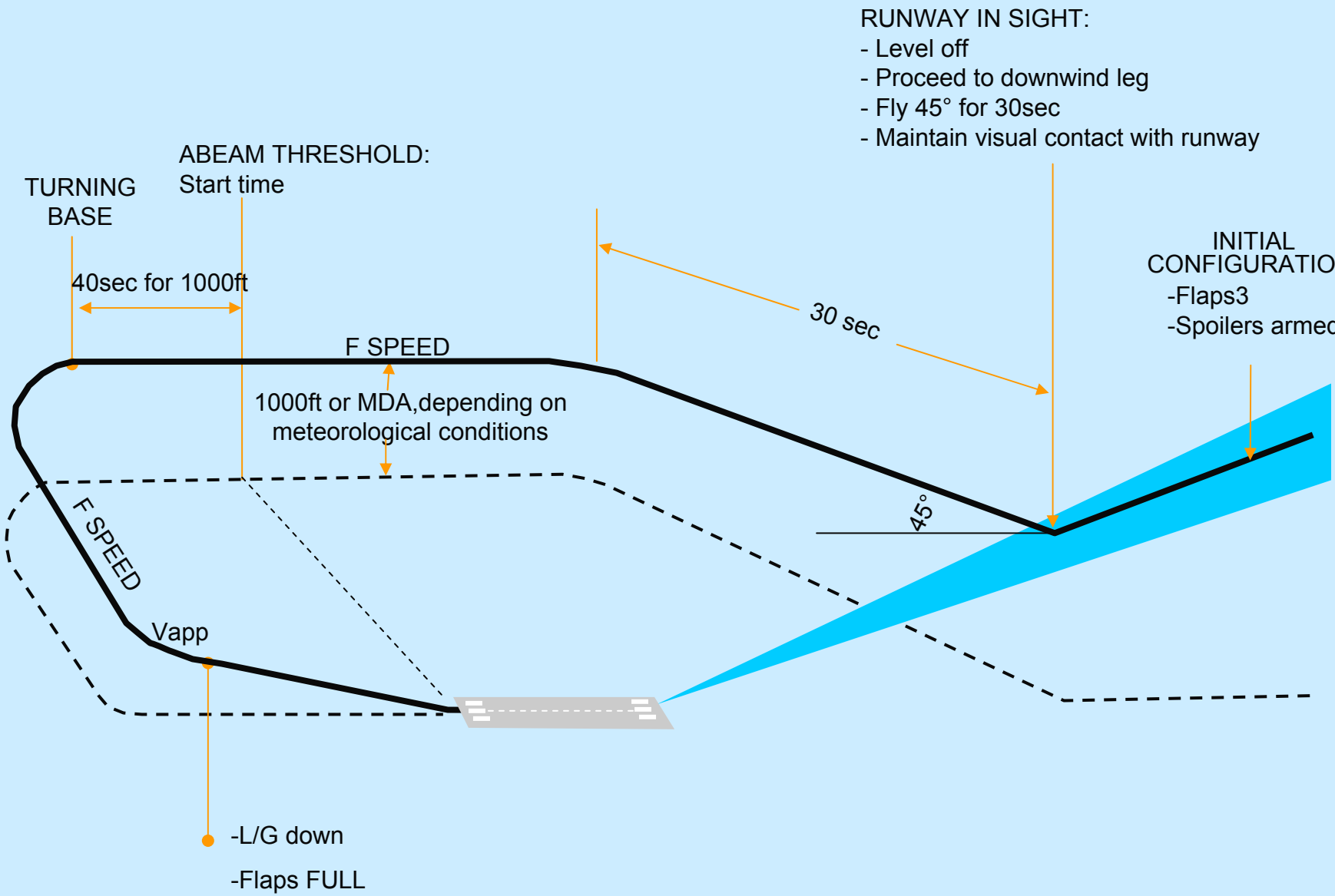
- If the circling approach is flown at less than750ft RA, the warning “L/G NOT DOWN” will be triggered. This warning is to be disregarded and cleared.

- The gear must be extended as soon as possible in final approach to avoid triggering the “TOO LOW GEAR” warning,which appears at 500ft RA if the landing gear is not downlocked.

Conclusion

- The FCOM 3.02.10 “Approach with one engine inoperative” will be revised to introduce the following pattern:

Conclusion


RUNWAY IN SIGHT:
- Level off
- Proceed to downwind leg
- Fly 45° for 30sec
- Maintain visual contact with runway
ABEAM THRESHOLD:
Start time
TURNING
BASE
40sec for 1000ft
30 sec
INITIAL
CONFIGURATIO
-Flaps3
-Spoilers armed
F SPEED
1000ft or MDA,depending on
meteorological conditions
45°
F SPEED
Vapp
-L/G down
-Flaps FULL


A320
A320
F-WWFT
Thank you for
your attention