

# AIRFRANCE

## Visual RNAV

*A new Concept of Operations*

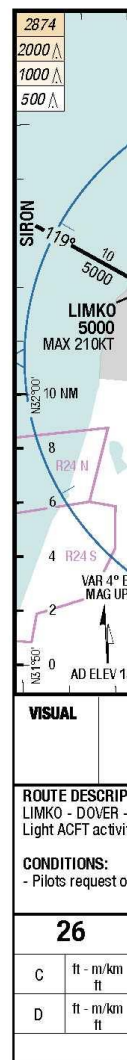


*Capt. Claude Godel*

# Visual RNAV:

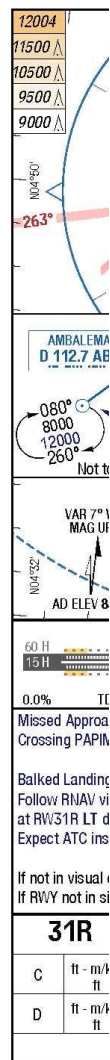
- 1 Already widespread worldwide
- 2 What it does.
- 3 The benefits, the limits...
- 4 The need for an harmonized concept
- 5 The RISE project in Nice

Effective 29-  
22-MAY-2014  
TLV-LLBG



Changes: APL

10-OCT-201  
BOG-SKE

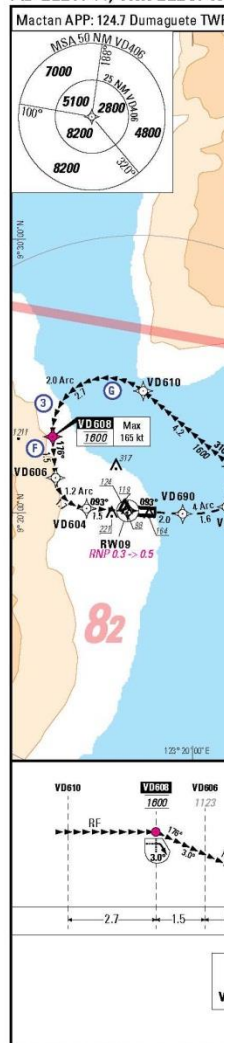


Changes: Editorial



CHANGES: Chart revised.

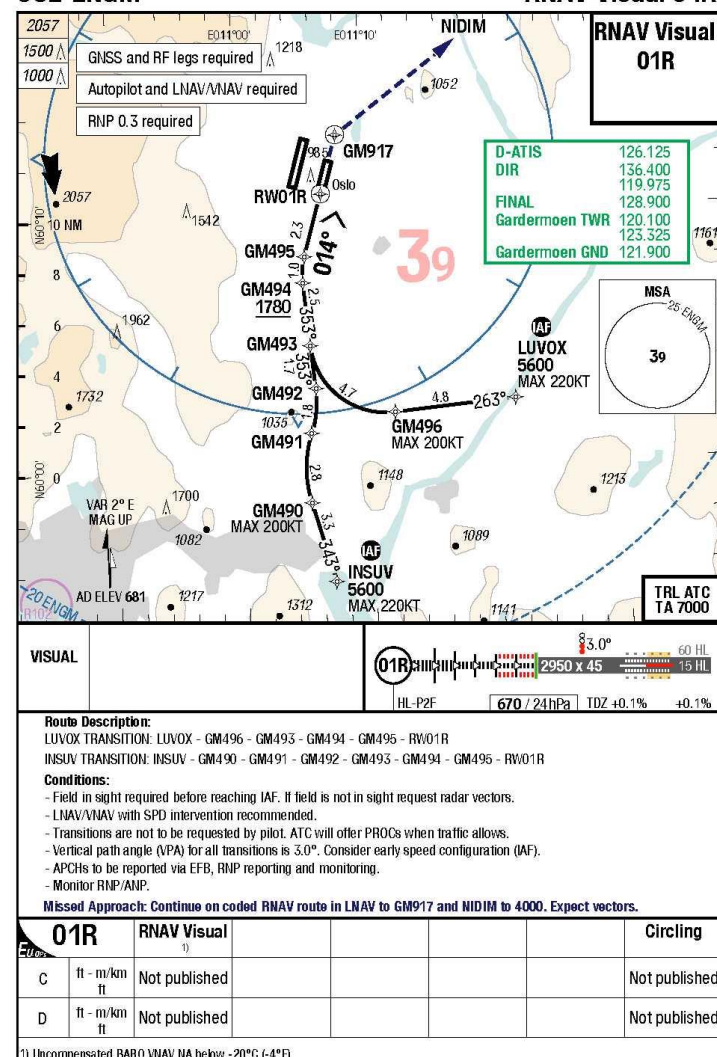
**VISUAL APPROACH CHART**  
(with prescribed RNAV track)  
CAT: A B C D  
AD ELEV: 44, **THR ELEV: 43**



NOT FOR OPERATIONS

09-JUL-2014

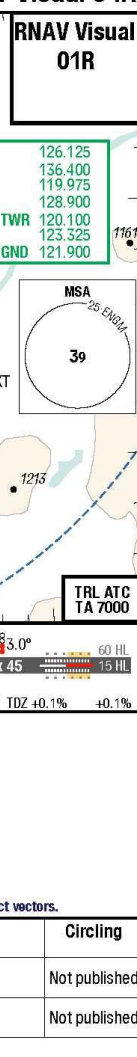
OSL-ENGM



Changes: new

Norway Oslo Gardermoen

RNAV Visual 01R



ChartVersionID 764626

*Proposed definition so far:*

**Visual RNAV: Charted approach procedures supplemented by the use of the RNAV capabilities of the aircraft.**

**They require visual conditions to continue the approach after a published position.**

**They are established for environmental/noise considerations or when necessary for safety and efficiency.**



These are the paths of all the flights which landed in Bordeaux (France) on a sunny day with runway 05 in use. RWY 05 has no ILS

Free  
Visual  
APCH

Visual  
RNAV

RNP  
APCH

SOGBO

BD510

LFBD Airport

BD01V

AFR6262

AFR7634

AFR7620

AFR6270

AFR7624

BD02V

**VISUAL RNAV**

=

**RNP APCH**

**- 12 Nm**

**- 4 min at least!**



Those which did a  
“free” Visual Approach

Not  
Environmentally  
Friendly!  
Fine?

Not  
efficient

Bank  
angle

SOGBO

BD01V

BD02V

LFBD Airport  
LFBD Airport LFBD Airport

AFR7634

AFR6262 AFR7620

AFR7634



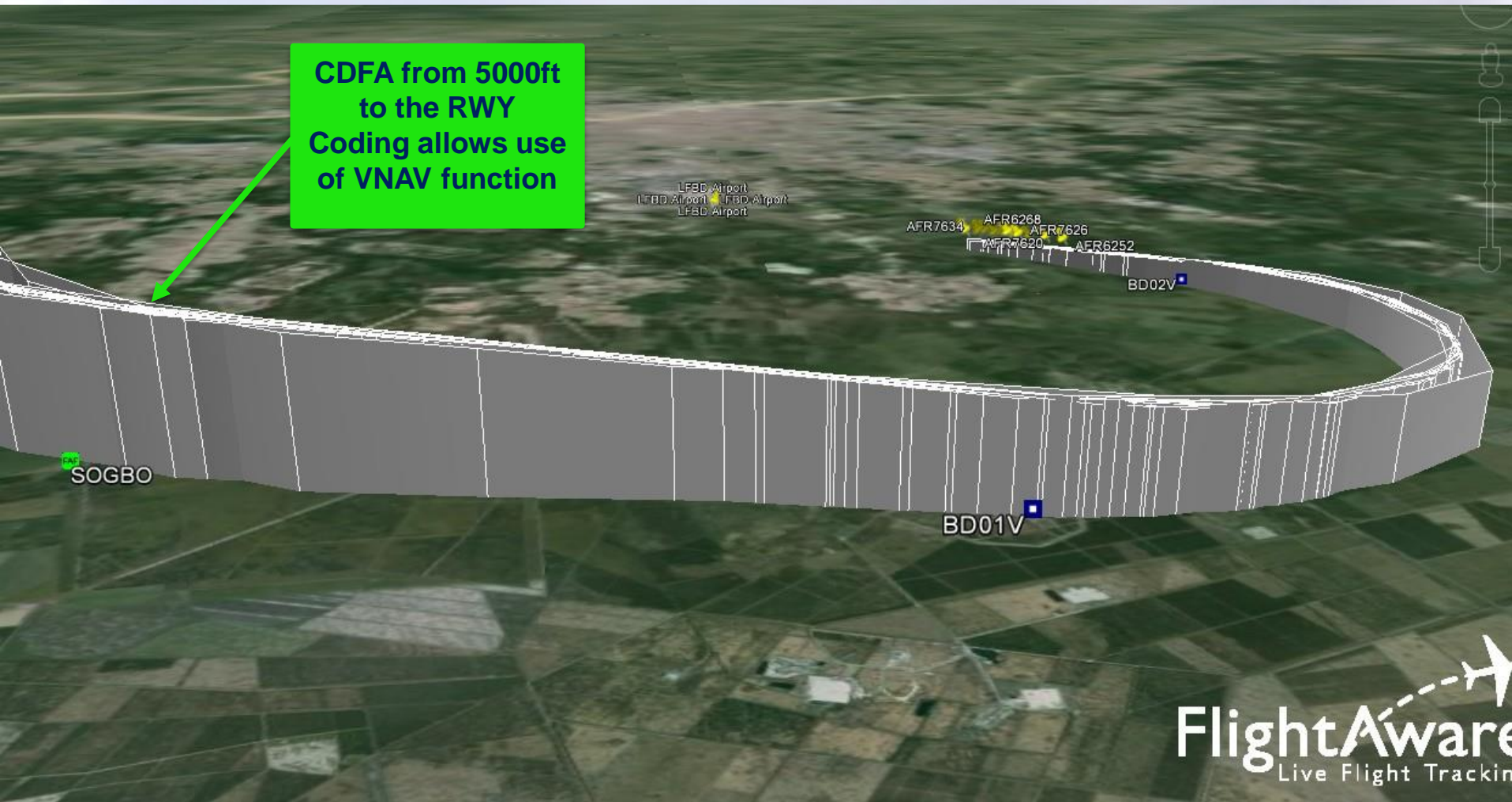
## Those which flew the Visual RNAV

[illegible]

**ATC knows exactly what the aircraft will do**

**Aircraft easily  
stabilized on final  
at 1000ft AAL**

Those which flew the Visual RNAV





## Benefits:

- Improved safety of operations,
- reduction in both pilot and controller workload,
- CDFA path and stabilization,
- Reduced reliance on local familiarity and improved situation awareness,
- Efficiency (fuel and flight time savings),
- Environmental foot print (avoidance of noise sensitive areas),
- Predictability/repeatability of trajectory,
- Increased aerodrome capacity,

## Limits:

- Lack of regulatory framework and harmonization so far,
- Visual weather conditions required,
- Needs to be perfectly coded,
- Pilot committed to follow the coded path (must advise ATC if not able),
- Pilots are responsible for separation from obstacles along the visual part,
- *Risks: fly the approach in IMC, stay “inside”, pilots loose their manual flying skills, wrong approach selection in the FMS,*

## ICAO standard and recommendations necessary.

- ✓ Where and for what purpose shall a Visual RNAV be published?
- ✓ Charting standards need to be established:
  - *Line of little arrows means visual*
  - *Missed approach from Visual WPT, Go around from RWY threshold*
- ✓ Responsibilities of Pilots versus ATC must be clarified:
  - *Pilots shall follow published path and are responsible for obstacle clearance*
  - *ATC responsible for separation from other traffic*
- ✓ “PBN Box” shall remain light and clear.
  - *E.g. “GNSS and RF leg required”*



- ✓ **Pilot and ATC training required**
  - *E.g. phraseology*
- ✓ **Already existing charts are often not clear enough for the pilots to understand how to proceed and what to do in case of problems.**
- ✓ **ANSP must share the development of a new Visual RNAV with a lead carrier able to validate outcome on simulator and in flight.**
- ✓ **Lack of coding instructions by the ANSPs on the AIP can lead to undesired FMS/AP/FD behaviors.**
- ✓ **ATC controllers must understand the concept and use it properly for their benefit.**



- ✓ RISE is a SESAR JU project
- ✓ Airbus Prosody, French DGAC, Air France, Easy Jet and Emirates are part of the RISE project in Nice.
- ✓ The aim is to create new RNP AR approaches on demanding aerodromes
- ✓ In parallel, as weather is not always foggy and as many aircraft are not yet RNP AR approved, Visual RNAVs are also published.
- ✓ Visual RNAV 22R in Nice shows the way we think a Visual RNAV should be implemented.



## RISE V 22 R

Procédure réservée aux compagnies partenaires  
 Procedure restricted to participating airline  
 Visibilité / Visibility  $\geq 10$  km Platford / Ceiling  $\geq 3500$  ft. T<sub>Q</sub>  $\geq -10^{\circ}\text{C}$   
 Uniquement sur autorisation du CTL et sous surveillance RADAR.  
 Only with ATC clearance and RADAR surveillance  
 Rappeler aérodrôme en vue pour guidage vers FERAT.  
 Advise airport in sight for radar vectoring to join FERAT.

Projet VISUAL RNAV NICE RWY22R  
 V2.0 du 07.07.2015

NICE COTE D'AZUR

CAT C/D  
 ALT AD: 12 (1hPa), THR: 10

ATIS : NICE 129.6 (FR) - 136.575 (EN)  
 APP : NICE Approche / Approach 134.475 (H)(1) - 124.175 (H)(2) - 128.2 (I) - 125.575 (S)  
 TWR : NICE Tower / Tower 138.7

RF et/and GNSS  
 requis / required

(Visual Rnav) RNAV V RWY 22 R

VAR  
 2°E  
 (15)

# NICE COTE D'AZUR

## (Visual Rnav) RNAV V RWY 22 R



els  
 hts

F. é. (3 s)

F. é. R. (5 s)

RF

2.3

MNAR2

MNAR1

RF leg – line of arrows = visual

TA : 5000

Trajectoire de remise de gaz : poursuivre la trajectoire jusqu'au bout de piste tourner à gauche au CM 180° en montée vers 2000ft (1988) et suivre les instructions du contrôle.

Go around track : maintain prescribed track to extremity of RWY then turn left heading 180°, climb up to 2000 (1988) and follow ATC instruction.

DTHR (NM) ←

0

1.2

3.5

5.7

8.2

MNAR1

MN01V

2000

FERAT

304° (305.6T)

304°

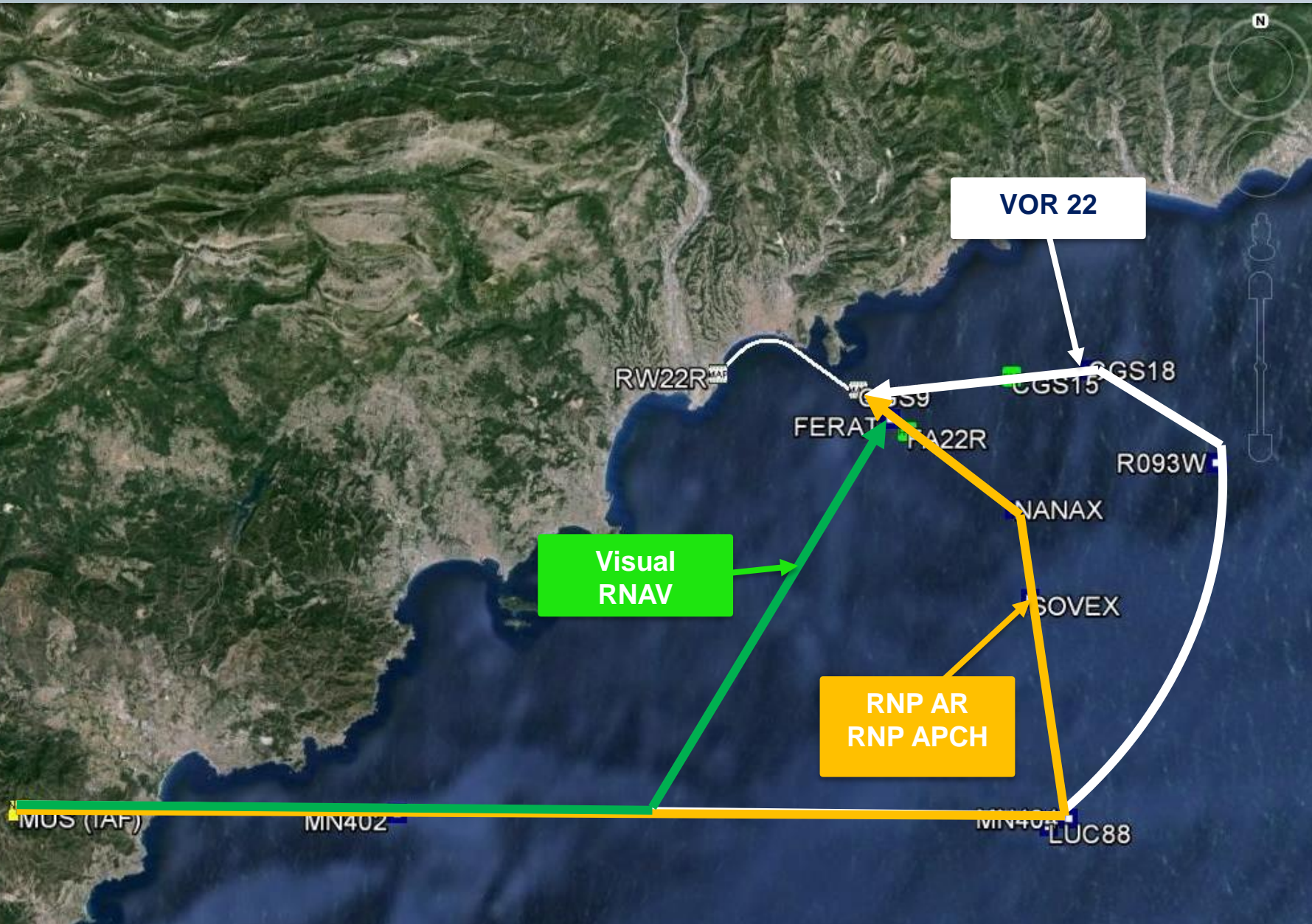
RF

PAPI 3.5°

223°

3.3°/5.7%

R 225 SFC - 500





Visual RNAV is like using  
your car GPS: you look  
through the windshield but  
the GPS informs you  
where to turn left or right.

