

## Tuto 2

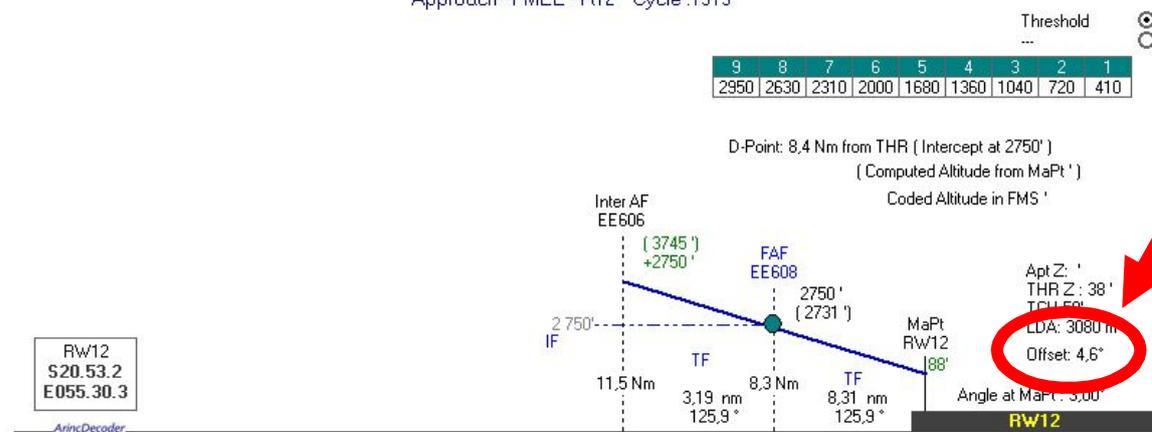
### Move or create some waypoints in a procedure.

With the same RNAV GNSS 12 at FMEE that we already modified, imagine you want to remove the 4.6° offset in the final segment.

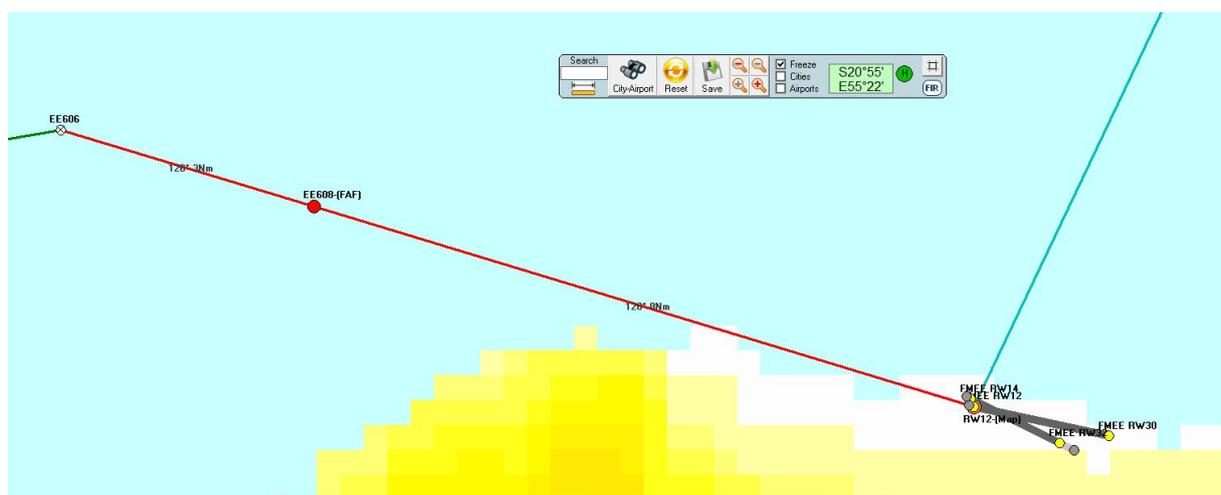
#### Approach - FMEE - R12

Via	Seq	Pt	Fix	Typ	F/D	TD	Mag	Crs	Alt 1	Alt 2	Vert Angle	RNP	Speed Limit	Distance Time	Coordinates Fix	Rec Navaid	Cycle :1513	Update
OKTIB	10	IF	OKTIB	IAF										15,1 Nm	S21.05.4 E055.07.2		Transition	1308
OKTIB	20	TF	ERDIP				36,6°					1	220 Kts	15,1 Nm	S20.50.9 E055.12.1		Transition	1508
OKTIB	30	TF	EE606				99,3°	+	2750			1		6,1 Nm	S20.49.8 E055.18.6		Transition	1508
	10	IF	EE606	Inter AF					2750						S20.49.8 E055.18.6			1308
	20	TF	EE608	FAF			125,8°		2750		-3,00°	1		3,1 Nm	S20.50.8 E055.21.9			1508
	30	TF	RW12	MaPt	FD				88		-3,00°	0,3			S20.53.2 E055.30.3			1209
	40	DF	EE410	RdG	L			+	466			1	220 Kts		S20.46.8 E055.33.6			1211
	60	TF	OKNER				308,4°		3000			1	220 Kts	16 Nm	S20.41.4 E055.17.4			1509

#### Approach - FMEE - R12 Cycle :1513



Where we see that we just have to move south the two points EE606 and EE608. (of course here we refuse to think that the reason of the offset is the terrain on the right of the finale... it's an example for the exercise !)



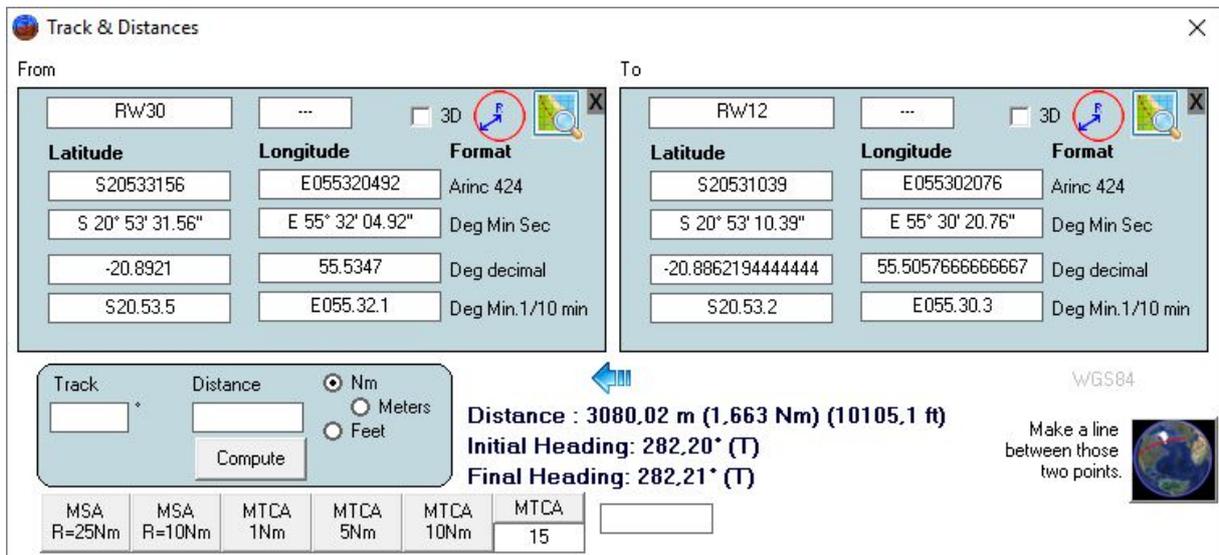
To determine what is the correct axis, we take the two runways extremities and extend them with the actual length of the actual segments.

First. We determine the exact and precise distance between EE608 and THR 12.

Select EE608 in the bottom list and press the little compass (  )

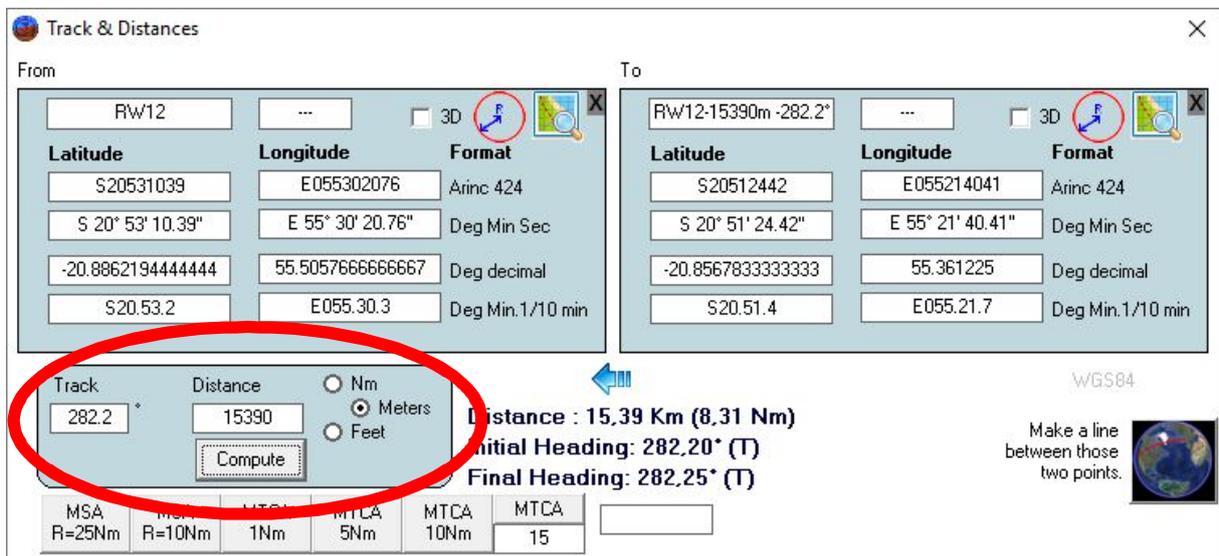






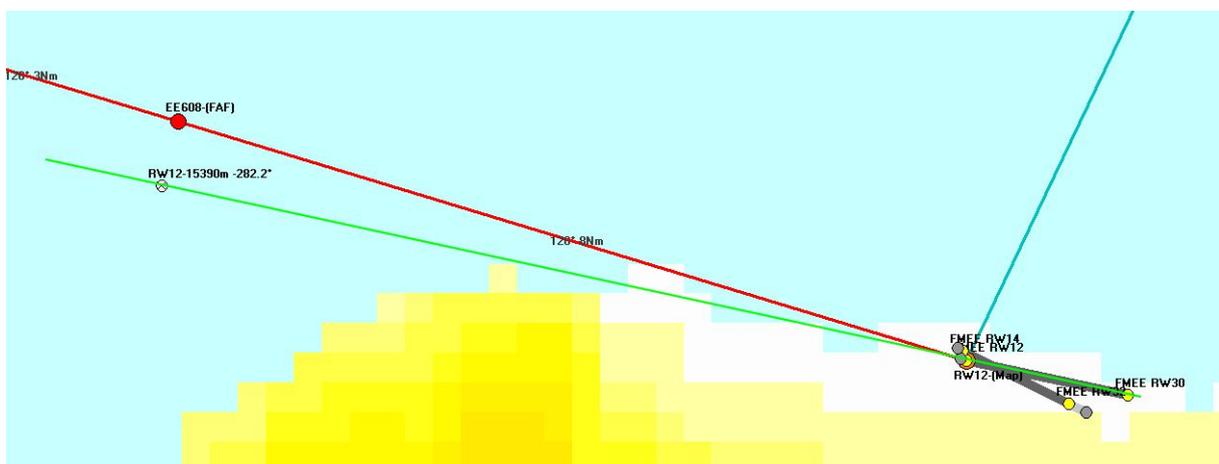
The second box is filled and calculation of distance and heading (true) is shown.

The new position of EE608 should be in the same axis 8.31 Nm after RW12.



Press on "Compute" and on the right box you have the coordinates of the new waypoint.

Press on  to see it on the map.



Where we see the distance is OK and now we deleted the offset... (by coming near to the terrain !)

By Copy + Paste we modify the coordinates of EE608 in the coding.

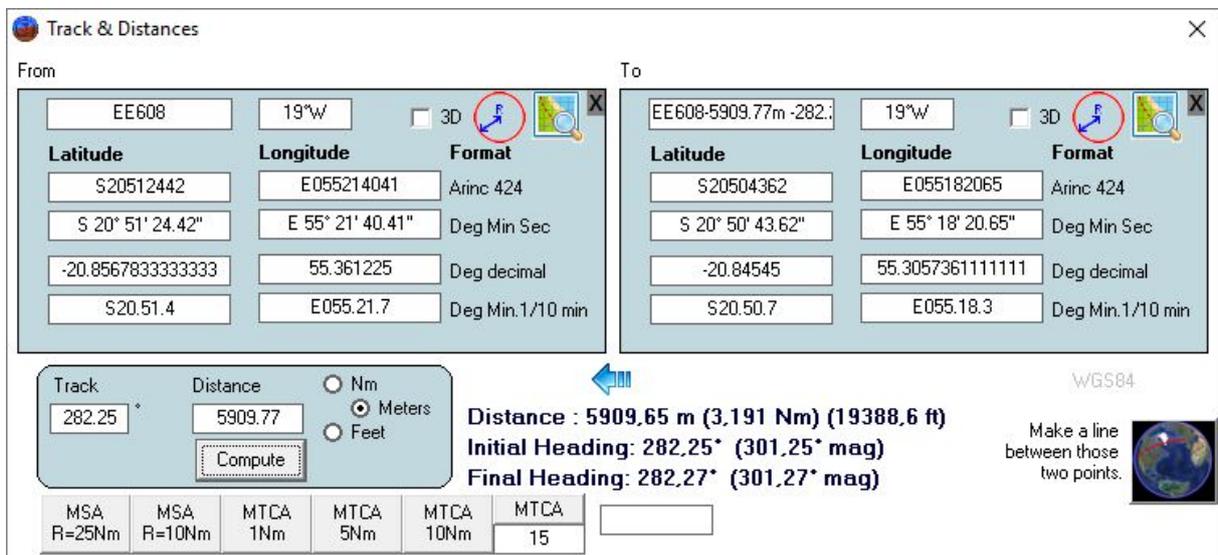


The same thing will have to be done for EE608 and EE606...

Distance is

**Distance : 5909,77 m (3,191 Nm) (19389,0 ft)**

So from our new EE608, in the same (runway) Axis...



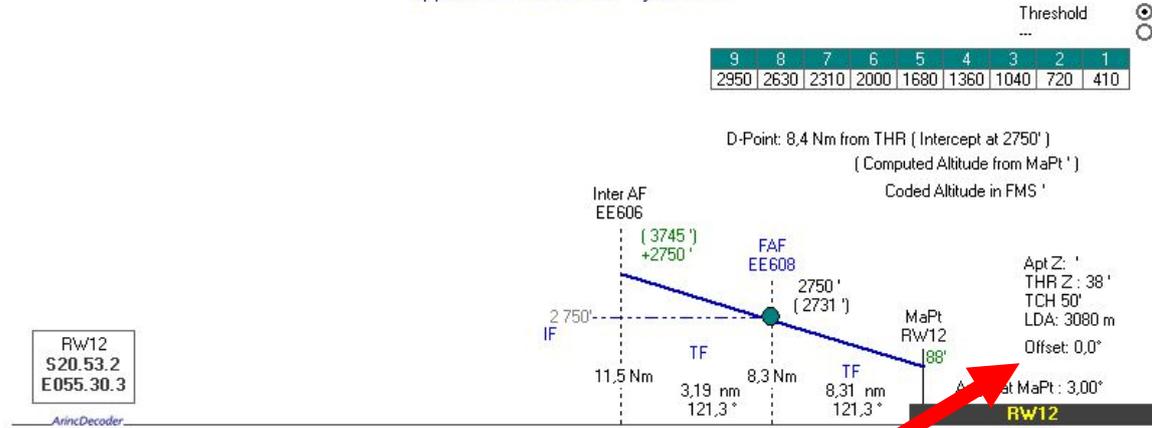
We find the new coordinates of EE606.

Validate and Save then plot this new

Approach - FMEE - R12

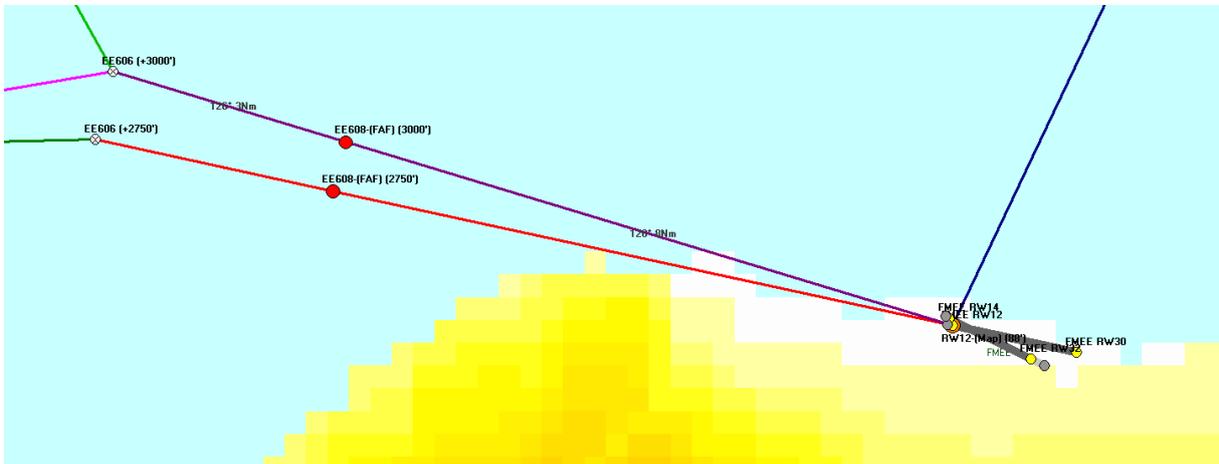
Via	Seq	Pt	Fix	Typ	F/O	TD	Mag	Crs	Alt 1	Alt 2	Vert Angle	RNP	Speed Limit	Distance Time	Coordinates	Fix	Rec Navaid	Cycle :1513	Update
DKTIB	10	IF	DKTIB	IAF											S21.05.4 E055.07.2		Transition	1308	
DKTIB	20	TF	ERDIP				36,6°					1	220 Kts	15,1 Nm	S20.50.9 E055.12.1		Transition	1508	
DKTIB	30	TF	EE606				99,3°	+	2750			1		6,1 Nm	S20.50.7 E055.18.3		Transition	1508	
	10	IF	EE606	Inter AF					2750						S20.50.7 E055.18.3			1308	
	20	TF	EE608	FAF			125,8°	+	2750		-3,00°	1		3,1 Nm	S20.51.4 E055.21.7			1508	
	30	TF	RW12	MaPt	FD				88		-3,00°	0,3			S20.53.2 E055.30.3			1209	
	40	DF	EE410	RdG	L			+	466			1	220 Kts		S20.46.8 E055.33.6			1211	
	60	TF	DKNER				308,4°		3000			1	220 Kts	16 Nm	S20.41.4 E055.17.4			1509	

Approach - FMEE - R12 Cycle :1513



With the same distances and no more offset at all !

Original and awfully modified RNAV GNSS 12 at FMEE:



The track and distance module can give some explanations about the official choice of the offset:

Official procedures with non modified EE606/EE608, the MTCA (minimum terrain clearance altitude) between the two fixes (at 5Nm) is 4300 feet:

Track & Distances

From

EE606	19° W	<input type="checkbox"/> 3D	
Latitude	Longitude	Format	
S20494970	E055183560	Arinc 424	
S 20° 49' 49.70"	E 55° 18' 35.60"	Deg Min Sec	
-20.8304722222222	55.3098888888889	Deg decimal	
S20.49.8	E055.18.6	Deg Min.1/10 min	

To

EE608	19° W	<input type="checkbox"/> 3D	
Latitude	Longitude	Format	
S20504550	E055215120	Arinc 424	
S 20° 50' 45.50"	E 55° 21' 51.20"	Deg Min Sec	
-20.8459722222222	55.3642222222222	Deg decimal	
S20.50.8	E055.21.9	Deg Min.1/10 min	

Track Distance  Nm  Meters  Feet

Distance : 5909.77 m (3.191 Nm) (19389.0 ft)  
 Initial Heading: 106.89° (125.89° mag)  
 Final Heading: 106.87° (125.87° mag)

WGS84

Make a line between those two points.

MSA R=25Nm	MSA R=10Nm	MTCA 1Nm	<b>MTCA 5Nm</b>	MTCA 10Nm	MTCA 15	4300'
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Our procedure gives a MTCA of 4900 ':

Track & Distances

From

EE606	19° W	<input type="checkbox"/> 3D	
Latitude	Longitude	Format	
S20504362	E055182065	Arinc 424	
S 20° 50' 43.62"	E 55° 18' 20.65"	Deg Min Sec	
-20.84545	55.3057361111111	Deg decimal	
S20.50.7	E055.18.3	Deg Min.1/10 min	

To

EE608	19° W	<input type="checkbox"/> 3D	
Latitude	Longitude	Format	
S20512442	E055214041	Arinc 424	
S 20° 51' 24.42"	E 55° 21' 40.41"	Deg Min Sec	
-20.8567833333333	55.361225	Deg decimal	
S20.51.4	E055.21.7	Deg Min.1/10 min	

Track Distance  Nm  Meters  Feet

Distance : 5909.65 m (3.191 Nm) (19388.6 ft)  
 Initial Heading: 102.27° (121.27° mag)  
 Final Heading: 102.25° (121.25° mag)

WGS84

Make a line between those two points.

MSA R=25Nm	MSA R=10Nm	MTCA 1Nm	<b>MTCA 5Nm</b>	MTCA 10Nm	MTCA 15	4900'
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