



| ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY



Frequency Finder

Easy reference -*NAV Module*

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Demonstrations

Test Frequency & Understand the result

Example 1

Test Frequency & Understand the result

Example: Select Leo People’s Democratic, Nongkhang, ILS/DME 108.300and click test

1

Key R 972573

Region APAC

Country Lao People's Democratic

Location Nongkhang

frdeglatg 34.0019444

frdeglongg 74.7563889

Map coverage

Facilityg ILS/DME

VHF Frequency 108.300

DME channel 020X

Frequency	Height	Range	PWR	TRD	Copy
VHF 108.300	6250	25	17		
DME 020X	10000	80	27		

VHF MarginG -137 NM Not Compatible

DME MarginG -209 NM Not Compatible

2

Key R 972532

Region APAC

Country India

Location SRINAGAR

Facility ILS/DME

frdeglat 34.0019444

frdeglong 74.7563889

Map coverage

1 2

Measured from location to test points

Frequency	Height	Range	PWR	TRD	Copy	L xx to 1	Dist to 1	L 1 to xx	Dist to xx	Minimum Required Separation	Actual Separation
VHF 108.300	6250	25	17			153	112	153	112	137	
DME 020X	10000	80	27			146	129	146	129	209	0

Map interference VHF

Map interference DME

VHF Margin -137 NM Not Compatible

DME Margin -209 NM Not Compatible

Minimum transmission loss (dB) between facility 2 and facility 1

Minimum transmission loss (dB) between facility 1 and facility 2

Minimum Required Separation Distance from facility 2 to facility 1

Minimum Required Separation Distance from facility 1 to facility 2



Example: Select Leo People’s Democratic, Nongkhang, ILS/DME 108.300and click test

1

Key R 972573

Region APAC

Country Lao People's Democratic

Location Nongkhang

frdeglatg 34.0019444

frdeglongg 74.7563889

Facilityg ILS/DME

Map coverage

Frequency

Height

Range

PWR

TRD

Copy

VHF 108.300

6250

25 NM

17

DME 020X

10000

80 NM

27

VHF Frequency

108.300

DME channel

020X

VHF MarginG

-137

Not Compatible

DME MarginG

-209

Not Compatible

① Check minimum transmission loss!

Minimum transmission loss

153 dB

2

Key R 972532

Region APAC

Country India

Location SRINAGAR

Facility ILS/DME

frdeglat 34.0019444

frdeglong 74.7563889

Map coverage

Frequency

Height

Range

PWR

TRD

Copy

VHF 108.300

6250

25

17

DME 020X

10000

80

27

Measured from location to test points

L xx to 1

Dist to 1

L 1 to xx

Dist to xx

Minimum Required Separation

Actual Separation

153

112

153

112

137

0

Map interference VHF

Map interference DME

VHF Margin

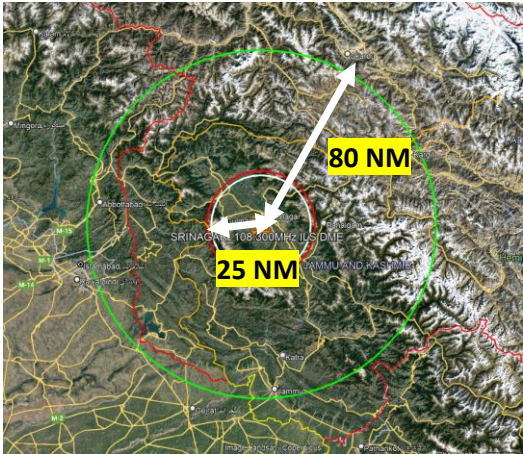
-137

Not Compatible

DME Margin

-209

Not Compatible



② Check a table included in the handbook!
In this example, Table 3-7

③ Consider Minimum Required separation!

a. LLZ 2 to LLZ 1: 137 NM

(Minimum separation distance 112 + Range of LLZ 1 (25) = 137 NM)

b. LLZ 1 to LLZ 2: 137 NM

(Minimum separation distance 112 + Range of LLZ 2 (25) = 137 NM)

④ Compare the result above and then...determine the required separation!

In this case, Required separation is

137 NM

Table 3-7. Minimum geographical separation distances between the edge of coverage of a desired localizer and the location of an undesired localizer facility

E dB (μV/m)	f (MHz)	P _d (dBW)	D/U (dB)	P _u (dBW)	T _x (dBW)	L (dB)	D (NM)	Δf (kHz)	Remarks
32	108	-116	36	-152	30 17	182 169	246 135	0	Co-frequency undesired localizer, 36 dB
32	108	-116	20	-136	30 17	166 153	131 112	0	Co-frequency undesired localizer, 20 dB
32	108	-116	-7	-109	30 17	139 126	81 44	50	Undesired adjacent localizer, 100 kHz receiver

Minimum transmission loss (dB) between facility 2 and facility 1

Minimum Required Separation Distance from VOR 1 to VOR 2

Minimum transmission loss (dB) between facility 1 and facility 2

Minimum Required Separation Distance from VOR 2 to VOR 1

Example: Select Argentina, VALLE DEL CONLARA, VOR/DME 117.500 and click test

NAV CO-CHANNEL compatibility -- NAV CO-CHANNEL compatibility (ILS, VOR, DME, GBAS)
 Compatibility of co-frequency NAV VHF facilities (ILS, VOR, GBAS) as well as co-channel DME facilities or TACAN

Go to SAM COM list 2 Go to Summary Calculations Go to Adj Channel compatibility Go to Prop Curves Map interference all

1 Key R 940128 Region SAM Country ARGENTINA Location VALLE DEL CONLARA frdeglatg -32.3666667 frdeglongg -65.1833333

Facilityg VOR/DME

2 1

Frequency Height Range PWR TRD Copy VHF Frequency 117.500 DME channel 122X

Frequency	Height	Range	PWR	TRD	Copy
VHF 117.500	45000	60	20		
DME 122X	45000	60	37		

VHF MarginG -30 NM Not Compatible
 DME MarginG -22 NM Not Compatible

Minimum transmission loss (dB) between facility 2 and facility 1 Minimum transmission loss (dB) between facility 1 and facility 2

2 Key R 940442 Region SAM Country UY UAY Location DURAZNO Facility VOR/DME frdeglat -33.3500000 frdeglong -56.5000000

1 2

Measured from location to test points

Frequency	Height	Range	PWR	TRD	Copy	L xx to 1	Dist to 1	L 1 to xx	Dist to xx	Minimum Required Separation	Actual Separation
VHF 117.500	45000	200	30			160	284	150	271	471	441
DME 122X	45000	200	30			149	258	156	263	463	

Map interference VHF Map interference DME

VHF Margin -30 NM Not Compatible
 DME Margin -22 NM Not Compatible

Minimum Required Separation Distance from facility 2 to facility 1 Minimum Required Separation Distance from facility 1 to facility 2

Example: Select Argentina, VALLE DEL CONLARA, VOR/DME 117.500 and click test

NAV CO-CHANNEL compatibility -- NAV CO-CHANNEL compatibility (ILS, VOR, DME, GBAS)

Compatibility of co-frequency NAV VHF facilities (ILS, VOR, GBAS) as well as co-channel DME facilities or TACAN

Go to SAM COM list 2Go to Summary CalculationsGo to Adj Channel compatibilityMap interference allMap coverage

1Key R 940128Region SAMCountry ARGENTINALocation VALLE DEL CONLARAfrdeglatg -32.366667frdeglongg -65.183333Facilityg VOR/DMEVHF Frequency 117.500DME channel 122XVHF MarginG -30Not CompatibleDME MarginG -22NMNot Compatible

21Frequency 117.500Height 45000Range 60 NMPWR 20TRD Copy 37

1Check minimum transmission loss!

Minimum transmission loss 160 dBMinimum transmission loss 150 dB

2Key R 940442R 160 dBVOR/DMEfrdeglatg -33.350000frdeglongg -56.500000Map coverageMap interference VHFMap interference DMEVHF Margin -30NMDME Margin -22Not Compatible

12Frequency 117.500Height 45000Range 200 NMPWR 30TRD Copy 30

Measured from locationTest pointsMinimum RequiredActual Separation

160284150271471 NM

149258156263463441

② Check a table included in the handbook!
In this example, Table 4-5A

Table 4-5A. Minimum separation distances between desired and undesired VORs

Δf (kHz)	D/U (dB)	Tx = 17 dBW		Tx = 20 dBW		Tx = 30 dBW		Remarks
		L (dB)	D (NM)	L (dB)	D (NM)	L (dB)	D (NM)	
0	20	147	268	150	271	160	284	Desired VOR at 45 000 ft 50/100 kHz receiver
50	-7	120	134	123	174	133	231	100 kHz receiver
50	-34	93	5	96	11	106	43	50 kHz receiver
100	-46	81	< 0.5	< 0.5	< 0.5	94	7	50/100 kHz receiver
150	-50	77	< 0.5	< 0.5	< 0.5	90	< 0.5	50/100 kHz receiver

Note.— The separation distances (D) are between the edge of coverage of a desired VOR at 45 000 ft and the location of an undesired VOR (localizer) facility.

Minimum Required Separation Distance from VOR 1 to VOR 2

Minimum Required Separation Distance from VOR 2 to VOR 1

③ Consider Minimum Required separation!

a. VOR 2 to VOR 1: 344 NM

(Minimum separation distance 284 + Range of VOR 1 (60) = 344 NM)

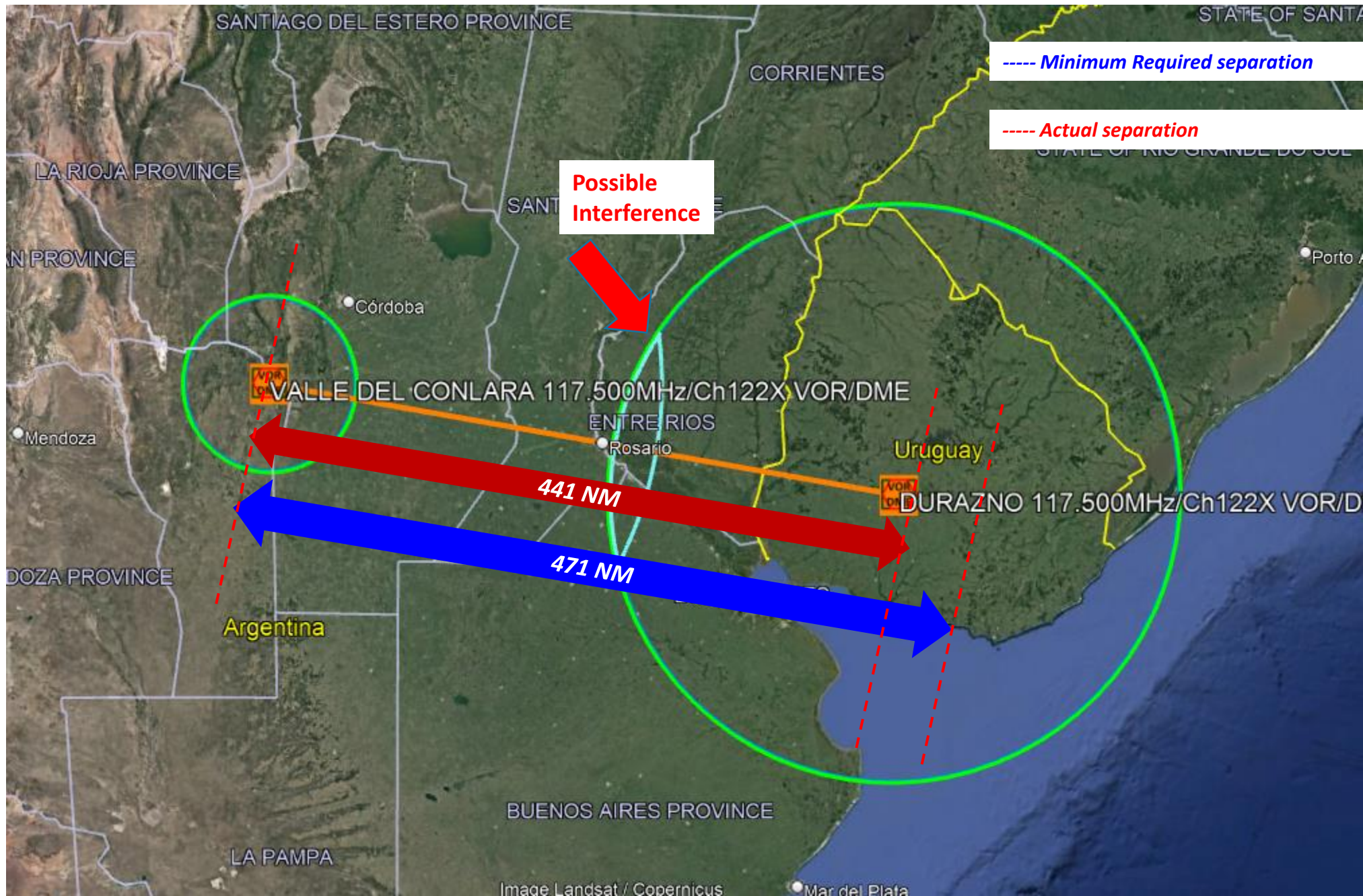
b. VOR 1 to VOR 2: 471 NM

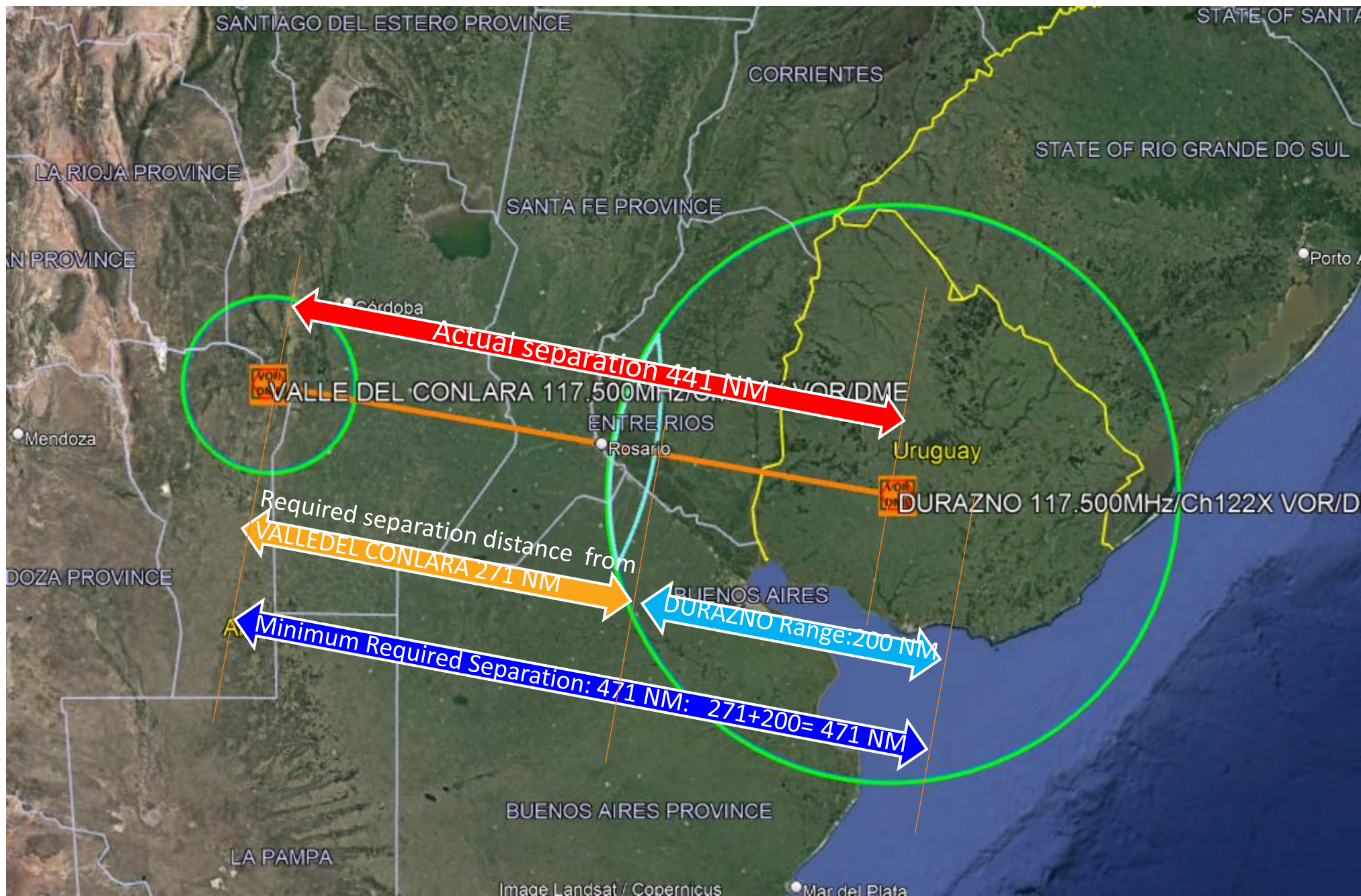
(Minimum separation distance 271 + Range of VOR 2 (200) = 471 NM)

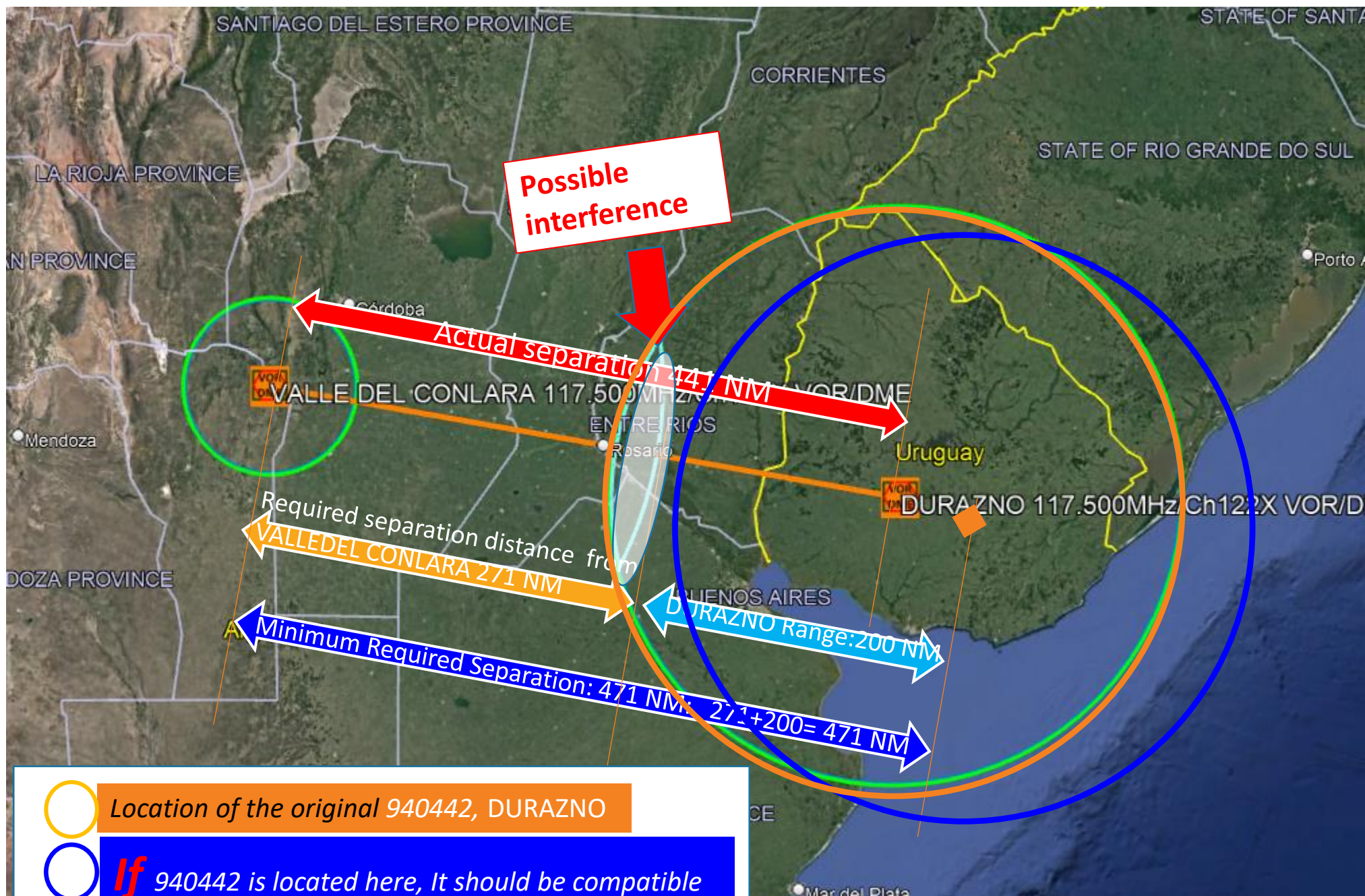
④ Compare the result above and then...determine the required separation!

In this case, Required separation is

471 NM







Exercises

Exercise NAV 1- Update your COM List 2 of the Frequency Finder, using your latest data.



Thank You!