

NAV 08 - ILA 37

-

Status of LORAN in EUROPE

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future**

**&Phares
Balises**

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DCNS
STRENGTH AT SEA

A very positive event

- In France, some people are looking after applications based on Loran
 - Requirements from the French Home Department : urban tracking system for the French Police
 - The solution : Loran !
- In Europe, some trials have already been run in the maritime domain.
 - GLA trials : dLoran could deliver a position with an error of 8 to 20 meters (but not in accordance with the IMO recommendations...)

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Can we only rely on a single positioning system ?

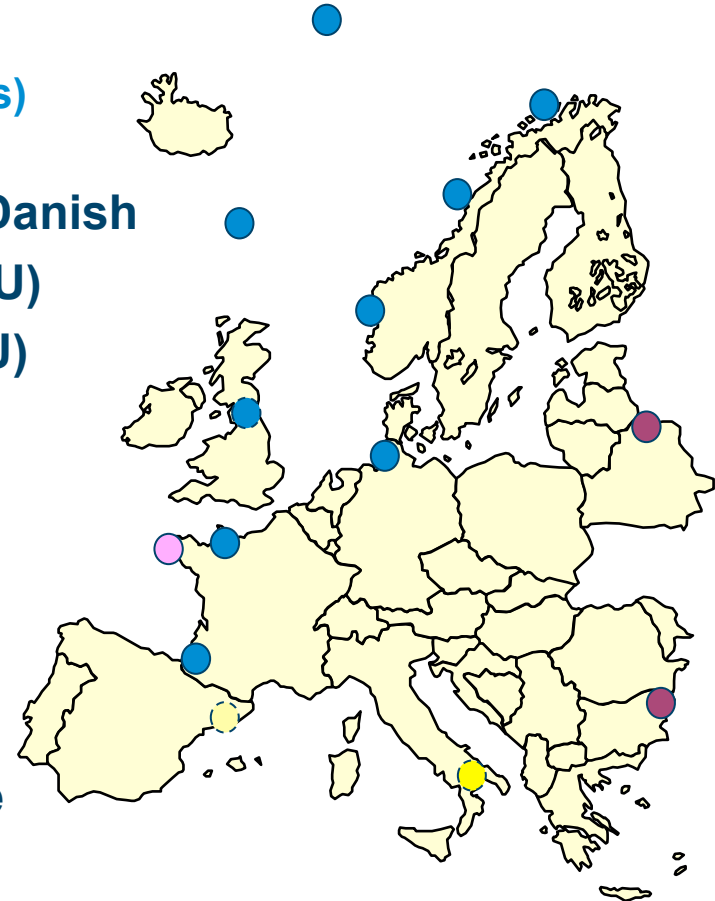
Traffic is becoming more congested

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**On average, a ship passes through the
Dover Straits every 3 minutes**

The French policy on Loran

- **Warranty, until at least 2020,**
 - 2 French stations (Lessay, Soustons)
 - The Control Centre in Brest,
- **Warranty, until at least 2014, the Danish station of Ejde (RDNHA/DAM MOU)**
- **Support UK project (TH/DAM MOU)**
 - loan of a transmitter & an antenna,
 - free use of CCB
- **Support Norway, to keep the 4 stations on air after 2005**
- **Support Germany**
- **Support common users in Europe**
 - Maritime
 - Aviation (Mobile phone/VOR DME)
 - Weather forecast
 - ...



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And Europe ...

- A tremendous work already done by European countries
 - Loran-C in Europe has been upgraded
 - TOE control
 - Eurofix
 - UTC compliant timing
- The European Radio Navigation Plan (ERNP) communication should be issued in the beginning of 2009
 - members states will have to give their support to the project, at the Parliament
 - The eLoran European Forum is supporting the project and will act for.
- However, the coverage in Europe is not sufficient, and especially is not able to deliver positioning for all the transport modes in the “blue banana”.

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ELORAN trial along the Channel

STRENGTH at sea



Cédric QUIVOURON
Services Division

28/10/08

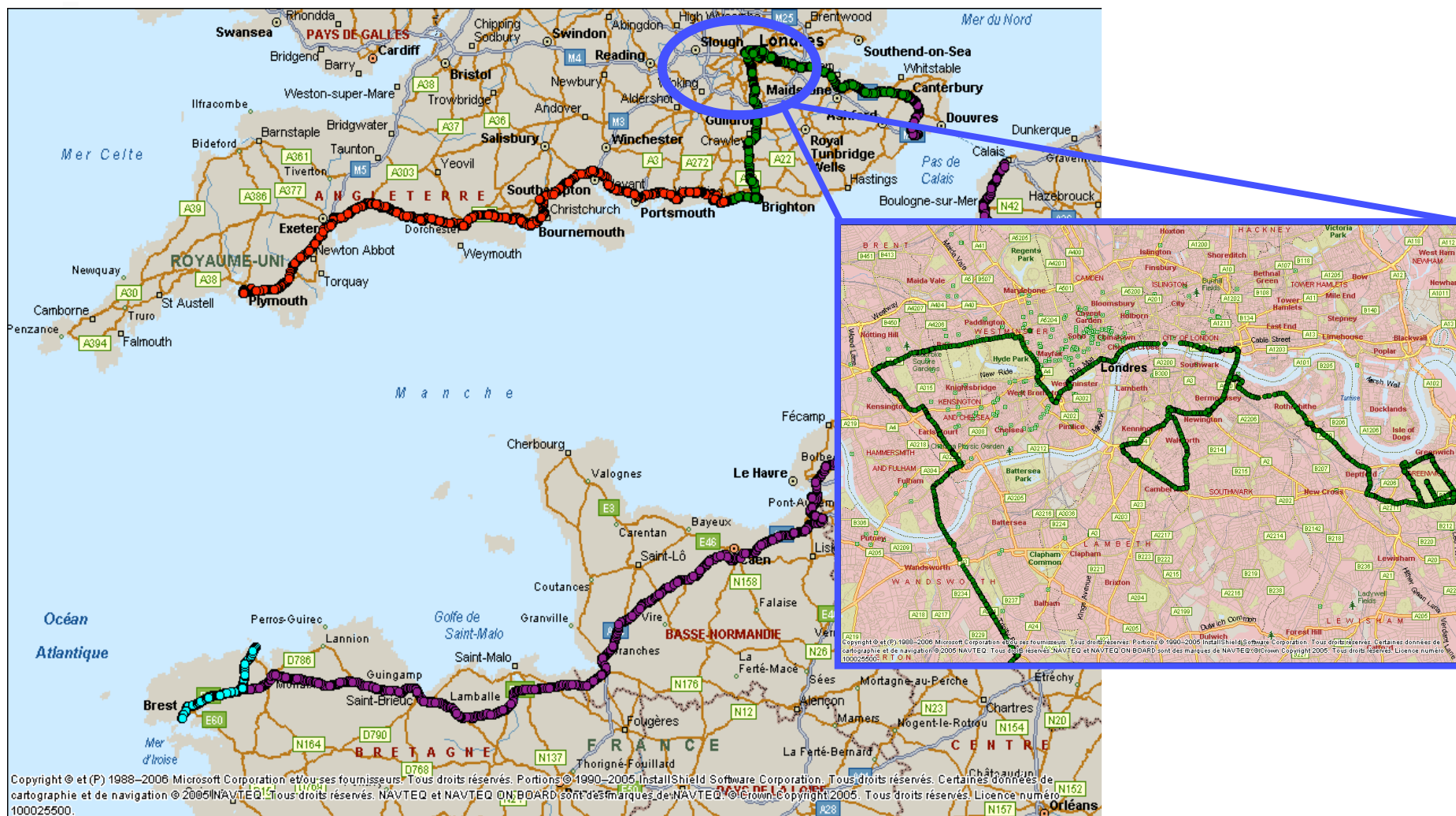
Purpose of the trial campaign

- Evaluate the Reelektronika LORADD receiver :
 - Positioning/Navigation performances,
 - Availability of service,on a real mixed travel (urban, sub-urban, coastal or forest landscape)
- Map and record the real LORAN service both on the British & French Channel banks.

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as a first prelude to ELORAN studies & tests

The journey...



The journey...



London



Greenwich

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The journey...



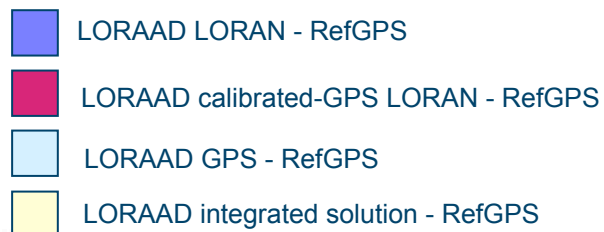
The equipments used for the test



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Positioning performances

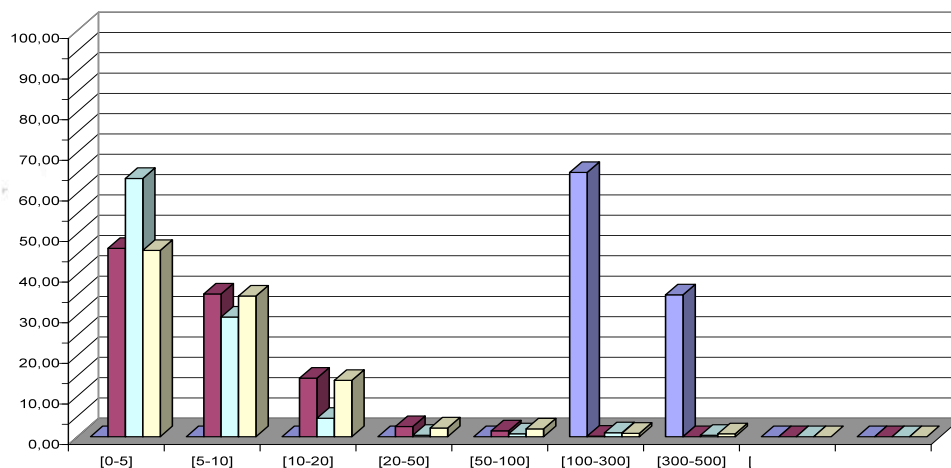
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Static positioning

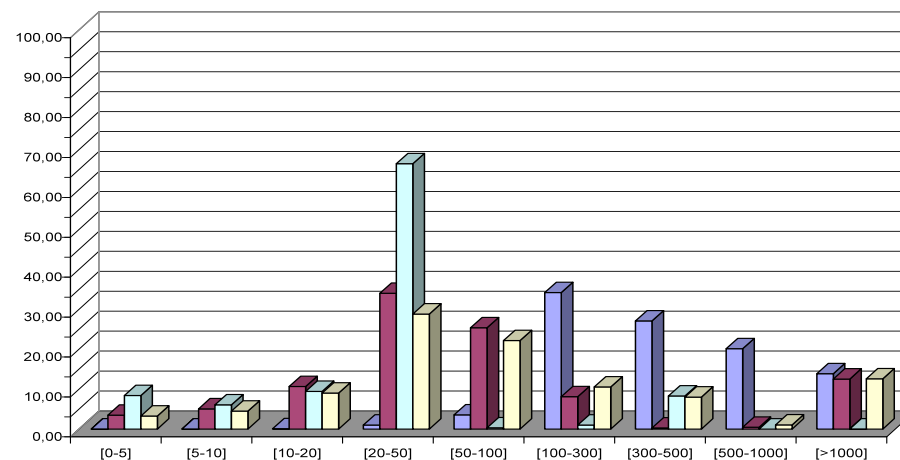
Repartition of errors
LORAAD – GPS ref.
(m)

(15 min tests)



Dynamic positioning

Repartition of errors
LORAAD – GPS ref.(m)



Availability

	GPS solution	LORAN solution (no GPS)	LORAN or GPS solution
DAY 1	99,41%	0,41%	99,82%
DAY 2	98,92%	0,99%	99,91%
DAY 3	99,22%	0,78%	100%
DAY 4	99,05%	0,95%	100%

Urban areas
(LONDON & BREST)

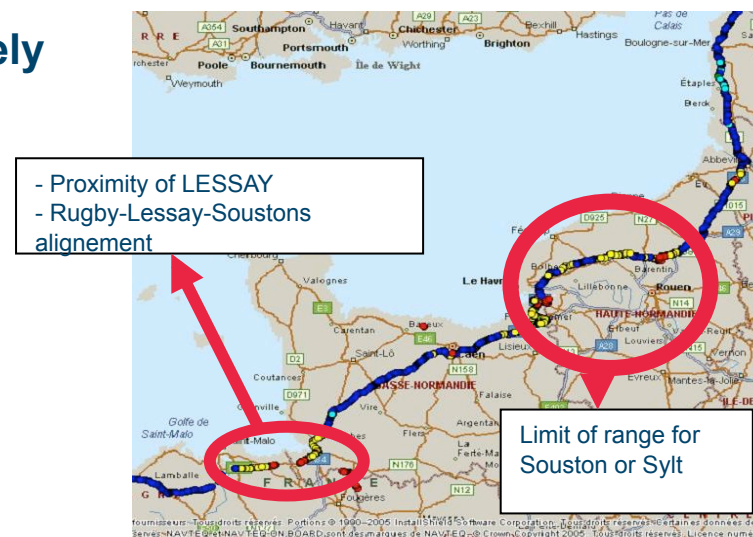
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- Real improvement of the availability in shadowed environment , mainly in urban/sub-urban areas

Conclusion

- The trials have been made in a relatively unfavorable geographical conditions for LORAN :

- Soustons-Lessay-Rugby alignment
- Very close to Lessay
- Limit of range of Soustons or Sylt



- However, the performances of the system are quite interesting, especially in static positioning. The addition of a correct ASF would have highly improved the results, in favour of LORAN.
- In more-unfavorable-to-GPS areas, LORAN should probably bring a better contribution to the navigation solution.
- Neither GPS nor LORAN would have been able to reach alone an objective of availability of 99.5%. Combining the 2 systems helps reaching the objective.

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Next first steps to ELORAN...

- **Additional trials could be run to acquire complementary datas on :**
 - the impact of the transfert of the station from Rugby to Anthorn,
 - the difficulties on other main critical areas
 - the limit of range in French Southern Area
- **These trials should help collecting real information :**
 - to improve ASF models,
 - to determine the complements to add to the existing network

in a view of developing ELORAN in EUROPE in cooperation.

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Thank you for you attention...

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