

# NELS beyond 2005

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## 1. Abstract

April 2004 is the “no return date” for prolongation of the NELS Agreement. All member nations have started the prolongation decision process and except France all nations have recommended their Governments not to prolong the NELS Agreement. Based on the above-mentioned facts, it seems unlikely that the NELS Agreement will be prolonged and this paper will therefore focus the possibility for a coherent Loran-C system in Europe beyond 2005 outside NELS. In earlier presentations the German and the French initiative have been deepened and in the last minute also UK has taken a more active position in favour of Loran-C. This paper will report NELS status and also inform about the German, the French and the UK Loran-C initiatives.

## 2. Introduction

Loran-C in Europe was until 1995 operated by USCG, primarily for military purposes. US decided to continue to operate only Loran-C transmitters located on US territory and the European transmitters were offered to the European host nations. NELS was established and 6 European nations (Denmark, France, Germany, Ireland, The Netherlands and Norway) started operating Loran-C in Europe for civilian purposes in January 1995.

NELS is a Legal entity through an International Agreement ratified by Member Nation`s Governments. The NELS Steering Committee (SC) with representation from all Member Nations is the system`s supreme authority and meet at least twice a year to discuss political and financial issues related to the NELS operation. The NELS SC has Observers from UK, Russia, Italy, Austrian Institute of Navigation, Arabic Institute of Navigation, EC, IALA and USCG. The Observers are invited to participate in all meetings, but are “excluded” from the meeting during financial discussions.

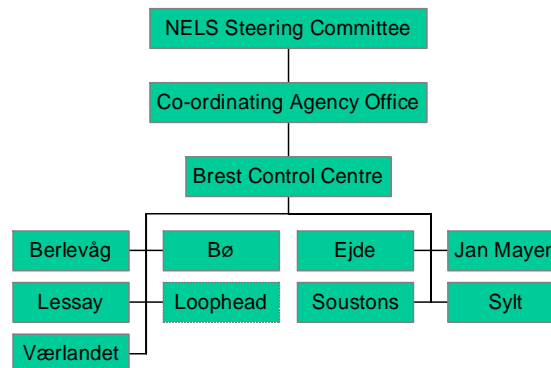


Figure 1 NELS Operational Organisation

All NELS stations are owned and operated nationally and National Operating Agencies (NOA) has been established in each member nation. The NOA group meets at least three times a year to discuss operational and technical problems and developments. The NOA group also act as an advisory board for the NELS SC, in particular on technical subjects.

The NELS Co-ordinating Agency Office (CAO) co-ordinate activities in the NOAs, i.e project management of system developments etc. NELS CAO also act as the SC secretariat, disseminates Loran-C information within the navigation community, does external NELS representation when necessary and is responsible for the day-to-day operation of NELS.

A Maintenance Centre (MCB) is located in DCN, Brest and is run on a cost recovery basis. MCB has established maintenance contracts with all NOAs which host a Loran-C station and has in addition a contract with CAO for general support that is of interest for all NELS nations, not only nations equipped with a Loran-C station.

The NELS Control Centre is located in Brest and is run by French military personal. Military personnel are allowed to stay in Brest only for limited periods of time. Most personnel stay at the Control Centre in 1-2 years before they move on to other tasks. To assure that Loran-C qualifications remain in the CCB a civilian position has been established and is in charge of all operational activity at CCB.

## **2.1. The NELS Agreement**

The NELS Agreement was signed 6 August 1992 and entered into force on 2 April 1994. The provisions of Art. 18 (Denunciation of the Agreement) states:

*"After the expiry of ten years from the date of entry into force of this Agreement, any Party may denounce the Agreement within the first six months of the eleventh year. Such denunciation, which shall be made by notice in writing to the Depositary, shall take effect at the end of the financial year following the financial year in which..."*

This means that NELS will be operated with the current configuration until at least 31 December 2005. The NELS Agreement will be prolonged with 7 years for all nations, which do not send a notice of denunciation to the Depositary within 2 April. It is possible to prolong the Agreement with a period less than 7 years, but that requires the Parties to follow certain procedures. These procedures have been distributed to all Parties, but no Party has reported interest for a limited prolongation of the Agreement.

## **3. NELS political status**

### **3.1. Member nations**

NELS has discussed the future for Loran-C at several Steering Committee meetings and it is now clear that Loran-C in Europe will be continued while the future for NELS remains unclear. However, it seems unlikely that the NELS Agreement will be prolonged.

**Germany** has decided that no public support will be given to Loran-C beyond the current Agreement period (31 December 2005) and will withdraw from the NELS Agreement. Germany considers Loran-C as being a system, which should compete with other navigation systems in the market. Therefore, Germany investigates organisational solutions outside governmental business. In doing so Germany liaison with other NELS member nations.

**France** will continue Loran-C until at least 2015. France would be interested in a prolongation of the NELS Agreement if NELS were continued.

**Norway** will withdraw from the NELS Agreement. The decision has been taken on Minister level, but needs to be formalised in the Parliament. This will be done 5 December 2003.

**Ireland** will withdraw from the NELS Agreement. The decision has been taken on Minister level, but needs to be formalised in the Parliament. No date has been set for the discussion in the Parliament.

**The Netherlands** will withdraw from the NELS Agreement. The decision has been taken on Minister level, but needs to be formalised in the Parliament. No date has been set for the discussion in the Parliament.

**Denmark** will withdraw from the NELS Agreement. The decision has been formalised in the Parliament. Denmark will, however; be willing to continue as a host nation for Loran-C station Ejde if all operational costs and future investment costs are covered.

### **3.2. NELS Observers**

NELS have several observers following the NELS activity by regularly participating at SC meetings. The Observers includes nations as well as national and international navigation organisations. Most observers report that they are interested in Loran-C, but none of the observers have up to now been willing to commit themselves financially. In the last minute, UK has taken a more active position in favour of Loran-C.

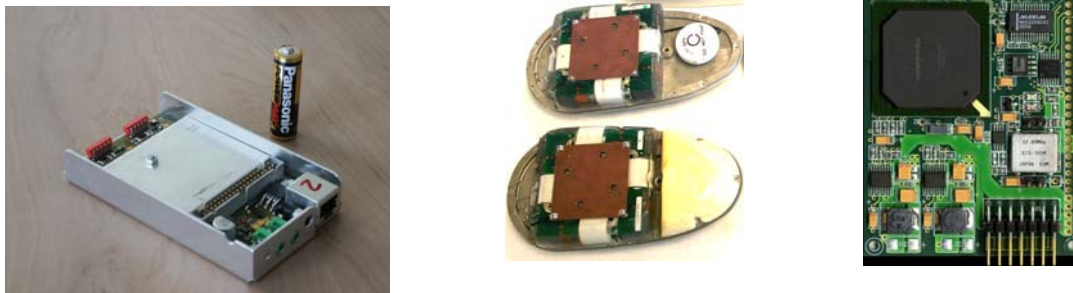
**UK** has been an observer in the NELS SC since the very beginning of NELS and has regularly reported that they remain interested in Loran-C as a backup system. UK applied for membership in NELS in year 2000, but the negotiations between UK and NELS failed and the UK application has since then been on hold. The NELS Chairman wrote a letter to UK early spring 2003 and asked UK if they were still interested in a NELS membership. UK answered that they in principal is still interested and that they currently are evaluating the issue. Since this first letter UK has followed up by more letters and has also stated that they would be willing to commit themselves financially if a future for Loran-C in Europe could be guaranteed. UK would prefer that Loran-C was included as the terrestrial part of a multi-modal European mix of systems, and preferably that EC in a European Radio Navigation Plan would include a statement related to the future need for Loran-C.

**Italy** has up to recently reported that they remain interested in Loran-C and that they would like to connect their two stations to the NELS chains. Italy has not been able to raise funds for a refurbishment of their two stations, but France has been in regular contact with Italy and would be willing support a refurbishment of at least the northernmost Italian station financially. On the last SC meeting in November 2003, Germany reported that Italy plan to dismantle their Loran-C stations by the end of 2003. This was a surprise for all SC member nations including France, and both France and Germany will contact Italy in order to convince them not to dismantle any stations.

**Austria** reports to the SC that they are interested in Loran-C as a backup system, but they will not commit themselves financially until the future for Loran-C else in Europe has been sorted out. Austria has been in close contact with Czechoslovakia, which would be willing to host a Loran-C station and a location for such a station has been discussed.

## 4. NELS beyond 2005

Most nations have difficulties defending use of public funds operating a navigation system with a limited number of users. All over Europe, governmental work is reorganised –as many tasks as possible are outsourced to private companies, hoping that this will lead to cheaper and more efficient operation of systems. Loran-C has in Europe been operated by national governments, co-ordinated by CAO and NELS has always focused operations and never included multi-modal service provision. The Netherlands, Ireland and Norway have the last years informed the SC that a considerable increase in the number of Loran-C users was a condition for a prolongation of the NELS Agreement. NELS continued, however, to focus on operation and with no service provision offered to the users and old and expensive receiver technology on the shelves, no increase in the number of users was to be expected.



**Figure 2 Detecis integrated Loran-C/GNSS receiver, Locus integrated Loran-C/GPS antenna and Reelektronika integrated Loran-C/GPS receiver**

In spite of this a growing interest for Loran-C has been noted the last years, triggered by the Volpe report and the 9/11 event, leading to increasing awareness about the GNSS vulnerability. Commercial low-cost integrated Loran-C/GNSS receivers are available and private companies interested in taking over the Loran-C transmissions have contacted NELS. Studies have shown that Loran-C is a candidate in a more robust mix of systems, but no political decision in favour of the system has yet been taken on European level.

Three nations (France, Germany and UK) actively support Loran-C in Europe and tries in different ways to market Loran-C and establish future institutional arrangements. The three nations have a common goal, i.e complete Loran-C coverage in Europe. There is no conflict or competition between the three nations – each nation support the other nations initiatives.

### 4.1. French initiative

In France, land-mobile interest has strengthened the national support of the Loran-C system and France will as already mentioned continue to run Loran-C until 2015. France has concrete plans for a new Loran-C station in Strasbourg and an additional station in southern France. The final location for the new site (or possibly the two new sites) in France has not been decided, but the Defence in France owns a lot of land, including several remote places so selection of a site is not considered difficult. France has suggested an upgrade of the northern Italian station, Sellia Marina using the mast and transmitter from Loophead. Sellia Marina could then be connected to NELS through a new French station located south in France.

France considers it for granted that the operation of Sylt will be continued and is willing to fund continued operation of Loran-C station Ejde. If the German initiative should fail then France is also willing to fund continued operation of Sylt. Bilateral meetings with Germany, Italy and Denmark is scheduled Q4/03 and Q1/04.

Technical investigations related to the implementation of a new Loran-C chain including a station in Provence and the Italian Sellia Marina station has started. France also research different ways of funding a new station in the Provence area and possibly a new station in Strasbourg. Analysis of the expected performance of a “SELS” chain has started and cost analysis is on the “to do” list. France has in the NELS SC stressed the importance of continued optimisation of the system performance; current performance should be thoroughly analysed and improved solutions should be installed where possible.

France find it very important that Loran-C operation in Europe is continued and is in principal willing to accept any legal way of organising the operation. France and Germany have a common goal – to find a solution for Loran-C in Europe if NELS is dissolved, with the purpose not only to have the NELS coverage continued, but to establish European Loran-C coverage as fast as possible. Bilateral national discussions and discussions with EC are important elements in this process and is considered necessary to get an overview of the financial as well as the political situation.

## **4.2. German initiative**

Germany informed the NELS SC some years ago that no public funds will be made available for Loran-C in Germany beyond the NELS Agreement period. Germany support Loran-C, but believe that Loran-C should compete with other navigation systems in the market. The last years Germany has investigated possible organisational solutions for Loran-C outside governmental business. The German initiative does not include only the Sylt station and a possible establishment of new stations in Germany – on the contrary Germany intends to find a solution for all of Europe, starting with central Europe.

Germany has recently indicated that they may be able to present their business case late this year or early next year. A business plan has been prepared including a proposed revenue stream, but investors have been hard to convince with the current financial difficult situation for Germany.

Germany see a great future for Loran-C in the land-mobile market where Loran-C is planned used in toll-collecting, tracking of dangerous goods, positioning tool for fire-fighters, rescue personnel serving the Alps etc.

## **4.3. UK initiative**

UK had lots of Decca users until the last Decca station was closed down in 2000. Like users in many other European countries the UK Decca users switched to GPS and not to Loran-C when they were forced to stop using Decca in year 2000. UK has always stated that of security reasons there is a need for two independent navigation systems. Loran-C coverage in UK has been investigated and the conclusion is that the coverage is incomplete, but still UK strongly supports the continuation of the system. UK has the last year become much more active in their support of Loran-C and are willing to commit themselves financially if European cooperation will result in acceptable European coverage. They have also informed that there are possibilities of establishing a site in UK by using redundant facilities.

UK is the only European nation, which have taken GNSS vulnerability issues seriously. A GPS vulnerability study has been finished and Trinity House has currently been tasked to carry out a vulnerability study of all aids to navigation, including Loran-C. The result from this study will be reported to the European Radio Navigation Plan Working Group. The two studies cover only marine systems.

The main reason for the UK interest in Loran-C is the possibility to use Loran-C to transmit time. UK has for several years had a LF station transmitting accurate time. This transmitter is aging and UK is looking for a replacement for the transmitter. The UK Company Helios did a study on possible systems, which could take over transmission of time in UK and Loran-C was found as the only viable solution. Trinity House has been contacted by two private companies, which are interested in taking over the responsibility for Loran-C transmissions in Europe and possibly establish a new Loran-C transmitter in UK. NELS has been contacted by one of the companies.

## 5. Summary

It seems rather clear that the NELS Agreement will not be continued beyond 31 December 2003. All NELS members except France have recommended their governments not to prolong the Agreement. The decision has been formalised in Denmark and Germany, Norway will formalise the decision 5 December and Ireland and the Netherlands will formalise the decision in the near future. The only possibility to change this decision is if UK in the last minute decides that they would like to join NELS and that they want to establish a Loran-C site in UK. UK is still evaluating whether or not to join NELS and currently UK considers the erection of a Loran-C station in UK. The Loran-C station can be erected using a site earlier used by British Telecom. If a new Loran-C site was erected in UK, this would be a very clear message to the Norwegians and it would then probably be very difficult for Norway to dismantle their stations. Time is unfortunately limited and it is important that a crystal clear message is forwarded from UK to the Norwegians as soon as possible.



**F**  
**igure 3 Can UK in the last minute save the Norwegian Loran-C stations?**

Loran-C will be continued in Europe. France will continue to operate their two stations and Control Centre Brest until 2015. France also plan to erect at least one new station in France, to support a refurbishment of the northernmost Italian station and to take over the operational cost of the Ejde station. Germany will most probably continue to operate the Sylt station, and is currently working on privatised Loran-C solution for all of Europe.

Hopefully, Austria and Czechoslovakia will follow up with a new site in south-east of Europe and maybe there finally could be established a link between the Russian Chayka system and the European Loran-C system...