Feature

Danish–Swedish Railway Cooperation

Søren Lynge Jacobsen

Cooperation with Foreign Railways

Danish State Railways (DSB) has a number of cooperative relationships with other railways in Europe and elsewhere. One of the longest-running is the Friendship Agreement with JR Hokkaido described by Mr Takashi Nagano on pp. 34–37 of this issue of *JRTR*.

This article brings readers up to date on the recent complete opening of the Øresund Fixed Link between Denmark and Sweden and the latest developments in the cooperative relationship between DSB and Swedish State Railways (SJ).

Background

The 1991 agreement between the Danish and Swedish governments about the Øresund Fixed Link across Øresund said, 'The link will connect the two countries, thereby producing the conditions for strengthened and enlarged cultural and economic collaboration, as well as development of shared labour and housing markets in the Øresund region, with benefit to both countries'.

The bridge and tunnel construction work is being managed by Øresundskonsortiet, a Danish–Swedish government joint-venture company whose purpose is to build and operate the road and rail transport systems from coast-to-coast across Øresund (*JRTR* 11, pp. 43–45). The construction work is being carried out by national companies—A/S Øresund on the Danish side, and Swedab AB on the Swedish side.

Due to differences in the work and opening dates, the Danish construction between Copenhagen Central and Copenhagen Kastrup Airport (phase 1) was opened on 28 September 1998, while the Øresund Fixed Link itself across Øresund (phase 2) is scheduled to open on 2 July 2000.

DSB Services between Copenhagen Central and Kastrup Airport

Before the start of railway services from Copenhagen Central to Copenhagen Kastrup Airport, DSB went through long and difficult discussions about what form of services should be used. The choice was between a pure shuttle service or integration into the train network with the airport as just one of many stations.

The decision was difficult because both have advantages and disadvantages. For example, shuttle trains offer:

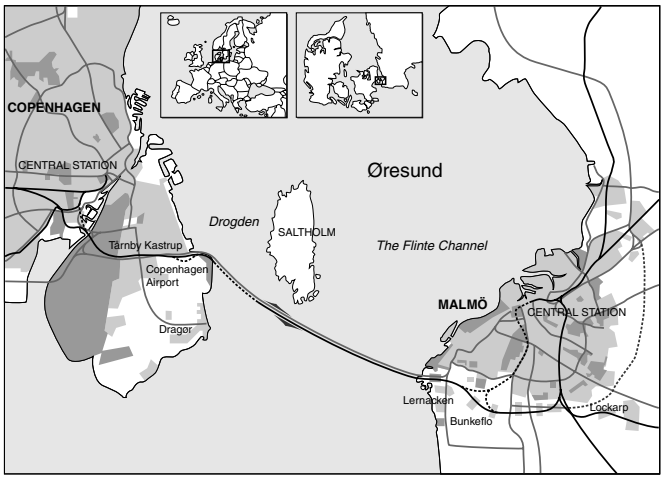
- Purpose-built design (ample baggage space, etc.)
- Trained staff (multilingual)
- Good service regularity (little effect from other service delays)
- Greater timetable flexibility (ability to wait for delayed flights)
- Value-added fare structure

Conversely, the integrated model offers:

- Fewer passenger changes (because airport trains part of entire train network)
- Easy through ticketing
- Potential non-airport customer base
- Greater efficiency through good utilization of personnel and equipment
- Easy integration with through traffic from Sweden when Øresund Fixed Link opens
- Larger customer base from city stations such as Nørreport and Østerport

In the end, DSB chose the integrated model offering the following advantages to airport passengers:

- High frequency (four trains each hour + nine daily *InterCityLyn* services. InterCityLyn is a special rail service that links most Danish provinces during the day, Monday–Friday, with



The Øresund Fixed Link between Denmark and Sweden (Øresundskonsortiet)

High Bridge Section of Øresund Fixed Link (Øresundskonsortiet)

only a few stops in the provinces before it goes non-stop to Copenhagen Central.)
- Short travel time (12 minutes) from Copenhagen city centre to Kastrup Airport
- Very low fare (DKr16.50 = US$2.14) from Copenhagen Central to Kastrup Airport)

A passenger survey 1 year later showed that DSB carries no less than 80,000 passengers each week on the Copenhagen Central to airport section. The detailed data shows:

- There is an almost even passenger distribution between airplane passengers and commuters.
- Most airplane passengers are international travellers.
- The remaining passengers are primarily airport workers.
- Nearly 30% of all passengers would have chosen transport by own car or taxi if the train had not been an alternative. For passengers taking the train to/from their flight, 46% would have chosen transport by car, and 49% by bus if the train had not been an alternative.
- 92% of passengers are satisfied or very satisfied with the train connection.

Clearly the connection to Copenhagen Kastrup Airport has been a success for DSB and a great benefit for customers.

Future Traffic across Øresund

After the 1991 agreement between the Danish and Swedish governments, DSB and SJ started close collaboration about joint introduction of regional traffic in the Øresund region via the Øresund Fixed Link, as well as plans to purchase the same rolling stock for the traffic. Their goal is to create an integrated traffic and ticketing system so that customers in the Øresund region only need to buy one ticket to get from a Swedish city to a Danish city.

However, this is not as easy to achieve as it sounds. Denmark and Sweden are two independent countries and although they have been good neighbours for several hundred years, they have chosen different solutions to different problems, not least in the railway field. In particular, DSB and SJ use different power supplies and different signalling systems. The fare systems are also quite different.

On 15 September 1999, DSB and SJ agreed that local train services after 1 July 2000 across the Øresund between Malmö and Copenhagen will run every 20 minutes in both directions.

Rolling Stock

In 1996, ADtranz Sweden was invited to tender for delivery of 27 new EMU trainsets each with 237 seats for the Øresund Fixed Link region—DSB will purchase 17 and SJ will purchase 10. They have a Danish–Swedish design although the front looks like the Danish IC3. They are fabricated of stainless steel and have a dual-current system that switches automatically between the Danish and Swedish power systems, as well as dual-standard radio and safety systems.

The 27 new Øresund trainsets are being put into service in stages due to several factors, mostly because all 27 sets cannot be delivered before the 1 July opening of the Fixed Link. Hopefully, 10 of the 27 sets will be ready for service by that date, with the remainder being delivered by mid-2001. Therefore, a Starting Timetable will be expanded gradually as more trains are delivered and put into service on sections of the Øresund region from 17 June 2001 (Fig. 2).

Just as DSB and SJ will operate common rolling stock, the train crews will also be both Danish and Swedish. Eleven X2000 trainsets will be rebuilt by SJ according to Danish safety standards (ATC and train radio) and power systems for service on the Danish section. SJ expects two trainsets to be ready in August 2000 for

Artist's impression of new Øresund EMU trainset (ADtranz Sweden)

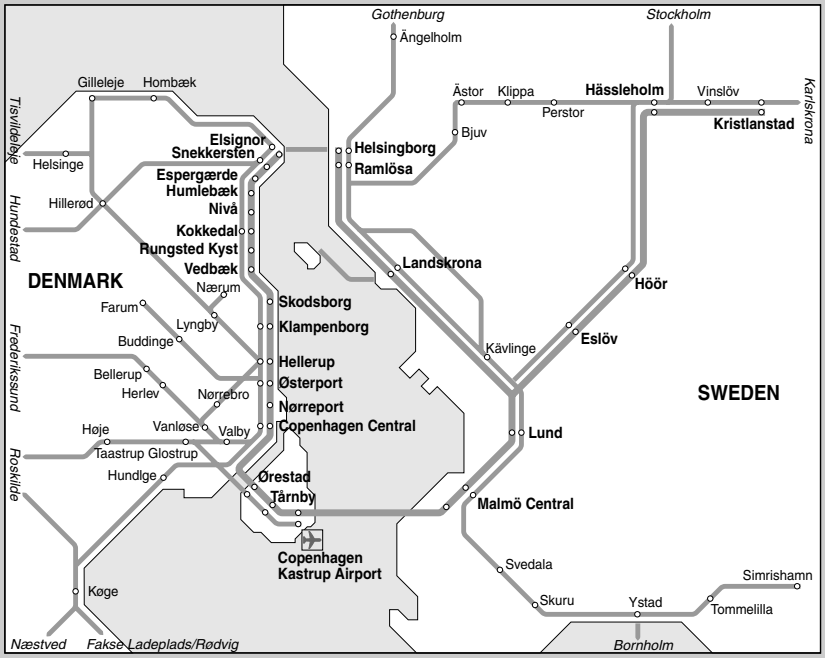
three daily departures between Stockholm and Copenhagen Central and *vice versa*, and with delivery of the remaining nine sets to be completed by March 2001.
Moreover, DSB Freight has ordered 13 new powerful freight locomotives to haul freight wagons in Denmark, Sweden, and Germany. These engines will be delivered this year.

2000 and 2001 Traffic Plans

The Starting Timetable for services between Copenhagen and Malmö will be a transitional timetable until all the trainsets have been delivered when the Øresund Timetable will come into effect. The Swedish side of this plan is also a fully integrated timetable, but it contains no changes on the Danish side.
The traffic system for the Starting Timetable as of 2 July 2000 (Figure 2) consists of:

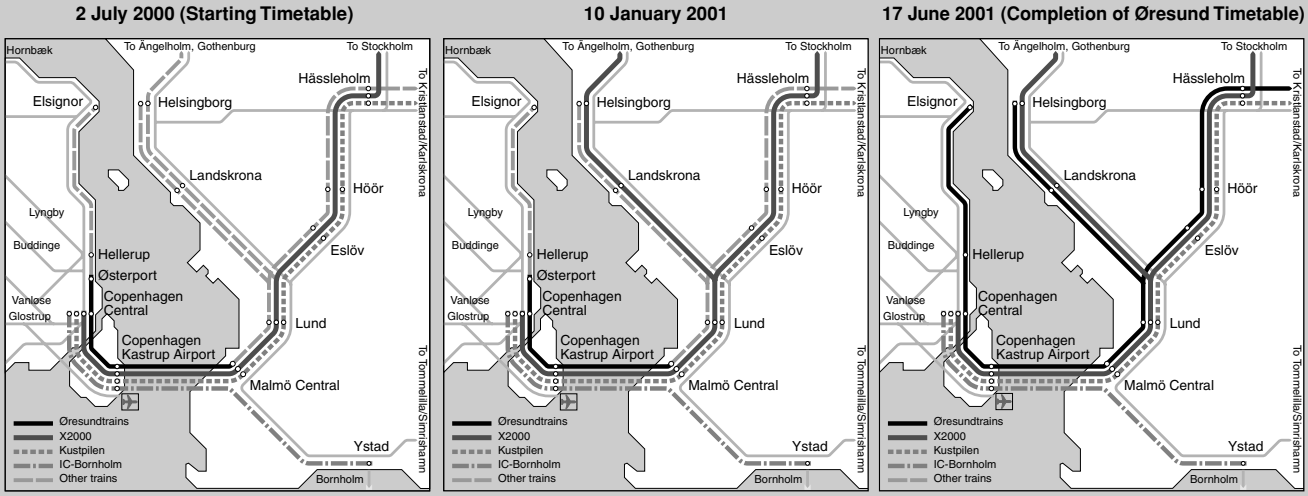
- Elsignor–Copenhagen Kastrup Airport, every 20 minutes (primarily IR4—an

Figure 1 DSB–SJ Network across Øresund



(DSB)

Figure 2 Evolution of Train Services across Øresund



(DSB)

80-m Danish EMU for regional and InterCity services)
- Roskilde–Copenhagen Kastrup Airport, every hour (primarily IR4)
- Østerport–Malmö Central, every 20 minutes (ØR—an 80-m Danish/Swedish EMU for regional Øresund traffic)
- Copenhagen Central–Karlskrona, 'Kustpilen' (Swedish type DMU of Danish IC3), 6 daily departures

The following long-distance services and high-speed EMUs are also included:
- Copenhagen Central–Ystad, 3–6 daily departures (primarily IC3—a 65-m Danish DMU for InterCity services)
- Copenhagen Central–Stockholm, 'Snabbtåg', at least 3 daily departures (X2000—a 165-m Swedish high-speed tilting EMU for long-distance services)
- Copenhagen Kastrup Airport–Fyn/Jylland, 'Lyntog', 9 daily departures as InterCityLyn (IC3)

Between 07:16 and 17:56, the Øresund traffic system will operate between Copenhagen Central and Malmö. In the evening, night and weekends, the system will continue to and from the Nørreport and Østerport city stations.

The Øresund Timetable consists of :
- Elsignor–Malmö, every 20 minutes (ØR) with extension to Kritianstad, every other hour (ØR) and with extension to Helsingborg, every hour (ØR)
- Roskilde–Copenhagen Kastrup Airport, every hour (primarily IR4)
- Copenhagen Central–Karlskrona, 'Kustpilen', 6 daily departures (Y2k—Swedish type DMU of Danish IC3 used to connect non-electrified line from Karlskrona–Kristianstad, and all way to Malmö and Copenhagen Central for InterRegional Service)

The following long-distance services and high-speed trains are also included:
- Copenhagen Central–Ystad, 'ICBornholm', 3–6 daily departures (primarily IC3 and possibly ØR)
- Copenhagen Central–Stockholm, 'Snabbtåg', 8 daily departures (X2000)
- Copenhagen Central–Gothenburg, 'Snabbtåg', 6 daily departures (X2000)
- Copenhagen Katsrup Airport–Fyn/Jylland, 'Lyntog', 9 daily departures as InterCityLyn (IC3)

Unlike the Starting Timetable, the Øresund Timetable contains extension of Øresund trains every 20 minutes to Elsignor, and every hour from Malmö to Helsingborg, as well as an extension from Malmö to Kristianstad.

Demography and Customer Base

The population density of Denmark and southern Sweden makes it possible for DSB and SJ to offer customers a good product with a high frequency, short travel times and simple ticketing system. As a result, there is potential for a greatly increased flow of travellers both internally in the Øresund region as well as on somewhat longer sections, with southern Skåne as the most important market.
Copenhagen Kastrup Airport is situated relatively centrally in the region, meaning that the railway and airport will both benefit greatly in a well-functioning interplay in the form of more passengers. Whether the airport attracts passengers to the railway, or *vice versa* is immaterial. It is also evident that the limit for choosing Arlanda or Kastrup will move further north into Sweden.
After a running-in period, DSB and SJ expect about 3 million regional passengers to use the Øresund connection in 2001. By 2005, this figure will probably increase to 4.8 million passengers.

Danish–Swedish Fare Systems

The Øresund Fixed Link will create a regional network stretching from Elsignor via Copenhagen/Kastrup to Malmö/Lund and further to Helsingborg, Hässleholm and Kristianstad. A bus–train fare system similar to the one in Denmark will be established from 2 July 2000 with the result that travellers will be able to buy a ticket from anywhere in the Copenhagen Metropolitan Area to somewhere in Skåne. The one-way fare from central Copenhagen or Amager to Malmö will be DKr60 and DKr120 for a return ticket valid for 24 hours. The fare will be the same, whether one takes the S-train or bus part of the way. The journey time by local train via the Øresund bridge and tunnel will take 35 minutes between Copenhagen Central and Malmö Central.

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