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Extract from Rigsrevisionen's report on

## **DSB's effort to complete the IC4 trains**

submitted to the Public Accounts Committee



1849  
147.281  
237  
1976  
114.6  
22.480  
908

October 2017

# 1. Introduction and conclusion

## 1.1. PURPOSE AND CONCLUSION

1. This report concerns DSB's (Denmark's national railway operator) effort to complete its fleet of IC4 trains over a period of two years from 2014 to 2016. In this period, an expert assessment report provided the basis for DSB's activities to complete the trains and have them ready for service in 2019. However, late in 2016, DSB decided to change the plans and reduce the future deployment of the IC4 trains compared to the original plans.

2. According to the initial plans, the IC4 trains should have been in service by January 2006, but AnsaldoBreda did not deliver the first IC4 trains until 2008, and the IC2 trains were delivered in the period 2011 to 2013. The technical quality of the trains was poor and they were not running as required. In 2009, DSB reached a settlement agreement with AnsaldoBreda and took charge of the completion of the trains. The completion work was to be carried out within the budget of DKK 6.2 billion (2015 prices) defined in the original acts concerning procurement of the trains. DSB has worked on modifying the trains since 2009, yet none of them were running as required in 2014.

3. Several experts have assessed whether it would be meaningful for DSB to continue its effort to complete the IC2 and IC4 trains and enter them into service. Most recently, DSB commissioned the consulting firm *PROSE* to assess whether its plans to complete the IC2 and IC4 trains and have them ready for service in 2019 were realistic and financially viable. *PROSE* concluded that the technical quality of the IC4 trains was poor, but that DSB could bring them up to a standard that would make them suitable for use in long distance traffic in 2019. However, this could only be achieved if DSB added more tasks to its existing list of planned activities and, for instance, developed and implemented various technical modifications to the trains.

DSB's modification of the IC2 and IC4 trains should take place while the trains were in service on regional routes and routes across the country.

4. Based on progress made by the end of 2016, DSB was to decide how to proceed with the completion of the IC2 and IC4 trains and have them introduced into service.

### PROCUREMENT OF THE IC2 AND IC4 TRAINS

In 2000 and 2002, DSB entered contracts with the train manufacturer AnsaldoBreda concerning delivery of the IC2 and IC4 trains that were intended to improve the train traffic in various areas: speed, number of seats per trainset and flexible coupling of the trainsets. The IC4 trains were to run on the long routes between the Danish regions, whereas the smaller IC2 trains were mainly intended for service on the shorter regional routes. From a technical perspective, the IC2 and IC4 are identical.

### WRITE-DOWNS MID-2016

The decision to phase out all the IC2 trains and five of the IC4 train sets led to write-downs of DKK 588 million and DKK 85 million, respectively, in DSB's interim financial statements in 2016.

### RELIABILITY

The reliability of the trains determines where they are deployed. If a train breaks down on one of the routes connecting the regions, the subsequent delays may affect other parts of the long-distance train traffic. The train traffic will not be affected to the same degree, if a train breaks down on one of the regional routes.

However, in mid-2016, DSB decided to phase out all 23 IC2 trains with immediate effect. It was DSB's assessment that the IC2 trains would not be capable of achieving the reliability goal that had been defined as the condition for introducing them into service. In 2014, DSB decided to complete the IC4 trains before the IC2 trains, because the two types of trains required the same modifications. In this way, lessons learnt from modifying the IC4 trains could be applied in connection with the completion of the IC2 trains. It follows that DSB has only carried out modifications to very few of the IC2 trains, and therefore very few of them have been in service. At the same time, DSB decided to phase out five IC4 trains, whose condition was such that DSB did not consider it worthwhile trying to complete them.

Late in 2016, DSB decided to adjust the goals set for the future deployment of the IC4 trains, because their reliability had been dropping and new errors had occurred. This means that DSB will be unable to deliver the promised improvements to the train traffic with the IC4 trains.

5. Rigsrevisionen has examined the procurement of the IC2 and IC4 trains, and DSB's effort to complete the trains, on two previous occasions. In the follow-up memorandum on our most recent report, we committed to returning to DSB's completion of the trains. We therefore initiated this study in November 2016.

The purpose of the study is to assess whether DSB's effort to complete the IC4 trains has been satisfactory in the two years that passed between the expert assessment by PROSE late in 2014 and DSB's decision on the future deployment of the IC4 trains late in 2016.

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## CONCLUSION

It is Rigsrevisionen's assessment that DSB's effort to complete the IC4 trains in the course of the two years covered by this study has not been satisfactory; for instance, DSB has failed to implement a number of the activities that PROSE considered crucial for achievement of the reliability goals.

DSB's effort has been based on the premise that the modifications to the IC4 trains should be made while they were in service, which resulted in the emergence of new failures of equipment that the DSB had to rectify simultaneously with the modification of the trains. DSB's decision to reduce the future deployment of the IC4 trains followed a period where having the trains running daily had been prioritized over their completion.

Rigsrevisionen's assessment of the effort is, firstly, based on the fact that DSB only late in the process commissioned a systematic and general analysis of the fundamental causes of the poor reliability of the IC4 trains. This analysis shows that one of the major causes of the poor reliability is the fact that the trains leave the maintenance depots and are re-entered into service with errors that have not been rectified. Previous analyses have not provided DSB with a clear picture of the causes of the trains' poor reliability, which the PROSE report highlighted as being essential for the success of DSB's effort.

Secondly, Rigsrevisionen's assessment is based on the fact that DSB only at the end of 2016 reached the level of staffing at the IC4 maintenance depots recommended in the PROSE report for the two-year period following its recommendation. The increased staffing level was intended to speed up the implementation of technical modifications to the trains while the maintenance depots, at the same time, rectified also the errors that occurred on the trains on an ongoing basis. In 2015 and 2016, DSB used considerably less money on modifying the trains compared to budget. DSB has explained that resolving problems relating to the daily operation were prioritized over the completion of the IC4 trains. In the course of 2016, DSB arrived at the conclusion that staffing at the IC4 maintenance depots should be further increased to ensure that DSB can make IC4 trains available for service concurrently with the completion of the trains.

At the end of the period under examination, DSB is still working on finding technical solutions to the problems facing the IC4 trains. This means that DSB does not have full overview of what it will require to complete the trains. DSB's expectations that the remaining elements of the effort can be implemented within the financial framework defined for the procurement are based on uncertain evidence and only partially documented.

Towards the end of 2016, DSB decided to limit deployment of the IC4 trains based on progress made so far, and therefore DSB now has to rely on alternative and older train models, which increases the risk that DSB will be unable to deploy the necessary number of trains.