Zeitschrift: Swiss express : the Swiss Railways Society journal
Herausgeber: Swiss Railways Society
Band: 5 (1997-1999)
Heft: 7

Artikel: High speed trains to Switzerland. Part 5, SBB tilting trains (Der Bahn 2000 Neigezug fur [i.e. für] die SBB)
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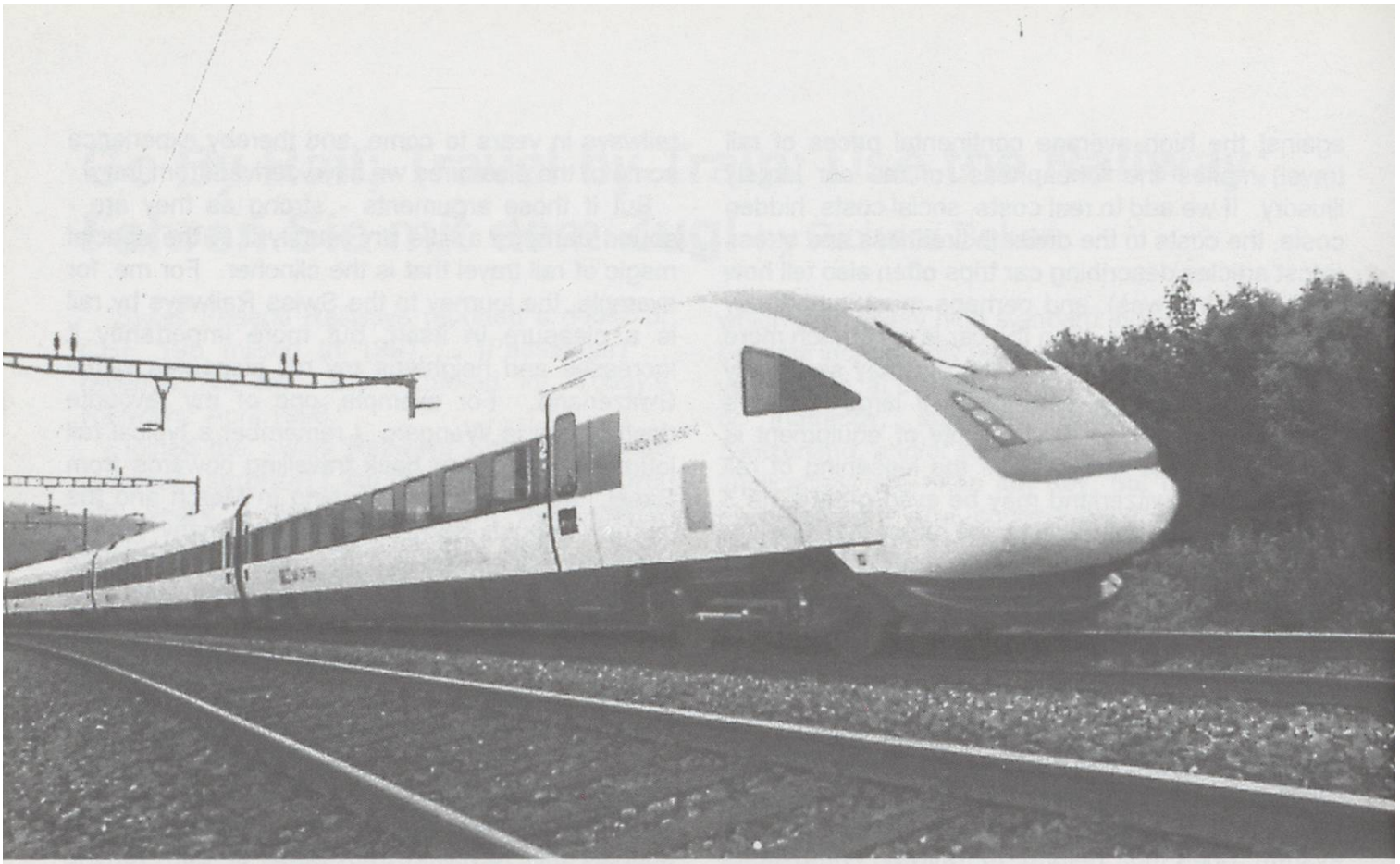
DOI: https://doi.org/10.5169/seals-854539



High Speed Trains to Switzerland; part 5

SBB tilting trains (Der Bahn 2000 Neigezug fur die SBB)

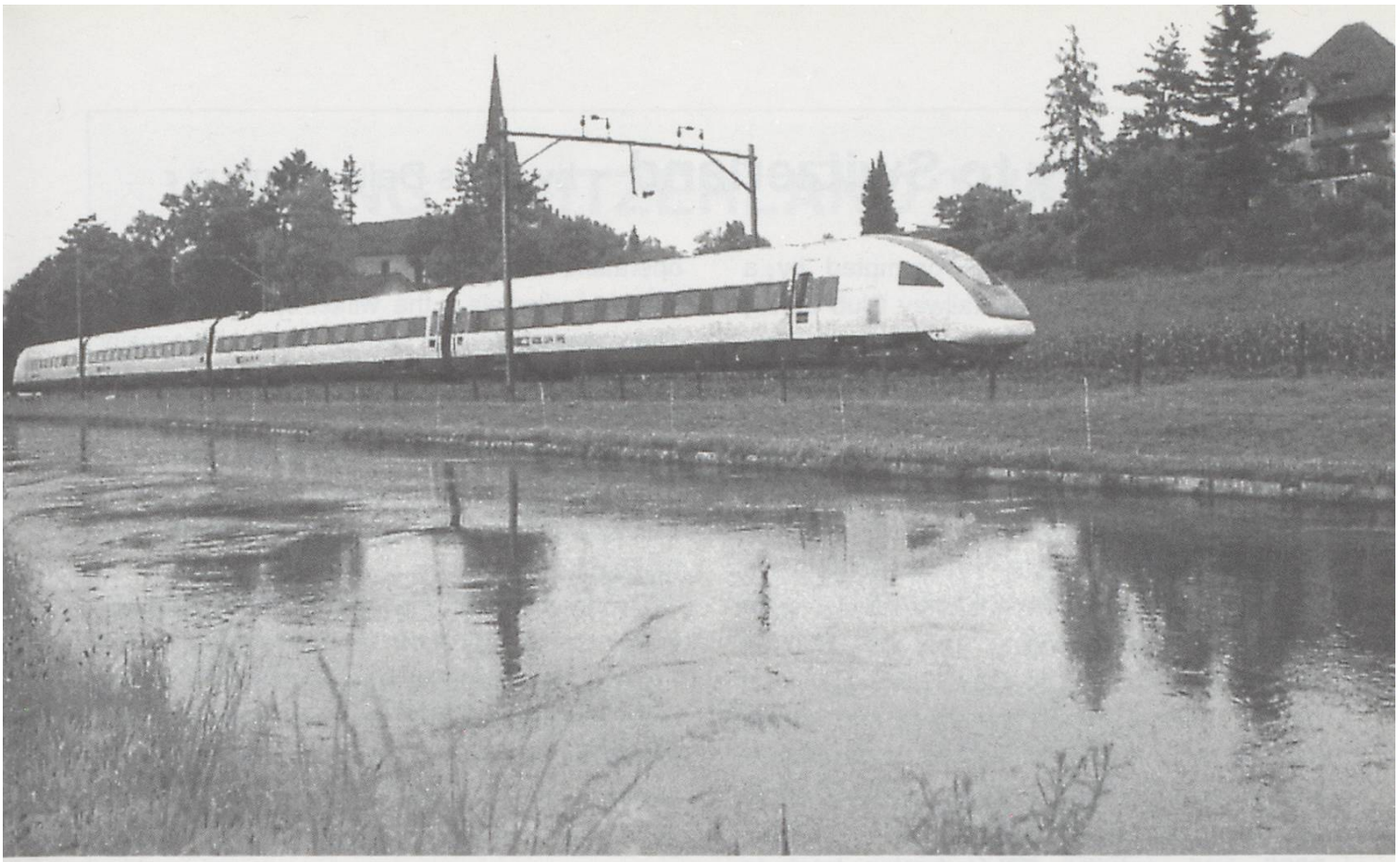
To conclude our series ***Peter Marriott*** *provides information about the eagerly awaited SBB tilting trains*

The Bahn 2000 Rail and Bus Plan agreed by the Swiss people in 1987 intended to offer "faster, more frequent, more direct and more comfortable" nation-wide public transport. The basic railway improvements would be based on six major junctions on the Swiss network - Bern, Biel, Basle, Lausanne, Lucerne and Zurich - providing a maximum journey time of one hour between each neighbouring junction. The original estimate of the cost of the infrastructure (new and improved lines) and rolling stock introductions (mainly conventional trains) was SFr 5400 million. Five years later it had become apparent that the cost of the project was grossly underestimated (perhaps by half!). A rethink was necessary and infrastructure and rolling stock needs were reconsidered against a background of the AlpTransit project and technical advancements in rolling stock technology.

Some of the main changes to the Bahn 2000 Plan were;

1. New lines would now only be built where additional capacity was required. This included the Mattstetten and Rothirst line which is on one of the country's busiest stretches of main line. The building of some new lines were postponed, for example, Zurich Flughafen to Winterthur but the elimination of bottlenecks (e.g. between Zurich Hauptbahnhof and Thalwil) would still be given priority.
2. Double decker Inter City carriages would be built to provide additional seating capacity. Compared with conventional single deck carriages the building and maintenance cost per seat was lower.
3. "Electronics before concrete" became the new philosophy. The introduction of new trains would take precedence over mammoth track rebuilding projects.
4. Tilting trains would be ordered. These would provide reduced travelling times with minimal infrastructure rebuilding costs. It was estimated that the introduction of these trains would reduce the infrastructure expenditure by SFr 500 million.

The Doppeldecker carriages were introduced to the Swiss network in 1997 and will be the



subject of a feature in a future issue of Swiss Express.

In July 1996 an order was placed with the Intercity Neigezuge SBB consortium for 24 trains at a cost of SFr 497 million. The consortium comprises ADtranz (electrical equipment and project leader), FIAT-SIG (bogies and tilt equipment) and Schindler Waggon (trainbodies). Tilting trains cost approximately 10% more than conventional trains per seat.

Each train will consist of seven carriages; two driving end seconds, two second carriages, one first with restaurant, one first carriage and one first including a luggage compartment. The total seating is expected to be 457 of which 131 will be first class. The three first class carriages will be located at the centre of the train. In addition to an open layout various compartments will be installed in the first carriages to accommodate business meetings and/or a change to second class where traffic demands. Disabled passengers can be accommodated in the first open carriage.

For maintenance the trains will be capable of being divided into two units. The electric tilting mechanism has a maximum tilt of 8°. The bogies use body-controlled radial steering system which reduces wear and tear and extends the periods between re-profiling of wheelsets. The pantographs feature an additional tilting mechanism to keep the pantographs in a vertical position for correct current collection. The electrical equipment is distributed symmetrically in the two half-trainsets. A total of eight asynchronous motors will power the trains to a maximum of 200km/h.

A four car test train is planned to begin trial in summer 1998 with the first production trains being delivered from May 1999 to May 2001.

The first 24 tilting trains will be used between Geneva, Lausanne, Biel, Zurich and St Gallen. They are envisaged to be introduced to the timetable in 2001 reducing the journey time between Geneva and St Gallen by 20 minutes. By 2005 a further 11 tilting trains are expected to have entered service on the Geneva/Zurich/St Gallen and Geneva/Biel/Basle routes.

My thanks go to Martin Reichenbach of BLS for some of the information in this article.

SBB tilting train facts and figures

Maximum speed	200 km/h
Gauge	1435 mm
Supply voltage	15 kV ac (Switzerland)
Weight in running order	355 t
Body width	26.8 metres
Overall length	187.6 metres
Seats	457
Number of trains	24 (first order)
Production	1998 - 2001