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Switzerland, Signalling, and Scenery - Part 2

of Ian Moore's report on the IRSE Conference in Switzerland

New Albula tunnel; a conveyor belt loader and yellow ventilation pipe.

All photos: Ian Moore all taken on 1 June 2018 except where shown.

(Part 1 appeared in our last issue)

At the end of Part 1 we left the Convention party travelling through the GBT (Gotthard Base Tunnel).

Upon arrival at Biasca, we were taken to the 'Railpark' where we were welcomed by the Mayor. We were given various demonstrations of new technology for the GBT and elsewhere, and then taken to a lecture theatre where we received a comprehensive lecture on how various types of emergency within the GBT would be dealt with. Finally, to our surprise, we were taken through a mocked-up cross passage into a mocked-up tunnel, to pretend that we were being evacuated from a burning train and waiting for a rescue train! This was the facility used to train the huge numbers of train crew that might have to implement an evacuation for real some day. The estimate is that a passenger train would only have to be evacuated in this way - rather than from a Rescue Station or after exiting the tunnel - once in every 20 years. An equivalent emergency has not occurred in the LBT in 10 years of operation, which gives further confidence in the prediction! There was a huge amount of detail for us to absorb as regards the safety management of the tunnel; how, for example, the spacing of the trains was managed so that, if an emergency befell a freight train, a following passenger train would have not passed the next crossover location to its rear (there are two, near the Rescue Stations) and could be routed through the other running tunnel, it not being considered desirable to have to reverse a train. Also, where passengers were being evacuated – either at a Rescue Station or elsewhere – positive pressure ventilation and the opening of doors into and between the running tunnels, would be controlled so as to avoid smoke inhalation.

For our next visit we were taken to the Gotthard Line Operations Centre at Pollegio near the southern entrance to the GBT. From an elevated viewing gallery we were able to watch the controllers dealing, not only with all aspects of

safety and operational management of the GBT, but also the signalling and infrastructure for much of southern Switzerland; this being one of only four similar centres run by SBB. We then had a demonstration of the use of Virtual Reality headsets for staff training, which was quite fun if initially disorientating!

Transfer to the RhB

The next day, the members and guests relocated from Lugano to Pontresina. This started with a coach journey (replicating the route of Rhätische Bahn's (RhB) own coach link). Crossing almost immediately into Italy we skirted Lake Como and later paralleled the Italian State Railways Valtellina route to Tirano. After a bit of time to explore we joined one of the two RhB Bernina Line trains that had additional reserved coaches attached for our use.

Coincidentally, the 1977 Convention that I attended had also visited Pontresina and, on that occasion, we travelled by special train to Le Prese and back. In those days the Bernina Line had open-platform coaches, which were very much enjoyed in the sunshine on the way out, although unseasonably early cold and snow on the return journey (it was September) drove us inside! I was waiting to see how much the glacier at Alp Grüm had shrunk since then – quite a bit it seemed. After a night at Pontresina – the resort had been opened specially for us – the members joined a special train that ran through the Albula Tunnel to Bergün, where we visited the Albula Railway Museum. This had many fascinating exhibits including signalling equipment – some of which we saw as new in 1977 but is now retired! Control of the entire RhB is now from a centre at Landquart, that in function essentially replicates the four SBB centres mentioned earlier. An explanation was given of the implications of the Bernina and Albula Lines (south of Thusis), having been designated a UNESCO World Heritage Site.

In the first part of this article it was explained how

ERTMS (European Rail Traffic Management System), of which ETCS (European Train Control System) is part, is providing a standardised system to facilitate interoperability across Europe. The concept is being carried a little further with the development of ZBMS – in which the RhB is playing a leading role - that will fulfil a similar role on the Swiss ‘Non Interoperable Railways’ - generally narrow gauge - using ETCS hardware with a view to delivering the equivalent of ETCS L1 LS to these lines. So if, for example, the RhB needed to hire a train from the Zentralbahn it would come fitted with a compatible system! Both of those railways already use systems from Siemens that could potentially achieve ZBMS compliance.

We then visited the north end construction site for the new Albula Tunnel at Preda. This parallels the original Albula Tunnel, opened in 1904, which is now suffering serious degradation. Not much more expensive than a complete reconstruction involving a prolonged closure, building the new tunnel avoids most of the disruption and results in a new tunnel with the old one then having its track removed and converted to an emergency access route with new cross passages being provided. Both old and new tunnels are, or will be, single track although, when the New Tunnel opens in 2021, it will have two block sections rather than one, enabling two trains to follow each other through the tunnel. The attention to the environment and to the use of extracted material is really quite amazing. After sorting by cleanliness and particle size, it is used as aggregate in the concrete for the project and as fill for widening an embankment as part of double tracking between Samedan and Bever. In fact, the project would be a prolific source of building material if it were not miles from any possible users! Only the minimum amount of material is dumped – on a piece of land at Preda. That has to be fenced off so as to prevent wild deer from eating the grass used to stabilise the site!

Spoil taken from the south end to the processing plant at Preda and the fill taken to Bever passed through the tunnel, when we were there, hauled by RhB locomotives 605 ‘Silvretta’ and 610 ‘Viamala’. Although modern looking it was a surprise to learn that they were built in 1953 but modernised about 1990! Later we were driven into the New Tunnel in minibuses – amazingly they stopped blasting for the day to enable our visit! When the old tunnel was built, major problems were encountered in a 60 metre zone between two tectonic plates, with water ingress and sand runs, so they were prepared for it this time, the ground being frozen beforehand.

That was a really interesting day although I was jealous of my wife, Lynda, and the other guests who had travelled by train to Bernina Diavolezza, gone up on the cable car and walked on the Pers Glacier!

That evening, the Convention finished with a celebratory dinner. The next day we all set off for home having had a wonderful and most interesting time! ☺

“Ian would like to say that references to Indusi in Part 1 should more correctly have been to Signum. He apologises for any confusion caused.”

Indusi is a generic description whilst Signum is the name of the actual product used in Switzerland. I inadvertently used both names in the article which may have led to some confusion. The fault is entirely my own and I apologise to you and the SRS for that.



1. Gotthard Line Operations Centre at Pollegio.
2. New Albula Tunnel: the zone where tectonic plates meet with shotcrete tunnel linings over reinforcing hoops and a temporary covering. Note the yellow ventilation pipe and black waste conveyor belt.
3. New Albula Tunnel: Preda waste processing plant.
4. RhB locomotive 610 at Preda waste processing plant.