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## Inching Along Through the Lötschberg Tunnel

By George M. Hoekstra

*Photographs by the Author*

Your *Swiss Express* correspondent was invited to visit the current work in the Lötschberg tunnel as only one of a select group of 15 journalists; this shows you how esteemed this publication is by the Bern-Lötschberg-Simplon. So on the night of 14 November 1994 we gathered at Kandersteg for a briefing on the work, as well as our personal safety during the visit to the tunnel works.

### Background

One of the terms of the transit-treaty between Switzerland and the European Union, the aim of which was to keep lorries of over 28 tonnes weight off Swiss roads, was that Switzerland must provide a pathway for *Huckepack* trains. Although these trains now run to a regular timetable over the Gotthard route, they are limited to carrying lorries with a maximum

Lowering the track base with hydraulic hammer drill. Note how close the running tracks are to the work site.

corner height of 8.8 m. The EU however specifies lorries with a corner height of 4.0 m. The forthcoming *NEAT* tunnels and their feeder routes will be able to do so in the early years of the next century, but what about the present? The almost 100 year old Gotthard route with its many tunnels on both approaches would be prohibitively expensive to adapt, quite apart from the fact that it is already saturated.

The Lötschberg-Simplon line is a better proposition: more capacity and with approaches which for the greater part have already been adapted for the 4.0 m corner measurement during the construction of *Bahn 2000* and the double tracking of the BLS. The only major obstacle left here is the Lötschberg tunnel itself, almost 15 km long, which cannot be deliberately blocked at any time.



Several solutions were proposed, but since all construction had to be done with the full existing traffic running through at all times, these were rather limited. The final solution involved lowering both tracks 100 mm, as well as moving the right hand track (as seen from Kandersteg) over by 100 mm. This will allow for a *Huckepack* train with 4.0 m corner height lorries running on the left hand track to pass normal outline trains running on the right hand track.

The BLS received the order to execute the work on 23 December 1993. Work started in the tunnel on the night of 2/3 January - not bad for a small railway company.

### **The visit**

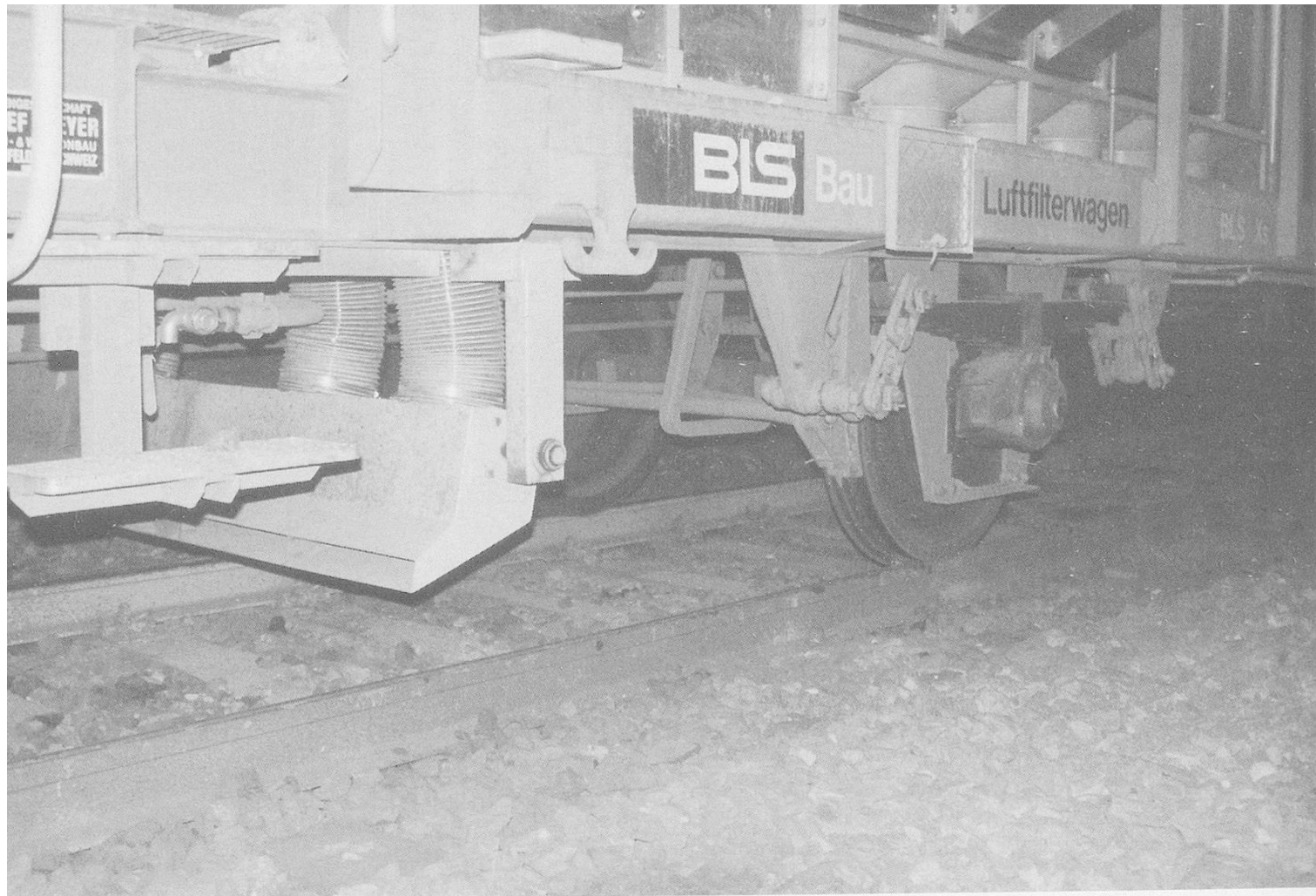
After the party donned white dust-protection gear and being handed ear plugs against the noise, we boarded the driving trailer of the 21:05 car transport train, which then put us off at Kilometer 9.9 (from Kandersteg). For this excursion we were joined by a delegation of top brass from the BLS, including the managing director, who were not afraid to get dirty, or even hurt!

Spoil is loaded into hoppers by conveyor belt. Note that the operator is wearing the special *Airstream* helmet. The safety officer wears dusk mask, noise protector and optical blinker for his radio telephone!

### **Conduct of the work**

Work in the tunnel is carried out from 22:00 Sunday to 07:00 Friday in three daily shifts. During this time about 550 m of track will have to be dealt with: a tight schedule in more ways than one since more than 170 trains pass within inches of the working area every day.

The right-hand track is worked on initially. The track is cut into sections 18 m long, lifted and removed from the tunnel. Useable sleepers are stored. Then the old ballast is removed and the rock floor of the tunnel is lowered. All this spoil is loaded by a conveyor belt into waiting hopper wagons. The work is extremely dusty, so apart from the operators wearing special *Airstream* masks and other personnel wearing face dust masks, the BLS has installed a special vacuum cleaner wagon, capable of filtering 120,000 cubic metres of air each eight hour shift. No less that 12 kilogrammes of very



fine particles are filtered out during a weekly turn. Furthermore, special low-sulphur diesel fuel is used and all diesel engines are fitted with special catalytic filters as well as soot-collecting exhaust filters.

New ballast from the Blausee quarry is brought in and the sleepers relaid. The new rails are laid in 108 m lengths and continuously welded. The completed track is tamped and aligned mechanically in the usual way. All this has to be carried out while traffic continues on the other track.

### **Safety**

The most important man on the site is thus the Head Safety Officer. He controls everything from his control post on the site, situated in one of the small safety dugouts cut into the side of the tunnel. He is connected by three independent links, two telephone lines and one radio circuit, with the signalboxes at Goppenstein and Kandersteg. All trains in the tunnel are indicated on a special panel. Special *Minimel* contacts activate horns and flashing lights 25 seconds before the train arrives. This gives workers ample time to reach one of the small

The BLS *Luftfilterwagen* (air filtering wagon). Note the air intake on the bottom, where most of the fine dust comes from (scraping ballast and hydraulic hammers). Intake/output: 4,200 litres of air per second!

(3 persons) and large (12 people) dugouts in the tunnel wall.

Most of the workers, however, retreat to the other side, that is to say onto the track that is being worked on. Clearances are so close that if you are in a dugout whilst a train is passing, it is as if the dugout has been closed by a metal door.

Trains pass at a reduced speed of 50 km/h (roughly 30 mph), but it still seems very fast.

Away from the working lights the darkness in the tunnel is so intense that an individual, dressed as we were in pure white, completely disappears after some three metres! Taking photographs is very tricky, there is absolutely no reflection from the walls, which are covered with brake dust, rust and mould, so it is necessary to increase the exposure quite a lot.

Together with the safety staff of seven to nine persons, about 25 individuals work a shift.

As the distance from the tunnel exits are considerable, snacks are brought along in rucksacks, and a full meal is served at the end of the shift. A "taxi-service" brings in the new shift and collects all the workers from the old one along the way. Our "taxi" though, was another car-train which made a special stock to pick us up. It was a huge step up into the driving trailer from the lowered tunnel floor.

Thank you BLS for an interesting, well organised and safe excursion.

The most important man on the site; the head safety officer, together with his special equipment housed in one of the smaller dugouts in the tunnel wall

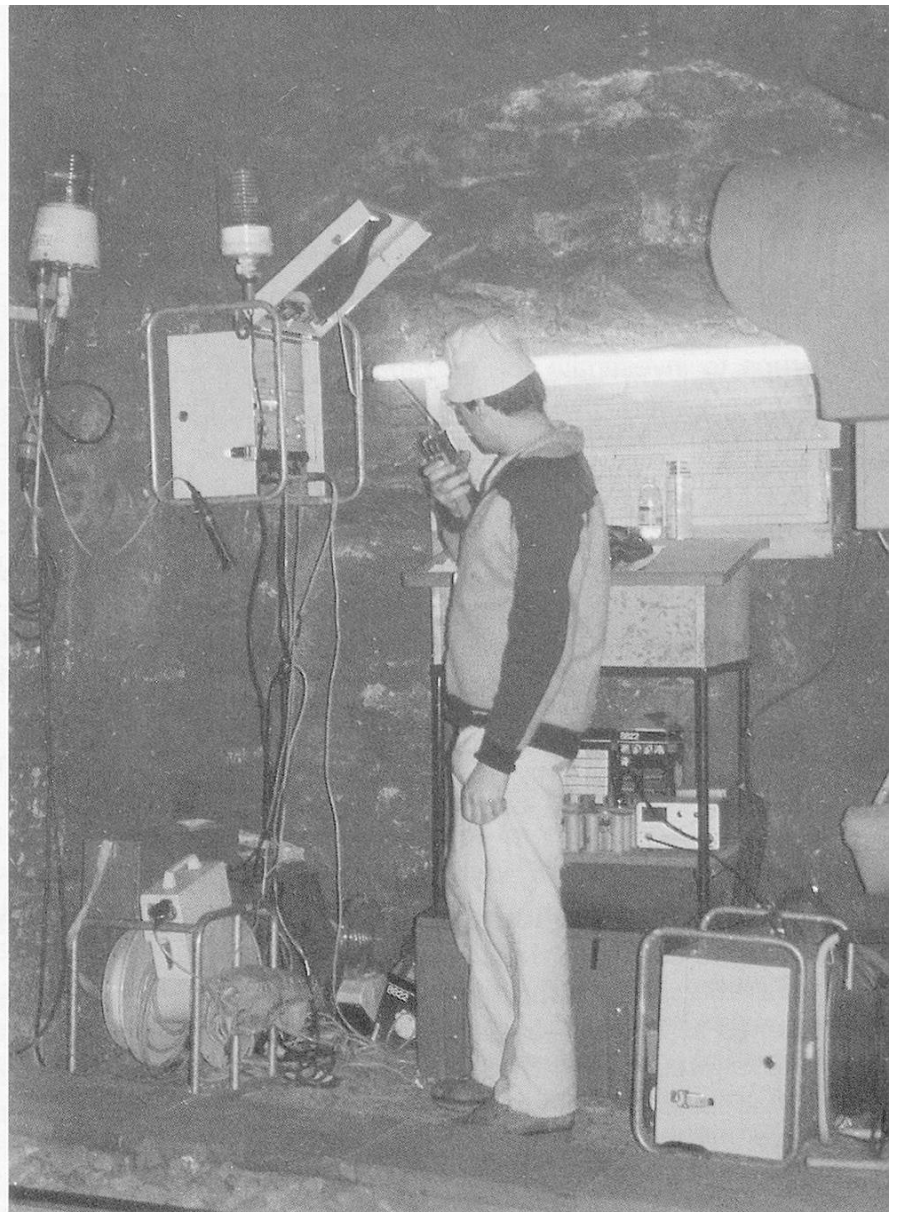
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### Early 2-axle Vans

*Continued from page 25*

bably a concession to the toy market. Another concession probably accounts for the height inaccuracy, virtually all of which is accounted for by a too-large gap between the axleboxes and the bottom of the solebars, thereby accounting for the too-high buffers as well. By no means unusually for Lima, the centre of the roof is marred by a large moulding pip. All the inscriptions are very fine (some are too small) and easily legible. The van is numbered 20 85 114 4 241-9 which is correct.

The Liliput van is a little short in the body, a little narrow and a little high, although the buffer height is near enough correct. The van doors are too narrow, by about 1.5 mm. The end platform handrails and handbrake are a one-pieces nylon moulding, as was usual for Liliput, making the handrails too heavy. In contrast to the Lima van, the ventilator covers are inserted from the outside, and look far more



realistic. Inscriptions are clear and well done. The number carried is 20 85 111 6 977-2, which is also correct. The Bachmann reintroduction is better finished than the original Liliput van and carries slogans on the doors - German on one side, Italian on the other. The number is 20 85 114 4 624-6, once again, correct.

The two underframes show a remarkable similarity, considering the difference in the ages of the models. The Liliput axleboxes are the older oblong type, with a Swiss cross on each, while those on the Lima van are the more modern round type. On both vehicles, the steps below the van doors and the steps to the platform are set too far in, generally by about 2 mm, and the brake shoes are set too far out, nowhere near in line with the wheel treads.

As I said at the beginning, rebuilding freight vehicles is not something I have done to any great extent. Replacement of the plastic handrails by brass ones would improve the appearance, but the most effective change that can be made to any freight vehicle is to weather it. After all, how many clean wagons do you see, especially when the wagon is as old as these.