

## NOTES ON THE OPENING-UP AND RETIMBERING OF No. 3 VERTICAL SHAFT, GELDENHUIS DEEP, LIMITED.

---

T. McALPINE,

*Manager, Geldenhuis Deep, Ltd.*

---

On Sunday, the 17th April, 1932, a severe earth tremor was felt over the whole property, particularly in the vicinity of No. 3 Shaft.

Shortly afterwards it was found that a portion of No. 3 shaft from above No. 2 Station down to above the bend, a distance of 135 ft., was wrecked. The shaft intersects the South Reef 23 ft. below No. 2 Station. Above No. 2 Station the north wall of the shaft was sound, but the south wall was badly broken. A sett of bearers was put in 16 ft. above the station and the re-opening of the shaft commenced.

When the floor of No. 2 Station was reached, it was found that the north and south walls had crushed tight together and it was ascertained later that this condition continued for a depth of 60 ft. Owing to the floor of No. 2 Station having caved the trouble that faced us was to find some means of supporting the north side of our shaft setts, in order to support the south wall of the shaft, which was still heavily broken.

Fortunately the hanging wall of No. 2 Station was sound and it was decided to hang square timber setts through the station and as far down below it as the caved floor of the station extended. The square setting had to be carried down a sett in advance of the shaft timbers. The ground was so badly broken on the south side that we could only clean out for half a sett of shaft timber at a time, this being put in and securely blocked before the other two compartments were cleaned out and the other half sett completed. This system was carried on successfully right through the closed portion of the shaft.

The different sizes of timber used were as follows:—Wall plates, end plates and corner studdles 8 in. by 8 in., dividers and inside studdles 8 in. by 6 in. The setts were hung at 6 ft. centres, except in a few instances where the state of the rock would not allow this distance.

Owing to the heavy and broken condition of the ground that was exposed in the opening of the shaft, it was anticipated that the new timber might be subject to heavy pressure and trouble might be encountered in keeping the shaft timbers in a truly vertical position. It was therefore decided that the side and end walls of the shaft should be opened up enough to give 12 in. minimum clearance behind the timber and some system of lagging adopted that could be released in the event of excessive pressure being shown on the timbers.

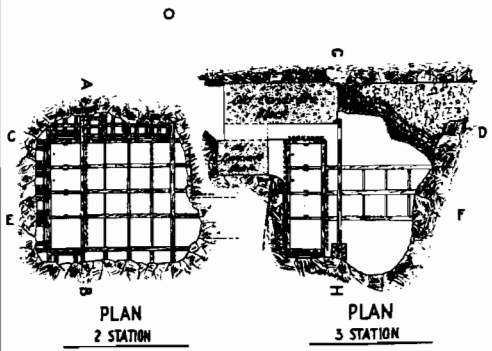
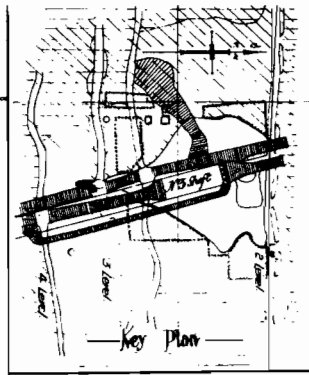
The type of lagging to support the ground between the setts was as follows:—6 in. by 8 in. timber checked at the end to the depth of  $\frac{3}{4}$  in. was cut and fitted vertically between and at the back of the setts, two on the north and the south side of each compartment and two on each end

piece. Behind the 6 in. by 8 in. lagging 9 in. by 3 in. deals were fixed horizontally 9 in. apart, and light blocking fixed where necessary to support the broken sides between the setts. The wider portions of the shaft, where the blocking was rather long, were further secured by utilizing the old timber recovered from the shaft and building it in the form of chocks between the setts and the walls of the shaft. Winding was resumed on 7th May, the total time of the stoppage being 20 days.

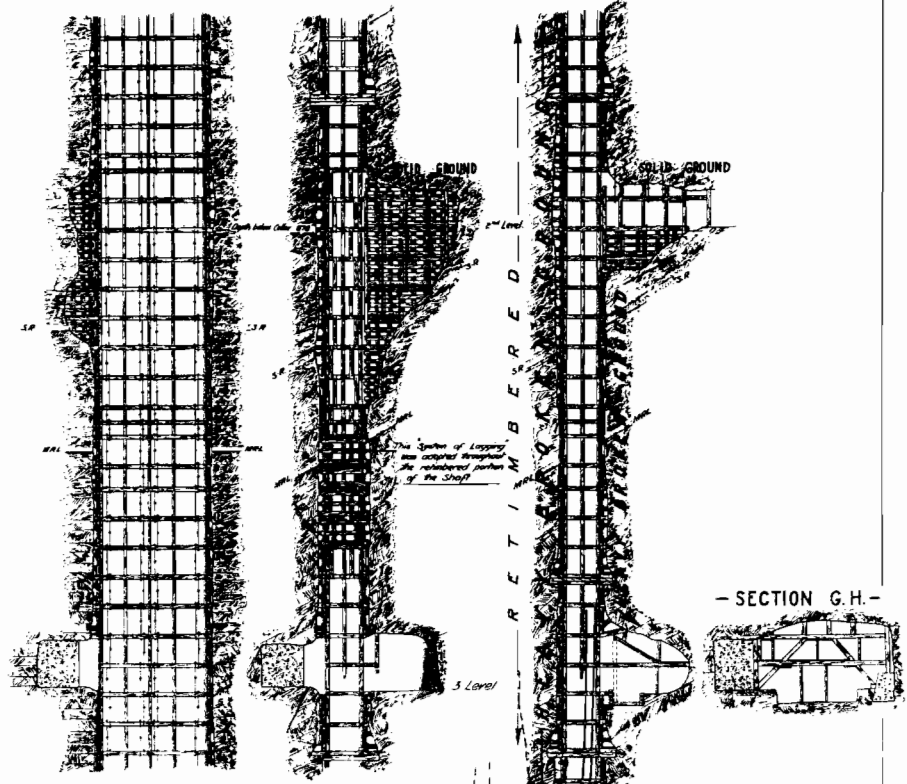
Contrary to our expectations, the timber at a later date showed no signs of excessive pressure, but on the 11th February of this year we had another severe pressure burst which brought a very heavy pressure on the new timber, putting the shaft at various points slightly out of plumb and bulging out the end and wall plates in places. Due to our system of blocking, this difficulty was easily overcome, the shaft being put in order with only nine hours' delay.

I am sure if we had not taken the precautions I have already mentioned, we would have had a repetition of the original damage to the shaft.

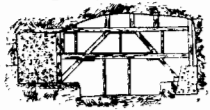
*22nd September, 1933.*



SECTION AB SECTION C.D. SECTION E.F.



SECTION G.H.



— Geldenhuis Deep L<sup>rd</sup> —  
 — Plan Showing Retimbering N<sup>o</sup> 3 Shaft —  
 — after pressure burst 47·4·1932. —

4 Level

