

Public Works (1897) Department.

G.O., No. 5402

DATED 10 June 1897

11/6/97

[Despatch Abstract.]

Accidents. Report from the S.E. II Circle
of two blasting — which occurred on the
29th March and 1st April 1897 in the 1st mile
of Illunigera main channel, Kistna
Northern D^o recorded.

SD
/K

10.6.97

Government { 1897 } of Madras.
PUBLIC WORKS.

} 1897.

Spare copies

JUNE.

Report from the Superintending Engineer, II Circle, of two blasting — which occurred on the 29th March and 1st April 1897 in the 1st mile of Muniyeru main channel, Kistna Northern division, recorded.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Establishment.

READ—the following paper :—

From Captain W. M. ELLIS, R.E., Executive Engineer, Kistna Northern Division, to the Superintending Engineer, II Circle, dated 17th May 1897, No. 147 S.E.

I herewith forward a report by the Sub-division officer, Muniyeru, enclosing also a report by the Engineer student K. R. Seshachariyar in immediate charge of the blasting works in the 1st mile, Muniyeru main channel. These reports refer to two blasting accidents which occurred on the 29th March and 1st April, resulting in the injuries of five men by the first accident and three by the second.

2. The accidents were reported promptly by the Sub-division officer on their occurrence, but the reports made were so incomplete that they were referred back for further information to the Sub-division officer. The further reports are now forwarded.

3. The first accident occurred through coolies attempting contrary to orders to clear out a "missfire" hole when fully tamped. I am not quite satisfied that sufficient care was taken to see that the coolies carried out the orders given, but it is easy to be wise after the event, and it was hardly to be expected that men seeing daily the results of blasting would be so foolhardy. I would therefore hesitate to impute blame to any one. The orders now given will, it is hoped, prevent a recurrence of such an accident.

4. The second accident is fully described and appears to have been caused by the spontaneous explosion of a missfire loaded some weeks and never discovered. The cause of the explosion is not understood fully, and a reference on the subject will be made to the maker's agents in India.

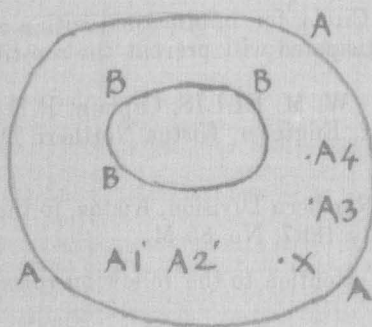
ENCLOSURES.

From the Sub-division officer, Muniyeru, to the Executive Engineer, Northern Division, Kistna, dated 7th May 1897, No. 47 E.

With reference to your Nos. 82 M., dated 1st May 1897, and 88 M., dated 4th May 1897, I have the honour to forward, herewith, the report of the Engineer student on the two accidents. Soon after the accidents took place, I also went to the spot and found that the first accident took place purely out of the carelessness of the coolies in not obeying the orders of the maistry.

When I saw the place soon after the second accident, the position of the bore-holes were as noted in the sketch at the margin.

The rock within the boundary line BBB was cleared to a depth of 2 feet from top, and that between the lines AAA and BBB to 1 foot deep from top on the 1st instant. Bore-holes were ordered to be made at points A₁, A₂, A₃ and A₄ in a ring at about the same distance about 9 inches from the face line BBB. The explosion was from the bore-hole X which was out of the line of A₁, A₂, A₃ and A₄. As no new bore-holes were made outside of the line A₁, A₂, A₃ and A₄, and as all bore-holes made and blasted the previous day should be along the line BBB, it is concluded that the bore-hole



X should have been charged some two months back when bore-holes were made all over the top of the rock and the top layer only blasted. Such old bore-holes are seen now all over the rock. This practice of making bore-holes indiscriminately has been discontinued long ago.

2. How the accident took place is noted below :—

The coolies were ordered to make bore-holes at A₁, A₂, A₃ and A₄ and they finished A₁, A₂ and A₄; when they laid on only a few strokes pretty hard at A₃ (the man with his jumper sitting over X which was not seen previously); the explosion took place from bore hole X. The man that was sitting over this with a stone for his seat, is the worst injured. He was thrown away from the place to a distance of 15 feet from the spot. The explosion took away a layer of 6 inches at top of the rock and the bore-hole, after this piece was removed, was 9 inches deep.

From the Engineer Student in charge of blasting rock at 0/3, to the Officer in charge, Muniyeru Sub-division, dated 6th May 1897.

I beg to report the following facts about the accidents which occurred in connection with blasting rock at 0/3 :—

The first of the accidents reported occurred on the 29th March at about 3-30 p.m., on the first rock at 0/3. I was not at the place when the accident took place, but I heard from the coolies themselves that both the gumasta on the work and the blasting maistry were there at the time. Missfire had occurred there during the previous evening and the tamping in the bore-hole had not been meddled with. We showed a new bore at a distance of 1½ feet from the old one and warned those working at and near it to be careful. On examining the place of accident and making enquiries about it, I found that the coolies, who had been asked to make a bore-hole at a distance of 1½ feet from the old one, began to clear the old hole itself, thinking that the hole was merely filled up and that the maistry was deceiving them. This the coolies themselves admitted on enquiry. Since work was going on at two other faces on the same rock and since the place of missfire was in the centre fit, the coolies took advantage of the maistry's going to the other coolies for a while and caused this accident.

In all five coolies were wounded—three very slightly and two a little badly. Their names are as follow :—

Chava Latchayya.

Bandara Ramadu.

Anjagoru Mangadu.

Kukkala P. Venkadu.

Do. C. Venkadu.

} These that made the bore only slightly hurt.

The second accident occurred on the first instant at 2-30 p.m., on the second rock at 0/3 in the place where I am forming a new face. The maistry and the gumasta were both upon the rock, though not at the very place at the time. After the accident had occurred, I went and made enquiries. That morning, I myself had examined the place of accident and had shown the positions for new bores. As far as I could see, I had not been able to discover any filled-up bore-hole there, and no missfire had occurred after we commenced work there for a new face. I therefore fully believe that the bore which exploded had not been made by us and that a missfire must have occurred some time ago (three months ago) there when the top layer was being removed. Accidentally, however, the new bore which I had shown was 1 foot away from the old, but completely filled-up bore, and although this was the case, probably, on account of midday heat and the vibrations which the blows of the jumpers working near must have set up the charge exploded. When this took place a cooly was actually sitting on the old bore-hole.

Three were injured, all rather badly, and one severely. They are—

One Etha Hussain

Koniguntla Jaggayya

Hakanaborna Narayana, severely wounded.

} was sitting on the hole.

I sent away all to Jaggiapet.

Copy forwarded to the Superintending Engineer, II Circle, for information, with a copy of this office No. 85 M., dated 4th May 1897, which it is anticipated will prevent the repetition of such accidents.

(Signed) W. M. ELLIS, Captain, R.E.,
Ex. Engineer, Kistna Northern Divn.

15th May 1897.

From Captain W. M. ELLIS, R.E., Executive Engineer, Northern Division, Kistna, to the Sub-division officer, Muniyeru, dated 4th May 1897, No. 85 M.

You are requested to issue such orders as will ensure attention to the following rules when blasting rocks in your sub-division :—

Storage.—(1) The dynamite or other explosives are to be stored in a place apart, and the detonators in another separate place.

(2) It is not necessary to store the detonators in a magazine; but wherever they are stored, it must be in a box or boxes and in a regularly appointed place, not here and there.

(3) The dynamite boxes should never be left standing exposed to the direct rays of the sun, and the same applies to the cartridges.

Blasting.—(1) The holes must always be charged in the presence and under the orders of the Engineer or subordinate in immediate charge of the work, and the charges fired immediately after the tamping of the holes has been finished.

(2) Not more than 10 shots shall be fired simultaneously.

(3) After firing, 5 minutes should be allowed to elapse before approaching the spot in case one charge might have failed to fire and merely delayed action through fault in the fuze.

(4) Immediately on approaching the place after firing, the new face is to be cleaned off and carefully examined to see if any blast has missed fire or any hole be found on the new face. Should any be found, it should immediately be drowned with water. A missfire hole should be plugged carefully with a wooden plug and a tar mark drawn round the hole. The plug is not to be hammered into the hole, but put in by hand pressure only. No new hole to be commenced nearer to this than 2 feet.

(5) When a missfire has occurred, the subordinate in charge must remain on the work as long as work is going on until the missfire has been blasted out, and in such a case jumping within 20 feet of the place must not be permitted after 12 noon on any day until the missfire hole has been removed.

(6) No attempt must be made to remove the tamping from a hole that has missed fire or is charged, either to admit water for drawing or for any other purpose. This does not refer to the clearing out with the fingers of the top inch of tamping which will be necessary for inserting the plug.

(7) No inserting charges should be commenced after 5 P.M., in the ordinary course. Those on the spot may, however, give special orders in special cases.

General remarks.—Should any of these rules be found impracticable or modification or addition seem advisable, the Sub-division officer must take such action as may be necessary reporting the case for confirmation at the same time.

No. 539 K.N.

Forwarded to the Chief Engineer for Irrigation for information.

2. The first accident was undoubtedly due to carelessness of the workmen—the result of familiarity with the work!

3. The cause of the second accident will probably never be satisfactorily explained, but the opinion of the manufacturers will be of interest.

4. A further report will be made if it is found that any of the workmen have died from their injuries.

21st May 1897.

(Signed) W. M. ELLIS,
for Supg. Engineer, II Circle.

ORDER—No. 540 I., dated 10th June 1897.

Recorded.

(True Extract.)

Under Secretary to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle.

Exd. T. K. Narayana Aiyangar.

Public Works (1897) Department.

CURRENT No. 178Kd 5334

*Report of accident in the Mangayam
Blasting work station*

From *Kapt. W. C. Baddley*
Superintending Engineer
II Circle.

Order

Recorded.

No. *539/K.N.*

Dated *21 May 1897*

Received *24 do*

Registered *5.6.97*

Enclosures *+ 3*

Spare copies

SUBJECT.

*Two blasting miss-
fires in Mangayam blas-
ting works. Reporting
about the ———.*

To

*The Chief Engineer
Supg. Eng. II*

*less
25/5/97*

*less
24/5/97*

25/5/97

BACK PAPERS.

FURTHER PAPERS.

Letter from Capt Wm. M.
R. Executive Engineer, Richmond Northern
Division, to the Superintending Engr.
2nd Circle, Vol 147 S.E. dated 17-5-99.

I herewith forward a report by the Sub-Division Officer, Muzam, enclosing also a report by the Engineer Student K. R. Seshachariyar in immediate charge of the blasting works in the 1st mile, Muzam main channel. These reports refer to two blasting accidents which occurred on the 29th March and 1st April resulting in the injuries of five men by the 1st accident and 3 by the second.

2. The accidents were reported promptly by the Sub-Division Officer on their occurrence, but the reports made were so incomplete that they were referred back for further information to the Sub Div. Officer. The further reports are now forwarded.

3. The 1st accident occurred through coolies attempting contrary to orders to clear out a "missfire" hole when fully tamped.

I am not quite satisfied that sufficient care was taken to see that the coolies carried out the orders given, but it is easy to be wise after the event, and it was hardly to be expected that men seeing daily the results of blasting would be so fool hardy. I would therefore hesitate to impute blame to any one. The orders now given will, it is hoped, prevent a recurrence of such an accident.

4. The second accident is fully described and appears to have been caused by the spontaneous explosion of a misfire loaded some weeks and never discovered. The cause of the explosion is not understood fully and a reference on the subject will be made to the makers agents in India.

N^o 539 K.M.
21.5.97

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Chief Engineer for Brigation
for

Encl 1

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J. H. M.
Executive Engineer
for S. & G. Engineer.
C. C. C.

20.5.97

Letter from Captain W. M. Ellis R.E. Ex-
-cutive Engineer Northern Division India
to the Sub Division Officer Muzeyar
No 85 m dated 4.5.97

You are requested to issue
such orders as will ensure attention to the
following rules when blasting rocks in
your Sub Division.

Storage

- (1) The Dynamite or other explosives
are to be stored in a place apart and the
Detonators in another separate place.
- (2) It is not necessary to store the
Detonators in a magazine but wherever
they are stored it must be in a box or boxes
and in a regularly appointed place not
here and there.
- (3) The dynamite boxes should never
be left standing exposed to the direct
rays of the sun and the same applies
to the cartridges.

Rho II
17872

(1) The holes must always be charged in the presence and under the orders of the Engineer or subordinate in immediate charge of the work and the charges fired immediately after the tamping of the holes has been finished.

(2) Not more than 10 shots shall be fired simultaneously.

(3) After firing, 5 minutes should be allowed to elapse before approaching the spot in case one charge might have failed to fire and merely delayed action through fault in the fuse.

(4) Immediately on approaching the place after firing the new face is to be cleaned off and carefully examined to see if any blast has missed fire or any hole be found on the new face. Should any be found it should immediately be drowned with water. A missfire hole should be plugged carefully with

Blasting

4.88
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(5) When a missfire has occurred the subordinate in charge must remain on the work as long as work is going on until the missfire has been blasted out and in such a case jumping within 20 feet of the place must not be permitted after 12 noon on any day until the missfire hole has been removed.

(6) No attempt must be made to remove the tamping from a hole that has miss-fired or is charged, either to admit water for drawing or for any other purpose.

This does not refer to the clearing out with the fingers of the top inch of tamping which will be necessary for inserting the plug.

(7) No inserting charges should be commenced after 5 P.M. in the ordinary course. Those on the spot may however give special orders in special cases.

Should any of these rules be found impracticable or modification or addition seem advisable, the Sub Division Officer must take such action as may be necessary reporting the case for confirmation at the same time.

General
Remarks

P.W.
5/34/97

589

Letter from Engineer Student in charge of Blasting rock at $\frac{2}{3}$ to the officer in charge Munger Sub Division dated 6th May 1897

I beg to report the following facts about the accidents which occurred in connection with blasting rock at $\frac{2}{3}$.

The first of the accidents reported occurred on the 29th March at about 3.30 P.M. on the first rock at $\frac{2}{3}$. I was not at the place when the accident took place but I heard from the Coolies themselves that both the Gunasta on the work and the blasting Maistry were there at the time. Missfire had occurred there during the previous evening and the tamping in the bore hole had not been meddled with. We shewed a new bore at a distance of $1\frac{1}{2}$ feet from the old one and warned those working at and near it to be careful. On examining the place of accident and making enquiries about it

it I found that the coolies who had been asked to make a bore hole at a distance of $1\frac{1}{2}$ ft from the old one began to clear the old hole itself thinking that the hole was merely filled up and that the maistry was deceiving them. This the coolies themselves admitted on enquiry. Since work was going on at two other faces on the same rock and since the place of miss fire was in the centre pit, the coolies took advantage of the maistry's going to the other coolies for a while and caused this accident.

In all five coolies were wounded, three very slightly and two a little badly. Their names are as follow:-

Chava Latchayya

Bandara Ramadu

Anjapogu Mangadu

Dukkala P Venkadu

Do

C. Venkadu

} These that
made the bore
only slightly
hurt

689
The second accident occurred on the 1st instant at 2.30 P.M on the second rock at $\frac{2}{3}$ in the place where I am forming a new face. The maistry and the gumasta were both upon the rock though not at the very place at the time. After the accident had occurred I went and made enquiries. That morning, I myself had examined the place of accident and had shown the positions for new bores. As far as I could see, I had not been able to discover any filled up bore hole there and no miss fire had occurred after we commenced work there for a new face. I therefore fully believe that the bore which exploded had not been made by us and that a miss fire must have occurred some time ago (3 months ago) there when the top layer was being removed. Accidentally however the new bore which I had shown was 1 foot away from the hole old but completely filled up bore and

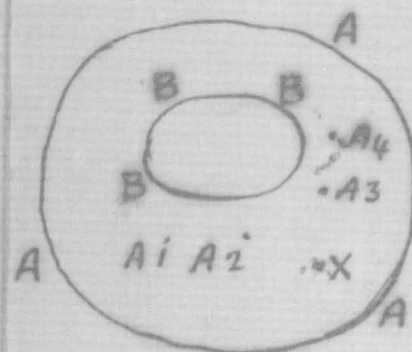
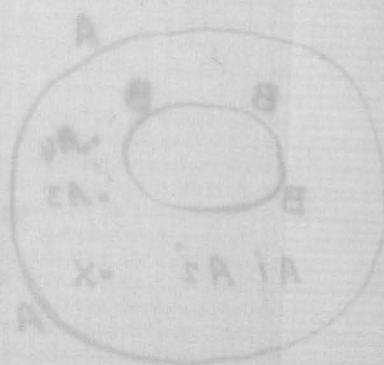
and although this was the case probably on account of the midday heat and the vibrations which the blows of the jumpers working near must have set up the charge exploded. When this took place a cooly was actually sitting on the old bore hole.

Three were injured all rather badly and one severely. They are

1 Etha Hussain	} was sitting on the hole
Koniguntla Jaggayya	
Hakharabornu Nayana	} severely wounded

I sent away all to Jaggiapet

W. 5534/97



Letter from the Sub Division Officer
Muneguru, to the Executive Engineer
Northern Division Kistna No 472 dated
7-5-97

With reference to your Nos
82 m dated 1-5-97 I have the honour
88 m dated 4-5-97
to forward herewith the report of the
Engineer Student on the two accidents.
Soon after the accidents took place, I also
went to the spot and found that the
first accident took place purely out of
the carelessness of the coolies in not
obeying the orders of the maistry.
When I saw the place soon after the
second accident, the position of the bore
holes were as noted in the sketch at the
margin

The rock within the boundary line
B. B. B was cleared to a depth of 2 ft
from top and that between the lines
A. A. A and B. B. B to 1 ft deep from
top

top on the 1st instant. Bore holes were ordered to be made at points A_1, A_2, A_3 and A_4 in a ring at about the same distance about 9" from the face line B. B. B. The explosion was from the bore-hole x , which was out of the line of A_1, A_2, A_3 and A_4 .

As no new bore holes were made outside of the line A_1, A_2, A_3 and A_4 and as all boreholes made and blasted the previous day, should be along the line B. B. it is concluded that the bore hole x should have been charged some 2 months back when boreholes were made all over the top of the rock and the top layer only blasted. Such old bore holes are seen now all over the rock. This practice of making boreholes indiscriminately has been discontinued long ago.

How the accident took place is noted below—

The

88P
The coolies were ordered to make bore holes at A_1, A_2, A_3 and A_4 and they finished A_1, A_3 and A_4 ; when they laid on only a few strokes pretty hard at A_2 (the man with his jumper sitting over x which was not seen previously); the explosion took place from bore hole x . The man that was sitting over this with a stone for his seat, is the worst injured. He was thrown away from the place to a distance of 15 ft from the spot. The explosion took away a layer of 6" at top of the rock and the bore hole after this piece was removed was 9" deep.

~~Ad.~~

Copy forwarded to the Superintendent Engineer II circle for information with a copy of this office No. 10 dated 4-5-97. which it is anticipated will prevent the repetition of such accidents.

W. H. M. Captain R. E.
A. P. 15.5.97 Executive Engineer S. N. S. M.

Co 540 22/10/1897

MR.

Will you kindly
arrange to have
the sketch in the S. 2.0.
letter No. 47 & d/7.5.97
inserted in the
accq: 80 copies of
the printed Co.

99/6

25/6/97

Or J

WLL

25/6/97

Very many thanks

Please attend to them

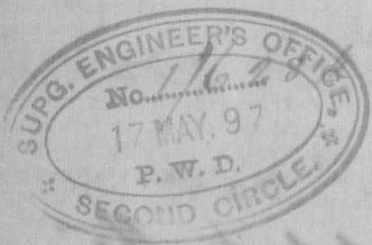
Dr

25/6

W.C. W.S.
W.C.S.
25/6/97

MR.

The diagram has
been inserted in all the
copies of the printed Co.
Sd. 28/6



P.W. 3.3
55 34/97