

Government of Madras.

189

P. W. DEPARTMENT.

Marine CURRENT No. 868.

From

The P. W. Department.

No.

2782 W.

ENCLOS 2

Dated

2. 11. 95

Received

4. 11. 95

ru: 2

SUBJECT.

Lightning Conductors of
Seven Pagodas, Pulicat and
Arueghore Lighthouses.

Communicating letter
from S. R. II Circle report-
ing the results of further
tests made by the R. R.
Buckingham Canal to the

29-2,000-28-2-95.

To the Marine Department with

18-2-95 P-412a
24-2-95 2782a
24-2-95 184a
26-2-95 2734a
25-2-95 2730a

No.

dated

Marine

No. 368 Marine of 7 Dec

Communicated to
the Presidency Court office
the Presidency Court office

See

24/11/95
The P. P. O. with 2 Enclos.
The P. P. O. with 2 Enclos.

DESPATCHED

7 DEC. 95

INDEXED

16/12
Te 11/2

a Marine Deptt.

hms.
The fact that the conductor earthplate was, on the
it occasion, found to lie in perfectly dry sand, without
ice of moisture, whereas, in the former test, the earthplate
actually taken down to water level before any
ance could be got, will account for this vast difference.
is evident that subsoil water level at the lighthouse
ies greatly with the character of the season, the alteration
de during the former test having, it was thought, taken
on the Conductor's earth sufficiently. I have now or-
ered the Executive Engineer to forthwith lengthen the
ductor tape, so as to permit of the earthplate being carried
permanent water level, and in order to be on the safe side,
have instructed him to bury it at a depth not less
than 15 feet from the surface of the ground.

Order No. 2782 W of 2nd Nov 1895

Communicated to the Marine Department in
Continuation of G.O. No. 184 W. dated 24th January 1895.

(See Extract)

C. H. B. Butler.
Under Secretary to Govt. Secy.

Marine G.O. 51814.25
with Marine G.O.
553 of 95
(not yet disposed of)

To the Marine Department with Enclosures in original.

Caw-
h-117

mitted for the inspection of the Superintendent
Telegraphs, he considered that, with some patching,
could be quite efficient, but advised that a Tangent
galvanometer be used for testing as being far more trust-
worthy, where strong earth currents are met, than the
McNeill's Balance hitherto used. A Tangent Galvanometer
is thereupon obtained in July last and the following
are the results of the tests made.

Seven Pagoda Lighthouse.

Copy of the detailed report submitted by the Executive
Engineer is forwarded. The results show that, as before, the
conductivity of the Lightning Conductor is nearly perfect,
and amounted to 0.70 ohms. As regards the resistance of
the Lightning Conductor earth, it will be observed, from my
letter quoted in para 1 above, that no balance at all
could formerly be obtained, and this was formerly
attributed to the bad condition of the leads. On the pre-
sent occasion, after a series of the most thorough tests
had been carried out by the Executive Engineer, as will
be apparent from his report herewith forwarded, the
Conductor earth gave the high resistance of 16 ohms
but was found to be much superior to the auxiliary
earths. The Executive Engineer attributes this high res-
istance to an underlying bed of rock, but looking
to the fact that the deflections were very small, and
the auxiliary earths so suspiciously bad, the real cause
must be looked for elsewhere. On reference to the
Telegraph Department for an explanation of the high
resistances, that Department unhesitatingly stated
that the high resistances were due to the very small
auxiliary earthplates (a little over 1 Sq. foot) used, and
considered that auxiliary earthplates of 12 Sq. feet should
be used. There is no doubt whatever that this opinion
is correct, and that the Conductor earth shows a resistance
much

much greater than the actual owing to such an
auxiliary earthplates having been used. The same can
account for the difficulty experienced at the test
reported in my former letter. The Conductor's earth
which is carried down deep to permanent water level
is the best that can be obtained, and is, I have no doubt,
a good one, but, to make sure, I have requested the Executive
Engineer to make a further test with auxiliary earthplate
of 12 Sq. ft.

4. Auxiliary earthplates of such a size were used
for testing the Pulicat and Arneghon Lighthouse Light-
ning Conductor, and the accompanying copy of a report
from the Executive Engineer, Buckingham Canal, shows
the results obtained.

5 Pulicat Lighthouse.

The results closely approximate to the tests
already reported. Conductivity is perfect, and the resistance
of the Conductor earth was found to be 10 ohms. This resis-
tance, though somewhat high, is not uncommonly found
in earths under similar conditions. The Conductor earth-
plate is sunk very deep, and I do not think any better
earth can be obtained on the sandy hill on which the
lighthouse is built.

6. Arneghon Lighthouse.

Conductivity as before perfect. As regards the
resistance of the Conductor's earth, the present and
former tests are wholly discordant, the present giving the
enormous resistance of 143 ohms, and the former only

hms.

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Marine G.O. 51 D 14, 25
with Marine G.O.
553 of 95
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C. H. B. Butler.

Under Secretary to Govt. P.W.D.

To
The Marine Department with Enclosures in original.

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P. W. CURRENT No. 9517