

5.9.00 ✓
18.11.05 ✓

Judicial (1895) Department.

ORDINARY MS.

G.O., No. 1833

Dated 3rd Sept 1895

INDEXED.

[Despatch Abstract.]

NELLICOOPAM SUGAR FACTORY.

Communicating to Messrs. Parry and Co., Chief Engineer's note
approving the arrangements made by Mr. Gill for the safety of the---

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
602	150	7/97					

Report on arrangements made & proposed to be made to obviate danger of further accident with the Weston Centrifugals in the Mellicoopum Sugar factory -

These Weston Centrifugals with a factor of safety of about 3 when new (The bottom & the lip of the Machine do not materially strengthen the plate sides, I consider, as in the absence of distance pillars between the bottom and lip, the sides bulge in the center under a load approaching the breaking strain, and rupture I have little doubt commences there unhindered by the bottom and lip) are not safe as they should be, and the governing of their speed within what are practically narrow limits is essential to their safe working. A centrifugal of the size in question, loaded, will absorb 3 H.P. on being started and will require but 0.3-0.5 H.P. when going full speed, & consequently where but 1 or 2 Centrifugals are worked by an engine, a little common place carelessness in the working will practically demand too

taken and proposes to adopt in the future to obviate the danger of further accidents in our

Mellicoopum

too much of the governor. The larger the number of centrifugals worked by the one engine, however, the greater certainly there is of the demand on the engine being kept within moderate limits.

The arrangement made. Is abandonment of the group of 2 Machines.

Further arrangements being made. Putting in a special form of governor - the Macfarlane to the present engine - (An auxiliary engine just erected to run the centrifugals on occasion, is already fitted with this governor and will, in 3 or 4 weeks time probably, take up the work of the present engine, while this is being fitted with its governor)

Further arrangements intended. The hoops of the baskets of the Weston Machines with 2 steel hoops dividing height of plate sides into equal spaces, and affording a total of

about

3

about 1.75 square inches section of steel equal to a factor of safety of 3.7 independently of the plate, and so allowing a good practical margin for wear and tear, and in a way the wear and tear will be apparent.

• Supplementary to 'arrangements made' - I perhaps should say the centrifugal engine is controlled by a driver who has nothing else to do than to look after this one engine, and that behaviour of the engine is known the 24 hours through pen speed diagrams taken automatically through a counter & clock driver drum, and that these diagrams after examination, are sent by the Engineer to me.

Under all the circumstances surrounding the technical points I would ask the government to request the Chief Engineer to reconsider his Note in the light of these further

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further fact:-

1. It was not reasonable to suppose Machines of this character would be sent out with a factor of safety of only about 3; and had to lose only .05 thickness of plate (a loss which from construction of the machine, could not be apparent even on very careful ordinary examination) to become highly dangerous; and thence it was that up to the time of the accident, I had not looked into the factor of safety; and with the engineer, had on occasion of repair, looked for only ordinary excessive wear, such as would be looked for in an ordinary wire basket, which has generally a factor of safety of about 13.
2. The actual gauging by a Birmingham wire gauge plate, of the thinnest point along the line of rupture of the perforated steel plate

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plate of the basket was between 14 + 15. i.e. between .088" + .072" or say .077" + such point must have been very perceptibly thinner after rupture by tensile strain than it was before. I took .07" so as to avoid questioning of the arithmetical results proving that the rupture of the basket by excessive speed was a fact.

3. The basket revolved inside a case which was specially designed by the makers to obviate any serious results from the bursting of the basket, and was built of boiler iron plate, butt strapped + double rivetted at the point. The butt strap was $\frac{7}{8}$ " thick, double rivetted with $\frac{1}{2}$ " rivets $1\frac{3}{4}$ " pitch, and was burst throughout its length along a line of rivets and the sides of the case of $\frac{1}{4}$ " boiler plate, torn from around the

6
the bottom and opened out straight. ²⁹⁵ ~~Consider~~
a minimum of 950 tons total pressure
was required for this and that accepting
the whole weight of the basket with its
spindle and portion of attached beam (as
found after the accident) together with
the sugar, equal to a total maximum
of 560th, was available to burst the case
by impact, the velocity required, ~~to~~ ^{be} ~~calculate~~
calculate, would involve 275 revol. of the
engine.

The means now adopted, to be adopted,
of rendering wide differences of speed practically
impossible and of more than doubling the
original strength of the machine, and
proportionately much further increasing
the factor of safety, in wear & tear, very
fully meet the requirements of the case.

of F. N. G. Gill

CURRENT NO. 3709.

Madras 2nd Aug 1895.

To
The Chief Secretary
to Government
Ootacamund.

Sir,
We have the honor to acknowledge receipt of G.O. dated 11th July 1895 No 1460 handing us a copy of a Note by the Chief Engineer S.P.W. Department on the accident which occurred to one of the Centrifugals at our Mellicoopum Sugar Factory, and in connection therewith we have now the honor to hand you the report of our Agent, Mr. J. N. G. Gill, reviewing the cause of the accident, and at the same time detailing the precautions he has taken and proposes to adopt in the future to obviate the danger of further accidents in our

Mellicoopum



²
Mellicoopum Factory.

We have the honor to be

Sir

Your Obed^t Servants

Thos R

Judicial Dept.
CURRENT NO. 3709

From Messrs Barry & Co
Madras.

So. 1460: 11.7.95 Miss
Papers

~~For~~
Cs.
For order.

Messrs Barry & Co's reply to No. 1460 of 11 July 95
No. 1460, Tudd, mis, is submitted for personal order.
Submitted that this may be
Endorsed No. 1899
Referred to the P.W.D.
with the request that the opinion
of the Chief Engineer may be obtained
as to whether the arrangements proposed
by Messrs Barry & Co. are of adequate
need the needs of the case

18/8/95 9-8.50

Co. to be amended
14 August 1895

Subj: 2.

Submitting the report of their
agent, Mr J. N. G. Gill, reviewing
the cause of the recent accident
at their Nellore sugar factory
and detailing the precautions he
has taken & proposes to adopt in
the future to obviate the danger of
further accidents.

11/7/8
12/8/8

Cover

P.W. Department.
CURRENT NO. 3989

Memorandum from the Judicial Department No. 1899 dated 21 Aug 1895
Note by the Chief Engineer P.W.D. No. 80 dated 21 Aug 1895

SECRET

21 AUG 1895

GOVERNMENT OF MADRAS

I think the arrangements
made and proposed, as explained
in Mr. Gill's report will be
adequate.

2. The additional hooping
provided will be of the greatest
possible value, the more so as it
will provide a means of resistance
to rupture which will not be liable
to reduction by ordinary wear
and tear as the material of the
basket itself must be.

3. The machines are in themselves
of an essentially dangerous
character, and neither the arrange-
ments now being made nor any
others possible will obviate the
necessity for the constant care
and periodical examination
mentioned in the last paragraph
of my note of the 24 June.
With regard to the last
portion of Mr. Gill's report,
I am bound to say that I agree
largely with what he says.
It was not the expected
that

that machines of this class
would be sent out with so
small a factor of safety
as is the case, and it is not
surprising that the discovery
of their real weakness came
somewhat unexpectedly upon
the management of the factory.

(sd) John Penney
Colonel R.E.
Chief Engineer, P.W.D.

No. 802 D. 20. Aug 1895
Transferred to the
Judicial Department

John Penney
Colonel R.E.
Secretary to Govt P.W.D.

20/8/95

To
The Judicial Department.

[9]

Current No. 3989

Judicial DEPARTMENT.

From O. W. Seph.

No. 802 D.

Dated 20. Aug 1895

Received 21. 8. 1895

Enclosures cno 3709 with Enc. nbs.

SUBJECT.

Transferring note by the Chief Eng.
O. W. D. no. 801 D 20. Aug 1895,
stating that the arrangements made
and proposed, as explained in
Mr Gills Report will be adequate.

W.S. 22/8

By cno 1899/95
f. to apers marked
main

Read again 11 July 95. no 1469. 12.
+ cno 3709 + 3989/95.

For order.

As to whether the report was made
"Recorded" by the Chief Engineer
further note may be

Communicated to Messrs. Parry
H.C. with an expression of
concurrence in the Chief Engineer's
views.

23. 8. 95
20/8/95

Yes - said it - but I don't
express concurrence -
of what value is Govt con-
currence in such a matter?
None

29/8/95

Say that Govt note with
satisfaction the C.E.'s concurrence
with Mr Gills.

typed 25/9.

30 Sept 1895, no 1833

Communicated to Messrs. Parry

H.C. the Govt note with satisfaction
the Chief Engineer's concurrence
20/8/95

(over)

When given for copying _____
When copied _____
When examined _____
When signed _____

189 .

READ AGAIN G.O., No.
189 .

DATED

CURRENT No.

ENCLOSURES TO O. No

ORDER OF GOVERNMENT

A A A A A A A

LETTER OF GOVERNMENT.

STATEMENT WITH DITTO.

PAPERS NOT FILED UP, BRING MEANT FOR DESPATCH
IN ORIGINAL.

N.B.—

A = Copy in full.
B = Not to be copied.
F = Copy abstract only.
Q = Copy heading only.