

O T T A W A

July 26th, 1940.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 871.

Report on Section from a Manganese Steel
Crushing Jaw Plate, for the Joliette
Steel Limited, Joliette, Quebec.

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BUREAU OF MINES
DIVISION OF METALLIC MINERALS
—
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CANADA
DEPARTMENT
OF
MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

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Object of Investigation:

A letter from the Joliette Steel Limited,
Joliette, Quebec, dated July 10th, 1940, describes a
manganese steel crushing jaw plate which had a short

working life. A section cut from this plate accompanied the letter.

Chemical Analysis:

		<u>Per cent</u>
Carbon	-	1.25
Manganese	-	13.40
Silicon	-	0.50
Sulphur	-	0.014
Phosphorus	-	0.076

Microstructure:

Figure 1.

Figure 2.

X100.

Dirt Cavity.

(Nital).

X100.

Grain Size.

(Nital).

The austenite grain size is fairly small. No carbides or martensite can be seen. The metal is quite dirty and contains large cavities.

Discussion of Results:

The chemical analysis is within the accepted limits for austenitic manganese steel. The microstructure

of the sample submitted indicates that probably the pouring temperature and heat treatment were satisfactory. The presence of dirt cavities is objectionable, especially if there is a tendency toward segregation.

As far as can be judged from the sample submitted, we cannot definitely state the reason for failure. An examination of the whole plate might show the presence of seams, internal cracks, or cavities, if any are present.

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