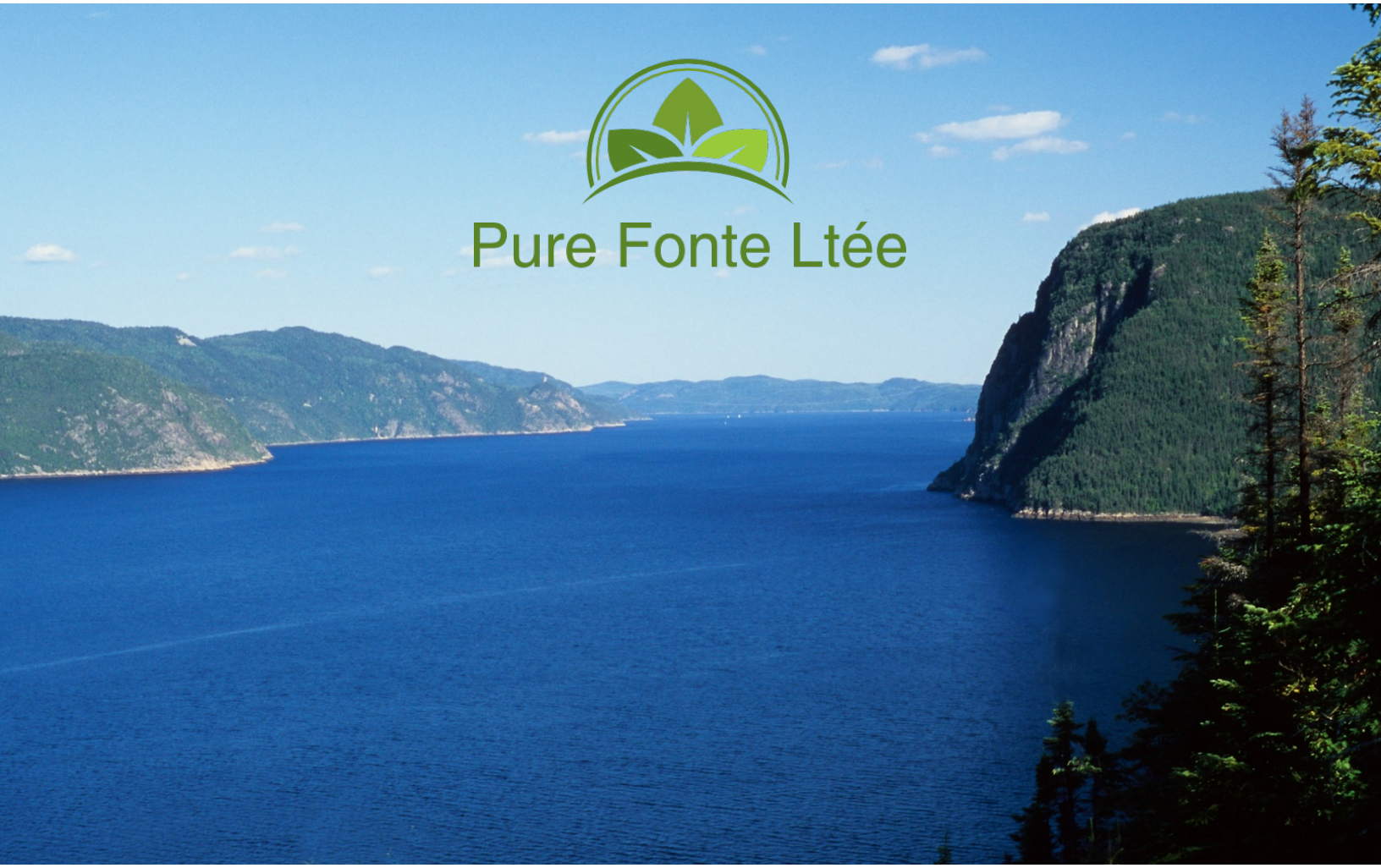
Feasibility Study
Merchant Pig Iron Plant – Saguenay
Pure Fonte Ltée

Étude de faisabilité
Projet d'usine de fonte en gueuse – Saguenay
Pure Fonte Ltée

CD-335 – April 2018



Saguenay river and Cap Éternité, Quebec, Canada

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Étude de faisabilité
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Pure Fonte Ltée

Study N. CD-335

Date : April, 2018

Prepared by:

Francesco Memoli
EVP American Commercial Operations

Prepared by:

Jaime Teira
Engineering Director

Approved by:

Thomas V. Bovalina
President and CEO

Tenova Inc.
Cherrington Corporate Center
100 Corporate Center Drive
Coraopolis, PA 15108-3185
Phone: +1 (412) 262-2240
Fax: +1 (412) 262-2055

Techint Compañía Técnica Internacional S.A.C.I.
Torre Bouchard Plaza
Hipólito Bouchard 557, Piso 12
(C1106ABG) Buenos Aires
Tel: +54 (11) 4018-4100
Fax: +54 (11) 4018-1000

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Study team
Équipe de travail

TENOVA TEAM

Direction:
Francesco Memoli

Coordination:
Sergio A. Guzman
Ruben Rodriguez Montemayor
Luca Romoli

Process:
Bill Barraclough
Jorge O. Becerra Novoa
Pablo Duarte Escareño Pablo
Teresa Guerra Reyes
Cesare Giavani
Kyle J Shoop
Eugenio Zendejas Martinez

Engineering:
Ronald Lopez
Josh Marino
Mark Olean
Luca Origoni
Marco Sassoli
Michele Specogna

Estimating:
Andrea Conti
Jason Fisher
Leo Incorvati

Drafting:
Ron Carder
James Macon
Randy McDevitt
Giorgio Sommariva
Agostino Stella
Giuseppino Virgili

TECHINT TEAM

Direction:
Jaime Teira

Coordination:
Lucas Gambardella
Nicolas Gomez
Cristian Gonzalez

Engineering:
Andres Araujo Ciukszo
Germán Carrescia
Fernando De Ipola
Alfredo Fernandez
Jorge Guerberoff
Roberto Holowaty
Diego L. Lopolito
Ana Laura Martín
Juan Pablo Miretti
Carlos Orquera
José Ouro
Pablo Pombo
Raúl Porco Palacios
Lino Puia
Gustavo Rucci
Pablo Sanmartin
Marcela Soto
Rosana Souza
Miguel Vega
Flavio Vittola

Drafting:
Armando Abraham
Miguel Alfonso
Javier Asprea
Martín Mogliatti
María Nakamura
Angeles Origuela
Hernán Osterwarder
Andrea Visacovsky

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2	ISSUED	4/4/18	-	SAG	MES	MES
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0	FOR REVIEW	8/15/16	-	SAG	MES	MES
A	PRELIMINARY	6/9/16	-	SAG	KJS	MES

Pure Fonte Ltée

PURE FONTE LTÉE
PIG IRON PRODUCTION PLANT – FEASIBILITY STUDY
CUSTOMER Nº: 1821

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FEASIBILITY STUDY

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IV - REFERENCES

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Pure Fonte Ltée

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FEASIBILITY STUDY

V – ACRONYMS, UNITS, SYMBOLS

ESC.: N/A

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ACRONYMS

1	AACE	Association for the Advancement of Cost Engineering (http://www.aacei.org/)
2	AMMC	ArcelorMittal Mining Canada G.P. (http://www.transformerlavenir.com/en/)
3	APS	Administration portuaire du Saguenay - Saguenay Prot Authority
4	BF	Blast Furnace
5	BFS	Bankable Feasibility Study
6	BH	Pulse-jet bag house or bag filter
7	BP	Briquetting Plant
8	BPI	Basic Pig Iron
9	BWG	Birmingham Wire Gauge
10	CAD	Canadian dollars
11	CAGR	Compounded Annual Growth Rate
12	Capex	Capital Expenditure
13	CFR	Cost and Freight (http://www.incotermsexplained.com/)
14	Cliff	Cliffs Natural Resources (www.cliffsnaturalresources.com)
15	CLTC	Consolidated Terminals and Logistics Co. (http://www.ctlconline.com/)
16	COG	Coke oven gas
17	CRU	CRU Group (http://www.crugroup.com/)
18	CSE	Canadian Securities Exchange
19	CSL	Canada Steamship Lines (https://www.cslships.com)
20	CWT	
21	D&A	Depreciation and Amortization
22	DAT	delivered at terminal
23	DMDS	Dimethyl disulfide, molecular formula CH_3SSCH_3
24	DOB	Drop Out Box
25	DRI	Direct-reduced iron (DRI), also called sponge iron
26	DS	Dust Silo
27	EAF	Electric Arc Furnace
28	EBITDA	Earnings before interest, taxes, depreciation and amortization
29	EI	Employment Insurance
30	EIA	Environmental Impact Analysis
31	EIA	Energy Information Administration
32	FOB	Free On Board (http://www.incotermsexplained.com/)
33	FPI	Foundry Pig Iron

34	FS	Feasibility Study
35	FTP	Fumes Treatment Plant
36	FX	Foreign Exchange
37	Gcal	Giga calories
38	GHG	Green House Gasses
39	GIIC	Gulf Industrial Investment Co. (www.giic.com.bh)
40	GJ	Giga Joule
41	GM	Gaz Metro
42	GRI	Grand Rivers Ironsands (http://www.ironsands.ca/)
43	GT	Gross Ton
44	HBI	Hot Briquetted Iron
45	HHV	higher heating value
46	HP-MPI	High Purity Merchant Pig Iron
47	HQ	Hydro-Québec
48	HYL	Tenova HYL (http://www.hyltechnologies.com/home.php)
49	IIMA	International Iron & Metallics Association (http://metallics.org.uk/)
50	IO	Iron Ore
51	IOC	Iron Ore Company of Canada (http://www.riotinto.com/)
52	IRR	Internal rate of return
53	JSE	Johannesburg Stock Exchange limited, the largest stock exchange in Africa
54	kPa	kilo Pascal
55	L/C	Letter of Credit
56	LKAB	Luossavaara-Kiirunavaara AB (http://www.lkab.com/)
57	LME	London Metal Exchange
58	masl	meters above sea level
59	MDEA	Methyl diethanolamine, Chemical formula $C_5H_{13}NO_2$
60	MMI	Metalo Manufacturing Inc. (http://www.metalo.ca/)
61	MPI	Merchant Pig Iron
62	MPP	Manual of Project Procedure
63	MT	Metric Ton
64	MTO	Material Take Off
65	Mtpy	Million tons per year, metric
66	PURE FONTE LTÉE	North Atlantic Iron Corporation
67	NG	Natural Gas
68	NOLA	New Orleans, Louisiana
69	NOx	NOx is a generic term for the mono-nitrogen oxides NO and NO2
70	NPI	Nodular Pig Iron
71	NPV	Net present value
72	NS	Norda Stelo (http://www.norda.com/en/)
73	NYSE	New York Stock Exchange

74	OEM	Original Equipment Manufacturer
75	Opex	Operating Expenditure
76	PADEM	Programme d’assainissement des eaux municipales
77	PAEQ	Programme d’assainissement des eaux du Québec
78	Petmin	Petmin Limites (http://www.petmin.co.za/)
79	PGH	Process Gas Heater
80	QPP	Quebec Pension Plan
81	QSL	Quebec Stevedoring Company Ltd.
82	RHF	Rotary Hearth Furnace
83	SEDAR	System for Electronic Document Analysis and Retrieval
84	SG&A	Selling, General and Administrative Expenses
85	SI	Système international d'unités or International System of Units
86	SNC	SNC Lavalin (http://www.snclavalin.com/en/)
87	TCM	Total Cost Management
88	TEIC	Techint Engineering and Construction
89	TS	Tenaris
90	TX	Ternium
91	UDS	US dollars
92	VOCs	Volatile Organic Compounds
93	VPSA	Vacuum Pressure-Swing Adsorption
94	WA	Western Australia
95	WBS	Work Breakdown Structure
96	WTP	Water Treatment Plant
97	ZR	Zero Reformer

UNITS

1	bcf	billion cubic feet
2	Btu	British thermal unit
3	dBA	A-weighted decibels
4	g/kmV	gram per kilometer per vehicle
5	kg/h	kilogram per hour
6	km	kilometer
7	kPa	kilo Pascal
8	kV	kilovolt
9	m	linear meters
10	m^2	square meters
11	m^3	cubic meters
12	m^3/d	cubic meters per day
13	m^3/h	cubic meters per hour
14	mg/l	milligram per liter
15	MJ	Mega Joule
16	MJ	Mega Joule
18	MMBtu	million Btu
19	MMI	Metalo Manufacturing Inc. (http://www.metalo.ca/)
20	Mt/a	Million ton per annum
21	MVA	Mega Volt Ampere
22	MW	Mega Watts
23	Nm^3	normal cubic meter
24	Nm^3/h	Normal cubic meters per hour
25	ppb	parts per billion
26	ppm	parts per million
27	ppmvs	parts per million per dry volume
28	t	metric ton
29	t/h	tons per hour
30	tpy	ton per year, metric
31	$\mu g/m^3$	micrograms oer cubic meter

SYMBOLS

1	Al_2O_3	Aluminum Oxide
2	C	Carbon
3	$CaCO_3$	Calcium Carbonate
4	CaO	Calcium Oxide
5	CH_4	Methane
6	CO_2	Carbon dioxide
7	CO_2	Carbon Monoxide
8	Fe	Iron
30	Fe tot	total iron
9	Fe_2O_3	Hematite, Iron(III) oxide or ferric oxide
10	Fe_3C	Iron carbide
11	$FeCl_3$	Iron Chloride
12	FeO	Wüstite, Iron(II) oxide or ferrous oxide
13	H_2	Hydrogen
14	H_2O	Water
15	H_2S	Hydrogen sulfide
33	K_2O	potassium oxide
16	MgO	Magnesium Oxide
17	Mn	Manganese
18	N_2	Nitrogen
19	Na+	sodium ions
34	Na_2O	Sodium oxide
20	NaCl	salt, sodium chloride
21	NO_2	nitrogen dioxide
22	NO_3	Nitrate
23	NOx	Nitrogen oxides
24	O_2	Oxygen
25	O_3	Ozone
31	Ored	reduced oxides
26	P	Phosphorous
27	S	Sulfur
28	Si	Silicon
29	SO_2	Sulfur dioxide
32	TiO_2	titanium oxide

REV.	DESCRIPTION	DATE	PROJ.	EXEC.	CHECK.	APPR.
1	ISSUED	4/4/18	GAM	GAM	TEI	MES
0	FOR REVIEW	8/14/16	GAM	GAM	TEI	MES
A	PRELIMINARY	6/7/16	GAM	GAM	TEI	TEI

Pure Fonte Ltée

PURE FONTE LTÉE

PIG IRON PRODUCTION PLANT – FEASIBILITY STUDY

CUSTOMER Nº: 1821

tenova

TECHINT

TENOVA

TECHINT ENGINEERING & CONSTRUCTION

FEASIBILITY STUDY

VI - LIST OF DRAWINGS

ESC.: N/A

JOB: CD-335

REVISION 1

REVISION

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