

MAIL ROOM
SALLE DE COURIER

2017 FEB 17 P 3:14

NEB/ONE



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February 17, 2017

Filed by Courier

National Energy Board
Suite 210, 517 Tenth Avenue SW
Calgary, AB T2R 0A8

Attention: Ms. Sheri Young, Secretary of the Board

Dear Ms. Young:

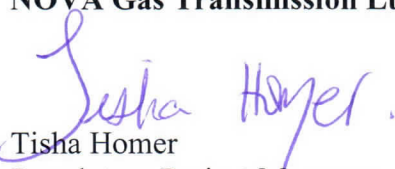
**Re: NOVA Gas Transmission Ltd. (NGTL)
2017 NGTL System Expansion Project (Project)
Certificate GC-126 (Certificate)
Condition 15 b) – Field Joining Programs
NEB File: OF-Fac-Gas-N081-2014-20 02**

On December 30, 2016, NGTL filed field joining programs for all pipeline components of the Project in compliance with Condition 15 b) of the Certificate. In reviewing the welding procedure data sheets (WPDS) for the Northwest Mainline Loop - Boundary Lake and Northwest Mainline Loop No. 2 - Bear Canyon Sections, NGTL noted that there was a clerical error in the document WPDS-2016-06. The first bullet in the "Remarks" section on page 2 of WPDS 2016-006-06 originally identified a change of more than 10% for Arc Speed, Wire Speed, Voltage, Amperage, Heat Input and Shielding Gas Flow Rate. The 10% value is an error, and should read 20%. The WPDS has been revised to represent the 20% allowance, identified within CSA Z662-15. Accordingly, NGTL is filing the corrected version of this data sheet with the Board.

NGTL confirms that all field offices will be provided with the updated data sheet for replacement in the construction materials.

Should you require additional information, please contact me at (403) 920-7942, or by email at tisha_homer@transcanada.com.

Yours truly,
NOVA Gas Transmission Ltd.


Tisha Homer
Regulatory Project Manager
Canadian Gas Pipelines

WELDING PROCEDURE DATA SHEET: 2016-006-06 Rev1

03 Feb. 2017



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PROJECT: Bear Canyon / Boundary Lake – OJ Pipelines / RMS Welding Systems
APPLICATION: Tie-in or Field Section Pipe to Pipe Girth Welds
SERVICE TEMPERATURE: -5°C **JOINT DESIGN:** See bevel configuration
MATERIAL SPECIFICATION: CSA Z245.1 Cat II Pipe Max. CSA CE = 0.30
DIA.: ≥ NPS18 **WT:** 4 – 24.6 mm **GRADE:** ≤ 483 MPa
PROCESS: SMAW / FCAW **CURRENT/POLARITY:** DCEP **POSITION/DIRECTION:** 5G/Vertical Down/Up
PREHEAT: 100 °C Min. / 200 °C Max. **INTERPASS TEMPERATURE:** 100°C Min. / 200°C Max.
TIME INTERVAL BETWEEN PASSES: Root & Hot Pass: 10 minutes maximum
Hot Pass / Fill 1: 60 minutes maximum
Fill 1 / Fill 2: 60 minutes maximum
Fill 2 / To Completion (min 2/3 full): 24 hours maximum
LINE-UP METHOD: Internal / External Clamp **LINE-UP CLAMP REMOVAL:** INT-100%; EXT-50% root pass
BACKING MATERIAL: N/A **NUMBER OF WELDERS:** 2 **WELDING CONSUMABLES:** See table
GAS SHIELDING: FCAW-G Fill 4+ & Cap 75%Ar / 25%CO₂ **FLOW RATE:** 29 – 33 L/min
WELDING HEAD ANGLE: 0°- 7° Leading **TORCH SEPARATION:** Not Applicable

Welding Parameters and Pass Configuration – 19.7 mm							
Layer	1	2	3	4 (OPTIONS)		5-6	7
Description	Root Pass	Hot Pass	Fill 1	Fill 2 – 3 (Split)	Fill 2 (Single)	Fills + (Split)	Cap (Split)
Process	SMAW	SMAW	SMAW	Option-1 SMAW	Option-2 FCAW	FCAW	FCAW
Electrode MFG & Trade Name	Lincoln Fleetweld 5P+	Lincoln Shield-Arc 70+	Bohler Fox BVD 85	Bohler Fox BVD 85	ESAB Pipeweld 111-T1	ESAB Pipeweld 111T-1	ESAB Pipeweld 111T-1
Electrode Classification	E4310	E5510-G	E8045-P2	E8045-P2	E111T1-K3MJ-H4	E111T1-K3MJ-H4	E111T1-K3MJ-H4
Welding Direction	Down	Down	Down	Down	Up	Up	Up
Electrode Dia. (mm)	4.0	4.8	4.0	4.0	1.2	1.2	1.2
Amperage Range	81 – 151	131 – 194	151 – 235	151 – 235	138 – 203	141 – 256	182 – 239
Voltage Range	17.8 – 27.5	20.2 – 34.6	17 – 28	17 – 28	17.5 – 23.6	17.5 – 26.1	22 – 26.2
Wire Feed (m/min)	N/A	N/A	N/A	N/A	7.6 – 8.3	7.6 – 8.9	7.6 – 8.9
Travel Speed (mm/min)	155 – 196	175 – 279	168 – 378	168 – 378	147 – 213	147 – 277	147 – 267
Heat Input (kJ/mm)	0.44 – 1.61	0.57 – 2.30	0.5 – 2.09	0.5 – 2.09	0.91 – 1.29	0.91 – 2.07	1.12 – 2.19
Oscillation Rate (bpm)	N/A	N/A	N/A	N/A	100	100	100
Oscillation Width (mm)	N/A	N/A	N/A	N/A	6.7 – 13.0	6.7 – 13.0	8.9 – 13.2
CTWD (mm)	N/A	N/A	N/A	N/A	12.7 – 19.0	12.7 – 19.0	12.7 – 19.0

Note: The above values do not include the CSA Z662 welding parameter allowances.

Layer 3-Mandatory SMAW Bohler Fox BVD 85. Layer 4 optional SMAW BVD 85 (split layer) or ESAB FCAW (single layer). Remaining weld layers shall be completed with mechanized FCAW.

WELDING PROCEDURE DATA SHEET: 2016-006-06 Rev1

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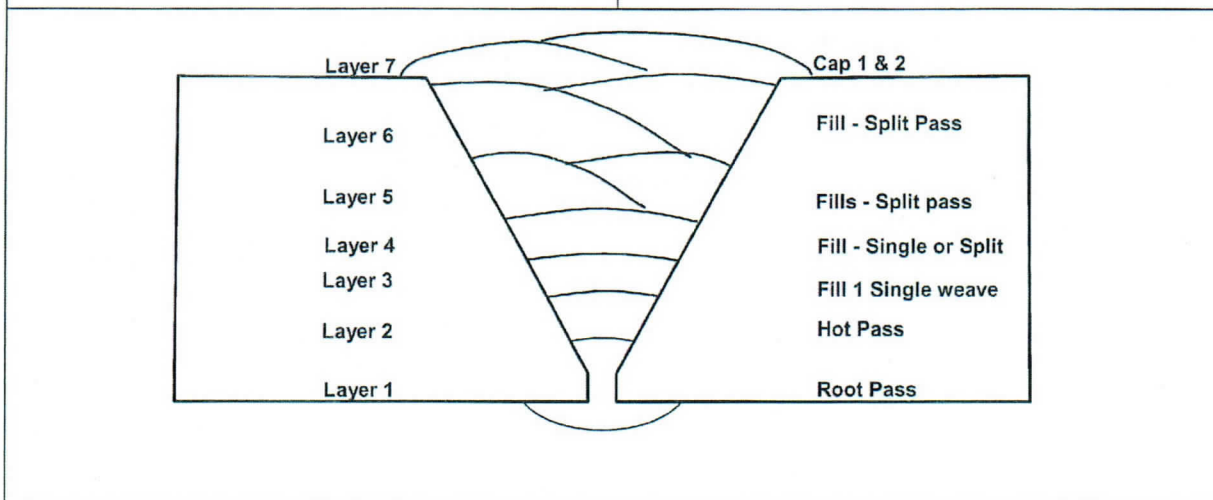


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Item	Description	Dimension
A	Angle	30 – 35°
B	Land	1.9 – 2.6 mm
C	Gap	1.7 – 2.5 mm

Notes:

- 1) Weld reinforcement height 3.5 mm max
- 2) Bevel angle shall not exceed +10%/-5% of the specified angles
- 3) Root gap or root face shall not exceed $\pm 20\%$ of qualified dimensions
- 4) Partial strip fill weld pass are optional utilizing the welding parameter ranges within the table provided
- 5) Number of fill passes is dependent upon WT. The number of layers below represents 19.7 mm WT pipe



NDT: 100% Ultrasonic Inspection to CSA Standard Z662-15.

REMARKS: 1) The following changes require a re-qualification of the welding procedure or cut-out of the affected weld(s):

- A change of more than 20% from the above values for Arc Speed, Wire Speed, Voltage, Amperage, Heat Input and Shielding Gas Flow Rate.
- Any essential changes exceeding those listed in CSA Z662-15, Table 7.3.
- Change of FCAW electrode manufacturer and/or classification.

2) Strips may be performed utilizing Layer 5-6 welding parameters.

3) Filler metal classification for Hot Pass applications shall be E5510-G.

4) Filler metal trade name for low hydrogen downhill fill applications shall be Bohler Fox BVD 85.

5) Filler metal trade name for FCAW welding applications shall be ESAB Pipeweld 111 T1.

DECLARATION: The information in this data sheet is correct and based on welding procedure specifications that meet the requirements of CSA Standard Z662-15 (Section 7 Qualification).

SUPPORTING FILE(S): 3258, 3259

Proposed By: Rick Ostrom

Reviewer: Robert Ostrom

Date: 3 Feb 2017

Contractor: _____

Acceptance: _____

Date: _____