



MS-18378

6655078

Daniel Industries Canada Inc.
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Canada

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Meter Tube Nameplate Facsimile

For use with AGA Report 3/API 14.3, Part 2, Third and Fourth Editions

DANIEL _____ a division of Emerson Process Management		Made in Canada	
DATE: 6/11/09	AGA FIG: CPA50E 2000	UL: 53.965	
TAG: FE-250	MAX BETA: .75	DL: 40.952	
S/N: DCM09-01213	MAX ORIFICE: 2.578	Dr: 3.437	
CRN: OFO634.21	MIN ORIFICE: .516	ANSI/DMT: 900-20 F	
Daniel Industries Canada	Ph: 403-279-1879	Fax: 403-236-1337	

Daniel Canada WO: 7027815-1

Orifice Fitting S/N: 09230002

Rev 1, 2004-11-29

DANIEL®

EMERSON

Process Management

Orifice Meter Inspection Certificate

AGA3/API 14.3, Part 2, 2000 Edition

DANIEL
Daniel Industries Canada Inc.

Customer Information

Customer: HUSKY ENERGY
Customer P.O.: 8400030069
Customer Job No.: 7027815-1
Location/LSD: N/A
Meter Tag No.: FE-250
Meter Name: N/A

General Meter Tube Information

Inspection Number:
Meter Tube Serial No.: DCM09-01213
Manufacturer: Daniel Canada
Inspection Criteria: AGA3/API 14.3, Part 2, 2000 Edition
AGA3 Configuration: CPA 50E
Nominal Line Size: 4"
Pipe Schedule: 160
Published I.D. (in.): 3.438"

Measured Internal Diameter of Meter Tube

Position	I.D. Measurements 1" Upstream from the Upstream Face of Orifice Plate (in.)	Calculations
1	3.437	Coefficient of Thermal Expansion, α_2 : 0.0000620
2	3.437	Meter Tube Temperature, T_m (°F): 73.3
3	3.437	Reference Temperature, T_r (°F): 68.0
4	3.437	Measured Meter Tube I.D., D_m (in.): 3.437
		Calculated Meter Tube I.D., D_r (in.): 3.437

Verification of the Internal Diameter of the Meter Tube

Note: Internal diameter measurements are checked in a minimum of 4 equally spaced planes at various locations along the length of the meter tube. Max./Min. values for various sections of the meter tube are recorded below. Locations of these check measurements include the orifice fitting, welds, adjoining flanges and pipe.

	Within 1D _m Upstream of Orifice Plate	Downstream	Entire Upstream Section
Tolerance (in.):	0.009	0.017	Max. Tolerance (%): 0.500
Allowable Max. (in.):	3.446	3.454	Recorded Max. (in.): 3.439
Allowable Min. (in.):	3.428	3.420	Recorded Min. (in.): 3.432
Recorded Max. (in.):	3.437	3.439	Actual Tolerance (%): 0.204
Recorded Min. (in.):	3.437	3.431	Results: Pass
Results:	Pass	Pass	

Orifice Plate and Sealing Unit

	Max.	Min.	Orifice Plate Thickness: 0.125"	U/S	D/S
Beta Ratio:	0.75	0.15	Orifice Plate Eccentricity:	Plate Seal Protrusion:	
Bore Size (in.):	2.578	0.516	Orifice Plate Bypass:	Plate Seal Gap:	

Internal Surface Roughness

Within 17D U/S of Plate: Pass
Beyond 17D U/S of Plate: Pass
Downstream of Plate: Pass

Meter Tube Configuration and Dimensions

Flow Conditioner or Vane: CPA 50E
1st. Downstream Connection: 1-1/2" Flange

Note: All dimensions are shown in inches unless specified otherwise.

OAL:	94.917
UL:	53.965
UL1:	21.471
UL2:	32.494
L:	0.519
DL:	40.952
C:	16.976

Orifice Fitting Information

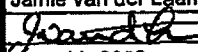
Manufacturer: Daniel
Model No.: 016C
Serial No.: 09230002
ANSI Class: 900#
Quantity: 2 Sets
Diameter:
Location:
Size: 1/2"

Flange Tap Information

Flange Taps Relative to Center of Meter Tube: Horizontal
No. of DP Sensors: None
Static Pressure Sensor: None
Location: Tee'd

Comments and Notes (indicate if attachments are included)

Inspection Kit Number: 2 NOA Number: G-0196 r1

Inspector: Jamie van der Laan
Signed: 
Date: June 11, 2009

Witness:
Signed:
Date:



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DANIEL _____ a division of Emerson Process Management		Made in Canada	
DATE: 6/3/09	AGA FIG: CPA50E 2000	UL: 79.988	
TAG: FE-200	MAX BETA: .75	DL: 67.094	
S/N: DCM09-01172	MAX ORIFICE: 3.890	Dr: 5.187	
CRN: OFO634.21	MIN ORIFICE: .778	ANSI/DMT: 900-20 F	
Daniel Industries Canada		Ph: 403-279-1879	Fax: 403-236-1337

Daniel Canada WO: 7027815-2

Orifice Fitting S/N: 09110189

Rev 1, 2004-11-29

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Orifice Meter Inspection Certificate

AGA3/API 14.3, Part 2, 2000 Edition

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Daniel Industries Canada Inc.

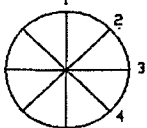
Customer Information

Customer: HUSKY ENERGY
Customer P.O.: 8400030069
Customer Job No.: 7027815
Location/LSD: N/A
Meter Tag No.: FE-200
Meter Name: N/A

General Meter Tube Information

Inspection Number:
Meter Tube Serial No.: DCM09-01172
Manufacturer: Daniel Canada
Inspection Criteria: AGA3/API 14.3, Part 2, 2000 Edition
AGA3 Configuration: CPA 50E
Nominal Line Size: 6"
Pipe Schedule: 160
Published I.D. (in.): 5.187"

Measured Internal Diameter of Meter Tube

Position	I.D. Measurements 1" Upstream from the Upstream Face of Orifice Plate (in.)	Calculations
	1 5.187 2 5.187 3 5.187 4 5.188	Coefficient of Thermal Expansion, α_2 : 0.00000620 Meter Tube Temperature, T_m (°F): 71.4 Reference Temperature, T_r (°F): 68.0 Measured Meter Tube I.D., D_m (in.): 5.187 Calculated Meter Tube I.D., D_r (in.): 5.187

Verification of the Internal Diameter of the Meter Tube

Note: Internal diameter measurements are checked in a minimum of 4 equally spaced planes at various locations along the length of the meter tube. Max./Min. values for various sections of the meter tube are recorded below. Locations of these check measurements include the orifice fitting, welds, adjoining flanges and pipe.

	Within 1D _m Upstream of Orifice Plate	Downstream	Entire Upstream Section
Tolerance (in.):	0.013	0.026	Max. Tolerance (%): 0.500
Allowable Max. (in.):	5.200	5.213	Recorded Max. (in.): 5.195
Allowable Min. (in.):	5.174	5.161	Recorded Min. (in.): 5.175
Recorded Max. (in.):	5.188	5.188	Actual Tolerance (%): 0.386
Recorded Min. (in.):	5.187	5.179	Results: Pass
Results:	Pass	Pass	

Orifice Plate and Sealing Unit

	Max.	Min.	Orifice Plate Thickness:	0.125"	U/S	D/S
Beta Ratio:	0.75	0.15	Orifice Plate Eccentricity:	Pass	Plate Seal Protrusion:	Pass
Bore Size (in.):	3.890	0.778	Orifice Plate Bypass:	Pass	Plate Seal Gap:	Pass

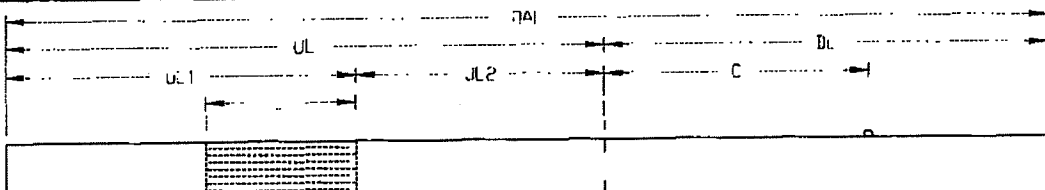
Internal Surface Roughness

Within 17D U/S of Plate: Pass
Beyond 17D U/S of Plate: Pass
Downstream of Plate: Pass

Meter Tube Configuration and Dimensions

Flow Conditioner or Vane: CPA 50E
1st. Downstream Connection: 1-1/2" Flange

Note: All dimensions are shown in inches unless specified otherwise.

	OAL: 147.082 UL: 79.988 UL1: 31.688 UL2: 48.300 L: 0.776 DL: 67.094 C: 25.244
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Orifice Fitting Information

Manufacturer: Daniel
Model No.: 016C
Serial No.: 09110189
ANSI Class: 600#
Quantity: 2 Sets
Diameter: Pass
Location: Pass
Size: 1/2"

Flange Tap Information

Flange Taps Relative to Center of Meter Tube: Horizontal
No. of DP Sensors: None
Static Pressure Sensor: None
Location: Tee'd
None

Comments and Notes (indicate if attachments are included)

Inspection Kit Number: 2 NOA Number: G-0196 r1

Inspector: Jamie van der Laan
Signed: _____
Date: June 4, 2009
Witness: _____
Signed: _____
Date: _____