

Middletown Energy Center CCPP 475MW
- Project V17494
& Kings Mountain Energy Center
- Project V17495

A-A
1 : 12

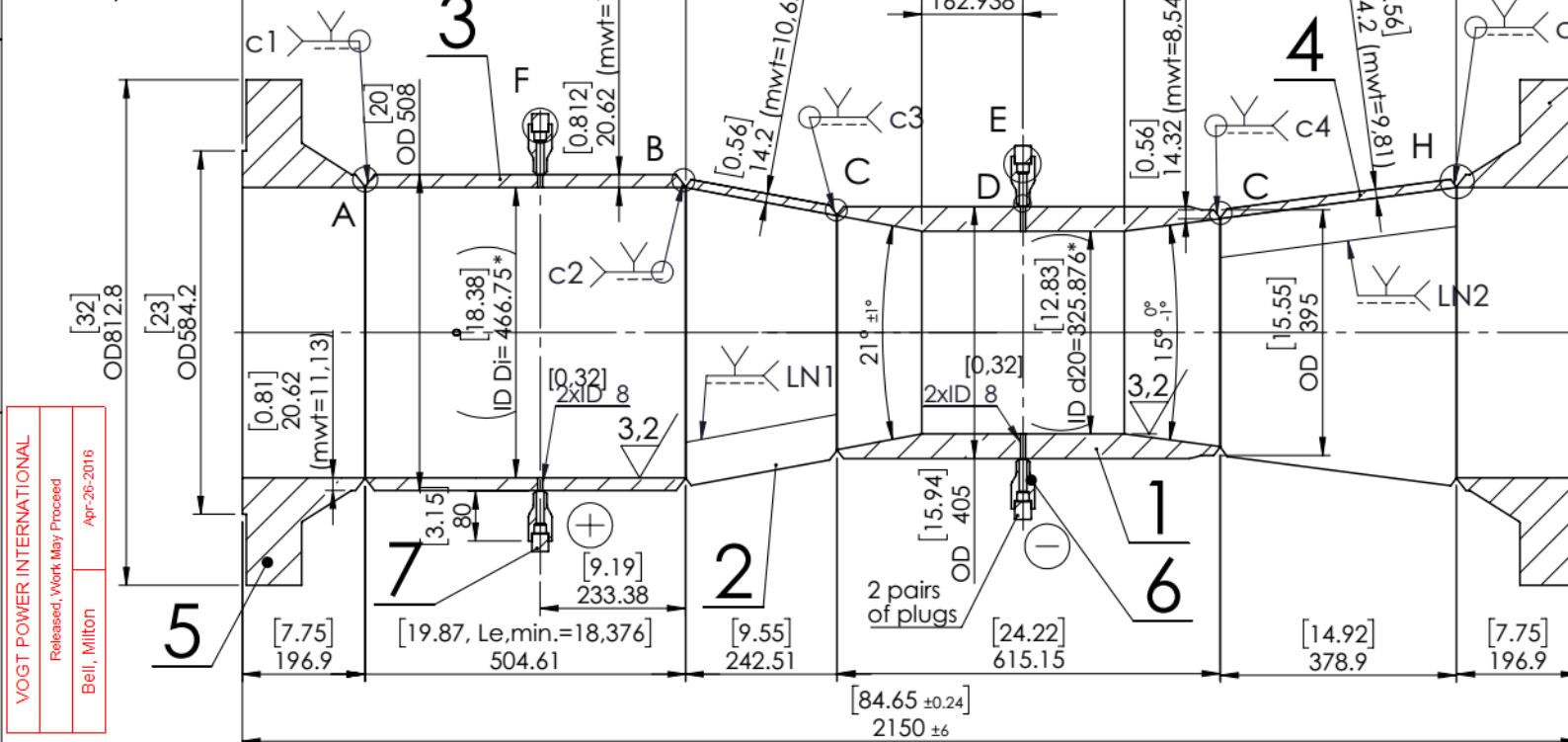
MEC/KMEC
20" Flow Element 1CR-FE3001 (Reheat Steam outlet - Venturi)

Calibration-VCS

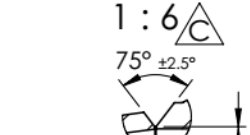
ReDmax: 6 E6
MID volumetric procedure /
20 points per tap set, including
repeat test points at 25%, 50%, and 75%
of calibration range.
Accuracy: $\pm 1/4\%$
Additional uncertainties: min. 0.50%
Calibration code:
ASME MFC - 3M - 2004 addendum

Ansicht in Durchflussrichtung!
View in flow-direction!

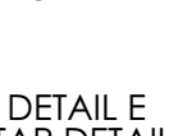
Flow direction



DETAIL H
- BW ENDING
1 : 6



DETAIL E
- TAP DETAIL
2 : 7



Stamping
"Taps B"



Stamping
"Taps A"



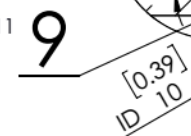
DETAIL G
- INSPECTION
PORT
1 : 7



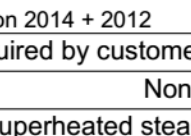
DETAIL F
- PLUGGED TAP
1 : 4



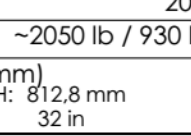
DETAIL D
- DETAIL OF IMPULSE
CONNECTION
2 : 7



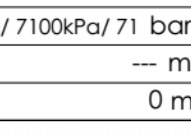
DETAIL B
- BW ENDING
1 : 4



DETAIL C
- BW ENDING
1 : 4



DETAIL A
- BW ENDING
1 : 4



DETAIL F
- PLUGGED TAP
1 : 4



DETAIL G
- INSPECTION
PORT
1 : 7



DETAIL H
- BW ENDING
1 : 6

DETAIL I
- BW ENDING
1 : 6

DETAIL J
- BW ENDING
1 : 6

DETAIL K
- BW ENDING
1 : 6

DETAIL L
- BW ENDING
1 : 6

DETAIL M
- BW ENDING
1 : 6

DETAIL N
- BW ENDING
1 : 6

DETAIL O
- BW ENDING
1 : 6

DETAIL P
- BW ENDING
1 : 6

DETAIL Q
- BW ENDING
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DETAIL R
- BW ENDING
1 : 6

DETAIL S
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DETAIL T
- BW ENDING
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DETAIL U
- BW ENDING
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DETAIL V
- BW ENDING
1 : 6

DETAIL W
- BW ENDING
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DETAIL X
- BW ENDING
1 : 6

DETAIL Y
- BW ENDING
1 : 6

DETAIL Z
- BW ENDING
1 : 6

DETAIL AA
- BW ENDING
1 : 6

DETAIL BB
- BW ENDING
1 : 6

DETAIL CC
- BW ENDING
1 : 6

DETAIL DD
- BW ENDING
1 : 6

DETAIL EE
- BW ENDING
1 : 6

DETAIL FF
- BW ENDING
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DETAIL GG
- BW ENDING
1 : 6

DETAIL HH
- BW ENDING
1 : 6

DETAIL II
- BW ENDING
1 : 6

DETAIL JJ
- BW ENDING
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DETAIL KK
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DETAIL LL
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DETAIL MM
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DETAIL NN
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DETAIL OO
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DETAIL PP
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DETAIL GGG
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DETAIL HHH
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DETAIL III
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DETAIL JJJ
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DETAIL KKK
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DETAIL LLL
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DETAIL WWW
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DETAIL YYY
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DETAIL ZZZ
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1 : 6

DETAIL AAA
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1 : 6


DETAIL BBB
- BW ENDING
1 : 6


DETAIL CCC
- BW ENDING
1 : 6

DETAIL DDD
- BW ENDING
1 : 6

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1		2		3		4		5		6		7		8				
A	EXCERPT FROM ASME-MFC-3M-2004, TABLE 4-1 REQUIRED STRAIGHT LENGTHS FOR CLASSICAL VENTURI TUBES 															A		
	BETA RATIO	Single 90° bend or tee (NOTE 1)		Several 90° bends, same plane (NOTE 1)		Several 90° bends, different planes (NOTE 1)		Reducer 3D to D over length of 3.5D		Expander 0.75D to D over length of D		Gate Valve Fully Open		Required outlet section			B	
	1	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B			
	0.698	258.399	55.371	332.228	55.371	332.228	55.371	193.800	46.143	101.514	64.600	101.514	64.600	51.319	51.319			
B	GENERAL NOTES: (a) Values are expressed in INCHES. (b) Straight lengths shall be measured from the downstream end of the curved portion of the nearest (or only) bend or the downstream end of the curved or conical portion of the reducer or expander to the upstream pressure tapping plane of the classical Venturi tube. (c) If temperature pockets or wells are installed upstream of the classical Venturi tube, they shall not exceed 0.13D in diameter and shall be located at least 4D upstream of the upstream tapping plane of the Venturi tube. (d) For downstream straight lengths, fittings or other disturbances (as indicated in this Table) or densitometer pockets situated at least four throat diameters downstream of the throat pressure tapping plane do not affect the accuracy of the measurement. (e) Column A for each fitting gives lengths corresponding to “zero additional uncertainty” values. (f) Column B for each fitting gives lengths corresponding to “0.5% additional uncertainty” values. ADDITIONAL NOTES: (1) The radius of curvature of the bend shall be greater than or equal to the pipe diameter. (2) The straight length in each Column A gives zero additional uncertainty, data are not available for shorter straight lengths that could be used to give the required straight lengths for each Column B.															C		
																	D	
																		E
</																		

Construction Code: ASME Section I, Ed. 2013		C	Implementation of detail H and note for inspection port.	07.04.16	LB
Classification: NBEP					
Supporting Code: ASME B31.1 Edition 2014 + 2012		B	Implementation of customer comments and inspection port. Modification of calibration code and table of required straight lengths.	03.02.16	LB
Stamping: N.A. (not required by customer)					
appl. Code cases: None		A	Initial release	04.01.16	LB
Medium: Superheated steam					
PWHT: NO		Index rev.	Änderungshinweis / Details of revision	Datum Date	Name
Baujahr/Year built: 2016		Inspector: SEIKO			
Gew./Weight: (kg) ~2050 lb / 930 kg		Einbaulage/mounting pos.: horizontal			
Abmessungen./Dimensions: (mm) L: 2150 mm W: 812,8 mm H: 812,8 mm 84,65 in 32 in 32 in		Druckentnahmestutzen/taps: 2 pairs			
PS (max. Pressure): 680Psig/4688,5kPa/47 bar(g)		Corrosion protection: Remosil			
TS (max. Temp.): 715°F / 379,4 °C		Oberflächenbeh./Surface treatment: SA2.5			
PT (Testpressure) inline, 1029,8Psig/ 7100kPa/ 71 bar(g)		KKS-Nr./TAG-No.:		Fabr. Nr./Serial No.:	
Isolierstärke/ Insulation thickness --- mm		1CR-FE3001		SEI15_2824	
Corrosion allowance: 0 mm					
Kunde/Customer:		Benennung/Title: 20"/Sch.60			
 Projekt/Project.: V17494 - Middletown Energy Center & V17495 -Kings Moutain Energy Center		Venturi tube meterrun with two pairs of taps 600#			
		CR Steam inlet flow element			
PO: V0009647 Item#10		Zeichnungs-Nr./Drawing-No.:		Type:	
		Seiko: A16020088-150712/10		RKVRB_ML_FL	
HO: A16020088-150712		Kunde: Vogt Power International (VPI)		2/2	