November 16, 2017

Zachary Berggren Engineered Controls International, LLC 100 Rego Drive Elon, NC 27244

Subject: Capacity Certification, Valve Type: A8436N (20% OP)

NB Cap Cert. No.: REG-M46145

Dear Mr. Berggren:

We have reviewed the enclosed test results, referenced below, which were performed at the **National Board Testing Laboratory** on November 14, 2017 for the purpose of testing for capacity certification of the subject valve type as required by paragraph UG-136(c)(3) of Section VIII of the ASME Code.

Engineered Controls International, LLC is hereby granted capacity certification and authorization to apply the "NB" mark and ASME Certification mark with "UV" designator to the valve type listed in the scope of certification. This authorization is valid only for the above location and only while the organization is fully implementing its quality control system as accepted by the National Board.

SCOPE OF CERTIFICATION

Valve Type: A8436N (20% OP)

Organization Type: Manufacturer

Certified Rating Value/Sizes/Pressure Ranges: As listed in the NB-18

Certification Expiration Date: May 8, 2024

Sincerely,

Thomas P. Beirne, P.E. Technical Manager, Pressure Relief Dept.

REFERENCING TEST NUMBERS: 45764A, 45794A

File:GF: 171116 REG-M46145 Pass

National Board Testing Laboratory Nitrogen Test - Orifice Plate Flow Meter Method

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Number Code <mark>tional Data and Measured Di</mark>			
code tional Data and Measured Di	40047		
tional Data and Measured Di	40047		
	10D17		
Pressure	mensions		
1000010		psig	
essure	268.3	psig	
Set Pressure		psig	
own	58.5	psi	
Blowdown		psi	
Diameter	1.766	inch	Nominal
		inch	
ired Data			
rea	2.44947	in ²	
ressure	306.7	psig	
ntial Pressure	6.74	psid	
emp.	39	°F	
Pressure	296.4	psig	
Temp.	53	°F	
	14.29	psia	
D Number		9	3 Plate Dia.
ressure (absolute)	320.99	psia	
. O Flow Condition	1 0000	lhm/ft ³	
		IDITI/IC	
		Ibm/ft-sec	
	4,815,675		
red Capacity at Std. Cond.			
		SCFM/PSIA	
	9188.1	SCFM	
cient Capacity For Measured Set 3 VIv. Ave.	9839.		
	D Number Atted Data Temp. Atted Data Tessure (absolute) Y @ Flow Condition (w) Actor (Fa) Tessure (absolute) Act	14.29 D Number ated Data	14.29 psia D Number 9 14.29 psia 15.20 psia 15.2

National Board Testing Laboratory Air Test - Orifice Plate Method: Test Summary

Test Summary for test 45764A:	
Valve tested for 6 Year Capacity Recertification as	s a Manufacturer.
provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Ma	s was obtained under my supervision in accordance with the of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects
provisions of ASME PTC 25, the applicable sections	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d.
provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Ma	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects
provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Ma	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d.
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provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Matested were of the same type and design as indicated	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d. //- (5-(7) Date Company Representatives
provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Matested were of the same type and design as indicated Authorized Observer: Sam Finley Test Personnel	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d. //- (5-(7) Date
provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Matested were of the same type and design as indicated Authorized Observer: Sam Finley Test Personnel Steve Bowman	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d. //- (5-(7) Date Company Representatives
provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Matested were of the same type and design as indicated Authorized Observer: Sam Finley Test Personnel Steve Bowman	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d. //- (5-(7) Date Company Representatives
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provisions of ASME PTC 25, the applicable sections National Board Testing Laboratory Quality Control Matested were of the same type and design as indicated Authorized Observer: Sam Finley Test Personnel Steve Bowman	of the ASME Boiler and Pressure Vessel Code, and the anual. To the best of my knowledge and belief the objects d. //- (5-(7) Date Company Representatives

National Board Testing Laboratory Nitrogen Test - Orifice Plate Flow Meter Method

	Valve ID Data	Revision 2.4		
1	Test Number	45794A		
2	Test Sponsor	Engineered Cor	ntrols International, Ll	_C
3	Company Type	Manufacturer	•	Elon, NC
4	Test Date	11/14/2017		REG
5	Valve Type	A8436N		
6	Manufacturer	Engineered Cor	ntrols International, Ll	_C
7	Cap. Cert. ID No.	46145		
8	Set Pressure	265 psig		
9	Inlet Size	3 M		
10	Outlet Size	Тор		
11	Stamped Capacity	9839. SCFM		
12	Code Section	VIII		
13	Serial Number			
14	Date Code	10D17		
	Operational Data and Measured D	imensions		
15	Warn Pressure		psig	
16	Set Pressure	268.0	psig	
17	Reset Set Pressure		psig	
18	Blowdown	13.3	psi	
19	Reset Blowdown		psi	
20	Bore Diameter	1.766	inch	Nominal
21	Lift		inch	
	Measured Data			
22	Flow Area	2.44947	in ²	
23	Line Pressure	312.3	psig	
24	Differential Pressure	7.71	psid	
25	Line Temp.	42	°F	
26	Vessel Pressure	300.8	psig	
27	Vessel Temp.	55	°F	
28	P _b	14.41	psia	
29	Plate ID Number		9	3 Plate Dia.
	Calculated Data			
	Line Pressure (absolute)	326.707	psia	
	Density @ Flow One dition	4 7004	lbm/ft ³	
32	Density @ Flow Condition (w)	1.7091	IDIII/IL	
33	Area Factor (Fa)	0.999600		
34	Trial Flow Rate	13.8385	lbm/sec	
35	Viscosity	1.1345E-05	lbm/ft-sec	
36	Reynolds Number RD	5,142,517		
37	Theoretical Capacity (WT)			
	WT=CKAP√M/T	64,136.8	lbm/hr N2	
38	Measured Capacity at Std. Cond.	49,818.5	lbm/hr N2	
39	Measured Capacity at Std. Cond.	11058.4	SCFM AIR	
40	Slope	35.083	SCFM/PSIA	
41	Coefficient	0.77675		
42	Rated Capacity For Measured Set	9321.7	SCFM	
43	Rated 3 VIv. Ave.	9839.		
44				

National Board Testing Laboratory Air Test - Orifice Plate Method: Test Summary

Test Summary for test 45794A:	
Valve tested for 6 Year Capacity Recertificatio	n as a Manufacturer.
I certify that the data on the attached test data she	eets was obtained under my supervision in accordance with the
provisions of ASME PTC 25, the applicable section	ons of the ASME Boiler and Pressure Vessel Code, and the
National Board Testing Laboratory Quality Contro	l Manual. To the best of my knowledge and belief the objects
tested were of the same type and design as indica	
1. = 1.1	11-14-17
Authorized Observer: Sam Finley	Date
AdditionZed Observer. Gain i liney	Date
Test Personnel	Company Representatives
Tim Brown	
Steve Bowman	
Sieve Downlan	
Sam Finley	