MTE Report No: 56515
Part#: 14396.3
WO#: 924267

Certificate of compliance and test report – welded or brazed cylinders
Manufactured under Dept. of Transportation regulations

Manufacturer: MANCHESTER TANK & EQUIP.

Location: 3400 Wismann Lane, QUINCY, IL 62301-1256 USA

CYLINDER DESCRIPTION AND DESIGN CRITERIA:

DOT spec. 4BW

Service Pressure: 400 psi

Nominal size: 16.000in. O.D.x 37.250in. Long

Test Pressure: 800 psi

Nominal volumetric capacity: 235.0 lb

Minimum wall: 0.173 in.

Tare weight range: 131.67 - 137.36 lb

Calculated stress @ T.P: 34965 psi

Joint Efficiency: Spot X-Ray for 90% Joint Efficiency.

MANUFACTURING PROCESS:

Construction: (Welded, brazed, type seams, etc) These Cylinders were made by process of electric arc welding semi-elliptical heads to a rolled shell. The Longitudinal butt seam was butt welded, per 178.61-(d)(3)(i). The circumferential seams were Joggle butt welded, per 178.61(d)(2).

MATERIAL AND HEAT TREATMENT:

Material was type 3 authorized in Table 1 of Appendix A of Part 178.

The material was identified by Heat Numbers: 212331,C79546

REPORT DETAILS:

Quantity: 37

Test date: 07/2017

Serial# Range: AA867917 – AA867953

Heat no. or code: 191RH,175CS

Identifying symbol: M4502

Lot numbers: 1 - 1

MARKINGS:

Inspector's mark: PR

MANUFACTURED FOR: STOCK

CONSIGNED TO:

I hereby certify that I have determined that cylinders described on this report comply with the requirements of Dept. of Transportation specification Title 49 CFR, Part 178.61

Remarks: Tare Weights include valves.

Signed:
Peggy Reeves

Location: QUINCY, IL

Date: 07-18-17

MTE Report No: 56515

Record of chemical analysis of material for cylinders

Serial no range: AA867917 to AA867953 inclusive

Cylinder size: 16.000in. O.D. x 37.250in. long

Cylinder Manufacturer: MANCHESTER TANK & EQUIP.

Heat and Code number.	Type of Analysis (ladel/check	Chemical Analysis									
		C Ni	Mn Cu	P Cr	S Mo	Si Ti	Al Mg	Cb Zn	V Fe	Other 1 Name – Sym Other 2 Name - Sym	
191RH - 212331 MANUF BY: RAO TESTED BY: RAO	Ladle	0.040 0.080	0.850 0.110	0.014 0.070	0.004 0.020	0.020 0.001	0.020 0.000	0.033 0.000	0.001 0.000	0 - -	
175CS - C79546 MANUF BY: NUCOR STEEL TESTED BY: NUCOR STEEL	Ladle	0.040 0.030	0.860 0.090	0.009 0.050	0.004 0.020	0.020 0.001	0.022 0.000	0.037 0.000	0.001 0.000	- -	

Material manufacturer: Manufacturers listed in above data.

The above analyses have been verified to comply with material authorized by the specification. Chemical Analyses were made by Companies listed in above data.

Location: QUINCY, IL

Date: 07-18-17

MTE Report No: 56515

Record of physical test of material for cylinders

Serial no range: AA867917 to AA867953 inclusive

Cylinder size: 16.000 in. O.D. x 37.250 in. long

Cylinder Manufacturer: MANCHESTER TANK & EQUIP.

Type of heat treatment: Cylinders were heat treated in excess of 1100F, in accordance with the 4BW Cylinder Spec.

First Serial# Last Serial# Min Wall Thick Wall Stress	Lot number	Heat Code	Yield strength Psi	Tensile strength Psi	Yield/ tensile ratio*	Elongation % in Inches** Length %	Red in area %	Weld test * tensile bend	Flat test *	Burst test *	Cycle test *
AA867917 AA867953 0.220 in 27502 psi	1-HT 1-HB 1-S 1-W	191RH 191RH 175CS	54877 56226	76561 77310 73433	% %	18.3 17.8	78.6 72.7	SAT SAT		PASS	

HT – Head Top HB – Head Bottom S – Side Wall W – Weld PM – Parent Material SAT - Satisfactory

* Where applicable

** Insert gage length of specimen

Location: QUINCY, IL

Date: 07-18-17

MTE Report No: 56515

Record of hydrostatic tests of cylinders (sample basis)

Serial no range: AA867917 to AA867953 inclusive

Cylinder size: 16.000 in. O.D. x 37.250 in. long

Cylinder Manufacturer: MANCHESTER TANK & EQUIP.

Test method: Water Jacket method, per CGA C-1.

Test pressure: 800 psi

Lot #	Serial # Range	Lot Size	Permanent Expansion Cm^3	Total Expansion Cm^3	% Ratio of Permanent to Total Expansion	Volumetric Capacity (lbs.)
1	AA867917 - AA867953	37	10.00	250.00	4.0	235.0

The above results represent sample cylinders selected from each lot. All other cylinders in the lot were subjected To a proof pressure of 800 psi and showed no defects.

Location: QUINCY, IL

Date: 07-18-17