

FORM U-2A MANUFACTURER'S PARTIAL DATA REPORT (ALTERNATIVE FORM)
A Part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Karbate Vicarb Inc. 21945 Drake Road, Strongsville, Ohio 44136
(Name and address of Manufacturer)

2. Manufactured for John Brown Engineers
(Name and address of Purchaser)

3. Location of installation Maryland
(Name and address)

4. Type: Vertical Shell K41301.071 ✓ #93903
(Description of vessel part (shell, two-piece head, tube bundle)) (Mfg's. serial No.)
734 CP9516-C7A Item 1
(Mat'l. Bd. No.) (Drawing No.) (CRN) 1995
(Year built)

5. ASME Code, Section VIII, Div. 1 Edition 1992, Add. 93
(Edition and Addenda (date)) (Drawing prepared by) (Code Case No.) (Special Service per UG-120(d))

6. Shell (a) No. of course(s): 1 (b) Overall length (ft & in.): 7' - 9"

Courses			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
No	Diameter, in.	Length, ft & in.	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	10.75	7'-7.625	SA53B		.307	.062	ERW	NONE	.85	--	--	--	--	--

7. Heads: (a) End Flgs. SA105 (b) SA516-70
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp.

Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A	
	Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None
(a) <u>Fixed</u>	1.188	SID	10" R.	F.S.O.	150#	WELD	FLG.		16" O.D. x 10.88	I.D.		--
(b) <u>Floating</u>	1.375	--	--	--	--	--	--		16" O.D. x 10.023	I.D.		--

If removable, bolts used (describe other fastening) Groove & Fillet Weld to Shell

8. MAWP 100 psi at max. temp. 425 °F. Min. design metal temp. -20 °F at 100 psi.
(internal) (external) (internal) (external)

9. Impact test No UCS-66(a)
(Indicate yes or no and the component(s) impact tested)

10. Hydr., pneu., or comb. test press. 150 Proof test --

11. Nozzles, inspection, and safety valve openings: Safety valves to be supplied by owner/user.

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
<u>INLET</u>	1	3 x 2	<u>CONC RED</u>	<u>SA234WP</u>	<u>SA105</u>	<u>ST. WT.</u>	<u>.062</u>		<u>W 16 Cl</u>	<u>Fig 2-4 (3)</u>	<u>in shell</u>
<u>OUTLET</u>	1	2"	"	"	<u>.154 WALL</u>		<u>.062</u>		"	"	"
<u>Drain</u>	1	.50 NPT		<u>3000#</u>	<u>COUPLING</u>				<u>Weld to shell</u>		

12. Supports: Skirt No Lugs -- Legs -- Others (2) Supports Attached WELD TO SHELL
(Yes or no) (No.) (No.) (Describe) (Where and how)

13. Remarks: Assembly Drawing K41301-7C Size CKS - 2 - 6 Block

W.O. K41301

CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of material, construction, and workmanship of this pressure vessel part conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

U Certificate of Authorization No. 3948 Expires February 28, 19 98

Date 7-28-95 Name Karbate Vicarb Inc. Signed [Signature]
(Manufacturer) (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Ohio and employed by Arkwright Mutual Insurance Co.* of Norwood, MA have inspected the pressure vessel part described in this Manufacturer's Data Report on 7/28, 19 95, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel part in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel part described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 7/28/95 Signed [Signature] *Factory Mutual Eng. Assoc. 1/1/93 NB10418 D
(Authorized Inspector) (Commissions) (Nat'l Board incl. endorsement, State, Province and No.)

#93903

PO 94037-21.51

MOAB

KARBATE

PREVIOUS GRAPHITE EQUIPMENT

NIXON MOAB INC. 450 PONY DRIVE FRUITLAND ONTARIO CANADA L8V 1R8 TEL (416) 293-9789 FAX (416) 293-9788	KARBATE MOAB INC. 21045 DRAKE ROAD STRONGSVILLE, OHIO USA 44136 TEL (216) 572-2468 FAX (216) 572-2570
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ITEM E-16081

734

100-FV 425

100-FV 425

-20 100

K41301-071

K41301-7C

1995

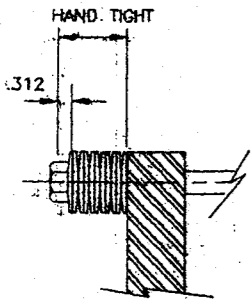
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PART

RES W

APPROX. WEIGHT, POUNDS	
DRY	FLOODED
920	1020

	SERVICE SIDE	PROCESS SIDE
DESIGN PRESSURE, PSIG	100 & FV	100 & FV
TEST PRESSURE, PSIG	150	150
MAX. WORKING TEMP., °F	425	425
DESIGN TEMP., °F	350	350
SERVICE	GLYCOL	TOLUENE MIX
MIN. DESIGN METAL TEMP.	-20° F. @ 100 PSIG	



PROCEDURE FOR SPRING ASSEMBLY

1. INSTALL ALL BOLTS, FLAT WASHERS, SPRINGS AND NUTS AS SHOWN IN DETAIL.
2. HAND TIGHTEN ALL NUTS TO SNUG FIT.
3. COMPRESS SPRINGS IN A DIAMETRICALLY STAGGERED PATTERN (5/16" IN 3 STAGES)
EQUIV. BOLT TORQUE = 22 FT. LBS.
(BOLT TORQUE PREDICATED ON CLEAN THREADS USING ANTI-SEIZURE THREAD LUBRICANT)

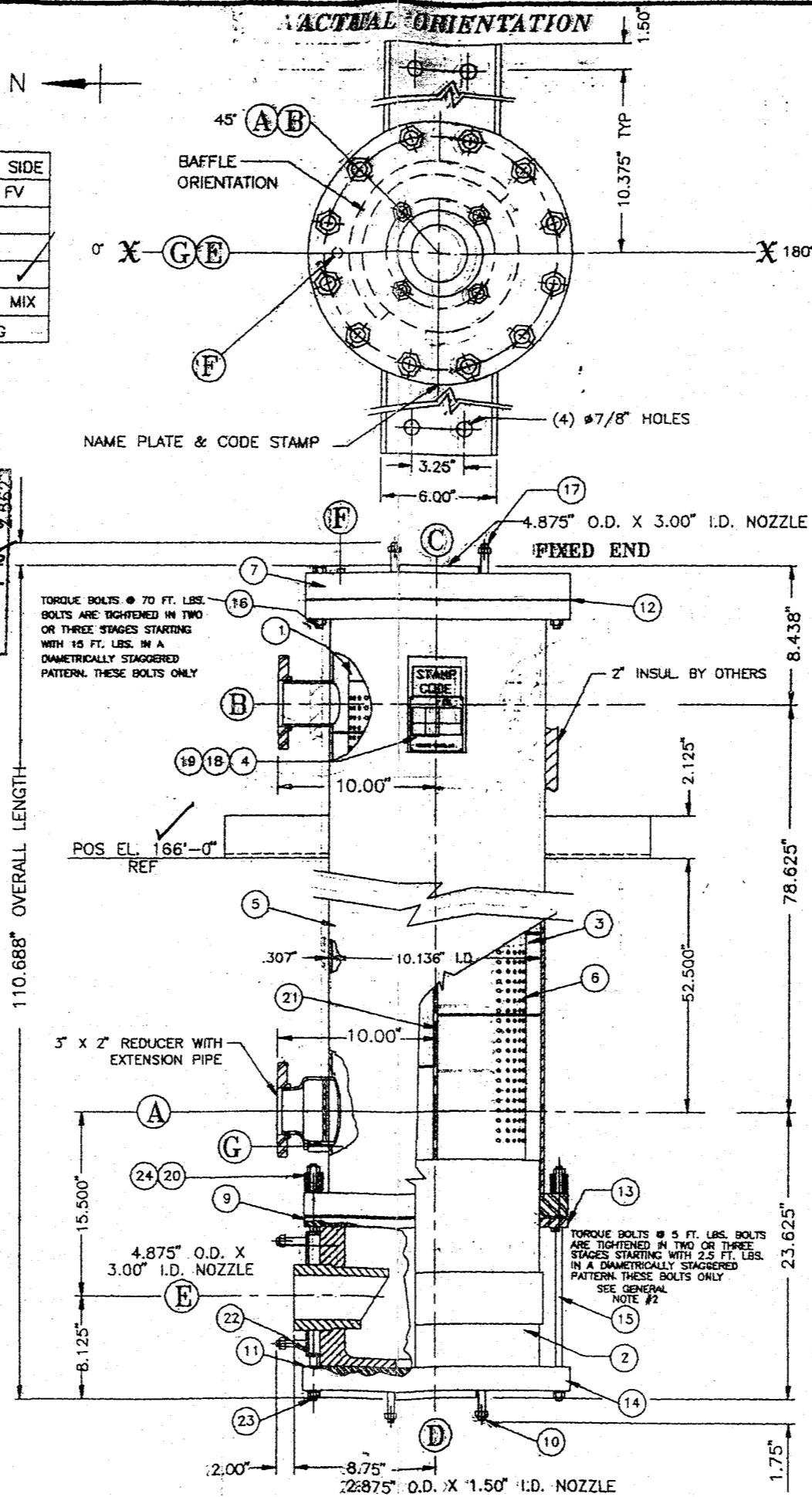
PATTERN MANUFACTURERS DATA
Approval or comments given are for gen'l arrangement only. Vendor's responsibility remains for design, performance and details.
Contract Item E-16081 Date 4/6/95
Checked By LJB P.O. 2151
Approved as drawn
Approved as drawn editorial comments only
Approved as noted
JOHN BROWN

GENERAL NOTES :

1. ALL NOZZLE BOLTS TO STRADDLE CENTER-LINES
2. COAT ONLY THESE BOLT THREADS (AS NOTED) WITH FEL-PRO OR EQUAL ANTI-SEIZURE COMPOUND
3. CUSTOMER INSPECTION : REQUIRED PER JB PROCEDURES
4. CODE SHELL:
THIS SHELL TO BE MANUFACTURED & STAMPED IN ACCORDANCE WITH A.S.M.E. CODE SECT. VIII, DIV.1, 1992 EDIT., 1993 ADD.
5. ALL PRESSURE CONTAINING METAL PARTS TO BE CODE MATERIAL
6. MATERIAL : BLOCKS - VCT TEFLON IMPREGNATED KARBATE SHELL - STEEL
7. CORROSION ALLOWANCE = 1/16"
8. SPECIAL PAINT: ALL CARBON STEEL SURFACES TO BE PAINTED IN ACCORDANCE WITH FMC SPEC. 8006 (3 COAT SYSTEM)

JOHN BROWN E & C
NEW JERSEY CENTER
DOCUMENT CONTROL
P.O. # 94037
REON # 21.51
TAG
VDO # 006

NOZZLE/COUPLING MARK	NOMINAL SIZE	SERVICE	CLASS
A	2"	SERVICE INLET	150# ANSI
B	2"	SERVICE OUTLET	
C	3"	PROCESS INLET	
D	1 1/2"	PROCESS OUTLET	
E	3"	VAPOR OUTLET	NPT
F	1/2"	SHELL VENT	
G	1/2"	SHELL DRAIN	



BILL OF MATERIAL

PART NO.	QTY.	CK/CP NUMBER	DESCRIPTION
		K41301-7C	GENERAL ASSEMBLY CKS-2
1	1	9400-C100-1	FIXED DOME VCT CKS-2
2	1	9516-B7B	FLOATING DOME VCT CKS-2
3	7	9400-D302	PROCESS SIDE GASKET -PTFE -1/4" JOINT SEALANT
4	1	175-D237	CODE STAMPED PLATE
5	1	9516-C7A	CODE STAMPED SHELL - SEE GEN. NOTE #8
6	6	CKS-2-45208	CKS-2 VCT BLOCK
7	1	9400-C210	FIXED END PRESSURE PLATE -BORE FOR 3" NOZZLE - SEE GEN. NOTE #8
9	1	9400-C205	"O" RING COMPRESSION FLANGE-SEE GEN. NOTE #8
10	4	7200-D806-1	FLTG. END STUD 1/2"-1.3. -SEE NOTE 2
11	1	9400-D304	PRESSURE PAD - FLOATING END NON-ASBESTOS FIBER OR EQ.
12	1	9400-D301	FIXED END SHELL & DOME GASKET - EPDM
13	1	9400-D300	PACKING "O" RING - EPDM
14	1	9516-C7D	FLTG. END PRESSURE PLATE - SEE GEN. NOTE #8
15	8	9400-D401	COMBINATION FLOATING END COVER SPRING & COMPRESSION FLANGE ROD EXCEPT "A" = 21" LG
16	12	9400-D400	FIXED END BOLT
17	4	7200-D806-1	FIXED END STUD 5/8"-11 SEE NOTE 2
18	1	175-D238	NAME PLATE
19	8	2848-D108	DRIVE SCREWS
20	130	8400-D800	COMPRESSION SPRINGS (13 SPRING DISK IN SERIES PER BOLT)
21	1	9516-C7J	BAFFLE ASSEMBLY - (6 BLOCK)
22	1	9516-C7E	CONNECTOR PLATE ASSY
23			CONNECTOR PLATE STUD-PRESSURE PLATE SIDE- 3/4"-10 UNC THREADED ROD X 4.75" LG WITH HEX NUT -SEE NOTE #2
24			CONNECTOR PLATE STUD-GLAND SIDE- 3/4"-10 UNC THREADED ROD X 8.00" LG WITH HEX NUT -SEE NOTE #2

NOTES : 1. MATERIAL : VCT GRAPHITE
2. BOLTS AND STUDS ; SA193-B7 - NUTS ; SA194-2H (ZINC PLATE BOLTS & NUTS)

SINGLE PASS PROCESS
THREE (3) PASS SERVICE PER BLOCK
SIX (6) BLOCK UNIT
E-16081 SOLVENT FLASH AFTER CONDENSER

CERTIFIED FOR DIMENSIONS ONLY FOR JOHN BROWN CONST.
CUST. ORDER NO. 94037-21.51
KARBATE VICARB INC.
APPROVED MM CHECKED MJM
DATE 2-24-95

MATERIAL	TOL. EXCEPT AS NOTED	SCALE	KARBATE VICARB INC. STRONGSVILLE, OHIO USA NIXON VICARB INC. NEWMARDET, ONTARIO CANADA
	.125	.430 NTS	VICARB
KARBATE® CKS-2 BLOCK TYPE HEAT EXCHANGER			
CUSTOMER JOHN BROWN ENGINEERS & CONST.		PURCHASE ORDER NO. 94037-21.51	
B 2-24-95	ALC	ADDED FMC PAINT SPEC.	ITEM NO. E-16081
A 2-2-95	ALC	ADDED B/M & GEN-REV	DRWN ALC 12-5-94
NO. DATE	BY	REVISIONS	CHECKED MJM 12-5-94
			WORK ORDER NO. K41301
			S/N K41301.071
			CHECKED MJM 12-5-94
			K41301-7C