



DE DIETRICH (USA), INC., HWY. 44 & MCKINZIE RD., P.O. BOX 10069, CORPUS CHRISTI, TX. 78460 • 512-265-9900 • TELEX 415089 • FAX 512-265-9625

August 6, 1993

CUSTOMER : Merck & Co.
700 Atrium Drive
Somerset, NJ 08873

P. O. # : RY-590601A

S. O. # : 45225A

SERIAL # : 34278

NATL. BOARD # : 5007

VESSEL TYPE : CSA-1000

ITEM # :

Package includes the following:

1. U1/U4
2. Nameplate (copy)
3. Plug Chart
4. Joint Efficiencies Sketch

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by De Dietrich, 1 rue d'Offwiller, 67110 Zinswiller, France
(Name and address of manufacturer)

Manufactured for Merck & Co., 700 Atrium Drive, Somerset, NJ 08873
(Name and address of purchaser)

3. Location of installation same
(Name and address)

4. Type Vertical 3A278 N/A CSA 1000-003 H 5007 1989
(Horiz. or vert., tank) (Mfr's serial No.) (CRN) (Drawing) (Nat'l. Bd. No.) (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME Boiler and Pressure Vessel Code. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 1986
Year

1987 N/A N/A
Addenda (date) Code Case No. Special service per UG-120(d)

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers

6. Shell: ***
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft & in.) Length (Overall) (ft & in.)

7. Seams: Single fillet weld to inner vessel N/A *** *
Long. (Dbl., Sngl.) R.T. (Spot or Full) Eff. (%) H.T. Temp. (°F)

* Single welded butt no backing N/A *****
Time Girth (Dbl., Sngl.) R.T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Matl. *** (b) Matl. N/A
(Spec. No., Grade) (Spec. No., Grade)

Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)									
(b)									

If removable, bolts used (describe other fastenings) N/A
(Matl., Spec. No., Gr., Size, No.)

Type of Jacket Split pipe coil Proof Test per UG-101 (m)(2)

10. Jacket Closure Reducer full fillet weld If bar, give dimensions N/A If bolted, describe or sketch.
(Describe as ogee & weld, bar, etc.)

11. MAWP 450 or 450 & F.V. psi at max. temp. 500 °F. Min. design metal temp. -20 °F at 450 psi.
Hydro., pneu., or Comb. test press. 450 psi.

Items 12 and 13 to be completed for tube sections

12. Tubesheets: N/A
Stationary Matl. (Spec. No., Gr.) Diam. (in.) (Subject to pressure) Nom. Thk. (in.) Corr. Allow. (in.) Attach. (Welded, Bolted)

N/A
Floating Matl. (Spec. No., Gr.) Diam. (in.) Nom. Thk. (in.) Corr. Allow. (in.) Attach

13. Tubes: N/A
Matl. (Spec. No., Gr.) O.D. (in.) Nom. Thk. (in. or Gauge) Number Type (Straight or "U")

Items 14-17 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers

14. Shell: SA 285 B 45/64" N/A 5 ft. 3" O.D. 5 ft. 4-7/16"
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft & in.) Length (Overall) (ft & in.)

15. Seams: Welded, Dbl. Butt Spot *** *
Long. (Dbl., Sngl.) R.T. (Spot or Full) Eff. (%) H.T. Temp. (°F)

* Welded, Dbl. Butt Spot 1
Time Girth (Dbl., Sngl.) R.T. (Spot, Partial, or Full) No. of Courses

16. Heads: (a) Matl. SA 285 B (b) Matl. SA 285 B
(Spec. No., Grade) (Spec. No., Grade)

Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a) <u>Top</u>	<u>25/32"</u>	<u>N/A</u>	<u>50-3/8"</u>	<u>9-5/8"</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>Concave</u>
(b) <u>Bottom</u>	<u>25/32"</u>	<u>N/A</u>	<u>50-3/8"</u>	<u>9-5/8"</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>Both</u>

If removable, bolts used (describe other fastenings) N/A
(Matl., Spec. No., Gr., Size, No.)

17. MAWP 100 & F.V. psi at max. temp. 500 °F. Min. design metal temp. -20 °F at 100 & F.V. psi.
Hydro., pneu., or Comb. test press. 150 psi. PO#Ry590601A

Form U-1 (Back)

18. Nozzles, Inspection and Safety Valve Openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
Opening	1	30"	Dbl. Butt Girth	SA 181-60	25/32"	None	Welded	on top head
Manhole	1	14"x18"	Dbl. Butt Girth	SA 181-60	25/32"	None	Welded	on cover
I/O	1	8"	Dbl. Butt Girth	SA 181-60	5/8"	None	Welded	N/A
I/O	4	4"	Dbl. Butt Girth	SA 181-60	5/8"	None	Welded	N/A
Outlet	1	4"	Dbl. Butt Girth	SA 181-60	5/8"	None	Welded	N/A
Jacket I/O	8	2"	Sit through	SA 105	Standard	None	Welded	N/A
Jacket I/O	4	1/2"	Sit through	SA 105	Standard	None	Welded	N/A

19. Supports: Skirt no Lugs 4 Legs 0 Other N/A Attached Welded on top head
(Yes or no) (No.) (No.) (Describe) (Where and how)

20. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A

(Name of part, item number, mfg's. name and identifying stamp)

see attached form U-4

CERTIFICATE OF SHOP COMPLIANCE

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

"U" Certificate of Authorization No. 11718 expires April 16 1992
 Date April 19, 1989 Co. name De Dietrich (Manufacturer) Signed WAGNER R. Q.C., Manager (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by De Dietrich at Zinswiller, France

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 New York and employed by The Royal Indemnity Company of New York, N.Y.

Report on April 14, 1989, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel 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 described in the 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 Apr-26, 1989 Signed Martin KERNIG (Authorized Inspector) Commissions H.B. 9354 (Nat'l Board, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code.

"U" Certificate of Authorization No. _____ expires _____, 19_____
 Date _____ Co. name _____ (Assembler that certified and constructed field assembly) Signed _____ (By Representative)

CERTIFICATE OF FIELD ASSEMBLY 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 _____ and employed by _____ of _____

_____ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that, to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel 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 _____ Signed _____ (Authorized Inspector) Commissions _____ (Nat'l Board (incl. endorsements), State, Prov., and No.)

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by De Dietrich, 1 rue d'Offwiller, 67110 Zinswiller, France
(Name and address of manufacturer)

2. Manufactured for Merck & Co., 700 Atrium Drive, Somerset, NJ 08873
(Name and address of purchaser)

3. Location of installation _____
(Name and address)

4. Type Vertical 34278 N/A CSA 1000-003 H 5007 1989
(Horiz., vert., tank, etc.) (Mfg'r. serial No.) (CRN) (Dwg) (Nat'l. Bd. No.) (Year built)

Data Report Item Number	Remarks
20 Remarks	<p>*Vessel and split pipe coil H.T. at high temperature for extended period of time due to glass lining process.</p> <p>**See attached sketch.</p> <p>***1/2 coil 3-1/2" O.D., Material SA 516-60, 13/64" thickness, no corrosion allowance.</p> <p>****1/2 pipe 3-1/2" O.D., Material SA 106 B, 7/32" thickness, no corrosion allowance.</p> <p>*****Split pipe coil jacketed reactor consists of 4 separate units welded to shell and bottom head.</p> <p>Safety relief valve to be supplied and installed by customer as per UG-125 (h).</p> <p>Inner vessel design pressure of 100 psig and F.V. at 650°F is limited to 500°F max. allowable working temperature due to glass lining process.</p> <p>30" dia. inlet cover contains one 14"x18" manhole, one 4-3/8" dia. nozzle and two 3" dia. nozzles. 14" x 18" manhole cover contains one 4" dia. sight glass.</p> <p>I/O = Inlet/Outlet. 4 lifting lugs welded on heads.</p> <p>No impact testing required as per UG-20 (f) and UCS-66 (b);</p> <p>Glass lined steel vessel for chemical use.</p>

Date April 19, 1989 Co. name De Dietrich Signed [Signature] WAGNER R. Q.C. Manager
(Manufacturer) (Representative)

Date Apr. 26, 1989 Signed [Signature] Commissions N.B. 9354
(Authorized Inspector) (Natl. Board (incl. endorsements), State, Prov., and No.)

Martin KOENIG

NATIONAL BOARD



NAT'L BD. NO. 5007

CERTIFIED BY DE DIETRICH

INT. M.A.W.P. 100 / FV P.S.I.G. AT 500 °F

INT. MIN. DESIGN METAL TEMP. -20 °F AT 100 / FV P.S.I.G.

W JKT. M.A.W.P. 450 P.S.I.G. AT 500 °F

RT 4 JKT. M.A.W.P. 450 P.S.I.G. W. INT. F.V.

JKT. MIN. DESIGN METAL TEMP. -20 °F AT 450 P.S.I.G.

HT MFR'S NO. 34278 YEAR BUILT 1989

INSPECTED BY RIC

GLASS 3008 NOM. CAP. 1000 U.S. GALS

ITEM NO.

TANK SH. THK. $45/64$ " TOP HD. THK. $25/32$ " BOT. HD. THK. $25/32$ " HD. ICR. $50 \ 3/8$ "

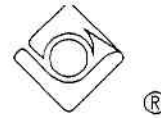
JKT. SH. THK. $13/64$ " JKT. HD. THK. $7/32$ " JKT. HD. ICR. -



MFG. BY DE DIETRICH & CIE
ZINSWILLER, FRANCE

DIST. BY DE DIETRICH (USA), INC
UNION, N.J. USA

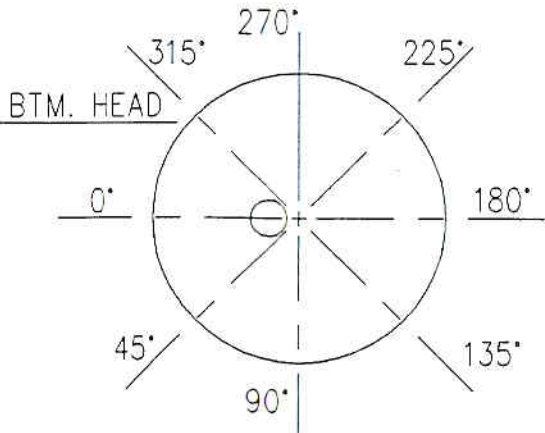
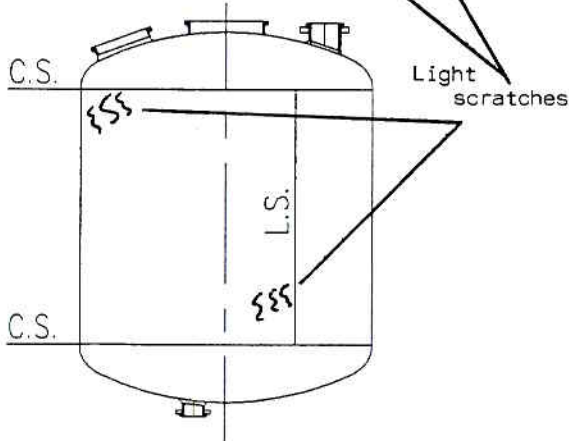
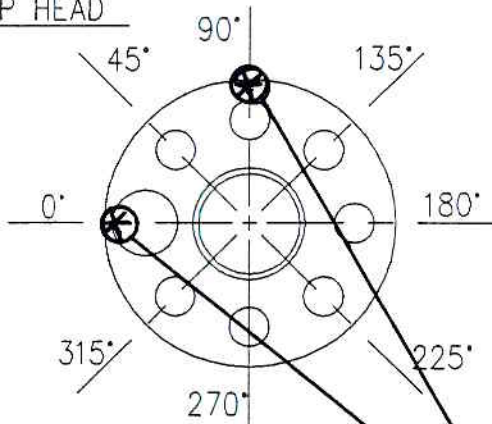
De Dietrich (USA), Inc.
Corpus Christi, Texas



REACTOR PLUG CHART

Cust. :	Merck & Co.,	S.A.#	45225A
Cust. P.O.#	RY590601A	S.O.#	45225A
Description	CSA-1000	RM#	new/stock
Item #		S.N.#	34278
		N.B.#	5007

TOP HEAD



SIZE & TYPE

△ PLUG#1 _____
 #2 _____
 #3 _____
 #4 _____
 #5 _____

PATCH OR SLEEVE _____

POLISHED AREA _____

COMMENTS: Plug free. Satisfactory:

Note: light scratches on shell @ 95' 16" from
 BHD @ 0°24" from THD.

INSPECTION

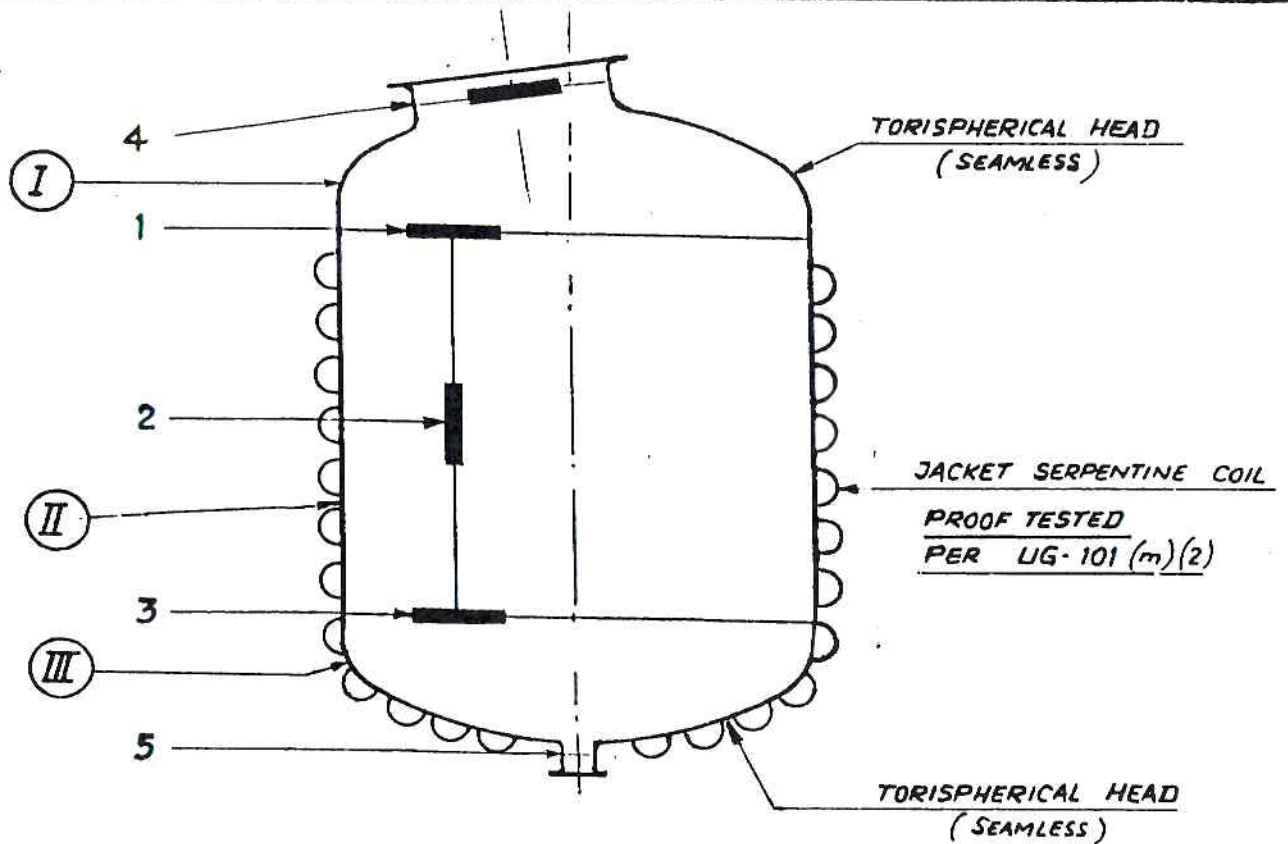
BY Alex Carrizales DATE 8-5-93

QTY. OF PLUGS none

OTHER _____

APPRO. BY Don Bearden

DATE 8-5-93



JOINT Nr.	RADIOGRAPHIC EXAMINATION	JOINT CATEGORY	JOINT TYPE	JOINT EFF. (TABLE UW-12)	CODE REF.
1	SPOT	B	1	0.85	UW-11 (a)(5) (b)
2	SPOT	A	1	0.85	UW-11 (b)
3	SPOT	B	1	0.85	UW-11 (a)(5) (b)
4	SPOT	C	1	0.85	UW-11 (b)
5	SPOT		1	0.85	UW-11 (b)

SEE NOTE 1

NOTE 1 : NO RADIOGRAPHY FOR BUTT WELDS IN NOZZLES THAT NEITHER EXCEED 10" N.P.S. NOR 1 1/8" WALL THK (UW-11 (a) (4))

RESULTANT JOINT DESIGN EFFICIENCIES

PART OF VESSEL	JOINT GOVERNING	EFFICIENCY	CODE REF.
I VESSEL TOP HEAD	1	1.0	UW-12 (d)
II VESSEL SHELL	2	0.85	UW-12 (b)
III VESSEL BOTTOM HEAD	3	1.0	UW-12 (d)