

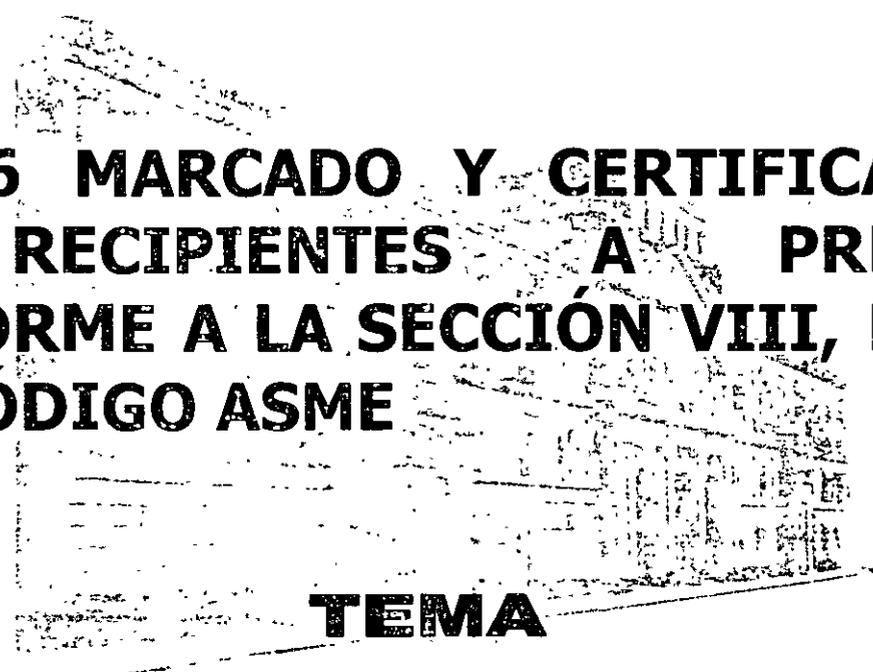


**FACULTAD DE INGENIERÍA UNAM  
DIVISIÓN DE EDUCACIÓN CONTINUA**



...: Mecánica e Industrial

# **CURSOS ABIERTOS**



**CA-336 MARCADO Y CERTIFICACIÓN  
DE RECIPIENTES A PRESIÓN  
CONFORME A LA SECCIÓN VIII, DIV. 1  
DEL CÓDIGO ASME**

**TEMA**

**APUNTES GENERALES**

**EXPOSITOR: ING. ORLANDO R. RIVERA MENDOZA  
DEL 14 AL 18 DE NOV. DEL 2005  
PALACIO DE MINERÍA**

**UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO**  
**FACULTAD DE INGENIERIA**  
**DIVISIÓN DE EDUCACIÓN CONTINUA**

**CURSO / MODULO**

**MARCADO Y CERTIFICACION  
DE  
RECIPIENTES A PRESION**

**CONFORME A SECCION VIII, DIV.1 DEL CODIGO ASME**

**INSTRUCTOR**  
**ING. ORLANDO R. RIVERA**

**NOVIEMBRE, 2005.**



**FIG. UG-116 OFFICIAL SYMBOLS FOR STAMP TO  
DENOTE THE AMERICAN SOCIETY OF MECHANICAL  
ENGINEERS' STANDARD**

## **ASME CODE SECTION VIII, DIV.1 SYMBOL STAMPS FOR PRESSURE VESSELS**

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### **STAMPING DIRECTLY ON THE VESSEL**

**WHEN CODE STAMPING IS APPLIED DIRECTLY ON THE VESSEL,  
STAMPING MUST:**

- **DONE USING LETTERS AND FIGURES AT LEAST 5/16" HIGH.**
- **BE ARRANGED PER FIGURE UG-118 WHERE SPACE PERMITS.**

# STAMPING ON A NAMEPLATE

WHEN CODE STAMPING IS APPLIED TO A NAMEPLATE, THE STAMPING MUST COMPLY WITH THE FOLLOWING:

- IT IS ARRANGED PER UG-118.
- THE CODE SYMBOL AND MANUFACTURER'S SERIAL NUMBER MUST BE STAMPED.
- LETTERS AND FIGURES MUST BE AT LEAST 5/32" HIGH.
- THE NAMEPLATE MUST BE ATTACHED IN A CONSPICUOUS PLACE.
- THE SYMBOL MAY BE STAMPED PRIOR TO ATTACHMENT TO THE VESSEL HOWEVER, THE PROCEDURE MUST BE ACCEPTED BY THE A.I.
- THE A.I. DOES NOT HAVE TO WITNESS THE STAMPING OF THE CODE SYMBOL HOWEVER, HE MUST VERIFY THAT THE NAMEPLATE IS ATTACHED TO THE PROPER VESSEL.

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## REQUIRED NAMEPLATES

A NAMEPLATE IS REQUIRED ON:

- FERROUS VESSELS LESS THAN 1/4" THICK.
- NON-FERROUS VESSELS LESS THAN 1/2" THICK.

NOTE: A NAMEPLATE MAY BE USED AS AN OPTION ANYTIME, WHETHER REQUIRED OR NOT.

# MODE OF INSPECTION

SECTION VIII, DIVISION 1 RECOGNIZES TWO TYPES OF AUTHORIZED INSPECTION. ONE IS BY THE AUTHORIZED INSPECTOR AND THE OTHER IS BY THE OWNER-USER INSPECTOR. THE STAMPING WOULD APPEAR AS FOLLOWS:

USER



USER INSPECTED  
SYMBOL



AUTHORIZED  
INSPECTION

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# TYPE OF CONSTRUCTION

THE TYPE OF CONSTRUCTION, I.E. WELDED, BRAZED, ETC., MUST BE INDICATED ON THE NAMEPLATE UNDER THE "U" SYMBOL. THE TYPES OF CONSTRUCTION AND THEIR SYMBOLS ARE AS FOLLOWS:

- ARC/GAS WELDED W
- BRAZED B
- FORGE WELDED F
- RESISTANCE WELDED RES



W

# SPECIAL SERVICE

IF A SPECIAL SERVICE IS REQUIRED, IT MUST BE INDICATED ON THE NAMEPLATE UNDER THE "U" SYMBOL. THE SPECIAL SERVICES AND THEIR SYMBOLS ARE AS FOLLOWS:

- LETHAL L
- UNFIRED STEAM BOILER UB
- DIRECT FIRED VESSEL DF



W

L

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# DEGREE OF RADIOGRAPHY

THE DEGREE OR AMOUNT OF RADIOGRAPHY MUST BE INDICATED ON THE NAMEPLATE UNDER THE "U" SYMBOL. THE DEGREE OF R.T. AND THE SYMBOLS ARE AS FOLLOWS:

- FULL RT-1
- UW-11(a)(5)(b) RT-2
- SPOT RT-3
- DOES NOT COMPLY WITH RT-1, 2 OR 3 HOWEVER, NONE IS NOT RT-4



W

L

RT-1

# POSTWELD HEAT TREATMENT

THE AMOUNT OF POSTWELD HEAT TREATMENT MUST BE INDICATED ON THE NAMEPLATE UNDER THE 'U' SYMBOL. THE SYMBOLS ARE AS FOLLOWS:

- ENTIRE VESSEL            H.T.
- PART OF VESSEL        P.H.T.



W

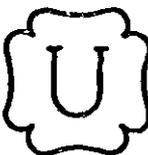
L

RT-1

H.T.

## CODE NAMEPLATE UG-118

THE ARRANGEMENT OF THE INFORMATION ON A CODE NAMEPLATE IS SHOWN IN FIGURE UG-118.

	Certified by
	<hr style="border: 0; border-top: 1px solid black;"/> Name of Manufacturer
	<hr style="border: 0; border-top: 1px solid black;"/> _____ psi at _____ °F (Max. allowable working pressure)
W (if arc or gas welded) RT (if radio- graphed) HT (if postweld heat treated)	<hr style="border: 0; border-top: 1px solid black;"/> _____ °F at _____ psi (Min. design metal temperature)
	<hr style="border: 0; border-top: 1px solid black;"/> (Manufacturer's serial number)
	<hr style="border: 0; border-top: 1px solid black;"/> (Year built)

# PARTS OF VESSELS

WHEN ONLY PART OF A VESSEL IS SUPPLIED BY A MANUFACTURER, THE WORD PART MUST APPEAR UNDER THE "U" SYMBOL STAMP. UG-116(h) GOES ON TO STATE THAT THE MANUFACTURER'S NAME, PRECEDED BY THE WORDS "CERTIFIED BY", AND SERIAL NUMBER MUST APPEAR ON THE NAME-PLATE.

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## REMOVABLE PARTS

UG-116(i) STATES "REMOVABLE PRESSURE PARTS SHALL BE PERMANENTLY MARKED IN A MANNER TO IDENTIFY THEM WITH THE VESSEL OR CHAMBER OF WHICH THEY FORM A PART. THIS DOES NOT APPLY TO MANHOLE COVER, HANDHOLE COVERS AND THEIR ACCESSORY PARTS PROVIDED THE MARKING REQUIREMENTS OF UG-11 ARE MET".

# MINIATURE VESSELS

THE REQUIREMENTS FOR MINIATURE VESSELS ARE FOUND IN U-2(j). IT STATES THAT VESSELS MEETING THE CRITERIA GIVEN MAY BE BUILT WITHOUT INSPECTIONS BY AN A.I.. TO BUILD THESE VESSELS A FABRICATOR MUST HOLD THE "U" OR "S" STAMP. THE CRITERIA ARE:

- FULL R.T. IS NOT REQUIRED.
- QUICK ACTUATING CLOSURES MAY NOT BE USED.
- IT MUST BE 5 CU. FT. AND 250 P.S.I OR LESS OR,
- 1.5 CU. FT. AND 600 P.S.I OR LESS.

THESE VESSELS MUST COMPLY WITH ALL OF THE RULES OF THE CODE WITH THE EXCEPTION OF INSPECTION BY AN A.I.. SOME JURISDICTIONS WILL NOT ACCEPT THESE TYPES OF VESSELS.

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## UG-90(c)(2) VESSELS

THE VESSELS COVERED BY THIS PARAGRAPH ARE IDENTICAL, MASS-PRODUCED VESSELS. THE A.I. IS NOT INVOLVED IN ALL INSPECTIONS. THE MANUFACTURER'S PERSONNEL PERFORM SOME OF THE INSPECTOR'S DUTIES. THE MANUAL MUST BE ACCEPTABLE TO THE AGENCY, THE JURISDICTION AND AN A.S.M.E. DESIGNEE. ANY REVISIONS ARE SUBJECT TO THE APPROVAL OF THESE ORGANIZATIONS. THE DATA REPORT MUST STATE "CONSTRUCTED TO THE RULES OF UG-90(c)(2)".

## **APPLICATION FOR AUTHORIZATION**

**ANY ORGANIZATION DESIRING A CERTIFICATE OF AUTHORIZATION SHALL APPLY TO THE B&PV COMMITTEE, ON FORMS ISSUED BY ASME, SPECIFYING THE STAMP DESIRED AND THE SCOPE OF CODE ACTIVITIES TO BE PERFORMED. THE APPLICATION SHALL IDENTIFY THE AUTHORIZED INSPECTION AGENCY PROVIDING CODE INSPECTION IN PLANT/ FIELD SITE.**

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## **ISSUANCE OF AUTHORIZATION**

**AUTHORIZATION TO USE CODE SYMBOL STAMPS MAY BE GRANTED OR WITHHELD BY ASME IN ITS ABSOLUTE DISCRETION. IF AUTHORIZATION IS GRANTED, AND THE PROPER ADMINISTRATIVE FEE PAID, A CERTIFICATE OF AUTHORIZATION EVIDENCING PERMISSION TO USE ANY SUCH SYMBOL, EXPIRING ON THE TRIENNIAL ANNIVERSARY DATE THEREAFTER, EXCEPT FOR UM CERTIFICATES, WILL BE FORWARDED TO THE APPLICANT.**

## **INSPECTION AGREEMENT**

**TO OBTAIN AND MAINTAIN A CERTIFICATE OF AUTHORIZATION TO USE THE U AND UM STAMPS, THE MANUFACTURER MUST HAVE IN FORCE AT ALL TIMES AN INSPECTION CONTRACT OR AGREEMENT WITH AN AUTHORIZED INSPECTION AGENCY TO PROVIDE INSPECTION SERVICES.**

**THE INSPECTION CONTRACT IS A WRITTEN AGREEMENT BETWEEN THE MFR. AND THE AIA WHICH SPECIFIES THE TERMS AND CONDITIONS UNDER WHICH THE INSPECTION SERVICES ARE TO BE FURNISHED AND WHICH STATES THE MUTUAL RESPONSIBILITIES OF THE MANUFACTURER AND THE AUTHORIZED INSPECTORS.**

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## **QUALITY CONTROL SYSTEM**

**ANY MANUFACTURER OR ASSEMBLER HOLDING OR APPLYING FOR A CERT. OF AUTHORIZATION TO USE THE U OR UM, SHALL HAVE, AND DEMONSTRATE, A QUALITY CONTROL SYSTEM TO ESTABLISH THAT ALL CODE REQUIREMENTS, INCLUDING MATERIAL, DESIGN, FABRICATION, EXAMINATION (BY THE MFR.), INSPECTION (BY THE A.I.) PRESSURE TESTING AND CERTIFICATION WILL BE MET.**

## **EVALUATION FOR AUTHORIZATION AND REAUTHORIZATION**

**BEFORE ISSUANCE OR TRIENNIAL RENEWAL OF AN ASME CERTIFICATE OF AUTHORIZATION, THE MANUFACTURER'S FACILITIES AND ORGANIZATION ARE SUBJECT TO A JOINT REVIEW BY A REPRESENTATIVE(S) OF HIS INSPECTION AGENCY AND AN INDIVIDUAL CERTIFIED AS AN ASME DESIGNEE.**

**A WRITTEN DESCRIPTION OR CHECKLIST OF THE QUALITY CONTROL SYSTEM WHICH IDENTIFIES WHAT DOCUMENTS AND WHAT PROCEDURES THE MANUFACTURER WILL USE TO PRODUCE A CODE ITEM SHALL BE AVAILABLE FOR REVIEW.**

**THE PURPOSE OF THE REVIEW IS TO EVALUATE THE APPLICANT'S QUALITY CONTROL SYSTEM AND ITS IMPLEMENTATION. THE APPLICANT SHALL DEMONSTRATE SUFFICIENT ADMINISTRATIVE AND FABRICATION FUNCTIONS OF THE SYSTEM TO SHOW THAT HE HAS THE KNOWLEDGE AND ABILITY TO PRODUCE THE CODE ITEMS COVERED IN HIS QUALITY CONTROL SYSTEM. FABRICATION FUNCTIONS MAY BE DEMONSTRATED USING CURRENT WORK, A MOCK-UP, OR A COMBINATION OF THE TWO.**

# RENEWAL OF CODE SYMBOL STAMPS

CODE SYMBOL STAMPS ARE NORMALLY RENEWED EVERY THREE YEARS. THE RENEWAL IS BASED ON A JOINT REVIEW PERFORMED BY THE AGENCY AND AN A.S.M.E. DESIGNEE. AN EXCEPTION TO THE TRIENNIAL REVIEW IS THE UM CERTIFICATE. IT IS RENEWED ANNUALLY BASED ON A JOINT REVIEW THE FIRST ISSUE AND AN AUDIT BY THE AGENCY FOR THE TWO FOLLOWING YEARS. THE CYCLE THEN STARTS AGAIN.

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## MANUFACTURER'S DATA REPORTS

THE DATA REPORTS USED TO DOCUMENT CODE COMPLIANCE ARE:

- U-1 BASIC DATA REPORT FOR VESSELS.
- U-1A ALTERNATIVE REPORT FOR SINGLE CHAMBERED, SHOP FABRICATED VESSELS ONLY.
- U-2 PARTIAL DATA REPORT FOR PARTS.
- U-2A ALTERNATIVE PARTIAL DATA REPORT.
- U-3 CERTIFICATE OF COMPLIANCE FOR UM VESSELS.
- U-4 SUPPLEMENTARY SHEET

# NONMANDATORY APPENDIX W

## GUIDE FOR PREPARING MANUFACTURER'S DATA REPORTS

### W-1 GUIDE FOR PREPARING MANUFACTURER'S DATA REPORTS

### W-2 INTRODUCTION

(a) The instructions contained in this Appendix are to provide general guidance for the Manufacturer in preparing Data Reports as required in UG-120.

(b) Manufacturer's Data Reports required by ASME Code rules are not intended for pressure vessels that do

not meet the provisions of the Code, including those of special design or construction that require and receive approval by jurisdictional authorities under the laws, rules, and regulations of the respective State or municipality in which the vessel is to be installed.

(c) The instructions for the Data Reports are identified by circled numbers corresponding to numbers on the sample Forms in this Appendix.

(d) Where more space than has been provided for on the Form is needed for any item, indicate in the space "See remarks" or "See attached U-4 Form," as appropriate.

**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 \_\_\_\_\_ (1) (Name and address of Manufacturer)  
 2. Manufactured for \_\_\_\_\_ (2) (Name and address of Purchaser)  
 3. Location of installation \_\_\_\_\_ (3) (Name and address)  
 4. Type: \_\_\_\_\_ (4) (Horiz., vert., or sphere) \_\_\_\_\_ (5) (Tank, separator, jkt vessel, heat exh., etc.) \_\_\_\_\_ (6) (Mfg's serial No.)  
 \_\_\_\_\_ (7) (CRN) \_\_\_\_\_ (8) (Drawing No.) \_\_\_\_\_ (9) (Nat'l Bd No.) \_\_\_\_\_ (10) (Year built)  
 5. ASME Code, Section VIII, Div. 1 \_\_\_\_\_ (11) (Edition and Addenda (date)) \_\_\_\_\_ (12) (Code Case No.) \_\_\_\_\_ (13) (Special Service per UG-120(e))

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

- 6 Shell (a) No. of course(s): \_\_\_\_\_ (14) (b) Overall length (ft & in.): \_\_\_\_\_ (15)

Course(s)			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	
	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)		

7. Heads: (a) \_\_\_\_\_ (28) (Mat'l Spec. No., Grade or Type) (HT — Time & Temp.) (b) \_\_\_\_\_ (29) (Mat'l Spec. No., Grade or Type) (HT — 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	Eff.
(a)	(30)	(31)	(32)	(33)								(34)	
(b)													

If removable, bolts used (describe other fastening) \_\_\_\_\_ (35) (Mat'l Spec. No., Grade, size, No.)

8. Type of jacket \_\_\_\_\_ (36) Jacket closure \_\_\_\_\_ (37) (Describe as ogee & weld, bar, etc.)  
 If bar, give dimensions \_\_\_\_\_ If bolted, describe or sketch.

9. MAWP \_\_\_\_\_ (38) (internal) \_\_\_\_\_ (39) (external) psi at max. temp. \_\_\_\_\_ (40) (internal) \_\_\_\_\_ (41) (external) °F Min. design metal temp. \_\_\_\_\_ (42) °F at \_\_\_\_\_ (43) psi.

10. Impact test \_\_\_\_\_ (44) (Indicate yes or no and the component(s) impact tested) at test temperature of \_\_\_\_\_ (45) °F.

11. Hydro., pneu., or comb. test press. \_\_\_\_\_ (46) Proof test \_\_\_\_\_ (47)

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: \_\_\_\_\_ (48) (Stationary (Mat'l Spec. No.)) \_\_\_\_\_ (49) (Dia., in. (subject to press.)) \_\_\_\_\_ (50) (Nom. thk., in.) \_\_\_\_\_ (51) (Corr. Allow., in.) \_\_\_\_\_ (52) (Attachment (welded or bolted))  
 \_\_\_\_\_ (53) (Floating (Mat'l Spec. No.)) \_\_\_\_\_ (54) (Dia., in.) \_\_\_\_\_ (55) (Nom. thk., in.) \_\_\_\_\_ (56) (Corr. Allow., in.) \_\_\_\_\_ (57) (Attachment)

13. Tubes: \_\_\_\_\_ (58) (Mat'l Spec. No., Grade or Type) \_\_\_\_\_ (59) (O D., in.) \_\_\_\_\_ (60) (Nom. thk., in. or gauge) \_\_\_\_\_ (61) (Number) \_\_\_\_\_ (62) (Type (Straight or U))

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s) \_\_\_\_\_ (63) (b) Overall length (ft & in.): \_\_\_\_\_ (64)

Course(s)			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	

15. Heads: (a) \_\_\_\_\_ (65) (Mat'l Spec. No., Grade or Type) (HT — Time & Temp.) (b) \_\_\_\_\_ (66) (Mat'l Spec. No., Grade or Type) (HT — 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	Eff.
(a)													
(b)													

If removable, bolts used (describe other fastening) \_\_\_\_\_ (67) (Mat'l Spec. No., Grade, size, No.)

This form (E00108) may be obtained from the Order Dept., ASME, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300.

FORM U-1 (Back)

16. MAWP \_\_\_\_\_ psi at max temp. \_\_\_\_\_ F. Min. design metal temp. \_\_\_\_\_ F at \_\_\_\_\_ psi.  
(internal) (external) (internal) (external)

17. Impact test \_\_\_\_\_ at test temperature of \_\_\_\_\_ °F.  
(Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb test press. \_\_\_\_\_ Proof test \_\_\_\_\_

19. Nozzles, inspection, and safety valve openings:

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	
(41)		(42)	(43)	(44)	(45)	(46)		(47)	(48) (49)	(48) (49)	(50)

20. Supports: Surt \_\_\_\_\_ Lugs \_\_\_\_\_ Legs \_\_\_\_\_ Others \_\_\_\_\_ Attached \_\_\_\_\_  
(Yes or no) (Yes) (No) (Describe) (Where and how)

21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: (List the name of part, item number, mfg's. name and identifying number)  
 \_\_\_\_\_  
 \_\_\_\_\_

22. Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**CERTIFICATE OF SHOP COMPLIANCE**  
 We certify that the statements 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. \_\_\_\_\_ Expires \_\_\_\_\_  
 Date \_\_\_\_\_ Name \_\_\_\_\_ Signed \_\_\_\_\_  
(Manufacturer) (Representative)

**CERTIFICATE OF SHOP 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 inspected the pressure vessel described in this Manufacturer's Data Report on \_\_\_\_\_, 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 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 \_\_\_\_\_ Commissions \_\_\_\_\_  
(Authorized Inspector) (Nat'l Board Incl. endorsements, State, Province, and No.)

**CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE**  
 We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1. U Certificate of Authorization No. \_\_\_\_\_ Expires \_\_\_\_\_  
 Date \_\_\_\_\_ Name \_\_\_\_\_ Signed \_\_\_\_\_  
(Assembler) (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 to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with the 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 \_\_\_\_\_ Commissions \_\_\_\_\_  
(Authorized Inspector) (Nat'l Board Incl. endorsements, State, Province and No.)

NONMANDATORY APPENDIX W

04

**FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS**  
 (Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)  
 As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by \_\_\_\_\_ (1)  
(Name and address of manufacturer)

2. Manufactured for \_\_\_\_\_ (2)  
(Name and address of purchaser)

3. Location of installation \_\_\_\_\_ (3)  
(Name and address)

4. Type \_\_\_\_\_ (5) \_\_\_\_\_ (8) \_\_\_\_\_ (9) \_\_\_\_\_ (10) \_\_\_\_\_ (12) \_\_\_\_\_ (13)  
(Horiz. or vert. tank) (Mfg's serial No.) (CRN) (Drawing No.) (Natl. 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 \_\_\_\_\_ (13)  
 to \_\_\_\_\_ (14) \_\_\_\_\_ (15)  
Addenda (Date) Code Case Nos. Special Service per UG-120(d)

6. Shell: \_\_\_\_\_ (20) \_\_\_\_\_ (21) \_\_\_\_\_ (22) \_\_\_\_\_ (18) \_\_\_\_\_ (17)  
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. LD. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: \_\_\_\_\_ (23) \_\_\_\_\_ (24) \_\_\_\_\_ (24) \_\_\_\_\_ (27) \_\_\_\_\_ (27) \_\_\_\_\_ (25) \_\_\_\_\_ (26) \_\_\_\_\_ (16)  
Long. (Welded, Dbl., Sngl., Lap, Butt) R.T. (Spot or Full) Eff. (%) H.T. Temp. (°F) Time (hr) Grth. (Welded, Dbl., Sngl., Lap, Butt) R.T. (Spot, Eff. (%) No. of Courses or Full)

8. Heads: (a) Matl. \_\_\_\_\_ (17) \_\_\_\_\_ (17) \_\_\_\_\_ (31) (b) Matl. \_\_\_\_\_ (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)		(28)	(22)	(29)	(30)					
(b)										

If removable, bolts used (describe other fastenings) \_\_\_\_\_ (32)  
(Mat'l, Spec. No., Gr., Size, No.)

9. MAWP \_\_\_\_\_ (35) \_\_\_\_\_ (36) psi at max. temp. \_\_\_\_\_ (37) °F.  
(internal) (external) (internal) (external)

Min. design metal temp. \_\_\_\_\_ (37) °F at \_\_\_\_\_ psi. Hydro, pneu., or comb. test pressure \_\_\_\_\_ (38) psi.

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
(41)		(42)	(43)	(40)	(46)		(48)	(50)
			(43)					
			(48)	(44)				

11. Supports: Skirt \_\_\_\_\_ (51) Lugs \_\_\_\_\_ (No.) Legs \_\_\_\_\_ (No.) Other \_\_\_\_\_ (Describe) Attached \_\_\_\_\_ (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: \_\_\_\_\_ (Name of part, item number, Mfg's name and identifying stamp)  
 \_\_\_\_\_ (38) \_\_\_\_\_ (52) \_\_\_\_\_ (53)

(56) **CERTIFICATE OF SHOP/FIELD 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. \_\_\_\_\_ (58) expires \_\_\_\_\_ Date \_\_\_\_\_ Co. name \_\_\_\_\_ (59) Signed \_\_\_\_\_ (58) (Manufacturer) (Representative)

(60) **CERTIFICATE OF SHOP/FIELD INSPECTION**

Vessel constructed by \_\_\_\_\_ (61) 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 \_\_\_\_\_ have inspected the component described in this Manufacturer's Data Report on \_\_\_\_\_, 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 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 \_\_\_\_\_ (60) Commissions \_\_\_\_\_ (62) (Authorized Inspector) (Nat'l Board (incl. endorsements), State, Prov. and No.)

This form (E00117) may be obtained from the ASME Order Dept., 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300.

**FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT**  
**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 \_\_\_\_\_ (1)  
(Name and address of Manufacturer)
2. Manufactured for \_\_\_\_\_ (2)  
(Name and address of Purchaser)
3. Location of installation \_\_\_\_\_ (3) (4)  
(Name and address)
4. Type: \_\_\_\_\_ (7) \_\_\_\_\_ (8) \_\_\_\_\_ (9)  
(Description of vessel part (shell, two-piece head, tube bundle)) (Mfg's serial No.) (CRN)  
 \_\_\_\_\_ (12) \_\_\_\_\_ (10) \_\_\_\_\_ (11) (17) \_\_\_\_\_ (18)  
(Mat'l Bd No.) (Drawing No.) (Drawing prepared by) (Year built)
5. ASME Code, Section VIII, Div. 1 \_\_\_\_\_ (13) \_\_\_\_\_ (14) \_\_\_\_\_ (15) (16)  
(Edition and 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, shell of heat exchangers, or chamber of multichamber vessels.

6. Shc!: (a) No. of courses: \_\_\_\_\_ (19) (b) Overall length (ft & in.): \_\_\_\_\_ (17)

Courses(s)			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	
	(19)	(18)	(20)	(21)	(22)	(23)	(24)		(25)	(26)		(27)		

7. Heads: (a) \_\_\_\_\_ (20) (27) (b) \_\_\_\_\_ (21)  
(Mat'l Spec. No., Grade or Type) (H.T. — Time & Temp.) (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	Eff.
(a)		(28)	(29)	(30)	(31)							(32)		
(b)														

- If removable, bolts used (describe other fastening) \_\_\_\_\_ (33)  
(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket \_\_\_\_\_ (34) Jacket closure \_\_\_\_\_ (35)  
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions \_\_\_\_\_ if bolted, describe or sketch.

9. MAWP (36) (37) (38) psi at max. temp. (39) (40) F. Min. design metal temp. (41) F at \_\_\_\_\_ psi.  
(Internal) (external) (Internal) (external)

10. Impact test \_\_\_\_\_ (42) at test temperature of \_\_\_\_\_ (43) F.  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. \_\_\_\_\_ (44) Proof test \_\_\_\_\_ (45)

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: \_\_\_\_\_ (46) \_\_\_\_\_ (47) \_\_\_\_\_ (48) \_\_\_\_\_ (49) \_\_\_\_\_ (50)  
(Stationary (Mat'l Spec. No.)) (Dia., in. (subject to press.)) (Nom. thk., in.) (Corr. Allow., in.) (Attachment (welded or bolted))  
 \_\_\_\_\_ (51) \_\_\_\_\_ (52) \_\_\_\_\_ (53) \_\_\_\_\_ (54) \_\_\_\_\_ (55)  
(Floating (Mat'l Spec. No.)) (Dia., in.) (Nom. thk., in.) (Corr. Allow., in.) (Attachment)

13. Tubes: \_\_\_\_\_ (56) \_\_\_\_\_ (57) \_\_\_\_\_ (58) \_\_\_\_\_ (59)  
(Mat'l Spec. No., Grade or Type) (O.D., in.) (Nom. thk., in. or gauge) (Number) (Type (Straight or U))

Items 14-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of courses: \_\_\_\_\_ (19) (b) Overall length (ft & in.): \_\_\_\_\_ (17)

Courses(s)			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	
	(19)	(18)	(20)	(21)	(22)	(23)	(24)		(25)	(26)		(27)		



**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 \_\_\_\_\_ (1) (Name and address of Manufacturer)

2. Manufactured for \_\_\_\_\_ (2) (Name and address of Purchaser)

3. Location of installation \_\_\_\_\_ (3) (Name and address)

4. Type: \_\_\_\_\_ (7) (Description of vessel part (shell, two-piece head, tube bundle)) (8) (Mfg's serial No.) (9) (CRN)  
 \_\_\_\_\_ (12) (Nat'l. Bd No.) \_\_\_\_\_ (10) (Drawing No.) \_\_\_\_\_ (13) (Drawing prepared by) \_\_\_\_\_ (14) (Year built)  
 \_\_\_\_\_ (11) (Edition and Addenda (date)) \_\_\_\_\_ (15) (Code Case No.) \_\_\_\_\_ (16) (Special Service per UG-120(d))

6. Shell: (a) No. of course(s) \_\_\_\_\_ (18) (b) Overall length (ft & in.) \_\_\_\_\_ (17)

No.	Course(s)		Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B, & C)			Heat Treatment	
	Diameter, in.	Length (ft & in.)	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
	(18)	(19)	(20)		(21)	(22)	(23)	(24)		(25)	(26)		(27)	

7. Heads: (a) \_\_\_\_\_ (20) (b) \_\_\_\_\_ (27) (Mat'l Spec. No., Grade or Type) (H.T. — Time & Temp.) (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	Eff.
(a)	(28)	(29)	(30)	(31)								(32)	
(b)		(33)											

If removable, Bolts used (describe other fastening) \_\_\_\_\_ (34) (Mat'l Spec. No., Grade, Size, No.)

8. MAWP (35) (36) \_\_\_\_\_ psi at max. temp. (37) (38) \_\_\_\_\_ F. Min. design metal temp. (39) (40) \_\_\_\_\_ F. (Internal) (External) (Internal) (External)

9. Impact test \_\_\_\_\_ (41) at test temperature of \_\_\_\_\_ F. (Indicate yes or no and the component(s) impact tested)

10. Hydro., pneu., or comb. test press. \_\_\_\_\_ (42) Proof test \_\_\_\_\_ (43)

11. Nozzles, inspection, and safety valve openings:

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	
(44)		(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52) (53)	(54) (55)	(56)

12. Supports: Skirt (57) (Yes or no) Lugs (58) (No) Legs (59) (No) Others (60) (Describe) Attached (61) (Where and how)

13. Remarks: \_\_\_\_\_ (62)

**(63) 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. \_\_\_\_\_ Expires \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ (Manufacturer) Signed \_\_\_\_\_ (Representative)

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**(64) 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 \_\_\_\_\_ (65) and employed by \_\_\_\_\_ (66) of \_\_\_\_\_ (67) have inspected the pressure vessel part described in this Manufacturer's Data Report on \_\_\_\_\_ (68) 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 \_\_\_\_\_ Signed \_\_\_\_\_ (Authorized Inspector) Commissions \_\_\_\_\_ (69) (Nat'l Board incl. endorsement, State, Province and No.)

NONMANDATORY APPENDIX W

**FORM U-3 MANUFACTURER'S CERTIFICATE OF COMPLIANCE  
COVERING PRESSURE VESSELS TO BE STAMPED WITH THE UM SYMBOL, SEE U-1(j)  
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1**

1. Manufactured and certified by \_\_\_\_\_ (1)  
(Name and address of Manufacturer)
2. Manufactured for \_\_\_\_\_ (2)  
(Name and address of Purchaser)
3. Location of installation \_\_\_\_\_ (3)  
(Name and address)
4. Type: \_\_\_\_\_ (4) \_\_\_\_\_ (5) \_\_\_\_\_ (6) \_\_\_\_\_ (7)  
(Horiz., vert., or sphere) (Tank, separator, etc.) (Capacity) (Mfg's. serial No.)  
(CRN) (Drawing No.) (Year built)
5. ASME Code, Section VIII, Div. 1 \_\_\_\_\_ (8)  
(Edition and Addenda (date)) (Code Case No.)
6. Shell (a) No. of course(s): \_\_\_\_\_ (9) (b) Overall length (ft & in.): \_\_\_\_\_ (10)

Course(s)			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
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)

7. Heads: (a) \_\_\_\_\_ (25) (b) \_\_\_\_\_ (26)  
(Mat'l Spec. No., Grade or Type) (H.T. — Time & Temp.) (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	Eff.
(a)	(27)	(28)	(29)	(30)								(31)	
(b)													

If removable, bolts used (describe other fastening) \_\_\_\_\_ (32)  
(Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket \_\_\_\_\_ (33) Jacket closure \_\_\_\_\_ (34)  
(Describe as open & weld, bar, etc.)

If bar, give dimensions; if bolted describe or sketch \_\_\_\_\_

9. MAWP \_\_\_\_\_ (35) psi at max. temp. \_\_\_\_\_ (36) F. Min. design metal temp. \_\_\_\_\_ (37) F at \_\_\_\_\_ psi.  
(internal) (external) (internal) (external)

10. Impact test \_\_\_\_\_ (38) at test temperature of \_\_\_\_\_ (39) °F.  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. \_\_\_\_\_ (40) Proof test \_\_\_\_\_ (41)

12. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Instp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
(42)		(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)

13. Supports: Skirt \_\_\_\_\_ (53) Lugs \_\_\_\_\_ (54) Legs \_\_\_\_\_ (55) Others \_\_\_\_\_ (56) Attached \_\_\_\_\_ (57)  
(Yes or no) (No.) (No.) (Describe) (Where and how)

14. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: (List the name of part, item number, mfg's. name and identifying number) \_\_\_\_\_ (58)

15. Remarks: \_\_\_\_\_ (59)

**(60) 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.

UM Certificate of Authorization No. \_\_\_\_\_ Expires \_\_\_\_\_

Date \_\_\_\_\_ Name \_\_\_\_\_ (Manufacturer) Signed \_\_\_\_\_ (Representative)

Signed \_\_\_\_\_ (61) (Certified Individual)



NONMANDATORY APPENDIX W

TABLE W-3  
INSTRUCTIONS FOR THE PREPARATION OF MANUFACTURER'S DATA REPORTS

U-1	Applies to Form					Note No.	Instruction
	U-1A	U-2	U-2A	U-3	U-4		
X	X	X	X	X	X	①	Name and street address of manufacturer as listed on ASME Certificate of Authorization.
X	X			X	X	②	Name and address of purchaser.
X	X	X	X	X	X	③	Name of user, and address where vessel is to be installed. If not known, so indicate (e.g., "not known" or "built for stock").
X	X			X	X	④	Type of installation intended (horizontal, vertical, or sphere).
X	X			X	X	⑤	Description or application of vessel (tank, separator, jacketed kettle, heat exchanger, etc.)
...	...			X	...	⑥	Indicate vessel capacity. See U-1(j).
...	...	X	X	...	...	⑦	Description of vessel part (i.e., shell, two-piece head, tube bundle).
X	X	X	X	X	X	⑧	Manufacturer's serial number. See UG-116(a)(1)(b)(5).
X	X	X	X	X	X	⑨	Canadian registration number, where applicable.
X	X	X	X	X	X	⑩	Indicate drawing number(s), including applicable revision number, that cover general assembly and list of materials. For Canadian registered vessels, the number of the drawing approved by the provincial authorities.
...	...	X	X	...	...	⑪	Organization that prepared drawing, if other than the Manufacturer listed in No. 1.
X	X	X	X	...	X	⑫	Where applicable, the National Board number from the Manufacturer's Series of National Board numbers sequentially without skips or gaps. National Board numbers shall not be used for owner-inspected vessels.
X	X	X	X	X	...	⑬	ASME Code, Section VIII, Division 1, Edition (e.g., 1989) and Addenda (e.g., A89, A90, etc.) used for construction.
X	X	X	X	X	...	⑭	All Code Case numbers and revisions used for construction must be listed. Where more space is needed use "Remarks" section or list on a supplemental page.
X	X	X	X	...	...	⑮	Note any special service by Code paragraph as specified in UG-120(d) (e.g., lethal, low temperature, unfired steam boiler, direct fired).
X	X	X	X	X	...	⑯	Total number of courses or sections between end closures (heads) required to make one shell. In the "No." blocks in the table below, under "Courses," indicate the number of courses with identical information.
X	X	X	X	X	...	⑰	Length of the shell (courses), excluding heads, in feet and inches.
X	X	X	X	X	...	⑱	Indicate the dimensions of the course(s) as follows: (a) cylindrical as inside or outside diameter; (b) transition as inside or outside diameter at the largest and smallest ends; (c) squares or rectangle as the largest width and height; (d) all other shapes define as appropriate or attach a sketch or drawing. Where more space is needed use "Remarks" section or list on a supplemental page.
X	...	X	X	X	...	⑲	Length of each course(s) in the shell.
X	X	X	X	X	...	⑳	Show the complete ASME specification number and grade of the actual material used in the vessel. Material is to be as designated in Section VIII, Division 1 (e.g., "SA-285C"). Exceptions: A specification number for a material not identical to an ASME specification may be shown only if such material meets the criteria in the Code in conjunction with the Foreword of this Section. When material is accepted through a Code Case, the applicable Case number shall be shown.

TABLE W-3 (CONT'D)  
INSTRUCTIONS FOR THE PREPARATION OF MANUFACTURER'S DATA REPORTS

U-1	Applies to Form					Note No.	Instruction
	U-1A	U-2	U-2A	U-3	U-4		
X	X	X	X	X		(21)	Thickness is the nominal thickness of the material used in the fabrication of the vessel shell. It includes corrosion allowance.
X	X	X	X	X		(22)	State corrosion allowance (see UG-25).
X	X	X	X	X		(23)	Type of longitudinal joint (e.g., Type 1, 2, 3, 4, 5, or 6) per Table UW-12. In case of brazing, explain type of joint per Fig. UB-16. If seamless, indicate joint type as S, and E for electric resistance welded.
X	X	X	X	X		(24)	Category A (longitudinal) welds — identify degree of examination (radiographic or if applicable ultrasonic) employed: full, spot, or none (see UW-11). Also identify the joint efficiency associated with the circumferential stress calculations from Table UW-12 or para. UW-12. Where more space is needed, use "Remarks" section, supplemental page, or RT map, as applicable. In the case of parts, there is no need to identify the joint efficiency associated with these welds. (See Note (31) for heads of welded construction joints.)
X	X	X	X	X	...	(25)	Type of circumferential joint (e.g., Type 1, 2, 3, 4, 5, or 6) per Table UW-12. In the case of brazing, explain type of joint per Fig. UB-16. For multiple course vessel, the Category B welds in the shell and head-to-shell joint (Category A, B, C) shall be listed bottom to top or left to right as shown on drawing listed in (10).
X	X	X	X	X	...	(26)	Categories A, B, and C (circumferential) welds — Identify degree of examination (radiographic or if applicable ultrasonic) employed: full, spot, or none (see UW-11) or spot radiography in accordance with UW-11(a)(5). Where more space is needed, use "Remarks" section, supplemental page, or RT map, as applicable. In the case of parts, there is no need to identify the joint efficiency associated with these welds.
X	X	X	X	X	...	(27)	When heat treatment is performed by the Manufacturer, such as postweld heat treatment, annealing, or normalizing, give the holding temperature and time. Explain any special cooling procedure under "Remarks."
X	X	X	X	X	...	(28)	Specified minimum thickness of the head after forming. It includes corrosion allowance.
X	X	X	X	X	...	(29)	Indicate the crown radius (inside or outside) for torispherical heads.
X	X	X	X	X	...	(30)	Indicate the knuckle radius (inside or outside) for torispherical or toriconical heads.
X	X	X	X	X	...	(31)	For heads of welded construction joints, indicate the following: (a) type of joint in the head (Category A), e.g., Type 1, 2, 3, etc., per Table UW-12; in the case of brazing, explain the type of joint per Fig. UB-16. (b) identify degree of examination (radiographic or if applicable ultrasonic) employed: full, spot, or none. Where more space is needed, use "Remarks" section, supplemental page, RT map, as applicable.
X	X	X	X	X	...	(32)	Bolts used to secure removable head or heads of vessel. Indicate the number, size, material specification (grade/type).
X	...	X	...	X	...	(33)	Note type of jacket by reference to Fig. 9-2, where applicable.
X	...	X	...	X	...	(34)	Explain type of jacket closures used by reference to Fig. 9-5.
X	X	X	X	X	...	(35)	Show maximum allowable working pressure (internal or external) for which vessel is constructed. See UG-98.
X	X	X	X	X	...	(36)	Show maximum temperature permitted for vessel at MAWP. See (35).

NONMANDATORY APPENDIX W

TABLE W-3 (CONT'D)  
INSTRUCTIONS FOR THE PREPARATION OF MANUFACTURER'S DATA REPORTS

U-1	Applies to Form				U-3	U-4	Note No.	Instruction
	U-1A	U-2	U-2A	U-3				
X	X	X	X	X	...	37	Indicate the minimum design metal temperature (MDMT).	
X	X	X	X	X	...	38	Indicate if impact testing was conducted (yes or no) and the component(s) that were impact tested and the impact test temperature. Where more space is needed, use "Remarks" section or list on a supplemental page. If no, indicate applicable paragraph(s) (such as UG-20(f), UCS-66(a), UCS-66(b), or UCS-66(c), and UHA-51 or UHT-6J.	
X	X	X	X	X	.	39	Indicate the type of test used (pneumatic, hydrostatic, or combination test, as applicable) and specify test pressure at the top of the vessel in the test position. Indicate under "Remarks" if the vessel was tested in the vertical position.	
X	...	X	X	X	...	40	When proof test is required by Code rules, indicate type (e.g., brittle-coating, bursting, etc.), specific Code requirements satisfied (UG-101, Appendix 9, Appendix 17), proof test pressure, and acceptance date by the Inspector. Subsequent Data Reports shall indicate under "Remarks" the test date, type and acceptance date by the Inspector.	
X	X	X	X	X	...	41	Nozzles, inspection, and safety valve openings; list all openings, regardless of size and use. Where more space is needed, list them on a supplemental page.	
X	X	X	X	X	...	42	Indicate nozzles by size (NPS) and inspection openings by inside dimensions in inches.	
X	X	X	X	X	...	43	Data entries with description acceptable to the Inspector. For flange type an abbreviation may be used to define any generic name. Some typical abbreviations:  Flanged fabricated nozzle      Cl. 150 flg. Long weld neck flange          Cl. 300 lwn. Weld end fabricated nozzle      w.e. Lap joint flange                  Cl. 150 lap jnt.	
X	X	X	X	X	...	44	Show the material for the nozzle neck.	
X	...	X	X	X	...	45	Show the material for the flange.	
X	X	X	X	X	...	46	Nominal thickness applies to nozzle neck thickness.	
X	...	X	X	X	...	47	Show the complete ASME specification number and grade of the actual material used for the reinforcement material (pad). Material is to be as designated in Section VIII, Division 1. Exceptions: A specification number for a material not identical to an ASME specification may be shown only if such material meets the criteria in the Code and in conjunction with the Foreword of this Section. When material is accepted through a Code Case, the applicable Case number shall be shown.	
X	X	X	X	X	...	48	Data entries with description acceptable to the Inspector. A code identification of Fig. UW-16.1 (sketch no.) may be used to define the type of attachment.	
X	...	X	X	X	...	49	Categories C and D welds — Identify degree of examination (radiographic or if applicable ultrasonic) employed: full, spot, or none (see UW-11). Also identify the joint efficiency associated with the weld from Table UW-12. When more space is needed, use "Remarks" section supplemental page or RT map, as applicable.	
X	X	X	X	X	...	50	"Location" applies to inspection openings only.	
X	X	X	X	X	...	51	Describe: (a) type of support (skirt, lugs, etc.); (b) location of support (top, bottom, side, etc.); (c) method of attachment (bolted, welded, etc.).	

TABLE W-3 (CONT'D)  
INSTRUCTIONS FOR THE PREPARATION OF MANUFACTURER'S DATA REPORTS

U-1	Applies to Form					Note No.	Instruction
	U-1A	U-2	U-2A	U-3	U-4		
X	X	...	..	X	...	(52)	To be completed when one or more parts of the vessel are furnished by others and certified on Data Report U-2 or U-2A. The part manufacturer's name and serial number required by UG-116 should be indicated.
X	X	X	X	X	...	(53)	Space for additional comments including any Code restrictions on the vessel, or any unusual requirements that have been met, such as those in U-2(g), UG-11, UG-46, UG-53, UG-79, UG-90(c)(2), UG-99(e)(2), UG-115, UG-119(g), UG-120(d), UCS-56(f)(1), and UCL-55 or in other notes to this Table. Indicate stiffening rings when used. See W-2(d) when additional space is needed.
...	...	...	...	...	X	(54)	Fill in information identical to that shown on the Data Report Form to which this sheet is supplementary. Indicate the type of Certificate of Authorization, number, expiration date, and signature of the company representative.
...	...	...	...	...	X	(55)	Fill in information for which there was insufficient space on the Data Report Form as indicated by the notation "See attached U-4 Form" on the Data Report. See W-2(d). Identify the applicable Data Report item number.
...	...	X	X	...	...	(56)	Indicate data, if known.
...	...	X	X	...	...	(57)	Indicate the extent, if any, of the design function performed, UG-120(c)(2).
X	X	X	X	..	...	(58)	Certificate of Shop/Field Compliance block is to show the name of the Manufacturer as shown on his ASME Code Certificate of Authorization. This should be signed in accordance with the organizational authority defined in the Quality Control System (10-4).
...	...	...	...	X	..	(59)	Manufacturer's authorization number to use the UM Symbol from his Certificate of Authorization.
X	X	X	X	...	...	(60)	Certificate of Shop/Field Inspection block is to be completed by the Manufacturer and signed by the Authorized Inspector who performs the inspection.
X	...	X	X	...	...	(61)	If the Inspector has a valid commission for the state or province where the Manufacturer's shop is located, the name of that state or province. If the Manufacturer is located in a non-Code state or province, insert the name of the state or province where the Inspector took his original examination to obtain his National Board Commission, provided he still has a valid commission for that state or province. Otherwise, if no valid commission, show the name of the state or province where he has a valid commission authorizing him to make inspection.
X	X	...	...	...	X	(62)	The Inspector's National Board Commission number must be shown when the pressure vessel is stamped National Board; otherwise show only his state or province commission number.
...	...	X	X	...	X	(63)	The Inspector's National Board Commission number must be shown when the pressure vessel part is stamped National Board; otherwise show only his state or province commission number.
X	...	...	...	...	...	(64)	Certificate of Field Assembly Compliance block for field work or assembly is to be signed by the Manufacturer's representative in charge of field fabrication. This should be signed in accordance with the organizational authority defined in the quality control system (10-4).
X	...	...	...	...	...	(65)	Certificate of Field Assembly Inspection block is for the Authorized Inspector to sign for any field construction or assembly work. See (61) for National Board Commission number requirements.
X	...	...	...	...	...	(66)	Indicate those items inspected in the field that were not inspected in the shop.
...	...	...	...	X	...	(67)	Signature of Certified Individual indicates ASME Code symbol has been applied in accordance with the requirements of Section VIII, Division 1.

**NONMANDATORY APPENDIX DD**  
**GUIDE TO INFORMATION APPEARING ON**  
**CERTIFICATE OF AUTHORIZATION**  
**(SEE FIG. DD-1)**

<b>ITEM</b>	<b>DESCRIPTION</b>
①	<ol style="list-style-type: none"><li>a. The name of the Manufacturer or Assembler; this description could include "doing business as" (DBA) or an abbreviation of the name.</li><li>b. The full street address, city, state or province, country, and zip code.</li></ol>
②	<p>This entry describes the scope and limitations, if any, on use of the Code Symbol Stamps, as illustrated below.</p> <p><b>U Code Symbol Stamp</b></p> <ol style="list-style-type: none"><li>1. Manufacture of pressure vessels at the above location only.</li><li>2. Manufacture of pressure vessels at the above location only. (This authorization includes multiple duplicate pressure vessels.)</li><li>3. Manufacture of pressure vessels at the above location only. (This authorization does not cover welding or brazing.)</li><li>4. Manufacture of pressure vessels at the above location and field sites controlled by that location.</li><li>5. Manufacture of pressure vessels at the above location and field sites controlled by that location. (This authorization does not cover welding or brazing.)</li><li>6. Manufacture of pressure vessels at field sites controlled by the above location.</li><li>7. Manufacture of pressure vessels at field sites controlled by the above location. (This authorization does not cover welding or brazing.)</li><li>8. Manufacture of pressure vessels (cast iron only) at the above location only.</li></ol> <p><b>UM Code Symbol Stamp</b></p> <ol style="list-style-type: none"><li>1. Manufacture of miniature vessels at the above location only.</li><li>2. Manufacture of miniature vessels at the above location only. (This authorization does not cover welding or brazing.)</li><li>3. Manufacture of miniature vessels (cast iron only) at the above location only.</li></ol> <p><b>UV Code Symbol Stamp</b></p> <ol style="list-style-type: none"><li>1. Manufacture of pressure vessel pressure relief valves at the above location only.</li><li>2. Manufacture of pressure vessel pressure relief valves at the above location only. (This authorization does not cover welding or brazing.)</li><li>3. Assembly of pressure vessel pressure relief valves at the above location. (This authorization does not cover welding or brazing.)</li></ol>

2004 SECTION VIII — DIVISION 1

ITEM	DESCRIPTION
③	The date authorization was granted by the Society to use the indicated Code Symbol Stamp.
④	The date authorization to use the Code Symbol Stamp will expire.
⑤	A unique Certificate number assigned by the Society.
⑥	Code Symbol granted by the Society, i.e., U pressure vessels, UM miniature vessels, UV pressure relief valves.
⑦,⑧	The signatures of the current chairman and director.

# CERTIFICATE OF AUTHORIZATION

This certificate accredits the named company as authorized to use the indicated symbol of the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the code symbol and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this symbol shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

The American Society of Mechanical Engineers



COMPANY ①

SCOPE ②

AUTHORIZED ③

EXPIRES ④

CERTIFICATE NUMBER ⑤

SYMBOL ⑥

**SAMPLE**

⑦

CHAIRMAN OF THE BOILER AND PRESSURE VESSEL COMMITTEE

⑧

DIRECTOR, ASME ACCREDITATION

FIG. DD-1 SAMPLE CERTIFICATE OF AUTHORIZATION

**UNIVERSIDAD NACIONAL AUTONOMA DE MÉXICO**  
**FACULTAD DE INGENIERIA**  
**DIVISIÓN DE EDUCACIÓN CONTINUA**

**DATOS DEL INSTRUCTOR**

**ING. ORLANDO R. RIVERA**

**Tel./Fax: (55) 5776-6524**  
**E- mail: orlanriver@hotmail.com**

Es Ingeniero Mecánico Titulado egresado de la Escuela Superior de Ingeniería Mecánica y Eléctrica del Instituto Politécnico Nacional: Cuenta con una experiencia profesional de más de 20 años en diseño, fabricación, inspección, prueba, certificación, montaje, reparación y expeditación de calderas de potencia, recipientes a presión, sistemas de tubería y componentes de plantas nucleoelectricas.

Ha calificado ante el Gobierno del Estado de Texas, Ohio y Pennsylvania y The National Board of Boiler and Pressure Vessel Inspectors de Norte América como Inspector Autorizado, Supervisor de Inspectores Autorizados, e Inspector Nuclear Autorizado de ASME.

Su participación en actividades con tres Agencias de Inspección Autorizadas de ASME le han permitido preparar y asesorar a más de 40 empresas en México, Colombia, Venezuela, Brasil y Argentina en la obtención y renovación de los diversos Certificados de Autorización y Sellos de ASME y National Board.

Ha impartido el Diplomado de Ingeniería de Calderas y Recipientes a Presión en la División de Educación Continua de la Facultad de Ingeniería de la Universidad Nacional Autónoma de México, y ha presentado ponencias y conferencias en Talleres Internacionales de Capacitación en Calderas, Recipientes a Presión y Temáticas Afines de la Asociación Mexicana de Ingenieros Mecánicos y Electricistas, A.C. (AMIME).

Ha sido miembro activo del Comité de Calderas y Recipientes a Presión de AMIME desde 1978, actual Presidente de este Comité y Consultor de varias compañías nacionales e internacionales.

Noviembre, 2005.