

**FORM PL-1 MANUFACTURER'S DATA REPORT FOR LOCOMOTIVE BOILERS**  
**As Required by the Provisions of the ASME Code Rules, Section I**

**MASTER DATA REPORT**  
**(Check one)**

**YES**   
**NO**

**PARTIAL DATA REPORT**  
**(Check one)**

**YES**   
**NO**

Page \_\_\_\_ of \_\_\_\_

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

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

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

4. Unit identification \_\_\_\_\_ ID Nos. \_\_\_\_\_  
(Complete boiler, superheater, waterwall, economizer, etc.) (Manufacturer's Serial No.) (CRN) (Drawing No.) (Nat'l. Board 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 conforms to Section I of the ASME BOILER AND PRESSURE VESSEL CODE \_\_\_\_\_,  
(Year)

Addenda to \_\_\_\_\_ (if applicable), and Code Cases \_\_\_\_\_  
(Date) (Numbers)

Supporting Manufacturer's Data Reports properly identified and signed by Commissioned Inspectors are attached for the following items of this report:

\_\_\_\_\_  
(Name of part, item number, manufacturer's name, and identifying Designator)

**6(a). Boiler Shell Sheets**

| Description      | Inside Diameter* | Inside Length |     | Shell Plates              |           |                         |                  | Front Flue Sheet |               |
|------------------|------------------|---------------|-----|---------------------------|-----------|-------------------------|------------------|------------------|---------------|
|                  |                  | ft.           | in. | Material Spec. No., Grade | Thickness | Min. Required Thickness | Outside Diameter | Thickness        | Inside Radius |
| Front flue sheet |                  |               |     |                           |           |                         |                  |                  |               |
| 1st course       |                  |               |     |                           |           |                         |                  |                  |               |
| 2nd course       |                  |               |     |                           |           |                         |                  |                  |               |
| 3rd course       |                  |               |     |                           |           |                         |                  |                  |               |

\*When courses vary in diameter, give I.D. at each end.

6(b). If shell is flattened, note location and amount. \_\_\_\_\_

Define how the flattened area is supported.

**7. Firebox and Wrapper Sheets**

| Description          | Plates                 |           |                            |
|----------------------|------------------------|-----------|----------------------------|
|                      | Mat'l Spec. No., Grade | Thickness | Minimum Required Thickness |
| Rear flue sheet      |                        |           |                            |
| Crown sheet          |                        |           |                            |
| Side sheets          |                        |           |                            |
| Door sheet           |                        |           |                            |
| Combustion chamber   |                        |           |                            |
| Inside throat sheet  |                        |           |                            |
| Wrapper sheets       |                        |           |                            |
| Outside throat sheet |                        |           |                            |
| Back head            |                        |           |                            |
| Roof sheet           |                        |           |                            |
| Wrapper side sheets  |                        |           |                            |
| Rivets               |                        |           |                            |
| Staybolts            |                        |           |                            |
| Braces               |                        |           |                            |

**FORM PL-1**

Manufactured by \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_

\_\_\_\_\_  
 (Locomotive Boiler No.)                      (Mfr's Serial No.)                      (CRN)                      (Drawing No.)                      (National Board No.)

**8. Steam Dome**

- (a) Where is dome located dimensionally on the shell by course? \_\_\_\_\_
- (b) Size of opening in the shell \_\_\_\_\_
- (c) Dimensions of reinforcement \_\_\_\_\_
- (d) Number of pieces used in the dome construction (not including welts, if any) \_\_\_\_\_
- (e) Dome top opening internal diameter \_\_\_\_\_
- (f) Middle cylindrical portion \_\_\_\_\_
- (g) Dome Sheets

|                            | Material | Thickness | Min. Required Thickness |
|----------------------------|----------|-----------|-------------------------|
| Base                       |          |           |                         |
| Middle cylindrical portion |          |           |                         |
| Top                        |          |           |                         |
| Lid                        |          |           |                         |
| Opening reinforcement      |          |           |                         |

Is reinforcement part of the longitudinal seam? \_\_\_\_\_

**9. Arch Tubes, Flues, Circulators, Thermic Siphons, Water Bar Tubes, Superheaters, and Dry Pipe**

**(a) Arch Tubes**

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

**(b) Flues**

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

**(c) Circulators**

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

**(d) Water Bar Tubes**

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

**(e) Thermic Siphons**

Number \_\_\_\_\_ Plate thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

Neck O.D. \_\_\_\_\_ Neck thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

**(f) Dry Pipe**

O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

**(g) Superheater Units**

Type \_\_\_\_\_

Number \_\_\_\_\_ O.D. \_\_\_\_\_ Wall thickness \_\_\_\_\_ Min. required thickness \_\_\_\_\_ Material \_\_\_\_\_

# FORM PL-1

Manufactured by \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_

(Locomotive Boiler No.) (Mfr's Serial No.) (CRN) (Drawing No.) (National Board No.)

**10. Staybolts and Crown Bar Rivets**

|                                   | Required CSA* | Maximum Pitch | Maximum Stress | Material |
|-----------------------------------|---------------|---------------|----------------|----------|
| <b>STAYBOLTS</b>                  |               |               |                |          |
| Crown stay                        |               | X             |                |          |
| Side sheets                       |               | X             |                |          |
| Throat sheet                      |               | X             |                |          |
| Door sheet                        |               | X             |                |          |
| <b>CROWN BAR BOLTS AND RIVETS</b> |               |               |                |          |
| Roof sheet rivets                 |               | X             |                |          |
| Roof sheet bolts                  |               | X             |                |          |
| Crown sheet rivets                |               | X             |                |          |
| Crown sheet bolts                 |               | X             |                |          |

\*CSA = cross-sectional area

**11. Braces**

|                 | Total Area to Be Stayed | No. Required | CSA* | Maximum Stress | Material |
|-----------------|-------------------------|--------------|------|----------------|----------|
| Number          |                         |              |      |                |          |
| Back head       |                         |              |      |                |          |
| Throat sheet    |                         |              |      |                |          |
| Front tubesheet |                         |              |      |                |          |
|                 |                         |              |      |                |          |
|                 |                         |              |      |                |          |

\*CSA = cross-sectional area

NOTE: Where stresses may vary due to changes in pitch or area to be supported, the recorded stress will be that developed under the greatest load.

**12. Safety Valves, Heating Surface, and Grate Area**

(a) Safety Valves

Total number used on boiler \_\_\_\_\_

Valve size \_\_\_\_\_ Manufacturer and model \_\_\_\_\_

(b) Heating Surface\*

Firebox and combustion chamber \_\_\_\_\_ ft<sup>2</sup>

Flue sheets (less flue I.D. areas) \_\_\_\_\_ ft<sup>2</sup>

Flues \_\_\_\_\_ ft<sup>2</sup>

Circulators \_\_\_\_\_ ft<sup>2</sup>

Arch tubes \_\_\_\_\_ ft<sup>2</sup>

Thermic siphons \_\_\_\_\_ ft<sup>2</sup>

Water bar tubes \_\_\_\_\_ ft<sup>2</sup>

Superheater (front end throttle only) \_\_\_\_\_ ft<sup>2</sup>

Other \_\_\_\_\_ ft<sup>2</sup>

**TOTAL HEATING SURFACE** \_\_\_\_\_ ft<sup>2</sup>

\* Heating surface is calculated using the side receiving heat.

(c) Grate Area

Maximum designed steaming capacity \_\_\_\_\_ lbm/hr

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Manufactured by \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_

\_\_\_\_\_  
 (Locomotive Boiler No.)                      (Mfr's Serial No.)                      (CRN)                      (Drawing No.)                      (National Board No.)

**13. Water-Level Indicators, Fusible Plugs, and Low-Water Alarm**

- (a) Height of the lowest reading of gage glasses above crown sheet \_\_\_\_\_
- (b) Height of the lowest reading of gage cocks above crown sheet\* \_\_\_\_\_
- (c) Number of fusible plugs applied to boiler \_\_\_\_\_
- (d) Number of low-water alarms applied to boiler \_\_\_\_\_

\*Gage cocks are not required.

**14. Riveted Longitudinal Seams (Attach drawing of each longitudinal seam.)**

(a) Shearing stress on rivets:

Greatest shear stress on rivets in longitudinal seams

Location (1st course) \_\_\_\_\_ Seam efficiency \_\_\_\_\_ Stress \_\_\_\_\_ psi  
 Location (2nd course) \_\_\_\_\_ Seam efficiency \_\_\_\_\_ Stress \_\_\_\_\_ psi  
 Location (3rd course) \_\_\_\_\_ Seam efficiency \_\_\_\_\_ Stress \_\_\_\_\_ psi

(b) Boiler Shell Plate Tension

Greatest tension on net section of plate in longitudinal seam

Location (1st course) \_\_\_\_\_ Seam efficiency \_\_\_\_\_ Stress \_\_\_\_\_ psi  
 Location (2nd course) \_\_\_\_\_ Seam efficiency \_\_\_\_\_ Stress \_\_\_\_\_ psi  
 Location (3rd course) \_\_\_\_\_ Seam efficiency \_\_\_\_\_ Stress \_\_\_\_\_ psi

**15. Remarks**

16.

| Max. Allowable Working Pressure | Code Part and/or Formula on Which MAWP Is Based | Shop Hydro Test |
|---------------------------------|---|-----------------|
|                                 |   |                 |

|  |  |
|--|--|
| <b>CERTIFICATE OF SHOP COMPLIANCE</b>  |  |
| We certify that the statements made in this data report are correct and that all details of design, material, construction, and workmanship of this boiler conform to Section I of the ASME BOILER AND PRESSURE VESSEL CODE.   |  |
| Our Certificate of Authorization No. _____ to use the (S) _____ Designator expires _____   |  |
| Date _____ Signed _____<br><small>(Authorized Representative)</small>  | Name _____<br><small>(Manufacturer)</small>  |
| <b>CERTIFICATE OF SHOP INSPECTION</b>  |  |
| Boiler made by _____ at _____  |  |
| I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by _____   |  |
| _____ have inspected parts of this boiler referred to as data items _____  |  |
| _____ and have examined Supporting Manufacturer's Data Reports for items _____   |  |
| _____ and state that, to the best of my knowledge and belief, the Manufacturer has constructed this boiler in accordance with Section I of the ASME BOILER AND PRESSURE VESSEL CODE.   |  |
| By signing this certificate, neither the Inspector nor the Inspector's employer makes any warranty, expressed or implied, concerning the boiler described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor the Inspector's 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 _____<br><small>(Authorized Inspector)</small>   | Commission _____<br><small>(National Board Authorized Inspector Commission Number)</small> |