Cylinder Filling and Evacuation Procedures
Status Page

Title: CYLINDER FILLING AND EVACUATION PROCEDURE

Author: Operations Department

Approved by: Gas Terminalling and Distribution Limited Managing Director

Document Owner: Gas Terminalling Chief Operating Officer

Document Custodians: Gas Terminalling and Distributions Limited, Terminals Manager

Document Distribution: Accessible to all Gas Terminalling Staff via Chief Operating Officer/Terminals Manager/Plant Managers/Supervisors

To be reviewed: Annually

Change History:

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Jan. 2009</td>
<td>First Issued</td>
</tr>
<tr>
<td>02</td>
<td>Apr. 2009</td>
<td>Pre-certification audit</td>
</tr>
<tr>
<td>03</td>
<td>May. 2009</td>
<td>Certification audit</td>
</tr>
<tr>
<td>04</td>
<td>Jan. 2010</td>
<td>Audit recommendation</td>
</tr>
</tbody>
</table>

Authority for Issue

Signature __________________________

Name: Felix Ekundayo
Date: __________________________
TABLE OF CONTENT

Section 1  Cylinder Filling Operations .................................................................1-4
  1.1.1  While Filling Cylinders .................................................................1-4
  1.1.2  Post Fill Operation .................................................................1-5

Section 2  Cylinder Filling and Evacuation Procedure .................................1-6

Appendix 1  Flow Diagram for Cylinder Filling Operation ............................2-7
All personnel carrying out the filling operation shall have received the level of training required to allow them to carry out all duties expected of them competently and safely, including a complete understanding of the plant operating procedures and site evacuation plan.

- A visual check of the filling plant, storage area and compound shall be carried out, looking for any unusual or potentially dangerous situations, and operations shall not be started until it is safe to do so.

- The scales shall be kept in good working order (Each Plant Manager shall be responsible for ensuring the daily, weekly, monthly and annual maintenance procedures are carried out on the scales).

- Appropriate personal protective equipment shall be available and worn by all operatives before work starts. A list of the recommended clothing is given in Appendix C

1.1.1 While Filling Cylinders

- The necessary protective clothing should continue to be worn throughout the filling operation.

- For each batch of cylinders segregated fit for filling it shall be ensured that:
  - all the cylinders in the batch are of same size;
  - the filling weight or volume for the size of cylinder is printed boldly on the cylinder

- The number of full and nominally empty cylinders within the filling building should be kept to a minimum, which requires periodic or continual evacuation of cylinders as they are filled.

- When filling by weight, care shall be taken that the TARE WEIGHT of each individual cylinder is correctly set on the filling scale, and that the correct net fill weight is set.

- Where cylinders are to be filled by volume they shall be completely emptied of liquid before being sent for filling.

- Each time a cylinder is connected for filling care shall be taken to ensure that the connection between the fill connector and the cylinder is made correctly.

- Any fault developing or becoming apparent while filling is in progress shall be attended to immediately, and the filling operation stopped if the fault is judged by the operator to be a possible hazard.
Reported faults shall be inspected promptly by supervisory staff. It is recommended that a written log is maintained of reported faults and the subsequent action taken.

1.1.2 Post Fill Operation

- After filling, and before other finishing operations, cylinders should be check weighed for correct fill.

- Under-filled cylinders should be returned for correct filling. Over-filled cylinders should be made safe immediately by the removal of the excess product in a safe manner (an evacuation rig is provided at each plant for this purpose). Where a closed cylinder evacuation system is not available, safe venting of the cylinder can be done through a vent stack.

- Cylinders should be checked for absence of leakage from any source including valves and fittings. A simple leak test must be done on all filled cylinders; the simplest method is to use the soapy water test. Leaking cylinders should be made safe immediately.

- All appropriate labels, valve sealing caps or plugs and any valve protection caps should be fitted prior to dispatch.

- If there is reason to suspect air in the cylinder it should be checked, e.g. by noting the vapour pressure. If air is indicated it shall be removed through a suitable venting system.
Section 2  Cylinder Filling and Evacuation Procedures

Gas Terminalling filling procedure:

1. Truck arrives plant
2. Cylinder inventory is taken at gate.
3. Sales personnel receives empty cylinders, name tag and dispatch to designated reception area
4. Plant supervisor segregate cylinders at reception area into:
   - Fill-able cylinders are sent to platform for filling
   - Cylinders that require maintenance are referred to maintenance area.
   - If cylinder maintenance is not available, cylinders are referred to owner. NOT AUTHORISED FOR FILLING
   - Cylinders beyond maintenance are SCRAPED
5. Cylinders are transferred to the platform
6. Filling process commences:
   - Cylinder is put on scale to ascertain tare/cylinder weight of each cylinder
   - Quantity to fill is inputted on scale
   - Filling head is engaged
   - Filling commences and is complete
   - Final cylinder weight rechecked
7. Filled cylinders are sent to designated open area
8. Truck is loaded from cylinder loading area and checked by sales person
9. Cylinder inventory is confirmed at gate
10. Truck is dispatched
Appendix 1  Flow Diagram for Cylinder Filling Operation

- **New Cylinder**
  - **Gas Charge**

- **Truck Arrives Plant**
  - Cylinder inventory is taken at Gate
  - Sales Receive and Dispatch to Reception Area

- **Is Cylinder Defective**
  - Yes
    - Can Cylinder be Repaired
    - No
      - Return to owner
  - No
    - Transfer to Platform
      - Maintain
      - Ascertain Tare/Cylinder Weight
  - Commence Filling
  - Send filled cylinder to designated Area
  - Truck Loaded and Checked
  - Truck Dispatched