

# FUGITIVE EMISSION MONITORING REPORT



**Client : Numaligarh Refinery Limited,**  
Numaligarh, Golaghat  
Assam - 785699

**Report No & Issue Date:**  
NIL/2017/NRL/Fugitive/01: 12.06.2017  
**Monitoring Done By:** Netel (India) Limited  
**Monitoring Period :** May-2017

**LOI Reference No :** COMM/C48/4041 Dt. 18/04/2017

| Sr. No.    | Component ID                            | Average LEL Reading % | Reading % Gas | Reading (ppm) | EPA Correlation Kg/Hour/So | Total Emission kg/annum |
|------------|-----------------------------------------|-----------------------|---------------|---------------|----------------------------|-------------------------|
| Unit : WAX |                                         |                       |               |               |                            |                         |
| Area       | Pump -18PA109A Wax Scripper Bottom Pump |                       |               |               |                            |                         |
| 1          | Suction Line I/V U/S flange             | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 2          | I/V gland                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 3          | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 4          | Drain line I/V Gland                    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 5          | Drain Line Safety flange                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 6          | Discharge line I/V U/S Flange           | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 7          | I/V gland                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 8          | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 9          | Pump Seal                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 10         | Meter Line I/V gland                    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 11         | OWS point                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 12         | 18PA109B Suction Line I/V U/S flange    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 13         | I/V gland                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 14         | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 15         | Drain line I/V Gland                    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 16         | Drain Line Safety flange                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 17         | Discharge line I/V U/S Flange           | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 18         | I/V gland                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 19         | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 20         | Pump Seal                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 21         | Meter Line 1st I/V gland                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 22         | Meter Line 2nd I/V gland                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 23         | OWS point                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 24         | 18PA105A Suction Line I/V U/S flange    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 25         | I/V gland                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 26         | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 27         | Drain line I/V Gland                    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 28         | Drain Line Safety flange                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 29         | Meter Line 1st I/V gland                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 30         | Meter Line 2nd I/V gland                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 31         | Pump Seal                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 32         | 18PA105B Suction Line I/V U/S flange    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 33         | I/V gland                               | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 34         | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 35         | Discharge line I/V gland                | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 36         | I/V D/S flange                          | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 37         | Drain line I/V Gland                    | 0                     | 0             | 0             | 0.000                      | 0.000                   |
| 38         | Drain Line Safety flange                | 0                     | 0             | 0             | 0.000                      | 0.000                   |

|    |                                      |   |   |   |       |       |
|----|--------------------------------------|---|---|---|-------|-------|
| 39 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 40 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 41 | OWS point                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 42 | 18PA105C Suction Line I/V U/S flange | 0 | 0 | 0 | 0.000 | 0.000 |
| 43 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 44 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 45 | Discharge line I/V U/S Flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 46 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 47 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 48 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 49 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 50 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 51 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 52 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 53 | OWS point                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 54 | 18PA105D Suction Line I/V U/S flange | 0 | 0 | 0 | 0.000 | 0.000 |
| 55 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 56 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 57 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 58 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 59 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 60 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 61 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 62 | OWS point                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 63 | LV1902 Suction Line I/V U/S flange   | 0 | 0 | 0 | 0.000 | 0.000 |
| 64 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 65 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 66 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 67 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 68 | 1902CV gland                         | 0 | 0 | 0 | 0.000 | 0.000 |
| 69 | Discharge Line I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 70 | Discharge Line Drain Line I/V gland  | 0 | 0 | 0 | 0.000 | 0.000 |
| 71 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 72 | LV2002 Suction Line I/V U/S flange   | 0 | 0 | 0 | 0.000 | 0.000 |
| 73 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 74 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 75 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 76 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 77 | LV2002 CV gland                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 78 | Discharge Line I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 79 | Discharge Line Drain Line I/V gland  | 0 | 0 | 0 | 0.000 | 0.000 |
| 80 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 81 | LV1802 Suction Line I/V gland        | 0 | 0 | 0 | 0.000 | 0.000 |
| 82 | LV1802 CV gland                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 83 | Discharge Line I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 84 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 85 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 86 | PV2401 Suction Line I/V U/S Flange   | 0 | 0 | 0 | 0.000 | 0.000 |
| 87 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 88 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |

|     |                                      |   |   |   |       |       |
|-----|--------------------------------------|---|---|---|-------|-------|
| 89  | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 90  | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 91  | PV2401 Suction Line I/V U/S Flange   | 0 | 0 | 0 | 0.000 | 0.000 |
| 92  | PV2401 CV gland                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 93  | CV D/S flange                        | 0 | 0 | 0 | 0.000 | 0.000 |
| 94  | Discharge line I/V U/S Flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 95  | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 96  | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 97  | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 98  | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 99  | NRV U/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 100 | NRV D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 101 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 102 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 103 | LV1702 Suction Line I/V gland        | 0 | 0 | 0 | 0.000 | 0.000 |
| 104 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 105 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 106 | LV1702 CV gland                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 107 | CV D/S flange                        | 0 | 0 | 0 | 0.000 | 0.000 |
| 108 | Discharge line I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 109 | Discharge line flange                | 0 | 0 | 0 | 0.000 | 0.000 |
| 110 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 111 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 112 | LV1602 Suction Line I/V gland        | 0 | 0 | 0 | 0.000 | 0.000 |
| 113 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 114 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 115 | LV1602 CV gland                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 116 | CV D/S flange                        | 0 | 0 | 0 | 0.000 | 0.000 |
| 117 | Discharge line I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 118 | Discharge line Drain Line I/V gland  | 0 | 0 | 0 | 0.000 | 0.000 |
| 119 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 120 | 18PA114A Suction Line I/V U/S flange | 0 | 0 | 0 | 0.000 | 0.000 |
| 121 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 122 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 123 | Discharge line I/V U/S flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 124 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 125 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 126 | NRV U/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 127 | NRV D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 128 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 129 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 130 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 131 | 18PA114B Suction Line I/V U/S flange | 0 | 0 | 0 | 0.000 | 0.000 |
| 132 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 133 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 134 | Discharge line I/V U/S flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 135 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 136 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 137 | NRV U/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 138 | NRV D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |

|     |                                      |   |   |   |       |       |
|-----|--------------------------------------|---|---|---|-------|-------|
| 139 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 140 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 141 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 142 | 18PA104A Suction Line I/V U/S flange | 0 | 0 | 0 | 0.000 | 0.000 |
| 143 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 144 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 145 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 146 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 147 | Discharge line I/V U/S flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 148 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 149 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 150 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 151 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 152 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 153 | 18PA104BSuction Line I/V U/S flange  | 0 | 0 | 0 | 0.000 | 0.000 |
| 154 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 155 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 156 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 157 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 158 | Discharge line I/V U/S flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 159 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 160 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 161 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 162 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 163 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 164 | 18PA104CSuction Line I/V U/S flange  | 0 | 0 | 0 | 0.000 | 0.000 |
| 165 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 166 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 167 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 168 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 169 | Discharge line I/V U/S flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 170 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 171 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 172 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 173 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 174 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 175 | 18PA104DSuction Line I/V U/S flange  | 0 | 0 | 0 | 0.000 | 0.000 |
| 176 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 177 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 178 | Drain line I/V Gland                 | 0 | 0 | 0 | 0.000 | 0.000 |
| 179 | Drain Line Safety flange             | 0 | 0 | 0 | 0.000 | 0.000 |
| 180 | Discharge line I/V U/S flange        | 0 | 0 | 0 | 0.000 | 0.000 |
| 181 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 182 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |
| 183 | Pump Seal                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 184 | Meter Line 1st I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 185 | Meter Line 2nd I/V gland             | 0 | 0 | 0 | 0.000 | 0.000 |
| 186 | 18PA104ESuction Line I/V U/S flange  | 0 | 0 | 0 | 0.000 | 0.000 |
| 187 | I/V gland                            | 0 | 0 | 0 | 0.000 | 0.000 |
| 188 | I/V D/S flange                       | 0 | 0 | 0 | 0.000 | 0.000 |

|     |                                     |   |   |   |       |       |
|-----|-------------------------------------|---|---|---|-------|-------|
| 189 | Drain line I/V Gland                | 0 | 0 | 0 | 0.000 | 0.000 |
| 190 | Drain Line Safety flange            | 0 | 0 | 0 | 0.000 | 0.000 |
| 191 | Discharge line I/V U/S flange       | 0 | 0 | 0 | 0.000 | 0.000 |
| 192 | I/V gland                           | 0 | 0 | 0 | 0.000 | 0.000 |
| 193 | I/V D/S flange                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 194 | Pump Seal                           | 0 | 0 | 0 | 0.000 | 0.000 |
| 195 | Meter Line 1st I/V gland            | 0 | 0 | 0 | 0.000 | 0.000 |
| 196 | Meter Line 2nd I/V gland            | 0 | 0 | 0 | 0.000 | 0.000 |
| 197 | 18PA104FSuction Line I/V U/S flange | 0 | 0 | 0 | 0.000 | 0.000 |
| 198 | I/V gland                           | 0 | 0 | 0 | 0.000 | 0.000 |
| 199 | I/V D/S flange                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 200 | Drain line I/V Gland                | 0 | 0 | 0 | 0.000 | 0.000 |
| 201 | Drain Line Safety flange            | 0 | 0 | 0 | 0.000 | 0.000 |
| 202 | Discharge line I/V U/S flange       | 0 | 0 | 0 | 0.000 | 0.000 |
| 203 | I/V gland                           | 0 | 0 | 0 | 0.000 | 0.000 |
| 204 | I/V D/S flange                      | 0 | 0 | 0 | 0.000 | 0.000 |
| 205 | Pump Seal                           | 0 | 0 | 0 | 0.000 | 0.000 |
| 506 | Meter Line 1st I/V gland            | 0 | 0 | 0 | 0.000 | 0.000 |
| 207 | Meter Line 2nd I/V gland            | 0 | 0 | 0 | 0.000 | 0.000 |