| DOCKETED | |
|---|---|
| **Docket Number:** | 85-AFC-01C |
| **Project Title:** | Compliance - Watson Cogeneration Company AFC |
| **TN #:** | 232002 |
| **Document Title:** | 2019 Q4 Emissions Report |
| **Description:** | Quarterly Emissions Report |
| **Filer:** | Craig Chi |
| **Organization:** | Watson Cogeneration Company |
| **Submitter Role:** | Applicant |
| **Submission Date:** | 2/11/2020 7:16:43 AM |
| **Docketed Date:** | 2/11/2020 |

*Watson Cogeneration Company*
22850 South Wilmington Avenue
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**P.O. Box 6203**
**Carson, California 90749-6203**

**VIA EMAIL**

January 23, 2020

Mr. Anwar Ali
Compliance Project Manager
California Energy Commission
1516 9th Street, MS-2000
Sacramento, California 95814-5512

**Subject:** **Watson Cogeneration Company (Facility #06755)**
**Quarterly Emissions Report – AQ 28 – 4th Quarter 2019**
**Submittal # 393**

Dear Mr. Ali:

Attached is Watson Cogeneration Company's (Facility #06755) Quarterly Emissions Report for the fourth quarter of 2019. The report contains a table of emission limits (Table 1), a table of daily fuel and ammonia usage (Table 2A), a table of daily emissions (Table 2B), and a table of emissions during start up mode (Table 2C) for each of the site's four gas turbines. A CEC permit has been issued for a fifth train, but it has been removed from Table 1 since the unit has not been built. Along with the quarterly emissions report, please find copies of the last sulfur content analysis in the quarter for our refinery fuel gas and butane.

During the fourth quarter of 2019, Watson Cogeneration Company (WCC) experienced two breakdown events.

- 10/11/2019 – WCC experienced a Title V NOx emissions exceedance at 10:21 PM, resulting in a violation of CEC Permit Conditions AQ-17. The issue was resolved at 10:59 PM, and notification was made to AQMD at 11:24 PM. Subsequent report was issued on 10/24/2019, and is attached.
- 11/17/2019 – WCC experienced a breakdown event under AQMD Rule 430, at 8:30 AM, resulting in a violation of CEC Permit Conditions AQ-17. Notification was made at 9:21 AM. Subsequent report was issued 12/12/2019, and is attached.

If you have any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Craig Chi
Cogen Operations Engineer

bcc: Connie Chow, Marathon Los Angeles Refinery
Jimmie Espie, WCC
David Booth, WCC

## Table 1

## Emission Limits as required by the California Energy Commission Conditions of Certification

| Turbine Number | Concentration Limits (ppmv @ 15% $O_2$) | | | | Maximum Daily Emission Limits [4] (lbs/day) | | | | | Start-Up/Shutdown Emission Limits [5] (lbs/day) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $NO_X$ | $SO_2$ | CO | $NH_3$ | $NO_X$ | $SO_2$ | CO | PM | ROG | $NO_X$ | $SO_2$ | CO | PM | ROG |
| 1 - 4 | 8 | 2 | 2.5 [1]<br>4.5 [2] | 20 | 2600 | 246 | 568 | 1244 | 531 | 2156 | 59 | 82 | 186 | 108 |
| 5 | 5 | --- | 2.5 [3] | 20 | 209 | 10 | 64 | 95 | 18 | 449 | 8 | 296 | 92 | 32 |

Notes:

1. Limit applies when turbine is operated at or above 85% capacity, except during startup and shutdown.
2. Limit applies when turbine is operated below 85% capacity, except during startup and shutdown.
3. Limit applies when turbine is operated at or above 50% capacity.
4. Limits do not apply on days when a start-up or shutdown has occurred. Limits pertain to combined emissions from Units 1-4.
5. Limits apply only on days when a start-up or shutdown has occurred. Limits pertain to stack emissions from individual Units.

**Table 2A**

**Daily Fuel & Ammonia Usage**

| Date | Unit Start-Up or Shutdown | Fuel Usage - By Unit (mmbtu/hr) | | | | | Fuel Usage - By Fuel Type (mmbtu/hr) | | | Ammonia Usage - By Unit (lbs/day) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GTG #1 | GTG #2 | GTG #3 | GTG #4 | Boiler #42 | Natural Gas | Refinery Gas | Butane | GTG #1 | GTG #2 | GTG #3 | GTG #4 |
| 10/1/19 | | 732 | 755 | 714 | 712 | 0 | 2365 | 421 | 126 | 1657 | 1611 | 1963 | 1951 |
| 10/2/19 | | 874 | 905 | 851 | 859 | 0 | 2939 | 441 | 109 | 1790 | 1611 | 2010 | 2087 |
| 10/3/19 | | 1048 | 1084 | 1016 | 1026 | 0 | 3497 | 563 | 114 | 1825 | 1611 | 2110 | 2084 |
| 10/4/19 | | 1011 | 1043 | 980 | 987 | 0 | 3481 | 425 | 116 | 1751 | 1611 | 1978 | 2010 |
| 10/5/19 | | 1008 | 1037 | 1001 | 990 | 0 | 3362 | 560 | 113 | 1825 | 1611 | 1846 | 2022 |
| 10/6/19 | | 863 | 892 | 860 | 847 | 0 | 3049 | 312 | 100 | 1909 | 1611 | 1934 | 2148 |
| 10/7/19 | | 882 | 914 | 854 | 864 | 0 | 3074 | 340 | 99 | 1715 | 1611 | 1944 | 1959 |
| 10/8/19 | | 912 | 941 | 882 | 889 | 0 | 3066 | 444 | 114 | 1669 | 1611 | 1931 | 1813 |
| 10/9/19 | | 981 | 1007 | 946 | 948 | 0 | 3498 | 254 | 130 | 1629 | 1611 | 1849 | 1805 |
| 10/10/19 | | 848 | 888 | 830 | 831 | 0 | 3002 | 276 | 119 | 1620 | 1630 | 1918 | 1866 |
| 10/11/19 | Y | 859 | 797 | 825 | 832 | 0 | 2797 | 398 | 119 | 1994 | 1644 | 2078 | 2085 |
| 10/12/19 | Y | 1142 | 14 | 1130 | 1111 | 0 | 2849 | 436 | 112 | 2362 | 469 | 1619 | 1615 |
| 10/13/19 | Y | 1133 | 13 | 1118 | 1101 | 0 | 2795 | 454 | 117 | 2348 | 16 | 2355 | 2362 |
| 10/14/19 | Y | 1116 | 12 | 1071 | 1076 | 0 | 2859 | 297 | 119 | 2010 | 106 | 2284 | 2345 |
| 10/15/19 | Y | 1122 | 13 | 1078 | 1088 | 0 | 2871 | 319 | 112 | 2025 | 207 | 2142 | 2339 |
| 10/16/19 | Y | 1295 | 13 | 1239 | 1256 | 0 | 3179 | 508 | 117 | 2036 | 307 | 1933 | 2255 |
| 10/17/19 | Y | 1085 | 12 | 1043 | 1049 | 0 | 2594 | 464 | 131 | 1912 | 407 | 2046 | 2267 |
| 10/18/19 | Y | 1092 | 13 | 1049 | 1058 | 0 | 2591 | 503 | 117 | 2035 | 508 | 2264 | 2337 |
| 10/19/19 | Y | 1128 | 13 | 1111 | 1094 | 0 | 2719 | 503 | 124 | 2040 | 608 | 2362 | 2362 |
| 10/20/19 | Y | 1076 | 14 | 1057 | 1043 | 0 | 2679 | 394 | 116 | 2204 | 708 | 2322 | 2362 |
| 10/21/19 | Y | 1110 | 13 | 1055 | 1072 | 0 | 2662 | 475 | 113 | 2391 | 809 | 2352 | 2362 |
| 10/22/19 | Y | 1137 | 13 | 1081 | 1101 | 0 | 2703 | 514 | 115 | 2339 | 909 | 2353 | 2362 |
| 10/23/19 | Y | 1212 | 12 | 1159 | 1173 | 0 | 2934 | 493 | 128 | 2293 | 1009 | 2326 | 2363 |
| 10/24/19 | Y | 1366 | 15 | 1277 | 1326 | 0 | 3395 | 467 | 123 | 2155 | 1110 | 2175 | 2358 |
| 10/25/19 | Y | 1227 | 330 | 1165 | 1198 | 0 | 3403 | 408 | 109 | 2349 | 1210 | 2362 | 2362 |
| 10/26/19 | Y | 1002 | 1021 | 957 | 945 | 0 | 3342 | 434 | 149 | 1915 | 1310 | 2195 | 2227 |
| 10/27/19 | Y | 955 | 985 | 947 | 928 | 0 | 3359 | 307 | 150 | 1717 | 1411 | 1927 | 1984 |
| 10/28/19 | Y | 1133 | 1161 | 594 | 1110 | 0 | 3411 | 461 | 126 | 2152 | 1511 | 1048 | 2260 |
| 10/29/19 | Y | 1072 | 1055 | 1030 | 1049 | 0 | 3475 | 594 | 137 | 2117 | 1399 | 1845 | 2362 |
| 10/30/19 | | 1016 | 975 | 1001 | 996 | 0 | 3344 | 513 | 132 | 1955 | 1169 | 2191 | 2352 |
| 10/31/19 | | 990 | 960 | 987 | 979 | 0 | 3389 | 416 | 111 | 2184 | 1261 | 2346 | 2306 |
| 11/1/19 | | 970 | 937 | 958 | 957 | 0 | 3217 | 490 | 115 | 1998 | 1301 | 2347 | 2275 |
| 11/2/19 | | 932 | 921 | 940 | 912 | 0 | 3065 | 538 | 101 | 1963 | 1277 | 2148 | 2235 |
| 11/3/19 | | 941 | 923 | 942 | 918 | 0 | 3032 | 581 | 112 | 1889 | 1201 | 2089 | 2199 |
| 11/4/19 | | 1001 | 955 | 976 | 970 | 0 | 3131 | 660 | 110 | 1739 | 1200 | 2254 | 2169 |
| 11/5/19 | | 1027 | 983 | 1004 | 1001 | 0 | 3314 | 587 | 114 | 1537 | 1190 | 2077 | 1952 |
| 11/6/19 | | 992 | 960 | 987 | 979 | 0 | 3270 | 534 | 115 | 1701 | 1231 | 1903 | 1859 |
| 11/7/19 | | 1033 | 988 | 993 | 1009 | 0 | 3353 | 557 | 113 | 1560 | 1121 | 1777 | 1822 |
| 11/8/19 | | 994 | 957 | 968 | 964 | 0 | 3328 | 443 | 112 | 1673 | 1124 | 1947 | 1983 |
| 11/9/19 | | 776 | 778 | 776 | 749 | 0 | 2635 | 330 | 114 | 1922 | 1249 | 2139 | 2198 |
| 11/10/19 | | 768 | 746 | 762 | 734 | 0 | 2492 | 373 | 145 | 1852 | 1126 | 1975 | 2121 |
| 11/11/19 | | 771 | 755 | 768 | 744 | 0 | 2490 | 427 | 121 | 1852 | 1136 | 1906 | 2121 |
| 11/12/19 | | 898 | 866 | 879 | 875 | 0 | 3017 | 397 | 105 | 1721 | 1178 | 1889 | 2012 |
| 11/13/19 | | 1080 | 1020 | 1056 | 1051 | 0 | 3255 | 841 | 111 | 1666 | 1231 | 1964 | 1914 |
| 11/14/19 | | 1164 | 1085 | 1135 | 1130 | 0 | 3308 | 1093 | 114 | 1713 | 1210 | 1986 | 2064 |
| 11/15/19 | | 1070 | 1002 | 1045 | 1036 | 0 | 3289 | 744 | 120 | 1593 | 1223 | 1979 | 1955 |
| 11/16/19 | | 868 | 850 | 866 | 844 | 0 | 2770 | 545 | 112 | 1756 | 1219 | 2050 | 2037 |
| 11/17/19 | | 797 | 790 | 782 | 765 | 0 | 2599 | 420 | 115 | 2037 | 1327 | 2232 | 2161 |
| 11/18/19 | | 976 | 925 | 920 | 928 | 0 | 3128 | 503 | 119 | 1929 | 1430 | 2357 | 2319 |
| 11/19/19 | | 975 | 918 | 931 | 938 | 0 | 3117 | 513 | 131 | 1591 | 1269 | 2227 | 2009 |
| 11/20/19 | | 870 | 825 | 855 | 846 | 0 | 2943 | 310 | 143 | 1741 | 1182 | 2122 | 1932 |
| 11/21/19 | | 771 | 730 | 756 | 744 | 0 | 2525 | 333 | 143 | 1727 | 1210 | 2147 | 1922 |
| 11/22/19 | | 684 | 652 | 662 | 654 | 0 | 2129 | 405 | 118 | 1831 | 1169 | 2126 | 2200 |
| 11/23/19 | | 855 | 833 | 847 | 828 | 0 | 2973 | 284 | 107 | 1973 | 1232 | 2139 | 2260 |
| 11/24/19 | | 810 | 787 | 797 | 779 | 0 | 2891 | 168 | 114 | 2007 | 1245 | 2241 | 2297 |
| 11/25/19 | | 681 | 644 | 658 | 646 | 0 | 2205 | 294 | 130 | 1709 | 1250 | 2127 | 2106 |
| 11/26/19 | | 797 | 756 | 781 | 776 | 0 | 2665 | 322 | 123 | 1758 | 1327 | 2298 | 2272 |
| 11/27/19 | | 884 | 824 | 862 | 859 | 0 | 2983 | 296 | 150 | 1842 | 1300 | 2233 | 2158 |
| 11/28/19 | | 1003 | 943 | 994 | 983 | 0 | 3359 | 422 | 141 | 1974 | 1293 | 2235 | 2344 |

**Table 2A**

**Daily Fuel & Ammonia Usage**

| Date | Unit Start-Up or Shutdown | Fuel Usage - By Unit (mmbtu/hr) | | | | | Fuel Usage - By Fuel Type (mmbtu/hr) | | | Ammonia Usage - By Unit (lbs/day) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GTG #1 | GTG #2 | GTG #3 | GTG #4 | Boiler #42 | Natural Gas | Refinery Gas | Butane | GTG #1 | GTG #2 | GTG #3 | GTG #4 |
| 11/29/19 | | 949 | 884 | 932 | 937 | 0 | 3150 | 417 | 135 | 1958 | 1317 | 2362 | 2305 |
| 11/30/19 | | 1099 | 1037 | 1073 | 1082 | 0 | 3667 | 502 | 122 | 1977 | 1285 | 2362 | 2340 |
| 12/1/19 | | 1021 | 964 | 980 | 994 | 0 | 3398 | 440 | 122 | 2040 | 1297 | 2362 | 2362 |
| 12/2/19 | | 1005 | 944 | 970 | 985 | 0 | 3389 | 391 | 124 | 1976 | 1223 | 2362 | 2362 |
| 12/3/19 | | 1002 | 943 | 976 | 977 | 0 | 3395 | 371 | 132 | 1933 | 1208 | 2362 | 2361 |
| 12/4/19 | | 1050 | 981 | 1024 | 1030 | 0 | 3638 | 304 | 143 | 1753 | 1250 | 2249 | 2246 |
| 12/5/19 | | 1065 | 1000 | 1030 | 1037 | 0 | 3648 | 356 | 128 | 1565 | 1212 | 2147 | 2058 |
| 12/6/19 | | 1030 | 967 | 997 | 999 | 0 | 3434 | 426 | 132 | 1694 | 1142 | 2147 | 2108 |
| 12/7/19 | | 1042 | 1018 | 1042 | 1031 | 0 | 3484 | 541 | 109 | 1771 | 1159 | 2110 | 2105 |
| 12/8/19 | | 941 | 921 | 942 | 932 | 0 | 3150 | 480 | 106 | 1789 | 1142 | 2028 | 2125 |
| 12/9/19 | | 960 | 932 | 971 | 976 | 0 | 3283 | 455 | 102 | 1795 | 1182 | 2123 | 2065 |
| 12/10/19 | | 1082 | 1063 | 1103 | 1102 | 0 | 3764 | 481 | 105 | 1822 | 1169 | 2077 | 2135 |
| 12/11/19 | | 1048 | 1039 | 1068 | 1068 | 0 | 3670 | 453 | 102 | 1777 | 1202 | 1912 | 2168 |
| 12/12/19 | | 1051 | 1031 | 1064 | 1061 | 0 | 3673 | 429 | 104 | 1711 | 1164 | 1921 | 2131 |
| 12/13/19 | | 1024 | 960 | 996 | 995 | 0 | 3480 | 369 | 125 | 1604 | 1030 | 1909 | 1945 |
| 12/14/19 | | 958 | 921 | 955 | 933 | 0 | 3334 | 301 | 132 | 1697 | 1055 | 1933 | 2018 |
| 12/15/19 | | 740 | 724 | 756 | 739 | 0 | 2517 | 329 | 113 | 1922 | 1226 | 2106 | 2188 |
| 12/16/19 | | 819 | 780 | 815 | 806 | 0 | 2566 | 536 | 118 | 2112 | 1288 | 2362 | 2362 |
| 12/17/19 | | 883 | 837 | 878 | 871 | 0 | 2586 | 768 | 115 | 2169 | 1287 | 2362 | 2353 |
| 12/18/19 | | 829 | 796 | 819 | 810 | 0 | 2536 | 594 | 123 | 2121 | 1300 | 2362 | 2360 |
| 12/19/19 | | 705 | 717 | 689 | 689 | 0 | 2338 | 341 | 120 | 2084 | 1307 | 2362 | 2368 |
| 12/20/19 | | 722 | 743 | 708 | 706 | 0 | 2381 | 380 | 117 | 2004 | 1268 | 2362 | 2365 |
| 12/21/19 | | 764 | 773 | 771 | 736 | 0 | 2384 | 525 | 135 | 1913 | 1300 | 2359 | 2361 |
| 12/22/19 | | 764 | 769 | 770 | 741 | 0 | 2482 | 405 | 158 | 1962 | 1207 | 2251 | 2271 |
| 12/23/19 | | 844 | 844 | 834 | 829 | 0 | 2823 | 386 | 141 | 1798 | 1164 | 2125 | 2210 |
| 12/24/19 | | 891 | 910 | 878 | 871 | 0 | 2874 | 539 | 138 | 2031 | 1216 | 2362 | 2368 |
| 12/25/19 | | 963 | 962 | 935 | 941 | 0 | 3185 | 458 | 157 | 2028 | 1080 | 2362 | 2361 |
| 12/26/19 | | 977 | 990 | 952 | 964 | 0 | 3324 | 416 | 143 | 2013 | 835 | 2362 | 2362 |
| 12/27/19 | | 1080 | 1079 | 1056 | 1068 | 0 | 3710 | 443 | 130 | 1957 | 1227 | 2353 | 2286 |
| 12/28/19 | | 1076 | 1087 | 1049 | 1057 | 0 | 3675 | 459 | 135 | 1933 | 1276 | 2356 | 2310 |
| 12/29/19 | | 766 | 781 | 743 | 748 | 0 | 2540 | 366 | 132 | 2031 | 1254 | 2362 | 2362 |
| 12/30/19 | | 771 | 777 | 760 | 756 | 0 | 2462 | 477 | 126 | 2011 | 1290 | 2362 | 2363 |
| 12/31/19 | | 1037 | 1041 | 1016 | 1009 | 0 | 3632 | 342 | 128 | 2038 | 1230 | 2362 | 2364 |

## Table 2B

## Daily Emissions

| Date | Unit Start-Up or Shutdown | Total Mass Emissions - GTG's #1 - 4 Midnight - Midnight (lbs/day) | | | | |
|---|---|---|---|---|---|---|
| | | NOX | SO2 | CO | PM [1] | ROG [1] |
| 10/1/19 | Y | 1338.0 | 3.7 | #REF! | 275.9 | 185.0 |
| 10/2/19 | | 1148.0 | 3.1 | #REF! | 330.2 | 221.4 |
| 10/3/19 | | 1069.2 | 3.4 | #REF! | 395.1 | 264.9 |
| 10/4/19 | | 1047.3 | 3.9 | #REF! | 380.5 | 255.0 |
| 10/5/19 | | 1254.3 | 5.0 | #REF! | 382.1 | 256.2 |
| 10/6/19 | | 1191.7 | 3.8 | #REF! | 327.4 | 219.4 |
| 10/7/19 | | 1175.7 | 5.5 | #REF! | 332.3 | 222.7 |
| 10/8/19 | | 1179.2 | 6.9 | #REF! | 343.1 | 230.0 |
| 10/9/19 | | 1204.0 | 5.8 | #REF! | 366.9 | 245.8 |
| 10/10/19 | | 1345.3 | 6.8 | #REF! | 321.3 | 215.3 |
| 10/11/19 | | 1323.0 | 6.6 | #REF! | 313.8 | 210.3 |
| 10/12/19 | Y | 910.5 | 1.3 | #REF! | 321.6 | 215.6 |
| 10/13/19 | | 864.4 | 1.5 | #REF! | 318.7 | 213.7 |
| 10/14/19 | Y | 850.7 | 1.8 | #REF! | 309.8 | 207.6 |
| 10/15/19 | | 860.3 | 2.5 | #REF! | 312.3 | 209.3 |
| 10/16/19 | | 965.3 | 3.1 | #REF! | 360.1 | 241.5 |
| 10/17/19 | | 942.4 | 2.7 | #REF! | 302.1 | 202.6 |
| 10/18/19 | | 973.3 | 3.1 | #REF! | 304.2 | 204.0 |
| 10/19/19 | | 1004.5 | 2.7 | #REF! | 316.9 | 212.6 |
| 10/20/19 | | 978.5 | 2.4 | #REF! | 302.0 | 202.4 |
| 10/21/19 | | 1041.8 | 3.2 | #REF! | 307.9 | 206.4 |
| 10/22/19 | | 1031.8 | 2.2 | #REF! | 315.7 | 211.7 |
| 10/23/19 | | 985.1 | 2.1 | #REF! | 336.7 | 225.8 |
| 10/24/19 | | 1097.2 | 2.8 | #REF! | 377.2 | 252.8 |
| 10/25/19 | | 1158.3 | 3.9 | #REF! | 370.9 | 248.6 |
| 10/26/19 | | 886.3 | 3.7 | #REF! | 371.5 | 249.1 |
| 10/27/19 | | 1008.1 | 4.2 | #REF! | 360.9 | 241.8 |
| 10/28/19 | | 1002.1 | 5.8 | #REF! | 378.4 | 253.6 |
| 10/29/19 | | 1065.0 | 3.7 | #REF! | 398.3 | 267.1 |
| 10/30/19 | | 1274.9 | 6.3 | #REF! | 377.6 | 253.1 |
| 10/31/19 | | 1106.7 | 4.6 | #REF! | 370.5 | 248.3 |
| 11/1/19 | | 997.0 | 4.4 | #REF! | 361.9 | 242.6 |
| 11/2/19 | | 1062.6 | 5.2 | #REF! | 350.8 | 235.2 |
| 11/3/19 | | 938.7 | 3.5 | #REF! | 352.8 | 236.6 |
| 11/4/19 | | 891.7 | 4.3 | #REF! | 369.7 | 247.9 |
| 11/5/19 | | 972.9 | 4.7 | #REF! | 380.3 | 255.0 |

## Table 2B
## Daily Emissions

| Date | Unit Start-Up or Shutdown | Total Mass Emissions - GTG's #1 - 4 Midnight - Midnight (lbs/day) | | | | |
|---|---|---|---|---|---|---|
| | | NOX | SO2 | CO | PM [1] | ROG [1] |
| 11/6/19 | | 992.2 | 4.0 | #REF! | 371.0 | 248.8 |
| 11/7/19 | | 1075.2 | 5.9 | #REF! | 380.9 | 255.4 |
| 11/8/19 | | 1019.6 | 4.4 | #REF! | 367.5 | 246.3 |
| 11/9/19 | | 975.5 | 3.7 | #REF! | 291.4 | 195.3 |
| 11/10/19 | | 873.6 | 4.2 | #REF! | 285.0 | 191.1 |
| 11/11/19 | | 976.1 | 4.2 | #REF! | 287.8 | 193.0 |
| 11/12/19 | | 941.9 | 3.3 | #REF! | 333.0 | 223.2 |
| 11/13/19 | | 1043.1 | 6.2 | #REF! | 398.8 | 267.6 |
| 11/14/19 | | 1055.1 | 6.6 | #REF! | 428.4 | 287.5 |
| 11/15/19 | | 969.7 | 5.1 | #REF! | 393.6 | 264.0 |
| 11/16/19 | | 990.2 | 3.0 | #REF! | 324.6 | 217.7 |
| 11/17/19 | | 1109.3 | 4.0 | #REF! | 296.7 | 199.0 |
| 11/18/19 | | 997.1 | 2.4 | #REF! | 355.0 | 238.0 |
| 11/19/19 | | 990.9 | 2.7 | #REF! | 356.2 | 238.9 |
| 11/20/19 | | 1095.9 | 4.4 | #REF! | 321.3 | 215.3 |
| 11/21/19 | | 1039.2 | 4.1 | #REF! | 284.0 | 190.4 |
| 11/22/19 | | 937.9 | 4.5 | #REF! | 251.3 | 168.5 |
| 11/23/19 | | 952.4 | 3.3 | #REF! | 318.1 | 213.2 |
| 11/24/19 | | 1007.9 | 4.8 | #REF! | 299.9 | 200.9 |
| 11/25/19 | | 1011.3 | 4.0 | #REF! | 248.9 | 166.9 |
| 11/26/19 | | 1040.5 | 5.3 | #REF! | 294.2 | 197.2 |
| 11/27/19 | | 1065.7 | 3.7 | #REF! | 324.3 | 217.4 |
| 11/28/19 | | 1077.3 | 5.3 | #REF! | 371.2 | 248.8 |
| 11/29/19 | | 1066.4 | 4.0 | #REF! | 350.4 | 234.9 |
| 11/30/19 | | 1088.0 | 4.1 | #REF! | 406.0 | 272.2 |
| 12/1/19 | | 1027.5 | 4.9 | #REF! | 374.7 | 251.2 |
| 12/2/19 | | 985.9 | 4.3 | #REF! | 369.3 | 247.5 |
| 12/3/19 | | 921.4 | 3.7 | #REF! | 368.8 | 247.2 |
| 12/4/19 | | 895.8 | 2.6 | #REF! | 386.3 | 258.8 |
| 12/5/19 | | 968.9 | 12.2 | #REF! | 390.8 | 261.9 |
| 12/6/19 | | 984.3 | 10.0 | #REF! | 377.8 | 253.2 |
| 12/7/19 | | 912.2 | 3.7 | #REF! | 391.2 | 262.3 |
| 12/8/19 | Y | 916.2 | 3.7 | #REF! | 353.7 | 237.1 |
| 12/9/19 | Y | 930.7 | 2.7 | #REF! | 363.4 | 243.6 |
| 12/10/19 | | 919.4 | 4.9 | #REF! | 411.6 | 275.8 |
| 12/11/19 | | 1041.1 | 6.0 | #REF! | 399.6 | 267.8 |

## Table 2B

## Daily Emissions

| Date | Unit Start-Up or Shutdown | Total Mass Emissions - GTG's #1 - 4 Midnight - Midnight (lbs/day) | | | | |
|---|---|---|---|---|---|---|
| | | NOX | SO2 | CO | PM [1] | ROG [1] |
| 12/12/19 | | 989.3 | 2.1 | #REF! | 397.9 | 266.7 |
| 12/13/19 | | 1064.2 | 5.3 | #REF! | 375.9 | 251.9 |
| 12/14/19 | | 1139.8 | 8.0 | #REF! | 356.2 | 238.7 |
| 12/15/19 | | 1305.1 | 9.1 | #REF! | 280.0 | 187.7 |
| 12/16/19 | | 1196.2 | 5.2 | #REF! | 305.1 | 204.7 |
| 12/17/19 | | 1225.6 | 4.5 | #REF! | 329.1 | 220.9 |
| 12/18/19 | | 1193.0 | 4.9 | #REF! | 308.4 | 206.9 |
| 12/19/19 | | 1190.3 | 4.4 | #REF! | 265.1 | 177.7 |
| 12/20/19 | | 1161.3 | 4.7 | #REF! | 272.5 | 182.7 |
| 12/21/19 | | 1211.8 | 4.9 | #REF! | 288.5 | 193.6 |
| 12/22/19 | | 1061.0 | 4.3 | #REF! | 288.4 | 193.4 |
| 12/23/19 | | 1126.1 | 6.8 | #REF! | 317.1 | 212.6 |
| 12/24/19 | | 904.4 | 4.3 | #REF! | 336.4 | 225.6 |
| 12/25/19 | | 973.7 | 1.8 | #REF! | 359.8 | 241.2 |
| 12/26/19 | | 1216.1 | 2.4 | #REF! | 367.5 | 246.3 |
| 12/27/19 | | 1185.3 | 1.9 | #REF! | 405.2 | 271.6 |
| 12/28/19 | | 1140.3 | 1.3 | #REF! | 404.0 | 270.8 |
| 12/29/19 | | 1073.2 | 1.0 | #REF! | 287.6 | 192.8 |
| 12/30/19 | | 1182.1 | 3.0 | #REF! | 290.3 | 194.7 |
| 12/31/19 | | 1103.9 | 1.7 | #REF! | 388.0 | 260.0 |

1. PM & ROG emission estimates were calculated using fuel based emission factors and fuel usage data.

| Fuel | PM | ROG |
|---|---|---|
| Natural Gas: | 0.00393 | 0.00263 |
| Refinery Gas: | 0.00402 | 0.00272 |
| Butane: | 0.00402 | 0.00272 |

The foregoing fuel based emission factors have been updated based on 1997 & 1998 stack testing.

**Table 2C**
**Daily Emissions for Individual Units during Startup**

| Date | Unit | Total Mass Emissions - GTG's #1 | | | | |
|---|---|---|---|---|---|---|
| | Start-Up | Midnight - Midnight | | | | |
| | or Shutdown | (lbs/day) | | | | |
| | | NOX | SO2 | CO | PM 1 | ROG 1 |
| | NONE | | | | | |

| Date | Unit | Total Mass Emissions - GTG's #2 | | | | |
|---|---|---|---|---|---|---|
| | Start-Up | Midnight - Midnight | | | | |
| | or Shutdown | (lbs/day) | | | | |
| | | NOX | SO2 | CO | PM 1 | ROG 1 |
| 10/11/19 | Y | | | | | |
| 10/29/19 | Y | | | | | |

| Date | Unit | Total Mass Emissions - GTG's #3 | | | | |
|---|---|---|---|---|---|---|
| | Start-Up | Midnight - Midnight | | | | |
| | or Shutdown | (lbs/day) | | | | |
| | | NOX | SO2 | CO | PM 1 | ROG 1 |
| 10/28/19 | Y | | | | | |

| Date | Unit | Total Mass Emissions - GTG's #4 | | | | |
|---|---|---|---|---|---|---|
| | Start-Up | Midnight - Midnight | | | | |
| | or Shutdown | (lbs/day) | | | | |
| | | NOX | SO2 | CO | PM 1 | ROG 1 |
| | NONE | | | | | |

Connie Chow
Environmental Department

**Tesoro Refining & Marketing Company LLC**
A subsidiary of Marathon Petroleum Corporation

Los Angeles Refinery – Carson Operations
2350 E. 223rd Street
Carson, California 90810
310-816-8100

October 24, 2019

**VIA Certified Mail No. 7018 1130 0002 0342 0488**
**Return Receipt Requested**

Title V Administrator
South Coast Air Quality Management District
PO Box #4944
Diamond Bar, CA 91765

**Re: Title V Deviation Excess Emissions Report for Cogen**
**Notification # 583397**
**Facility ID No. 174655**

Dear Title V Administrator,

Tesoro Los Angeles Refinery, Carson Operations is providing the enclosed Form 500-N for the Title V deviation notification made on October 11th, 2019 at 11:24 PM (Notification No. 583397).

Please contact me at (310) 847-5633 if you have questions or comments regarding this report.

Sincerely,

Connie Chow
Senior Environmental Engineer

Enclosure

cc: Env File 3E05-0046708

ecc: ECC 2019-10-11 Cogen 91 NOx Exceedance
George Lamont, SCAQMD
Joshua Valdez, Marathon
David Booth, Marathon
Michael Alexander, Marathon
Connie Chow, Marathon

South Coast Air Quality Management District

# Form 500-N
# Deviations, Emergencies, & Breakdowns

Mail Application To:
PO Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
**www.aqmd.gov**

**This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.*

## Section I - Facility Information

**1. Permit to be issued to (Business name of operator to appear on permit):** Tesoro Refining & Marketing Company LLC

**2. Valid AQMD Facility ID (Available on Permit or Invoice Issued by AQMD):** 174655

**3. Address (where incident occurred):** 2350 E. 223rd St

**City:** Carson **State:** CA **Zip Code:** 90810

**4. Mailing Address (if different from Item 2):** 2350 E. 223rd St

**City:** Carson **State:** CA **Zip Code:** 90810

**5. Provide the name, title, and phone number of the person to contact for further information**

| Name | Title | Phone |
|---|---|---|
| Connie Chow | Senior Environmental Engineer | 310-847-5633 |

## Section II - Reporting of Breakdowns, Deviations, and Emergencies

**1. This written notification is to report a(n):**

| | Type of Incident | Verbal Report Due* | Written Report Due |
|---|---|---|---|
| a. ☐ | Emergency under Rule 3002 (g) | Within 1 hour of discovery. | Within 2 working days from when the emission limit was exceeded |
| b. ☐ | Breakdown under:<br>☐ Rule 430 (Non-RECLAIM)<br>☐ Rule 2004 (RECLAIM)<br>☐ Rule 218 (Non-RECLAIM) [See Rule 218 (f)(3)] | For Rules 430 2004 - Within 1 hour of discovery<br>For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours. | For Rules 430 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from the start of the breakdown, unless a written extension is granted<br>For Rule 218 - With required semi-annual reports |
| c. ☑ | Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B] | Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation | Within 14 days of discovery of the deviation |
| d. ☐ | Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23] | None | With required semi-annual reports |

**2. The incident was first discovered by:** Operations **on?** 10/11/2019 (Date) 10:21:00 PM (Time)

**3. The incident was first reported to:** AQMD Operator #12 **on?** 10/11/2019 (Date) 11:24:00 PM (Time)

a. ◉ Via Phone

b. ○ In Person Notification Number (Required): 583397

**4. When did the incident actually occur?** 10/11/2019 (Date) 10:21:00 PM (Time)

| AQMD USE ONLY | | | | | | |
|---|---|---|---|---|---|---|
| | Recieved By: | | Assigned By: | | Inspector: | |
| | Date/Time Recieved: | | Date/Time Assigned: | | Date/Time Recieved Assignmen | |
| | Date Delivered to Team: | | Date Reviewed Inspector Repo | | Date Facility Inspected: | |
| | Team: | Sector: | Breakdown/Deviation Notification | | Date Completed Report: | |
| | Recommended Action: | Cancel Notification | Grant Relief | Issue NOV No. _____ | Other: _____ | |
| | Final Action: | Cancel Notification | Grant Relief | Issue NOV No. _____ | Other: _____ | |

5. Has the incident stopped? a. (•) Yes, on: 10/11/2019 (Date) 10:59:00 PM (Time) b. ( ) No

6. What was the total duration of the incident? 0.65 (Hours)

7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occured? N/A (Date) (Time)

8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary. Devices Affected: C1242, 1227, 1242

On October 11th, 2019, Cogeneration Gas Turbine Generator (GTG) Unit 91 experienced elevated NOx stack emissions. The 15-minute average concentration limit of 8 ppm corrected to 15% O2 was exceeded from 10:21 pm to 10:59 pm.

9. This incident may have resulted in a:

a. [✓] Violation of Permit Condition(s): A248.1

b. [✓] Violation of AQMD Rule(s): R203(b), R2004(f)(1), R3002(c)(1), R2005, NOX: 8 PPMV (4) [RULE 2005, 6-3-2011

10. What was the probable cause of the incident? Attach additional pages as necessary.

See Attachment

11. Did the incident result in excess emissions? ( ) No (•) Yes (Complete the following and attach calculations.)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| [ ] VOC | lbs | [✓] NOX | 17.74 ppm | lbs | [ ] SOx | lbs | [ ] H2S | lbs | |
| [ ] CO | lbs | [ ] PM | | lbs | [ ] Other | lbs | | | pollutant |

12. For RECLAIM facilities Subject to Rule 2004 (i)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?

a. ( ) Yes, for: [ ] NOx [ ] SOx b. ( ) No, for: [ ] NOx [ ] SOx

If box 12(b) above is checked, include all information specified in Rule 2004(i)(3)(B) and (C), as applicable.

13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.

See Attachment

14. Was the facility operating properly prior to the incident?

a. (•) Yes b. ( ) No, because:

15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?

a. (•) Yes b. ( ) No, because:

16. Has the facility returned to compliance?

a. ( ) No, because:

b. (•) Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)

## Section III - Certification Statement

I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

*For Title V Facilities ONLY:* [✓] I also certify under penalty of law that that I am the responsible official for this facility as defined in AQMD Regulation XXX.

OSR

| Signature of Responsible Official | Title | Date |
|---|---|---|
| Bradley Levi | Vice President, Tesoro Los Angeles Refinery | 10-24-2019 |

| Type or Print Name of Responsible Official | Phone | Fax |
|---|---|---|
| Brad Levi | 310-816-8100 | 310-847-5475 |

| Address | City: | State | Zip Code |
|---|---|---|---|
| 2350 E. 223rd St | Carson | CA | 90810 |

## Section IV - Attachments

10. What was the probable cause of the incident? Attach additional pages as necessary.

During the planned shutdown of an adjacent Cogeneration GTG Unit 92, turnaround activities included using air to purge the ammonia (NH3) line at GTG Unit 92. During this activity, NOx concentrations at GTG 91 began to increase unexpectedly. It was later discovered that an isolation valve was inadvertently left open at GTG 92, allowing air to back into the NH3 line shared by GTG Units 91 and 92. The air diluted the NH3 being injected into GTG Unit 91's selective catalytic reduction (SCR) system, resulting in elevated NOx concentrations.

13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.

Once the cause of GTG elevated NOx concentration was determined, Operations immediately closed the isolation valve at GTG Unit 92, returning the NH3 flow to GTG Unit 91 back to normal. NOx concentration began to decrease, and the 15 min average dropped below the 8 ppm limit at 10:59 pm on the same day. To prevent reoccurrence of similar incidents, Tesoro will be providing training to Operations and be revising existing purging procedures to provide clearer guidance on isolation practices.

Connie Chow
Environmental Department

**Tesoro Refining & Marketing Company LLC**
A subsidiary of Marathon Petroleum Corporation

Los Angeles Refinery – Carson Operations
2350 E. 223rd Street
Carson, California 90810
310-816-8100

December 12, 2019

**VIA Certified Mail No. 7018 0360 0001 1210 9889**
**Return Receipt Requested**

Title V Administrator
South Coast Air Quality Management District
PO Box #4944
Diamond Bar, CA 91765

**Re: Title V Deviation Breakdown Report for Cogen**
**Notification # 587989**
**Facility ID No. 174655**

Dear Title V Administrator,

Tesoro Los Angeles Refinery, Carson Operations is providing the enclosed Form 500-N for the Title V deviation breakdown notification made on November 17th, 2019 at 9:21 AM (Notification No. 587989).

Please contact me at (310) 847-5633 if you have questions or comments regarding this report.

Sincerely,

Connie Chow
Senior Environmental Engineer

Enclosure

cc: Env File 3E05-0046708

ecc: ECC 2019-11-17 Cogen NOx Exceedance
George Lamont, SCAQMD
Mohammed Eltaramsi, SCAQMD
Joshua Valdez, Marathon
David Booth, Marathon

South Coast Air Quality Management District

# Form 500-N
# Deviations, Emergencies, & Breakdowns

Mail Application To:
PO Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
**www.aqmd.gov**

**This written report is in addition to requirements to verbally report certain types of incidents. Verbal reports may be made by calling AQMD at 1-800-288-7664 (1-800-CUT-SMOG) or AQMD enforcement personnel.*

## Section I - Facility Information

**1. Permit to be issued to (Business name of operator to appear on permit):** Tesoro Refining & Marketing Company LLC

**2. Valid AQMD Facility ID (Available on Permit or Invoice Issued by AQMD):** 174655

**3. Address (where incident occurred):** 2350 E. 223rd St

**City:** Carson **State:** CA **Zip Code:** 90810

**4. Mailing Address (if different from Item 2):** 2350 E. 223rd St

**City:** Carson **State:** CA **Zip Code:** 90810

**5. Provide the name, title, and phone number of the person to contact for further information**

| Name | Title | Phone |
|---|---|---|
| Connie Chow | Senior Environmental Engineer | 310-847-5633 |

## Section II - Reporting of Breakdowns, Deviations, and Emergencies

**1. This written notification is to report a(n):**

| Type of Incident | Verbal Report Due* | Written Report Due |
|---|---|---|
| a. ☐ Emergency under Rule 3002 (g) | Within 1 hour of discovery. | Within 2 working days from when the emission limit was exceeded |
| b. ☑ Breakdown under:<br>☑ Rule 430 (Non-RECLAIM)<br>☐ Rule 2004 (RECLAIM)<br>☐ Rule 218 (Non-RECLAIM) [See Rule 218 (f)(3)] | For Rules 430 2004 - Within 1 hour of discovery<br>For Rule 218 - Within 24 hours or next business day for failure/shutdown exceeding 24 hours. | For Rules 430 2004 - Within 7 calendar days after breakdown is corrected, but no later than 30 days from the start of the breakdown, unless a written extension is granted<br>For Rule 218 - With required semi-annual reports |
| c. ☐ Deviation with excess emissions [See Title V Permit, Section K, Condition No. 22B] | Within 72 hours of discovery of the deviation or shorter reporting period if required by an applicable State or Federal Regulation | Within 14 days of discovery of the deviation |
| d. ☐ Other Deviation [See Title V Permit, Section K, Condition Nos. 22D & 23] | None | With required semi-annual reports |

**2. The incident was first discovered by:** Operations **on?** 11/17/2019 (Date) 8:34:00 AM (Time)

**3. The incident was first reported to:** AQMD operator #4 **on?** 11/17/2019 (Date) 9:21:00 AM (Time)

a. ◉ Via Phone

b. ○ In Person Notification Number (Required): 587989

**4. When did the incident actually occur?** 11/17/2019 (Date) 8:30:00 AM (Time)

| | | | | | |
|---|---|---|---|---|---|
| | Recieved By: | | Assigned By: | | Inspector: |
| | Date/Time Recieved: | | Date/Time Assigned: | | Date/Time Recieved Assignmen |
| AQMD | Date Delivered to Team: | | Date Reviewed Inspector Repo | | Date Facility Inspected: |
| USE | Team: | Sector: | Breakdown/Deviation Notification | | Date Completed Report: |
| ONLY | Recommended Action | Cancel Notification | Grant Relief | Issue NOV No. _____ | Other: _____ |
| | Final Action: | Cancel Notification | Grant Relief | Issue NOV No. _____ | Other: _____ |



Deviation ID: 1012

5. Has the incident stopped? a. • Yes, on: 11/17/2019 (Date) 8:59:00 AM (Time) b. No

6. What was the total duration of the incident? 0 (Days) 0.38 (Hours)

7. For equipment with an operating cycle, as defined in Rule 430 (b)(3)(A), when was the end of the operating cycle during which the incident occured? N/A (Date) (Time)

8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary. Devices Affected: 1228, 1226, 1227, 1233, 1234, 1239, 1240

See Attachment

9. This incident may have resulted in a:

a. ✔ Violation of Permit Condition(s): A248.1, Administrative Condition E4, Administrative Condition E2

b. ✔ Violation of AQMD Rule(s): R2004(f)(1), R203(b), R3002(c)(1), NOX: 8 PPMV (4) [RULE 2005, 6-3-2011

10. What was the probable cause of the incident? Attach additional pages as necessary.

See Attachment

11. Did the incident result in excess emissions? No • Yes (Complete the following and attach calculations.)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| VOC | lbs | ✔ NOX | > 8 ppm | lbs | SOx | lbs | H2S | lbs |
| CO | lbs | PM | | lbs | Other | lbs | | pollutant |

12. For RECLAIM facilities Subject to Rule 2004 (i)(3) ONLY: If excess emissions of NOx and/or SOx were reported in Item 11, do you want these emissions to be counted when determining compliance with your annual allocations?

a. Yes, for: NOx SOx b. No, for: NOx SOx

If box 12(b) above is checked, include all information specified in Rule 2004(i)(3)(B) and (C), as applicable.

13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.

See Attachment

14. Was the facility operating properly prior to the incident?

a. • Yes b. No, because:

15. Did the incident result from operator error, neglect or improper operation or maintenance procedures?

a. Yes b. • No, because: The incident was a result of a faulty communication wire.

16. Has the facility returned to compliance?

a. No, because:

b. • Yes (Attach evidence such as emissions calculations, contemporaneous operating logs or other credible evidence.)

## Section III - Certification Statement

I certify under penalty of law that based on information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

*For Title V Facilities ONLY:* ✔ I also certify under penalty of law that that I am the responsible official for this facility as defined in AQMD Regulation XXX.

DIK Bradley Levi

Signature of Responsible Official

Vice President, Tesoro Los Angeles Refinery (Title)

12-12-19 (Date)

Brad Levi

Type or Print Name of Responsible Official

310-816-8100 (Phone)

310-847-5475 (Fax)

2350 E. 223rd St (Address)

Carson (City)

CA (State)

90810 (Zip Code)

## Section IV - Attachments

8. Describe the incident and identify each piece of equipment (by permit, application, or device number) affected. Attach photos (when available) of the affected equipment and attach additional pages as necessary.

On November 17th, at approximately 8:34 am, all four Cogeneration Gas Turbine Generators (GTGs) experienced a sudden drop in DeNOx steam flow, resulting in elevated stack NOx emissions on all four GTGs. The 15-minute average concentration limit of 8 ppm (corrected to 15% O2) was exceeded from 8:36 am to 8:58 am.

10. What was the probable cause of the incident? Attach additional pages as necessary.

It was determined that a faulty communication wire that had degraded over time due to vibrations, had sent false temperature readings to the steam turbine generator's (STG1's) control system. These false high temperature readings caused the STG1 to trip offline on high journal bearing temperature. When STG1 tripped, it caused fluctuations in the 300 lb steam system, which in turn, resulted in DeNOx steam reduction/loss to all four units.

13. Describe the steps taken to correct the problem (i.e., steps taken to mitigate excess emissions, equipment repairs, etc.) and the preventative measures employed to avoid future incidents. Include photos of the failed equipment if available and attach additional pages as necessary.

Operations immediately increased ammonia rates to all four units to reduce NOx emissions. The DeNOx steam flow was re-established, bringing the NOx concentration down below the 15 min average NOx limit. The faulty communication wire was repaired and the rest of the wires in the terminal box were checked for similar issues. To help prevent a reoccurrence of similar incidents, alarms will be evaluated to help proactively identify faulty wire connections that could potentially cause loss of communication.

Additional Information:

Loss of DENOX steam duration:
Unit 91 – DeNOx steam reduced
Unit 92 – 8:40 AM - 8:41 AM (total loss of DeNOx steam)
Unit 93 - DeNOx team reduced
Unit 94 - 8:39 AM - 8:40 AM (total loss of DeNOx steam)

NOX Excess Emissions:
Unit 91 – 35.25 ppm; Duration: 8:36 am – 8:55 am
Unit 92 – 51.58 ppm; Duration: 8:36 am – 8:58 am
Unit 93 – likely exceeded 8 ppm limit, but no data since instrument was in calibration during the event
Unit 94 – 35.51 ppm; Duration: 8:36 am – 8:59 am