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# TERRA AIR SERVICES FTIR Summary Report

Customer: Tosco SFAR  
Address: 1380 San Pablo Avenue  
Rodeo, CA 94572-1298

## Monitoring Period

From: 01/01/99 00:00:01  
To: 01/31/99 23:59:59

Total Hours: 744.00

## North Fenceline

| Compound                | Path - Average Conc. (ppm) |       | Detections |        | Alarms    |          |                  | Path - MDL (ppm) |                 |   |                  |                  |                  |
|-------------------------|----------------------------|-------|------------|--------|-----------|----------|------------------|------------------|-----------------|---|------------------|------------------|------------------|
|                         | Avg.*                      | Max*  | Min*       | Number | Confirmed | J Values | High Level (ppm) | #                | Low Level (ppm) | # | Avg Detect Limit | Max Detect Limit | Min Detect Limit |
| 1,1,1 Trichloroethane   | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 450              | 0                | 350             | 0 | 0.033            | 0.741            | 0.002            |
| 1,3 Butadiene           | 0.000                      | 0.000 | 0.000      | 1      | 0         | 1        | 50               | 0                | 10              | 0 | 0.028            | 1.800            | 0.006            |
| 2,2,4-Trimethylpentane  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 0                | 0                | 0               | 0 | 5.133            | 84.346           | 0.909            |
| Acetaldehyde            | 0.000                      | 0.000 | 0.000      | 1      | 0         | 0        | 150              | 0                | 25              | 0 | 0.689            | 14.412           | 0.238            |
| Ammonia                 | 0.000                      | 0.000 | 0.000      | 83     | 0         | 83       | 100              | 0                | 3               | 0 | 0.012            | 0.385            | 0.002            |
| Butane                  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 1000             | 0                | 800             | 0 | 0.467            | 5.000            | 0.135            |
| Carbon monoxide         | 0.312                      | 2.552 | 0.126      | 5913   | 5913      | 0        | 400              | 0                | 20              | 0 | 1.969            | 40.926           | 0.126            |
| Carbonyl sulfide        | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 10               | 0                | 1               | 0 | 0.026            | 0.282            | 0.001            |
| Chlorodifluoromethane   | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 100              | 0                | 10              | 0 | 0.021            | 0.445            | 0.007            |
| Diethanol Amine         | 0.000                      | 0.000 | 0.000      | 1      | 0         | 0        | 6                | 0                | 0.46            | 0 | 0.673            | 14.487           | 0.226            |
| Dimethyl sulfide        | 0.000                      | 0.000 | 0.000      | 9      | 0         | 9        | 500              | 0                | 50              | 0 | 0.331            | 8.233            | 0.156            |
| Ethane                  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 3000             | 0                | 1000            | 0 | 0.211            | 2.062            | 0.059            |
| Ethyl benzene           | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 125              | 0                | 100             | 0 | 0.428            | 4.515            | 0.124            |
| Ethylene                | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 2700             | 0                | 1000            | 0 | 0.030            | 2.241            | 0.010            |
| Formaldehyde            | 0.000                      | 0.000 | 0.000      | 129    | 0         | 118      | 2                | 0                | 0.3             | 0 | 0.061            | 1.492            | 0.004            |
| Furan                   | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 2300             | 0                | 230             | 0 | 3.289            | 36.651           | 1.102            |
| Hydrogen chloride       | 0.000                      | 0.000 | 0.000      | 66     | 0         | 66       | 20               | 0                | 1               | 0 | 0.067            | 2.208            | 0.007            |
| Hydrogen cyanide        | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 3                | 0                | 0.3             | 0 | 0.069            | 1.292            | 0.020            |
| Methane                 | 1.204                      | 1.717 | 0.442      | 7258   | 7258      | 0        | 5000             | 0                | 1000            | 0 | 0.889            | 2.659            | 0.405            |
| Methyl mercaptan        | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 10               | 0                | 0.005           | 0 | 1.699            | 16.173           | 0.456            |
| Methyl tert-butyl ether | 0.108                      | 0.162 | 0.076      | 23     | 23        | 0        | 200              | 0                | 40              | 0 | 0.132            | 2.969            | 0.044            |
| n-Hexane                | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 75               | 0                | 50              | 0 | 0.694            | 5.703            | 0.197            |
| n-Octane                | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 375              | 0                | 75              | 0 | 0.390            | 3.247            | 0.108            |
| Naphthalene             | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 15               | 0                | 10              | 0 | 0.501            | 23.765           | 0.078            |

Date: 21-Feb-99 12:18

**North Fenceline**

| Compound         | Path - Average Conc. (ppm) |       | Detections |        | Alarms    |          |                  | Path - MDL (ppm) |                 |    |                  |                  |                  |
|------------------|----------------------------|-------|------------|--------|-----------|----------|------------------|------------------|-----------------|----|------------------|------------------|------------------|
|                  | Avg.*                      | Max*  | Min*       | Number | Confirmed | J Values | High Level (ppm) | #                | Low Level (ppm) | #  | Avg Detect Limit | Max Detect Limit | Min Detect Limit |
| Nickel carbonyl  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 0.16             | 0                | 0.09            | 0  | 0.021            | 0.229            | 0.001            |
| Nitrous oxide*** | 0.271                      | 0.581 | 0.196      | 7518   | 7518      | 0        | NONE             | na               | NONE            | na | 0.569            | 1.441            | 0.196            |
| Ozone**          | 0.000                      | 0.000 | 0.000      | 790    | 0         | 790      | NONE             | na               | NONE            | na | 0.046            | 0.991            | 0.009            |
| Phenol           | 0.000                      | 0.000 | 0.000      | 53     | 0         | 0        | 50               | 0                | 5               | 0  | 0.183            | 70.035           | 0.008            |
| Phosgene         | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 0.2              | 0                | 0.003           | 0  | 0.007            | 0.252            | 0.002            |
| Propane          | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 2500             | 0                | 1000            | 0  | 0.289            | 6.006            | 0.082            |

Number of Valid Spectra Collected and Analyzed: 7580

Online %: 87.5 Offline %: 12.5

**South Fenceline**

| Compound               | Path - Average Conc. (ppm) |       | Detections |        | Alarms    |          |                  | Path - MDL (ppm) |                 |   |                  |                  |                  |
|------------------------|----------------------------|-------|------------|--------|-----------|----------|------------------|------------------|-----------------|---|------------------|------------------|------------------|
|                        | Avg.*                      | Max*  | Min*       | Number | Confirmed | J Values | High Level (ppm) | #                | Low Level (ppm) | # | Avg Detect Limit | Max Detect Limit | Min Detect Limit |
| 1,1,1 Trichloroethane  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 450              | 0                | 350             | 0 | 0.036            | 0.205            | 0.013            |
| 1,3 Butadiene          | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 50               | 0                | 10              | 0 | 0.048            | 0.278            | 0.016            |
| 2,2,4-Trimethylpentane | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 0                | 0                | 0               | 0 | 5.534            | 37.542           | 1.237            |
| Acetaldehyde           | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 150              | 0                | 25              | 0 | 0.758            | 4.420            | 0.296            |
| Ammonia                | 0.000                      | 0.000 | 0.000      | 8      | 0         | 8        | 100              | 0                | 3               | 0 | 0.021            | 0.091            | 0.007            |
| Butane                 | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 1000             | 0                | 800             | 0 | 0.674            | 2.447            | 0.182            |
| Carbon monoxide        | 0.300                      | 0.497 | 0.195      | 1678   | 1678      | 0        | 400              | 0                | 20              | 0 | 0.829            | 24.596           | 0.195            |
| Carbonyl sulfide       | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 10               | 0                | 1               | 0 | 0.025            | 0.240            | 0.003            |
| Chlorodifluoromethane  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 100              | 0                | 10              | 0 | 0.023            | 0.148            | 0.009            |
| Diethanol Amine        | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 6                | 0                | 0.46            | 0 | 0.744            | 4.581            | 0.290            |
| Dimethyl sulfide       | 0.000                      | 0.000 | 0.000      | 5      | 0         | 0        | 500              | 0                | 50              | 0 | 0.426            | 1.909            | 0.180            |
| Ethane                 | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 3000             | 0                | 1000            | 0 | 0.298            | 0.966            | 0.079            |
| Ethyl benzene          | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 125              | 0                | 100             | 0 | 0.573            | 2.234            | 0.168            |
| Ethylene               | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 2700             | 0                | 1000            | 0 | 0.039            | 0.177            | 0.016            |
| Formaldehyde           | 0.000                      | 0.000 | 0.000      | 189    | 0         | 189      | 2                | 0                | 0.3             | 0 | 0.055            | 0.915            | 0.004            |
| Furan                  | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 2300             | 0                | 230             | 0 | 4.793            | 13.955           | 1.620            |
| Hydrogen chloride      | 0.000                      | 0.000 | 0.000      | 57     | 0         | 57       | 20               | 0                | 1               | 0 | 0.095            | 1.402            | 0.005            |
| Hydrogen cyanide       | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 3                | 0                | 0.3             | 0 | 0.095            | 0.403            | 0.032            |
| Methane                | 1.466                      | 2.404 | 0.621      | 5611   | 5611      | 0        | 5000             | 0                | 1000            | 0 | 1.544            | 2.384            | 0.621            |

Date: 21-Feb-99 12:18

**South Fenceline**

| Compound                | Path - Average Conc. (ppm) |       | Detections |        | Alarms    |          |                  | Path - MDL (ppm) |                 |    |                  |                  |                  |
|-------------------------|----------------------------|-------|------------|--------|-----------|----------|------------------|------------------|-----------------|----|------------------|------------------|------------------|
|                         | Avg.*                      | Max*  | Min*       | Number | Confirmed | J Values | High Level (ppm) | #                | Low Level (ppm) | #  | Avg Detect Limit | Max Detect Limit | Min Detect Limit |
| Methyl mercaptan        | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 10               | 0                | 0.005           | 0  | 2.476            | 9.300            | 0.624            |
| Methyl tert-butyl ether | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 200              | 0                | 40              | 0  | 0.145            | 0.897            | 0.057            |
| n-Hexane                | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 75               | 0                | 50              | 0  | 1.006            | 3.378            | 0.284            |
| n-Octane                | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 375              | 0                | 75              | 0  | 0.551            | 1.811            | 0.144            |
| Naphthalene             | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 15               | 0                | 10              | 0  | 0.668            | 3.646            | 0.206            |
| Nickel carbonyl         | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 0.16             | 0                | 0.09            | 0  | 0.021            | 0.218            | 0.002            |
| Nitrous oxide***        | 0.286                      | 0.618 | 0.211      | 6153   | 6153      | 0        | NONE             | na               | NONE            | na | 0.537            | 0.895            | 0.211            |
| Ozone**                 | 0.000                      | 0.000 | 0.000      | 203    | 0         | 203      | NONE             | na               | NONE            | na | 0.058            | 0.250            | 0.029            |
| Phenol                  | 0.112                      | 0.232 | 0.072      | 43     | 18        | 25       | 50               | 0                | 5               | 0  | 0.188            | 30.978           | 0.005            |
| Phosgene                | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 0.2              | 0                | 0.003           | 0  | 0.009            | 0.055            | 0.002            |
| Propane                 | 0.000                      | 0.000 | 0.000      | 0      | 0         | 0        | 2500             | 0                | 1000            | 0  | 0.426            | 1.731            | 0.111            |

Number of Valid Spectra Collected and Analyzed: 6221

Online %: 73.6      Offline %: 26.4

\* Zero (0.000) values indicate all concentrations less than the minimum detection limit (<MDL)  
 \*\* Included as an interfering compound  
 \*\*\* Included as an ambient quality assurance check compound