**APPENDIX 1**
TEST RESULTS

Baghouse Inlet

## CATALYST AIR MANAGEMENT, INC.

**Ontario Hydro Method**

Client: **TRACTEBEL POWER, INC.**
Unit Tested: **Kline Township Unit 1**
Sampling Location: Baghouse Inlet

Run No: **1-Hg-Inlet** Date: 10/28/99 Start Time: 8:35 End Time: 11:45

| | | | | | | |
|---|---|---|---|---|---|---|
| DIAMETER OF NOZZLE: | 0.188 | | DIMENSION OF DUCT: | 75 x 178 | in |
| AREA OF NOZZLE: | 1.928E-04 | $A_n$ | AREA OF STACK: | 92.71 | sq. ft. |
| BAROMETRIC PRESSURE: | 29.66 | $P_{bar}$ | VOLUME OF MOISTURE: | 87 | $V_{lc}$ |
| GAS METER Y-FACTOR: | 1.02 | Y | PITOT COEFFICIENT: | 0.84 | $C_p$ |

| POINT | TIME | GAS METER | VEL HEAD | PM ORIFICE | METER TEMP IN | METER TEMP OUT | STACK TEMP | CO2% | O2% | STATIC PRESS | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 38.506 | | | | | | | | | | |
| A-1 | 5.0 | 41.0 | 0.80 | 0.56 | 55 | 55 | 369 | | | | 25.75 | 62.5 |
| 2 | 5.0 | 42.9 | 0.80 | 0.58 | 57 | 55 | 391 | 17.6 | 2.4 | -7.50 | 26.09 | 63.3 |
| 3 | 5.0 | 45.3 | 0.82 | 0.60 | 59 | 55 | 394 | | | | 26.46 | 64.2 |
| 4 | 5.0 | 47.3 | 0.82 | 0.60 | 62 | 57 | 398 | | | | 26.52 | 64.4 |
| 5 | 5.0 | 49.468 | 0.75 | 0.54 | 65 | 57 | 364 | | | | 24.86 | 60.3 |
| | | 49.633 | | | | | | | | | | |
| B-1 | 5.0 | 51.7 | 0.75 | 0.54 | 66 | 60 | 368 | | | | 24.92 | 60.5 |
| 2 | 5.0 | 53.8 | 0.78 | 0.57 | 66 | 61 | 384 | | | | 25.66 | 62.3 |
| 3 | 5.0 | 55.6 | 0.60 | 0.44 | 69 | 62 | 390 | | | | 22.58 | 54.8 |
| 4 | 5.0 | 57.9 | 0.45 | 0.32 | 70 | 62 | 393 | | | | 19.59 | 47.5 |
| 5 | 5.0 | 58.603 | 0.65 | 0.47 | 72 | 62 | 391 | | | | 23.52 | 57.1 |
| | | 58.754 | | | | | | | | | | |
| C-1 | 5.0 | 60.6 | 0.75 | 0.55 | 71 | 66 | 366 | | | | 24.89 | 60.4 |
| 2 | 5.0 | 62.6 | 0.75 | 0.55 | 71 | 66 | 379 | | | | 25.08 | 60.9 |
| 3 | 5.0 | 64.7 | 0.78 | 0.56 | 73 | 66 | 380 | | | | 25.60 | 62.1 |
| 4 | 5.0 | 66.4 | 0.68 | 0.49 | 74 | 67 | 380 | | | | 23.90 | 58.0 |
| 5 | 5.0 | 67.495 | 0.37 | 0.27 | 75 | 67 | 365 | | | | 17.47 | 42.4 |
| | | 67.701 | | | | | | | | | | |
| D-1 | 5.0 | 69.6 | 0.70 | 0.52 | 74 | 69 | 365 | | | | 24.03 | 58.3 |
| 2 | 5.0 | 71.8 | 0.75 | 0.55 | 75 | 69 | 375 | | | | 25.02 | 60.7 |
| 3 | 5.0 | 73.9 | 0.79 | 0.58 | 75 | 70 | 370 | | | | 25.61 | 62.1 |
| 4 | 5.0 | 76.2 | 0.75 | 0.55 | 77 | 70 | 371 | | | | 24.96 | 60.6 |
| 5 | 5.0 | 77.752 | 0.55 | 0.40 | 77 | 71 | 344 | | | | 21.03 | 51.0 |
| | | 77.824 | | | | | | | | | | |
| E-1 | 5.0 | 80.1 | 0.80 | 0.61 | 77 | 71 | 346 | | | | 25.39 | 61.6 |
| 2 | 5.0 | 82.0 | 0.74 | 0.54 | 77 | 72 | 360 | | | | 24.63 | 59.8 |
| 3 | 5.0 | 84.1 | 0.75 | 0.55 | 78 | 72 | 363 | | | | 24.84 | 60.3 |
| 4 | 5.0 | 86.0 | 0.65 | 0.48 | 78 | 72 | 362 | | | | 23.11 | 56.1 |
| 5 | 5.0 | 87.609 | 0.50 | 0.38 | 79 | 72 | 345 | | | | 20.06 | 48.7 |
| | | 87.905 | | | | | | | | | | |
| F-1 | 5.0 | 90.0 | 0.85 | 0.63 | 76 | 75 | 354 | | | | 26.30 | 63.8 |
| 2 | 5.0 | 92.4 | 0.88 | 0.65 | 75 | 74 | 365 | | | | 26.94 | 65.4 |
| 3 | 5.0 | 94.5 | 0.85 | 0.63 | 75 | 74 | 348 | | | | 26.21 | 63.6 |
| 4 | 5.0 | 96.3 | 0.79 | 0.58 | 75 | 74 | 350 | | | | 25.30 | 61.4 |
| 5 | 5.0 | 98.351 | 0.60 | 0.48 | 76 | 74 | 362 | | | | 22.21 | 53.9 |

| RESULTS | TT | VM | PIT | PM | TM | TS | CO2 | O2 | STATIC | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 150.0 | 58.955 | 0.717 | 0.526 | 69 | 370 | 17.6 | 2.4 | -7.50 | 24.29 | 58.9 |
| | net | net | avg | avg | avg | avg | avg | avg | avg | avg | ft/sec |

$P_s$ = 29.11 $V_{m(std)}$ = 59.541 $V_{w(std)}$ = 4.098 %M= 6.44
$B_{ws}$ = 0.064 $M_d$ = 30.91 $M_s$ = 30.08

| | | | |
|---|---|---|---|
| STACK GAS VELOCITY = | 58.9 | AFPS | $V_s$ |
| STACK GAS VELOCITY = | 3,536 | AFPM | |
| STACK GAS VOLUME = | 189,894 | DSCFM | $Q_{std}$ |
| STACK GAS VOLUME = | 327,840 | ACFM | $Q_a$ |
| ISOKINETIC RATIO = | 100.6 | % | |

Hg EMISSIONS

| | Weight (ug) | Concentration (ug/dscm) | Emission Rate (lb/hr) |
|---|---|---|---|
| Particle bound | 77.60 | 46.02 | 3.27E-02 |
| Oxidized | 0.20 | 0.12 | 8.44E-05 |
| Elemental | 0.80 | 0.47 | 3.37E-04 |
| Total | 78.60 | 46.61 | 3.32E-02 |

## CATALYST AIR MANAGEMENT, INC.

**Ontario Hydro Method**

Client: **TRACTEBEL POWER, INC.**
Unit Tested: **Kline Township Unit 1**
Sampling Location: Baghouse Inlet

Run No: **2-Hg-Inlet** Date: 10/28/99 Start Time: 13:02 End Time: 15:54

| | | | | | |
|---|---|---|---|---|---|
| DIAMETER OF NOZZLE: | 0.188 | | DIMENSION OF DUCT: | 75 x 178 | in |
| AREA OF NOZZLE: | 1.928E-04 | $A_n$ | AREA OF STACK: | 92.71 | sq. ft. |
| BAROMETRIC PRESSURE: | 29.66 | $P_{bar}$ | VOLUME OF MOISTURE: | 94 | $V_{lc}$ |
| GAS METER Y-FACTOR: | 1.02 | Y | PITOT COEFFICIENT: | 0.84 | $C_p$ |

| POINT | TIME | GAS METER | VEL HEAD | PM ORIFICE | METER TEMP. IN | METER TEMP. OUT | STACK TEMP. | CO2% | O2% | STATIC PRESS. | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 98.804 | | | | | | | | | | |
| F-1 | 5.0 | 100.4 | 0.77 | 0.57 | 72 | 72 | 350 | | | | 24.97 | 60.7 |
| 2 | 5.0 | 103.0 | 0.80 | 0.59 | 72 | 72 | 393 | 17.6 | 2.4 | -7.50 | 26.12 | 63.5 |
| 3 | 5.0 | 104.9 | 0.77 | 0.57 | 74 | 73 | 395 | | | | 25.66 | 62.4 |
| 4 | 5.0 | 107.1 | 0.75 | 0.55 | 75 | 73 | 401 | | | | 25.41 | 61.8 |
| 5 | 5.0 | 109.120 | 0.70 | 0.52 | 76 | 74 | 350 | | | | 23.81 | 57.9 |
| | | 109.421 | | | | | | | | | | |
| E-1 | 5.0 | 111.3 | 0.75 | 0.55 | 76 | 75 | 369 | | | | 24.93 | 60.6 |
| 2 | 5.0 | 113.3 | 0.73 | 0.54 | 77 | 75 | 385 | | | | 24.84 | 60.4 |
| 3 | 5.0 | 114.6 | 0.50 | 0.37 | 77 | 75 | 387 | | | | 20.58 | 50.0 |
| 4 | 5.0 | 115.9 | 0.45 | 0.33 | 77 | 76 | 395 | | | | 19.62 | 47.7 |
| 5 | 5.0 | 117.800 | 0.67 | 0.49 | 77 | 76 | 354 | | | | 23.35 | 56.8 |
| | | 118.114 | | | | | | | | | | |
| D-1 | 5.0 | 120.5 | 0.72 | 0.54 | 78 | 77 | 358 | | | | 24.27 | 59.0 |
| 2 | 5.0 | 122.2 | 0.72 | 0.54 | 78 | 77 | 386 | | | | 24.68 | 60.0 |
| 3 | 5.0 | 124.2 | 0.75 | 0.55 | 80 | 77 | 383 | | | | 25.14 | 61.1 |
| 4 | 5.0 | 126.0 | 0.60 | 0.44 | 80 | 78 | 381 | | | | 22.46 | 54.6 |
| 5 | 5.0 | 127.419 | 0.50 | 0.37 | 81 | 78 | 362 | | | | 20.27 | 49.3 |
| | | 127.848 | | | | | | | | | | |
| C-1 | 5.0 | 129.8 | 0.70 | 0.52 | 80 | 78 | 355 | | | | 23.89 | 58.1 |
| 2 | 5.0 | 131.9 | 0.60 | 0.44 | 81 | 79 | 380 | | | | 22.45 | 54.6 |
| 3 | 5.0 | 133.7 | 0.68 | 0.50 | 81 | 79 | 377 | | | | 23.86 | 58.0 |
| 4 | 5.0 | 135.5 | 0.74 | 0.55 | 81 | 80 | 371 | | | | 24.80 | 60.3 |
| 5 | 5.0 | 137.094 | 0.48 | 0.35 | 82 | 81 | 337 | | | | 19.56 | 47.6 |
| | | 137.554 | | | | | | | | | | |
| B-1 | 5.0 | 139.9 | 0.72 | 0.54 | 81 | 80 | 349 | | | | 24.13 | 58.7 |
| 2 | 5.0 | 141.4 | 0.78 | 0.58 | 81 | 80 | 361 | | | | 25.31 | 61.5 |
| 3 | 5.0 | 143.3 | 0.70 | 0.52 | 81 | 79 | 365 | | | | 24.03 | 58.4 |
| 4 | 5.0 | 144.9 | 0.57 | 0.44 | 81 | 79 | 360 | | | | 21.62 | 52.6 |
| 5 | 5.0 | 145.945 | 0.32 | 0.26 | 81 | 79 | 355 | | | | 16.15 | 39.3 |
| | | 146.488 | | | | | | | | | | |
| A-1 | 5.0 | 149.4 | 0.91 | 0.68 | 83 | 80 | 349 | | | | 27.13 | 66.0 |
| 2 | 5.0 | 151.0 | 0.76 | 0.52 | 86 | 81 | 347 | | | | 24.77 | 60.2 |
| 3 | 5.0 | 152.9 | 0.75 | 0.52 | 87 | 81 | 346 | | | | 24.59 | 59.8 |
| 4 | 5.0 | 155.2 | 0.80 | 0.59 | 87 | 81 | 340 | | | | 25.30 | 61.5 |
| 5 | 5.0 | 157.011 | 0.65 | 0.48 | 89 | 82 | 333 | | | | 22.70 | 55.2 |
| RESULTS | TT | VM | PIT | PM – | | TM | TS | CO2 | O2 | STATIC | SDE | VEL |
| | 150.0 | 56.160 | 0.678 | 0.500 | | 79 | 366 | 17.6 | 2.4 | -7.50 | 23.55 | 57.3 |
| | net | net | avg | avg | | avg | avg | avg | avg | avg | avg | ft/sec |

| | | | | | |
|---|---|---|---|---|---|
| $P_s$ = | 29.11 | $V_{m(std)}$ = | 55.709 | $V_{w(std)}$ = | 4.427 | %M= | 7.36 |
| $B_{ws}$ = | 0.074 | $M_d$ = | 30.91 | $M_s$ = | 29.96 | | |

| | | | |
|---|---|---|---|
| STACK GAS VELOCITY = | 57.3 | AFPS | $V_s$ |
| STACK GAS VELOCITY = | 3,435 | AFPM | |
| STACK GAS VOLUME = | 183,532 | DSCFM | $Q_{std}$ |
| STACK GAS VOLUME = | 318,497 | ACFM | $Q_a$ |
| ISOKINETIC RATIO = | 97.4 | % | |

Hg EMISSIONS

| | Weight (ug) | Concentration (ug/dscm) | Emission Rate (lb/hr) |
|---|---|---|---|
| Particle bound | 70.30 | 44.56 | 3.06E-02 |
| Oxidized | 0.10 | 0.06 | 4.36E-05 |
| Elemental | 0.65 | 0.41 | 2.81E-04 |
| Total | 71.05 | 45.03 | 3.10E-02 |

## CATALYST AIR MANAGEMENT, INC.

**Ontario Hydro Method**

Client: **TRACTEBEL POWER, INC.**
Unit Tested: **Kline Township Unit 1**
Sampling Location: Baghouse Inlet

Run No: **3-Hg-Inlet** Date: 10/29/99 Start Time: 8:51 End Time: 11:44

| | | | | | |
|---|---|---|---|---|---|
| DIAMETER OF NOZZLE: | 0.188 | | DIMENSION OF DUCT: | 75 x 178 | in |
| AREA OF NOZZLE: | 1.928E-04 | $A_n$ | AREA OF STACK: | 92.71 | sq. ft. |
| BAROMETRIC PRESSURE: | 29.81 | $P_{bar}$ | VOLUME OF MOISTURE: | 90 | $V_{lc}$ |
| GAS METER Y-FACTOR: | 1.02 | Y | PITOT COEFFICIENT: | 0.84 | $C_p$ |

| POINT | TIME | GAS METER | VEL HEAD | PM ORIFICE | METER TEMP. IN | METER TEMP. OUT | STACK TEMP. | CO2% | O2% | STATIC PRESS. | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 163.945 | | | | | | | | | | |
| A-1 | 5.0 | 166.1 | 0.90 | 0.65 | 69 | 69 | 380 | | | | 27.50 | 66.5 |
| 2 | 5.0 | 168.3 | 0.85 | 0.63 | 71 | 69 | 393 | 17.8 | 2.1 | -7.50 | 26.93 | 65.2 |
| 3 | 5.0 | 170.4 | 0.87 | 0.64 | 72 | 79 | 396 | | | | 27.29 | 66.0 |
| 4 | 5.0 | 172.5 | 0.87 | 0.64 | 74 | 69 | 400 | | | | 27.35 | 66.2 |
| 5 | 5.0 | 174.605 | 0.75 | 0.55 | 75 | 70 | 396 | | | | 25.34 | 61.3 |
| | | 174.884 | | | | | | | | | | |
| B-1 | 5.0 | 176.9 | 0.77 | 0.57 | 75 | 71 | 385 | | | | 25.51 | 61.7 |
| 2 | 5.0 | 179.3 | 0.80 | 0.58 | 78 | 72 | 387 | | | | 26.03 | 63.0 |
| 3 | 5.0 | 181.3 | 0.64 | 0.46 | 80 | 72 | 390 | | | | 23.32 | 56.4 |
| 4 | 5.0 | 183.2 | 0.55 | 0.40 | 79 | 72 | 393 | | | | 21.66 | 52.4 |
| 5 | 5.0 | 184.892 | 0.52 | 0.38 | 80 | 73 | 386 | | | | 20.97 | 50.8 |
| | | 185.195 | | | | | | | | | | |
| C-1 | 5.0 | | 0.75 | 0.55 | 79 | 74 | 382 | | | | 25.13 | 60.8 |
| 2 | 5.0 | 189.7 | 0.75 | 0.55 | 81 | 75 | 385 | | | | 25.17 | 60.9 |
| 3 | 5.0 | 191.8 | 0.74 | 0.54 | 82 | 75 | 384 | | | | 24.99 | 60.5 |
| 4 | 5.0 | 193.7 | 0.60 | 0.43 | 83 | 75 | 391 | | | | 22.60 | 54.7 |
| 5 | 5.0 | 195.314 | 0.54 | 0.37 | 83 | 77 | 343 | | | | 20.82 | 50.4 |
| | | 195.609 | | | | | | | | | | |
| D-1 | 5.0 | 197.9 | 0.72 | 0.53 | 82 | 77 | 376 | | | | 24.53 | 59.4 |
| 2 | 5.0 | 199.8 | 0.68 | 0.49 | 84 | 78 | 379 | | | | 23.89 | 57.8 |
| 3 | 5.0 | 201.8 | 0.70 | 0.52 | 84 | 79 | 374 | | | | 24.16 | 58.5 |
| 4 | 5.0 | 203.8 | 0.75 | 0.55 | 85 | 78 | 373 | | | | 24.99 | 60.5 |
| 5 | 5.0 | 205.734 | 0.54 | 0.37 | 86 | 79 | 349 | | | | 20.90 | 50.6 |
| | | 205.994 | | | | | | | | | | |
| E-1 | 5.0 | 207.8 | 0.75 | 0.58 | 84 | 80 | 364 | | | | 24.86 | 60.2 |
| 2 | 5.0 | 210.5 | 0.70 | 0.52 | 86 | 80 | 362 | | | | 23.99 | 58.0 |
| 3 | 5.0 | 212.6 | 0.80 | 0.59 | 87 | 80 | 363 | | | | 25.66 | 62.1 |
| 4 | 5.0 | 214.4 | 0.68 | 0.49 | 88 | 81 | 365 | | | | 23.69 | 57.3 |
| 5 | 5.0 | 216.245 | 0.45 | 0.33 | 88 | 81 | 349 | | | | 19.08 | 46.2 |
| | | 216.559 | | | | | | | | | | |
| F-1 | 5.0 | | 0.89 | 0.64 | 85 | 83 | 350 | | | | 26.85 | 65.0 |
| 2 | 5.0 | 220.9 | 0.95 | 0.69 | 89 | 84 | 354 | | | | 27.81 | 67.3 |
| 3 | 5.0 | 223.2 | 0.95 | 0.69 | 89 | 83 | 353 | | | | 27.79 | 67.2 |
| 4 | 5.0 | 225.6 | 0.94 | 0.68 | 90 | 83 | 349 | | | | 27.58 | 66.7 |
| 5 | 5.0 | 227.648 | 0.68 | 0.49 | 91 | 83 | 339 | | | | 23.31 | 56.4 |

| RESULTS | TT | VM | PIT | PM | TM | TS | CO2- | O2 | STATIC | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 150.0 | 62.252 | 0.736 | 0.537 | 79 | 373 | 17.8 | 2.1 | -7.50 | 24.66 | 59.7 |
| | net | net | avg | avg | avg | avg | avg | avg | avg | avg | ft/sec |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $P_s$ = | 29.26 | $V_{m(std)}$ = | 61.991 | $V_{w(std)}$ = | 4.239 | | %M= | 6.40 | |
| | $B_{ws}$ = | 0.064 | $M_d$ = | 30.93 | $M_s$ = | 30.10 | | | | |

| | | | |
|---|---|---|---|
| STACK GAS VELOCITY = | 59.7 | AFPS | $V_s$ |
| STACK GAS VELOCITY = | 3,580 | AFPM | |
| STACK GAS VOLUME = | 192,536 | DSCFM | $Q_{std}$ |
| STACK GAS VOLUME = | 331,862 | ACFM | $Q_a$ |
| ISOKINETIC RATIO = | 103.3 | % | |

Hg EMISSIONS

| | Weight (ug) | Concentration (ug/dscm) | Emission Rate (lb/hr) |
|---|---|---|---|
| Particle bound | 82.90 | 47.22 | 3.41E-02 |
| Oxidized | 0.10 | 0.06 | 4.11E-05 |
| Elemental | 0.63 | 0.36 | 2.58E-04 |
| Total | 83.63 | 47.63 | 3.44E-02 |

Sheet 1 of _____

# PARTICULATE FIELD DATA

VERY IMPORTANT - FILL IN ALL BLANKS

Read and record at the start of each test point

SKETCH

Client Nepco

P. O. No. _____

Plant Meadow

Run No. Hg-In-R1

Location Inlet

Date 10-28-99

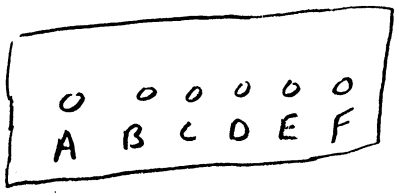
Operator J Ferguson

Sample Box No. N/A

Meter Box No. 010

Meter ΔH 1.60

C Factor .80




Pitot Calibration .84

Thimble No. 32, 33, 51, 52, 53, 54

Filter No. —

Ambient Temp. °F 40°

Bar. Press. "Hg 29.66

Assumed Moisture % 6%

Heater Box Setting, °F _____

Probe Tip Dia., In. .188

Probe Length 7'

Probe Heater Setting 250°

Avg. ΔP _____ Avg. ΔH _____

Static : -7.5

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. H2O ΔP | ORIFICE ΔH IN. H2O DESIRED | ORIFICE ΔH IN. H2O ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | BOX TEMP. °F | IMPINGER TEMP. °F | Probe | STACK TEMP °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1 | | 0835 | | 038.506 | .80 | | .56 | 55 | 55 | 2" | | 52° | 252° | 369 |
| 2 | | | | 041.0 | .80 | | .58 | 57 | 55 | 4" Hg | | 50° | 248° | 391 |
| 3 | | | | 042.9 | .82 | | .60 | 59 | 55 | 6" | | 48 | 246 | 394 |
| 4 | | | | 045.3 | .82 | | .60 | 62 | 57 | 10" | | 45° | 246 | 398 |
| 5 | | | | 047.3 | .75 | | .59 | 65 | 57 | 14" | | 45° | 245 | 364 |
| Stop | | | | 049.468 | | | | | | | | | | |
| E-1 | | 908 | | 049.633 | .75 | | .54 | 66 | 60 | 3 | | 50° | 250 | 368 |
| 2 | | | | 051.7 | .78 | | .57 | 66 | 61 | 4 | | 48° | 241 | 384 |
| 3 | | | | 053.8 | .60 | | .44 | 69 | 62 | 6 | | 46° | 244 | 390 |
| 4 | | | | 055.6 | .45 | | .32 | 70 | 62 | 5 | | 44° | 250 | 393 |
| 5 | | | | 057.9 | .65 | | .47 | 72 | 62 | 8 | | 44 | 250 | 391 |
| Stop | | | | 058.603 | | | | | | | | | | |

COMMENTS:

Client Nepco

PARTICULATE FIELD DATA
(continued)

Sheet 2 of 2

W.O. No. _____

Plant Meadow

Location Inlet

Run No. Hg-In-R1

Date 10-28-99

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. $H_2O$ $\Delta P$ | ORIFICE $\Delta H$ IN. $H_2O$ DESIRED | ORIFICE $\Delta H$ IN. $H_2O$ ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | Probe/BOX TEMP °F | IMPINGER TEMP °F | STACK PRESS IN. Hg | STACK TEMP. °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | | 938 | 0 | 058.754 | .75 | | .55 | 71 | 66 | 3 | 252 | 50° | -7.5 | 366° |
| 2 | | | 5 | 060.61 | .75 | | .55 | 71 | 66 | 4 | 246 | 48° | | 379 |
| 3 | | | 10 | 062.6 | .78 | | .56 | 73 | 66 | 6 | 251 | 50° | | 380 |
| 4 | | | 15 | 064.7 | .64 | | .49 | 74 | 67 | 7.5 | 240 | 50° | | 380 |
| 5 | | | 20 | 066.4 | .37 | | .27 | 75 | 67 | 5.0 | 242 | 50° | | 365 |
| Stop | | | 25 | 067.495 | | | | | | | | | | |
| C-1 | | 10:08 | 0 | 067.701 | .70 | | .52 | 74 | 69 | 3.0 | 260° | 46° | -8.0 | 365 |
| 2 | | | 5 | 69.6 | .75 | | .55 | 75 | 69 | 5.0 | 262° | 48° | | 375 |
| 3 | | | 10 | 71.8 | .79 | | .58 | 75 | 70 | 7.0 | 249° | 50° | | 370 |
| 4 | | | 15 | 73.9 | .75 | | .55 | 77 | 70 | 9 | 242° | 52° | | 371 |
| 5 | | | 20 | 76.2 | .55 | | .40 | 77 | 71 | 7 | 241 | 53 | | 344 |
| Stop | | | 25 | 77.752 | | | | | | | | | | |
| B-1 | | 1038 | 0 | 77.824 | .80 | | .61 | 77 | 71 | 4 | 242° | 52° | | 346° |
| 2 | | | 5 | 80.1 | .74 | | .54 | 77 | 72 | 3 | 245 | 52° | | 360 |
| 3 | | | 10 | 082.0 | .75 | | .55 | 77 | 72 | 4 | 244 | 52° | | 363 |
| 4 | | | 15 | 084.1 | .69 | | .48 | 78 | 72 | 4 | 248 | 54° | -7.9 | 362° |
| 5 | | | 20 | 086.0 | .50 | | .38 | 79 | 72 | 4 | 246 | 54 | | 345° |
| Stop | | | 25 | 087.609 | | | | | | | | | | |
| A-1 | | 1118 | 0 | 087.905 | .85 | | .63 | 76 | 75 | 3 | 252 | 54 | | 354 |
| 2 | | | 5 | 90.0 | .84 | | .65 | 75 | 74 | 5 | 255 | 54 | | 365 |
| 3 | | | 10 | 092.4 | .85 | | .63 | 75 | 74 | 7 | 249 | 55 | | 348 |
| 4 | | | 15 | 094.5 | .79 | | .58 | 75 | 74 | 7 | 250 | 53° | | 350 |
| 5 | | | 20 | 96.3 | .60 | | .48 | 76 | 74 | 9 | 242 | 54° | | 362 |
| Stop | | | 25 | 98.351 | | | | | | | | | | |
| | | | Stop | | | | | | | | | | | |
| | | 1145 | | | | | | | | | | | | |

COMMENTS:

Pre Leak ✓ 0.00 at 12" Vac  Post Pitot ± 0.00 at 5" wc

Post Leak ✓ 0.00 at 15" Vac

# CATALYST AIR MANAGEMENT
## AIR QUALITY TESTING SERVICES

PARTICULATE CLEAN-UP AND REPORT SHEET

**RUN DATE:** 10-28-99 **PLANT:** Kinetown Ship

**RUN NO.:** Hg-In-1 **CLIENT:** Tracteber

**OPERATOR:** Ferguson **SAMPLING LOCATION:** Baghouse Inlet

---

**FILTER DATA**

| Filter Number | Weight Results | |
|---|---|---|
| 32, 33 | | mg |
| 51, 52 | | mg |
| 53, 54 | | mg |
| | | mg |

Philip Analytical

| Probe Wash | Weight Results | |
|---|---|---|
| NA | | mg |
| | | mg |
| | | mg |
| | | mg |

**Total Particulate Weight** _____ mg

**MOISTURE DATA**

| Impingers | | |
|---|---|---|
| 1, 2, 3 | 130, 120, 116 | |
| 4 | 104 | |
| 5, 6, 7 | 104 104 102 | |
| | | |

| Volume | |
|---|---|
| final | 780 |
| initial | 700 |
| total | 80 |

**Silica Gel – weight**

| | |
|---|---|
| Final | 257 |
| Initial | 250 |
| Net | 7 |

**Total Moisture** 87 mg

Orsat lead / d

| | | |
|---|---|---|
| $CO_2$ | 17.6 | 17.6 |
| $O_2$ | 2.4 | 2.4 |

$F_o = 1.05$ ✓

Sheet 1 of 2

# PARTICULATE FIELD DATA

VERY IMPORTANT - FILL IN ALL BLANKS

Read and record at the start of each test point

Client Nepco

J. O. No.

Plant Meadow

Run No. Hg - In - R2

Location Inlet

Date 10-28-99

Operator Ferguson + [illegible]

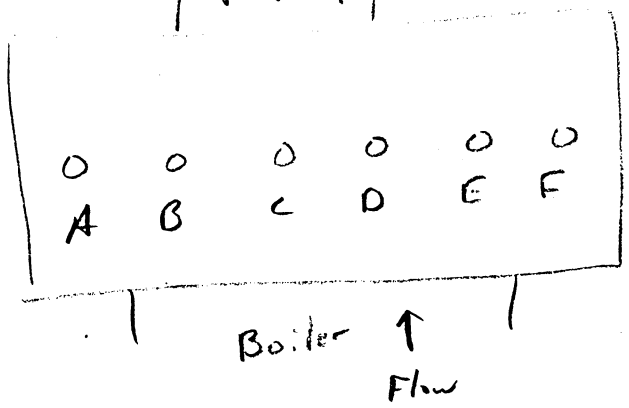
Sample Box No. N/A

Meter Box No. 010

Meter ΔH .160

C Factor .80

SKETCH




Pitot Calibration .84

Thimble No.

Filter No. 55, 56, 57, 59, 60, 61

Ambient Temp. °F 50°

Bar. Press. "Hg

Assumed Moisture % 6 8

Heater Box Setting, °F

Probe Tip Dia., In. .188

Probe Length 7'

Probe Heater Setting 250

Avg. ΔP Avg. ΔH

static -7.5

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. H2O ΔP | ORIFICE ΔH IN. H2O DESIRED | ORIFICE ΔH IN. H2O ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | BOX TEMP. °F | IMPINGER TEMP. °F | Probe | STACK TEMP °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F 1 | | 1302 | 0 | 098,804 | .77 | | .57 | 72 | 72 | 3 | | 56° | 248 | 350 |
| 2 | | | 5 | 100.4 | .80 | | .59 | 72 | 72 | 3 | | 52° | 249 | 349 |
| 3 | | | 10 | 103.0 | .77 | | .57 | 74 | 73 | 6 | | 50° | 249 | 355 |
| 4 | | | 15 | 104.9 | .75 | | .55 | 75 | 73 | 7.5 | | 44° | 247 | 401 |
| 5 | | | 20 | 107.1 | .70 | | .52 | 76 | 74 | 10 | | 42° | 245 | 35 |
| Stop | | | 25 | 109.120 | | | | | | | | | | |
| E 1 | | 1330 | | 109.421 | .75 | | .55 | 76 | 75 | 2 | | 40° | 252 | 367 |
| 2 | | | | 111.3 | .73 | | .54 | 77 | 75 | 4 | | 40° | 245 | 355 |
| 3 | | | | 113.3 | .50 | | .37 | 77 | 75 | 4 | | 40° | 241 | 381 |
| 4 | | | | 114.6 | .45 | | .33 | 77 | 76 | 4 | | 38° | 245 | 395 |
| 5 | | | | 115.7 | .67 | | .49 | 77 | 76 | 6 | | 42° | 256 | 354 |
| Stop | | | | 117.800 | | | | | | | | | | |

COMMENTS: Pre Leak 1 cfm at 15" Vac

Client Nepco

PARTICULATE FIELD DATA
(continued)

Sheet 2 of 2

W.O. No. _____

Plant Meadow

Location Inlet - to Precip

Run No. Hg-In-R2

Date 10-28-99

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. $H_2O$ $\Delta P$ | ORIFICE $\Delta H$ IN. $H_2O$ DESIRED | ORIFICE $\Delta H$ IN. $H_2O$ ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | ~~PROBE~~ BOX TEMP °F | IMPINGER TEMP °F | STACK PRESS IN. Hg | STACK TEMP. °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-1 | | 1400 | 0 | 118.114 | .72 | | .54 | 78 | 77 | 3 | 249 | 50° | | 358 |
| 2 | | | 5 | 120.5 | .72 | | .54 | 74 | 77 | 5 | 241 | 44° | -7.5 | 386° |
| 3 | | | 10 | 122.2 | .75 | | .55 | 80 | 77 | 6 | 280 | 44° | | 383 |
| 4 | | | 15 | 124.2 | .60 | | .44 | 80 | 78 | 7.5 | 251 | 46° | | 381 |
| 5 | | | 20 | 126.0 | .50 | | .37 | 81 | 78 | 7.5 | 250 | 46° | | 362 |
| Stop | | | 25 | 127.419 | | | | | | | | | | |
| C-1 | | 1429 | 0 | 127.878 | .70 | | .52 | 80 | 78 | 3 | 240 | 47 | | 355 |
| 2 | | | 5 | 129.8 | .60 | | .44 | 81 | 79 | 4 | 240 | 49° | | 380 |
| 3 | | | 10 | 131.9 | .68 | | .50 | 81 | 79 | 5 | 241 | 45° | | 377 |
| 4 | | | 15 | 133.7 | .74 | | .55 | 81 | 80 | 7 | 244 | 49 | | 371 |
| 5 | | | 20 | 135.5 | .48 | | .35 | 82 | 81 | 7 | 239 | 49 | | 337 |
| Stop | | | 25 | 137.094 | | | | | | | | | | |
| B-1 | | 1459 | 0 | 137.554 | .72 | | .54 | 81 | 80 | 3 | 249 | 49 | | 349 |
| 2 | | | 5 | 139.9 | .78 | | .58 | 81 | 80 | 5 | 246 | 46 | | 361 |
| 3 | | | 10 | 141.4 | .70 | | .52 | 81 | 79 | 5 | 247 | 44 | | 365 |
| 4 | | | 15 | 143.3 | .57 | | .44 | 81 | 79 | 7 | 249 | 49 | | 360 |
| 5 | | | 20 | 144.9 | .32 | | .26 | 81 | 79 | 6 | 239 | 49 | | 355 |
| Stop | | | 25 | 145.945 | | | | | | | | | | |
| A-1 | | 1529 | 0 | 146.488 | .91 | | .68 | 83 | 80 | 5 | 244 | 55 | | 349 |
| 2 | | | 5 | 149.4 | .76 | | .52 | 86 | 81 | 5 | 240 | 52 | | 347 |
| 3 | | | 10 | 151.0 | .75 | | .52 | 87 | 81 | 6 | 243 | 50 | | 346 |
| 4 | | | 15 | 152.9 | .80 | | .59 | 87 | 81 | 7 | 245 | 49 | | 340 |
| 5 | | | 20 | 155.2 | .65 | | .48 | 89 | 82 | 8 | 239 | 46 | | 333 |
| Stop | | 1554 | 25 | 157.011 | | | | | | | | | | |

COMMENTS:

Post Leak ✓ 0.010 at 13" Vac

Post Pitot Leak ✓ + 0.00 at 7" WC
- 0.00 at 6.5" WC

# CATALYST AIR MANAGEMENT
## AIR QUALITY TESTING SERVICES

PARTICULATE CLEAN-UP AND REPORT SHEET

**RUN DATE:** 10-28-99 **PLANT:** King Township

**RUN NO.:** Hg - In - R2 **CLIENT:** Tractebel

**OPERATOR:** Ferguson **SAMPLING LOCATION:** Baghouse Inlet

---

### FILTER DATA

| Filter Number | Weight Results | |
|---|---|---|
| 55, 56 | | mg |
| 57, 58 | | mg |
| 60, 61 | | mg |
| | | mg |

### MOISTURE DATA

| Impingers | | |
|---|---|---|
| 1, 23 | 128, 121, 109 | |
| 4 | 110 | |
| 5, 6, 7 | 110, 104 | 102 |
| | | |

| Probe Wash | Weight Results | |
|---|---|---|
| | | mg |
| | | mg |
| | | mg |
| | | mg |

| Volume | |
|---|---|
| Final | 784 |
| Initial | 700 |
| Total | 84 |

**Total Particulate Weight** _____ mg

**Silica Gel – weight**

| | |
|---|---|
| Final | 260 |
| Initial | 250 |
| Net | 10 |

**Total Moisture** 94 mg

| | | |
|---|---|---|
| Orsat | Bal - d | |
| $CO_2$ | 17.6 | 17.6 |
| $O_2$ | 2.4 | 2.4 |

$F_o$ = 1.05

Sheet 1 of 2

# PARTICULATE FIELD DATA

VERY IMPORTANT - FILL IN ALL BLANKS

Read and record at the start of each test point

SKETCH

Client: Ncpco

W. O. No.:

Plant: Mcadoo

Run No.: Hg - In - R3

Location: Inlet

Date: 10-29-99

Operator: JFerguson

Sample Box No.:

Meter Box No.: 010

Meter ΔH: 1.60

C Factor: .84

Pitot Calibration: .84

Thimble No.: 62-67

Filter No.:

Ambient Temp. °F: 50°

Bar. Press. "Hg:

Assumed Moisture %: 6%

Heater Box Setting, °F:

Probe Tip Dia., In.: .188

Probe Length: 7'

Probe Heater Setting: 250°

Avg. ΔP: Avg. ΔH:

Static -7.5

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. $H_2O$ ΔP | ORIFICE ΔH IN. $H_2O$ DESIRED | ORIFICE ΔH IN. $H_2O$ ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | BOX TEMP. °F | IMPINGER TEMP. °F | Probe | STACK TEMP °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E-1 | | 0851 | 0 | 163.945 | .90 | | .65 | 69 | 69 | 4 | | 49 | 241 | 38 |
| 2 | | | 5 | 166.1 | .85 | | .63 | 71 | 69 | 5 | | 50 | 246 | 39 |
| 3 | | | 10 | 168.3 | .87 | | .64 | 72 | 69 | 7 | | 48 | 244 | 396 |
| 4 | | | 15 | 170.4 | .87 | | .64 | 74 | 69 | 10 | | 52 | 241 | 400 |
| 5 | | | 20 | 172.5 | .75 | | .55 | 75 | 70 | 13 | | 52 | 243 | 396 |
| Stop | | | 25 | 174.605 | | | | | | | | | | |
| E-1 | | 0920 | 0 | 174.884 | .77 | | .57 | 75 | 71 | 3 | | 50 | 246 | 385 |
| 2 | | | 5 | 176.9 | .80 | | .58 | 78 | 72 | 6 | | 50 | 246 | 39 |
| 3 | | | 10 | 179.3 | .64 | | .46 | 80 | 72 | 7 | | 49 | 248 | 390 |
| 4 | | | 15 | 181.3 | .55 | | .40 | 79 | 72 | 7 | | 49 | 247 | 391 |
| 5 | | | 20 | 183.2 | .52 | | .38 | 80 | 73 | 8 | | 45 | 249 | 39 |
| Stop | | | 25 | 184.892 | | | | | | | | | | |

COMMENTS: Pre Leak ✓ 0.00 at 15" Vac

Client Nepco

PARTICULATE FIELD DATA
(continued)

Sheet 2 of 2

W.O. No. _____

Plant Meadow

Location Inlet

Run No. Hg-In-R3

Date 10-29-59

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. $H_2O$ $\Delta P$ | ORIFICE $\Delta H$ IN. $H_2O$ DESIRED | ORIFICE $\Delta H$ IN. $H_2O$ ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | Probe ~~BOX~~ TEMP °F | IMPINGER TEMP °F | STACK PRESS IN. Hg | STACK TEMP. °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-1 | | 948 | 0 | 185.195 | .75 | | .55 | 79 | 74 | 3 | 247 | 50° | -7.9 | 382 |
| 2 | | | 5 | — | .75 | | .55 | 81 | 75 | 6 | 239 | 50° | | 385 |
| 3 | | | 10 | 189.7 | .74 | | .54 | 82 | 75 | 7 | 242 | 50 | | 384 |
| 4 | | | 15 | 191.8 | .60 | | .43 | 83 | 75 | 7 | 240 | 48 | | 391 |
| 5 | | | 20 | 193.7 | .54 | | .37 | 83 | 77 | 10 | 246 | 50 | | 343 |
| Stop | | | 25 | 195.314 | | | | | | | | | | |
| C-1 | | 1018 | 0 | 195.609 | .72 | | .53 | 82 | 77 | 3 | 245 | 46 | | 376 |
| 2 | | | 5 | 197.9 | .68 | | .49 | 84 | 78 | 5 | 242 | 47 | | 379 |
| 3 | | | 10 | 199.8 | .70 | | .52 | 64 | 79 | 6 | 239 | 49 | | 374 |
| 4 | | | 15 | 201.8 | .75 | | .55 | 85 | 78 | 10 | 238 | 47 | | 373 |
| 5 | | | 20 | 203.8 | .54 | | .37 | 86 | 79 | 11 | 246 | 46 | | 349 |
| Stop | | | 25 | 205.734 | | | | | | | | | | |
| B-1 | | 1048 | 0 | 205.994 | .75 | | .55 | 84 | 80 | 3 | 245 | 46 | | 364 |
| 2 | | | 5 | 207.8 | .70 | | .52 | 86 | 80 | 6 | 246 | 45 | | 362 |
| 3 | | | 10 | 210.5 | .80 | | .59 | 87 | 80 | 7.5 | 245 | 45 | | 363 |
| 4 | | | 15 | 212.6 | .68 | | .49 | 88 | 81 | 9.0 | 246 | 46 | -8.0 | 365 |
| 5 | | | 20 | 214.4 | .45 | | .33 | 84 | 81 | 10 | 244 | 49 | | 349 |
| Stop | | | 25 | 216.245 | | | | | | | | | | |
| A-1 | | 1119 | 0 | 216.559 | .89 | | .64 | 86 | 83 | 3 | 247 | 42 | | 350 |
| 2 | | | 5 | — | .95 | | .69 | 89 | 84 | 7 | 239 | 45 | | 354 |
| 3 | | | 10 | 220.9 | .95 | | .69 | 89 | 83 | 11 | 246 | 49 | | 353 |
| 4 | | | 15 | 223.2 | .94 | | .68 | 90 | 83 | 11 | 248 | 49 | | 349 |
| 5 | | | 20 | 225.6 | .68 | | .49 | 91 | 83 | 11 | 241 | 49 | | 339 |
| Stop | | 1144 | 25 | 227.648 | | | | | | | | | | |

COMMENTS:

Post Leak @ 0.010 at 15" Vac

Pitot Leak +0.0 at 7.5" wc

0.00 at 6.9 "wc

# CATALYST AIR MANAGEMENT
## AIR QUALITY TESTING SERVICES

PARTICULATE CLEAN-UP AND REPORT SHEET

**RUN DATE:** 10-29-99 **PLANT:** Kline Township

**RUN NO.:** Hg-Iw-R3 **CLIENT:** Tractebel

**OPERATOR:** Ferguson **SAMPLING LOCATION:** Baghouse Inlet

---

### FILTER DATA

| Filter Number | Weight Results | |
|---|---|---|
| 62 63 | | mg |
| 64 65 | | mg |
| 66 67 | | mg |
| | | mg |

### MOISTURE DATA

| Impingers | |
|---|---|
| 1, 2, 3 | 125, 116, 114 |
| 4 | 113 |
| 5, 6, 7 | 106, 106, 102 |
| | |

| Probe Wash | Weight Results | |
|---|---|---|
| | | mg |
| | | mg |
| | | mg |
| | | mg |

| Volume | |
|---|---|
| final | 782 |
| initial | 700 |
| total | 82 |

**Total Particulate Weight** _____ mg

**Silica Gel – weight**

| | |
|---|---|
| Final | 258 |
| Initial | 250 |
| Net | 8 |

**Total Moisture** 90 mg

Orsat leak - ok

| | | |
|---|---|---|
| $CO_2$ | 17.8 | 17.8 |
| $O_2$ | 2.1 | 2.1 |

$F_o = 1.06$

Stack

## CATALYST AIR MANAGEMENT, INC.

**Ontario Hydro Method**

Client: **TRACTEBEL POWER, INC.**
Unit Tested: **Kline Township unit 1**
Sampling Location: Stack

Run No: **1-Hg-Stack** Date: 10/28/99 Start Time: 8:35
End Time: 11:38

| | | | | | | |
|---|---|---|---|---|---|---|
| DIAMETER OF NOZZLE: | 0.217 | | DIAMETER OF STACK: | 90 | in |
| AREA OF NOZZLE: | 2.568E-04 | $A_n$ | AREA OF STACK: | 44.2 | sq. ft. |
| BAROMETRIC PRESSURE: | 29.66 | $P_{bar}$ | VOLUME OF MOISTURE: | 233 | $V_{lc}$ |
| GAS METER Y-FACTOR: | 0.99 | Y | PITOT COEFFICIENT: | 0.84 | $C_p$ |

| POINT | TIME | GAS METER | VEL HEAD | PM ORIFICE | METER TEMP IN | METER TEMP OUT | STACK TEMP | CO2% | O2% | STATIC PRESS | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 242.742 | | | | | | | | | | |
| A-1 | 12.5 | 254.4 | 2.30 | 3.00 | 33 | 33 | 341 | | | | 42.92 | 103.2 |
| 2 | 12.5 | 266.5 | 2.40 | 3.10 | 40 | 34 | 342 | 14.7 | 5.2 | 5.00 | 43.87 | 105.5 |
| 3 | 12.5 | 278.621 | 2.30 | 3.00 | 48 | 36 | 343 | | | | 42.98 | 103.4 |
| | | 278.621 | | | | | | | | | | |
| B-1 | 12.5 | 290.8 | 2.40 | 3.15 | 53 | 39 | 340 | | | | 43.82 | 105.4 |
| 2 | 12.5 | 303.1 | 2.40 | 3.15 | 56 | 42 | 345 | | | | 43.95 | 105.7 |
| 3 | 12.5 | 314.357 | 2.10 | 2.60 | 59 | 45 | 339 | | | | 40.96 | 98.5 |
| | | 314.428 | | | | | | | | | | |
| C-1 | 12.5 | 326.4 | 2.30 | 3.00 | 50 | 50 | 344 | | | | 43.00 | 103.4 |
| 2 | 12.5 | 338.5 | 2.30 | 3.00 | 57 | 48 | 345 | | | | 43.03 | 103.5 |
| 3 | 12.5 | 350.379 | 2.20 | 2.95 | 61 | 50 | 345 | | | | 42.08 | 101.2 |
| | | 350.379 | | | | | | | | | | |
| D-1 | 12.5 | 362.6 | 2.30 | 3.00 | 61 | 51 | 346 | | | | 43.06 | 103.6 |
| 2 | 12.5 | 371.1 | 2.40 | 3.10 | 63 | 52 | 346 | | | | 43.98 | 105.8 |
| 3 | 12.5 | 386.858 | 2.20 | 2.95 | 65 | 53 | 346 | | | | 42.11 | 101.3 |
| RESULTS | TT | VM | PIT | PM | | TM | TS | CO2 | O2 | STATIC | SDE | VEL |
| | 150.0 | 144.045 | 2.300 | 3.000 | | 49 | 344 | 14.7 | 5.2 | 5.00 | 42.98 | 103.4 |
| | net | net | avg | avg | | avg | avg | avg | avg | avg | avg | ft/sec |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $P_s$ = | 30.03 | $V_{m(std)}$ = | 147.638 | $V_{w(std)}$ = | 10.974 | %M= | 6.92 |
| $B_{ws}$ = | 0.069 | $M_d$ = | 30.56 | $M_s$ = | 29.69 | | |

| | | | |
|---|---|---|---|
| STACK GAS VELOCITY = | 103.4 | AFPS | $V_s$ |
| STACK GAS VELOCITY = | 6,202 | AFPM | |
| STACK GAS VOLUME = | 168,200 | DSCFM | $Q_{std}$ |
| STACK GAS VOLUME = | 274,004 | ACFM | $Q_a$ |
| ISOKINETIC RATIO = | 100.7 | % | |

Hg EMISSIONS

| | Weight (ug) | Concentration (ug/dscm) | Emission Rate (lb/hr) |
|---|---|---|---|
| Particle bound | 0.02 | 0.005 | 3.01E-06 |
| Oxidized | 0.19 | 0.05 | 2.86E-05 |
| Elemental | 0.20 | 0.05 | 2.97E-05 |
| Total | 0.41 | 0.10 | 6.13E-05 |

## CATALYST AIR MANAGEMENT, INC.

**Ontario Hydro Method**

Client: **TRACTEBEL POWER, INC.**
Unit Tested: **Kline Township unit 1**
Sampling Location: Stack

Run No: **2-Hg-Stack** Date: 10/28/99 Start Time: 13:02 End Time: 14:53

| | | | | | |
|---|---|---|---|---|---|
| DIAMETER OF NOZZLE: | 0.217 | | DIAMETER OF STACK: | 90 | in |
| AREA OF NOZZLE: | 2.568E-04 | $A_n$ | AREA OF STACK: | 44.2 | sq. ft. |
| BAROMETRIC PRESSURE: | 29.66 | $P_{bar}$ | VOLUME OF MOISTURE: | 225 | $V_{lc}$ |
| GAS METER Y-FACTOR: | 0.99 | Y | PITOT COEFFICIENT: | 0.84 | $C_p$ |

| POINT | TIME | GAS METER | VEL HEAD | PM ORIFICE | METER TEMP. IN | METER TEMP. OUT | STACK TEMP. | CO2% | O2% | STATIC PRESS. | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 387.539 | | | | | | | | | | |
| D-1 | 12.5 | 399.5 | 2.40 | 3.10 | 47 | 47 | 347 | 14.7 | 5.2 | | 44.01 | 105.8 |
| 2 | 12.5 | 411.9 | 2.20 | 2.90 | 55 | 48 | 347 | | | 5.00 | 42.14 | 101.3 |
| 3 | 12.5 | 422.602 | 1.80 | 2.40 | 60 | 49 | 346 | | | | 38.09 | 91.6 |
| | | 422.663 | | | | | | | | | | |
| C-1 | 12.5 | 435.4 | 2.40 | 3.15 | 59 | 51 | 347 | | | | 44.01 | 105.8 |
| 2 | 12.5 | 447.2 | 2.30 | 3.00 | 65 | 53 | 346 | | | | 43.06 | 103.6 |
| 3 | 12.5 | 457.864 | 1.70 | 2.25 | 66 | 54 | 335 | | | | 36.76 | 88.4 |
| | | 457.996 | | | | | | | | | | |
| B-1 | 12.5 | 470.4 | 2.40 | 3.10 | 58 | 55 | 343 | | | | 43.90 | 105.6 |
| 2 | 12.5 | 481.6 | 2.20 | 2.85 | 67 | 57 | 347 | | | | 42.14 | 101.3 |
| 3 | 12.5 | 493.412 | 2.10 | 2.70 | 69 | 58 | 346 | | | | 41.14 | 98.9 |
| | | 493.412 | | | | | | | | | | |
| A-1 | 12.5 | 505.3 | 2.20 | 2.85 | 70 | 59 | 346 | | | | 42.11 | 101.3 |
| 2 | 12.5 | 517.3 | 2.30 | 3.00 | 71 | 60 | 347 | | | | 43.08 | 103.6 |
| 3 | 12.5 | 529.527 | 2.30 | 3.00 | 72 | 61 | 347 | | | | 43.08 | 103.6 |
| RESULTS | TT | VM | PIT | PM | | TM | TS | CO2 | O2 | STATIC | SDE | VEL |
| | 150.0 | 141.795 | 2.192 | 2.858 | | 59 | 345 | 14.7 | 5.2 | 5.00 | 41.96 | 100.9 |
| | net | net | avg | avg | | avg | avg | avg | avg | avg | avg | ft/sec |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $P_s$ = | 30.03 | $V_{m(std)}$ = | 142.574 | $V_{w(std)}$ = | 10.598 | %M= | 6.92 |
| $B_{ws}$ = | 0.069 | $M_d$ = | 30.56 | $M_s$ = | 29.69 | | |

| | | | |
|---|---|---|---|
| STACK GAS VELOCITY = | 100.9 | AFPS | $V_s$ |
| STACK GAS VELOCITY = | 6,055 | AFPM | |
| STACK GAS VOLUME = | 163,830 | DSCFM | $Q_{std}$ |
| STACK GAS VOLUME = | 267,494 | ACFM | $Q_a$ |
| ISOKINETIC RATIO = | 99.9 | % | |

Hg EMISSIONS

| | Weight (ug) | Concentration (ug/dscm) | Emission Rate (lb/hr) |
|---|---|---|---|
| Particle bound | 0.02 | 0.005 | 3.04E-06 |
| Oxidized | 0.20 | 0.05 | 3.04E-05 |
| Elemental | 0.19 | 0.05 | 2.90E-05 |
| Total | 0.41 | 0.10 | 6.25E-05 |

## CATALYST AIR MANAGEMENT, INC.

**Ontario Hydro Method**

Client: **TRACTEBEL POWER, INC.**
Unit Tested: **Kline Township unit 1**
Sampling Location: Stack

Run No: **3-Hg-Stack** Date: 10/29/99 Start Time: 8:51 End Time: 11:54

| | | | | | |
|---|---|---|---|---|---|
| DIAMETER OF NOZZLE: | 0.217 | | DIAMETER OF STACK: | 90 | in |
| AREA OF NOZZLE: | 2.568E-04 | $A_n$ | AREA OF STACK: | 44.2 | sq. ft. |
| BAROMETRIC PRESSURE: | 29.81 | $P_{bar}$ | VOLUME OF MOISTURE: | 204 | $V_{lc}$ |
| GAS METER Y-FACTOR: | 0.99 | Y | PITOT COEFFICIENT: | 0.84 | $C_p$ |

| POINT | TIME | GAS METER | VEL HEAD | PM ORIFICE | METER TEMP. IN | METER TEMP. OUT | STACK TEMP. | CO2% | O2% | STATIC PRESS. | SDE | VEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 529.648 | | | | | | | | | | |
| A-1 | 12.5 | 543.5 | 2.50 | 3.50 | 51 | 48 | 345 | 14.8 | 5.2 | 6.30 | 44.86 | 107.2 |
| 2 | 12.5 | 556.3 | 2.20 | 3.20 | 55 | 48 | 344 | | | | 42.06 | 100.5 |
| 3 | 12.5 | 565.042 | 1.85 | 2.50 | 61 | 50 | 339 | | | | 38.45 | 91.9 |
| | | 565.042 | | | | | | | | | | |
| B-1 | 12.5 | 577.7 | 2.35 | 3.40 | 61 | 51 | 348 | | | | 43.58 | 104.2 |
| 2 | 12.5 | 590.7 | 2.20 | 3.20 | 66 | 54 | 348 | | | | 42.16 | 100.8 |
| 3 | 12.5 | 602.487 | 1.60 | 2.40 | 67 | 56 | 343 | | | | 35.84 | 85.7 |
| | | 602.487 | | | | | | | | | | |
| C-1 | 12.5 | 618.3 | 2.50 | 3.50 | 61 | 61 | 349 | | | | 44.97 | 107.5 |
| 2 | 12.5 | 628.4 | 2.30 | 3.40 | 68 | 58 | 347 | | | | 43.08 | 103.0 |
| 3 | 12.5 | 639.862 | 1.50 | 2.20 | 70 | 59 | 344 | | | | 34.73 | 83.0 |
| | | 639.862 | | | | | | | | | | |
| D-1 | 12.5 | 653.6 | 2.50 | 3.50 | 69 | 59 | 350 | | | | 45.00 | 107.6 |
| 2 | 12.5 | 665.3 | 2.40 | 3.40 | 73 | 62 | 350 | | | | 44.09 | 105.4 |
| 3 | 12.5 | 677.518 | 1.70 | 2.45 | 76 | 63 | 350 | | | | 37.11 | 88.7 |
| RESULTS | TT | VM | PIT | PM | | TM | TS | CO2 | O2 | STATIC | SDE | VEL |
| | 150.0 | 147.870 | 2.133 | 3.054 | | 60 | 346 | 14.8 | 5.2 | 6.30 | 41.33 | 98.8 |
| | net | net | avg | avg | | avg | avg | avg | avg | avg | avg | ft/sec |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $P_s$ = | 30.27 | $V_{m(std)}$ = | 149.069 | $V_{w(std)}$ = | 9.608 | %M= | 6.06 |
| $B_{ws}$ = | 0.061 | $M_d$ = | 30.58 | $M_s$ = | 29.81 | | |

| | | | |
|---|---|---|---|
| STACK GAS VELOCITY = | 98.8 | AFPS | $V_s$ |
| STACK GAS VELOCITY = | 5,927 | AFPM | |
| STACK GAS VOLUME = | 162,965 | DSCFM | $Q_{std}$ |
| STACK GAS VOLUME = | 261,849 | ACFM | $Q_a$ |
| ISOKINETIC RATIO = | 105.0 | % | |

Hg EMISSIONS

| | Weight (ug) | Concentration (ug/dscm) | Emission Rate (lb/hr) |
|---|---|---|---|
| Particle bound | 0.02 | 0.005 | 2.89E-06 |
| Oxidized | 0.25 | 0.06 | 3.62E-05 |
| Elemental | 0.13 | 0.03 | 1.88E-05 |
| Total | 0.40 | 0.09 | 5.78E-05 |

Sheet 1 of ____

# PARTICULATE FIELD DATA

Client NEPCO

VERY IMPORTANT - FILL IN ALL BLANKS

Pitot Calibration 0.84

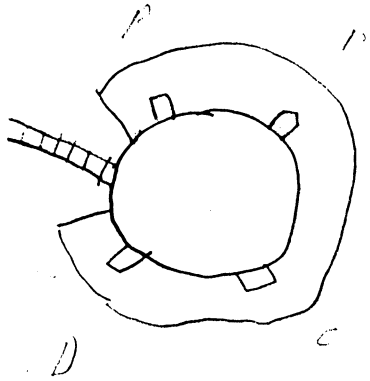
J. O. No. ____

Read and record at the start of each test point

Thimble No. 48

Plant McAdoo

SKETCH




Filter No. —

Run No. Hg - RS - 1

Ambient Temp. °F 40

Location Stack

Bar. Press. "Hg 29.66

Date 10/28/99

Assumed Moisture % 6

Operator ALBright

Heater Box Setting, °F 250°

Sample Box No. ____

Probe Tip Dia., In. 0.217

Meter Box No. 049

Probe Length ____

MeterΔH 1.71

Probe Heater Setting 250°

C Factor ~~0.9~~ 1.5

Avg.ΔP ____ Avg. ΔH ____

Y=0.99

| 92 POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. H2O ΔP | ORIFICE ΔH IN. H2O DESIRED | ORIFICE ΔH IN. H2O ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | BOX TEMP. °F | IMPINGER TEMP. °F | PROBE | STACK TEMP. °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | | 0835 | 0 | 242.742 | 2.3 | | 3.0 | 33 | 33 | 3 | 255 | 40 | 251 | 341 |
| 2 | | | 12.5 | 254.4 | 2.4 | | 3.1 | 40 | 34 | 3.5 | 248 | 40 | 248 | 342 |
| 3 | | | 25 | 266.5 | 2.3 | | 3.0 | 48 | 36 | 3 | 250 | 40 | 250 | 24 |
| STOP | | | 37.5 | 278.621 | | | | | | | | | | |
| 1 | | | 0 | 278.621 | 2.4 | | 3.15 | 53 | 39 | 4 | 251 | 40 | 251 | 340 |
| 2 | | | 12.5 | 290.8 | 2.4 | | 3.15 | 56 | 42 | 4 | 257 | 41 | 251 | 345 |
| 3 | | | 25 | 303.1 | 2.1 | | 2.6 | 59 | 45 | 3.5 | 255 | 41 | 252 | 339 |
| STP | | * | 37.5 | 314.257 | | | | | | | | | | |
| 1 | 1021 | * | 0 | 314.428 | 2.3 | | 3.0 | 50 | 50 | 3.5 | 254 | 43 | 250 | 344 |
| 2 | | | 12.5 | 326.4 | 2.3 | | 3.0 | 57 | 48 | 3.5 | 249 | 43 | 250 | 343 |
| 3 | | | 25 | 338.5 | 2.2 | | 2.95 | 61 | 50 | 3.5 | 251 | 43 | 250 | 345 |
| STP | | | 37.5 | 350.379 | | | | | | | | | | |
| 1 | 1100 | | 0 | 350.379 | 2.3 | | 3.0 | 61 | 51 | 3.5 | 254 | 42 | 251 | 346 |
| 2 | | | 12.5 | 362.6 | 2.4 | | 3.1 | 63 | 52 | 3.5 | 252 | 42 | 250 | 346 |
| 3 | | | 25 | 374.1 | 2.2 | | 2.95 | 65 | 53 | 3.5 | 252 | 44 | 250 | 346 |
| | | | 37.5 | 386.858 | | | | | | | | | | |

COMMENTS:

STOP 1138

* Leak Test ✓ ok

Static test Leak ✓ 0.003

# CATALYST AIR MANAGEMENT
## AIR QUALITY TESTING SERVICES

PARTICULATE CLEAN-UP AND REPORT SHEET

**RUN DATE:** 10-28-99 **PLANT:** KLINE TOWNSHIP

**RUN NO.:** Hg - S - R1 **CLIENT:** TRACTEBEL

**OPERATOR:** ALBRIGHT **SAMPLING LOCATION:** STACK

---

**FILTER DATA**

| Filter Number | Weight Results | |
|---|---|---|
| 50 | | mg |
| | | mg |
| | | mg |
| | | mg |

**MOISTURE DATA**

| Impingers | |
|---|---|
| 1, 2, 3 | 180, 160, 130 |
| 4 | 127 |
| 5, 6, 7 | 108, 106, 101 |
| | |

| Probe Wash | Weight Results | |
|---|---|---|
| | | mg |
| | | mg |
| | | mg |
| | | mg |

| Volume | |
|---|---|
| final | 912 |
| initial | 700 |
| total | 212 |

**Total Particulate Weight** _____ mg

**Silica Gel – weight**

| | |
|---|---|
| Final | 271 |
| Initial | 250 |
| Net | 21 |

**Total Moisture** 233 mg

ORSAT lead - of

| | | |
|---|---|---|
| $CO_2$ | 14.7 | 14.7 |
| $O_2$ | 5.2 | 5.2 |

$F_o$ = 1.07

Sheet 1 of 1

PARTICULATE FIELD DATA

Client NCPCO

VERY IMPORTANT - FILL IN ALL BLANKS

Pitot Calibration 0.84

W. O. No.

Read and record at the start of each test point

SKETCH

Thimble No. 50

Plant MC Ad 00

Filter No. —

Run No. Hg R-S-7

Ambient Temp. °F 42°

Location STACK

Bar. Press. "Hg 29.66

Date 10/28/97

Assumed Moisture % 6

Operator ALBright

Heater Box Setting, °F 250°

Sample Box No.

Probe Tip Dia., In. 0.217

Meter Box No. 040

Probe Length 6'

Meter ΔH 1.71

Probe Heater Setting 250°

C Factor K=1.4 Y=0.99

C=0.85

Avg. ΔP

Avg. ΔH

| 28 POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. H2O ΔP | ORIFICE ΔH IN. H2O DESIRED | ORIFICE ΔH IN. H2O ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | BOX TEMP. °F | IMPINGER TEMP. °F | Probe | STACK TEMP. °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-1 | | 1302 | 0 | 387.539 | 2.4 | | 3.1 | 47 | 47 | 1 | 249 | 38 | 252 | 347 |
| 2 | | | 12.5 | 399.5 | 2.2 | | 2.9 | 55 | 48 | 1 | 240 | 40 | 257 | 347 |
| 3 | | | 25 | 411.9 | 1.8 | | 2.4 | 60 | 49 | 0.5 | 251 | 41 | 255 | 346 |
| STN | | * | 37.5 | 422.602 | | | | | | | | | | |
| D-1 | 1344 | * | 0 | 422.663 | 2.4 | | 3.15 | 59 | 51 | 1 | 254 | 42 | [illegible] | 347 |
| 2 | | | 12.5 | 435.4 | 2.3 | | 3.0 | 65 | 53 | 1 | 250 | 43 | 250 | 34[illegible] |
| 3 | | | 25 | 447.2 | 1.7 | | 2.25 | 66 | 54 | 0.5 | 248 | 44 | 250 | 335 |
| STN | | * | 37.5 | 457.864 | | | | | | | | | | |
| C-1 | 1438 | * | 0 | 457.996 | 2.4 | | 3.1 | 58 | 55 | 1 | 240 | 45 | 249 | 34[illegible] |
| 2 | | | 12.5 | 470.4 | 2.2 | | 2.85 | 67 | 57 | 1 | 251 | 46 | 250 | 34[illegible] |
| 3 | | | 25 | 481.6 | 2.1 | | 2.7 | 69 | 58 | 0.5 | 251 | 46 | 250 | 34[illegible] |
| STN | | | 37.5 | 493.412 | | | | | | | | | | |
| D-1 | 1515 | | 0 | 493.412 | 2.2 | | 2.85 | 70 | 59 | 0.5 | 253 | 47 | 250 | 34[illegible] |
| 2 | | | 12.5 | 505.3 | 2.3 | | 3.0 | 71 | 60 | 1 | 251 | 47 | 250 | 34[illegible] |
| 3 | | | 25 | 517.3 | 2.3 | | 3.0 | 72 | 61 | 1 | 251 | 48 | 250 | 34[illegible] |

COMMENTS:

STN 1453 | 37.5 | 529.527

[illegible] OK

Final Leak [illegible]

# CATALYST AIR MANAGEMENT
## AIR QUALITY TESTING SERVICES

PARTICULATE CLEAN-UP AND REPORT SHEET

**RUN DATE:** 10-28-99 **PLANT:** Kline Township

**RUN NO.:** Hg-S-R2 **CLIENT:** Tractebel

**OPERATOR:** Albright **SAMPLING LOCATION:** Stack

---

**FILTER DATA**

| Filter Number | Weight Results | |
|---|---|---|
| 48 | | mg |
| | | mg |
| | | mg |
| | | mg |

**MOISTURE DATA**

| Impingers | |
|---|---|
| 1, 2, 3 | 183, 161, 142 |
| 4 | 111 |
| 5, 6, 7 | 106, 104, 100 |
| | |

| Probe Wash | Weight Results | |
|---|---|---|
| | | mg |
| | | mg |
| | | mg |
| | | mg |

| Volume | |
|---|---|
| final | |
| initial | 700 |
| total | 207 |

**Total Particulate Weight** _____ mg

**Silica Gel – weight**

| | |
|---|---|
| Final | 268 |
| Initial | 250 |
| Net | 18 |

**Total Moisture** 225 mg

Orsat - leaf - of

| | | |
|---|---|---|
| $CO_2$ | 14.7 | 14.7 |
| $O_2$ | 5.2 | 5.2 |

$F_o$ = 1.07

Sheet 1 of 2

# PARTICULATE FIELD DATA

VERY IMPORTANT - FILL IN ALL BLANKS

Client NEPCO

W. O. No.

Plant McAdoo

Run No. Run 3 - Hg - Stack

Location Stack

Date 10-29-99

Operator Taylor / Jones

Sample Box No. 040

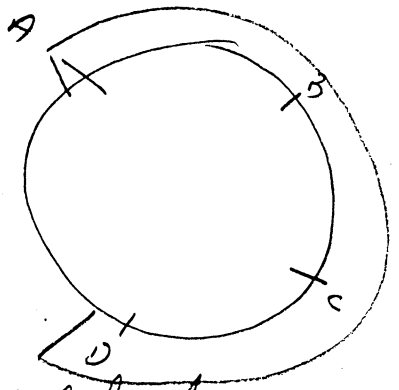
Meter Box No.

Meter ΔH 1.71 0.99

C Factor

Read and record at the start of each test point

SKETCH




initial leak check 7.5"
pitot check 3"

STATIC 6.30

Pitot Calibration 0.81

Thimble No. 49

Filter No.

Ambient Temp. °F 40

Bar. Press. "Hg 29.81

Assumed Moisture % 6

Heater Box Setting, °F 250

Probe Tip Dia., In. 0.217

Probe Length 8'

Probe Heater Setting 250

Avg. ΔP Avg. ΔH

| POINT | DISTANCE IN INCHES | CLOCK TIME ACTUAL | CLOCK TIME RUN | DRY GAS METER, CF | PITOT IN. H2O ΔP | ORIFICE ΔH IN. H2O DESIRED | ORIFICE ΔH IN. H2O ACTUAL | DRY GAS TEMP. °F INLET | DRY GAS TEMP. °F OUTLET | PUMP VACUUM IN. Hg GAUGE | BOX TEMP. °F | IMPINGER TEMP. °F | Probe | STACK TEMP. °F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0951 | | 529.648 | | | | | | | | | | |
| A1 | | | 12.5 | 543.5 | 2.50 | | 3.50 | 51 | 48 | 4.0 | 243 | 51 | 233 | 345 |
| 2 | | | 25.0 | 556.3 | 2.20 | | 3.20 | 55 | 48 | 4.0 | 253 | 52 | 251 | 344 |
| 3 | | | 37.5 | 565.042 | 1.85 | | 2.50 | 61 | 50 | 3.0 | 248 | 55 | 250 | 339 |
| | | | | | | | | | | | | | | |
| B1 | | 0940 | 12.5 | 577.7 | 2.35 | | 3.40 | 61 | 51 | 4.0 | 252 | 60 | 250 | 348 |
| 2 | | | 25.0 | 590.7 | 2.20 | | 3.20 | 66 | 54 | 4.0 | 246 | 60 | 250 | 348 |
| 3 | | | 37.5 | 602.487 | 1.60 | | 2.40 | 67 | 56 | 3.0 | 245 | 60 | 246 | 343 |
| | | | | | | | | | | | | | | |
| C1 | | 1035 | 12.5 | 618.3 | 2.50 | | 2.50 | 61 | 61 | 4.5 | 246 | 60 | 242 | 349 |
| 2 | | | 25.0 | 628.4 | 2.30 | | 3.40 | 68 | 58 | 4.5 | 243 | 58 | 242 | 347 |
| 3 | | | 37.5 | 639.862 | 1.50 | | 2.20 | 70 | 59 | 3.0 | 246 | 60 | 246 | 344 |
| | | | | | | | | | | | | | | |
| D1 | | 1115 | 12.5 | 653.6 | 2.50 | | 3.50 | 69 | 59 | 4.5 | 249 | 61 | 244 | 350 |
| 2 | | | 25.0 | 665.3 | 2.40 | | 3.40 | 73 | 62 | 4.0 | 235 | 63 | 245 | 350 |
| 3 | | | 37.5 | 677.518 | 1.70 | | 2.45 | 74 | 63 | 4.0 | 248 | 63 | 240 | 350 |

COMMENTS:

final leak check @ 8" Hg = 0.009

# CATALYST AIR MANAGEMENT
## AIR QUALITY TESTING SERVICES

PARTICULATE CLEAN-UP AND REPORT SHEET

**RUN DATE:** 10-29-99 **PLANT:** KLINE TOWNSHIP

**RUN NO.:** Hg-S-R3 **CLIENT:** TRACTEBEL

**OPERATOR:** TAYLOR **SAMPLING LOCATION:** STACK

---

**FILTER DATA**

| Filter Number | Weight Results | |
|---|---|---|
| 49 | | mg |
| | | mg |
| | | mg |
| | | mg |

**MOISTURE DATA**

| Impingers | |
|---|---|
| 1, 2, 3 | 178, 149, 136 |
| 4 | 115 |
| 5, 6, 7 | 106, 103, 103 |
| | |

| Probe Wash | Weight Results | |
|---|---|---|
| | | mg |
| | | mg |
| | | mg |
| | | mg |

| Volume | |
|---|---|
| final | 690 |
| initial | 700 |
| total | 190 |

**Total Particulate Weight** _____ mg

**Silica Gel – weight**

| | |
|---|---|
| Final | 264 |
| Initial | 250 |
| Net | 14 |

**Total Moisture** 204 mg

ORSAT leak-of

| | | |
|---|---|---|
| $CO_2$ | 14.8 | 14.8 |
| $O_2$ | 5.2 | 5.2 |

$F_O = 1.06$

**APPENDIX 2**
PLANT DATA

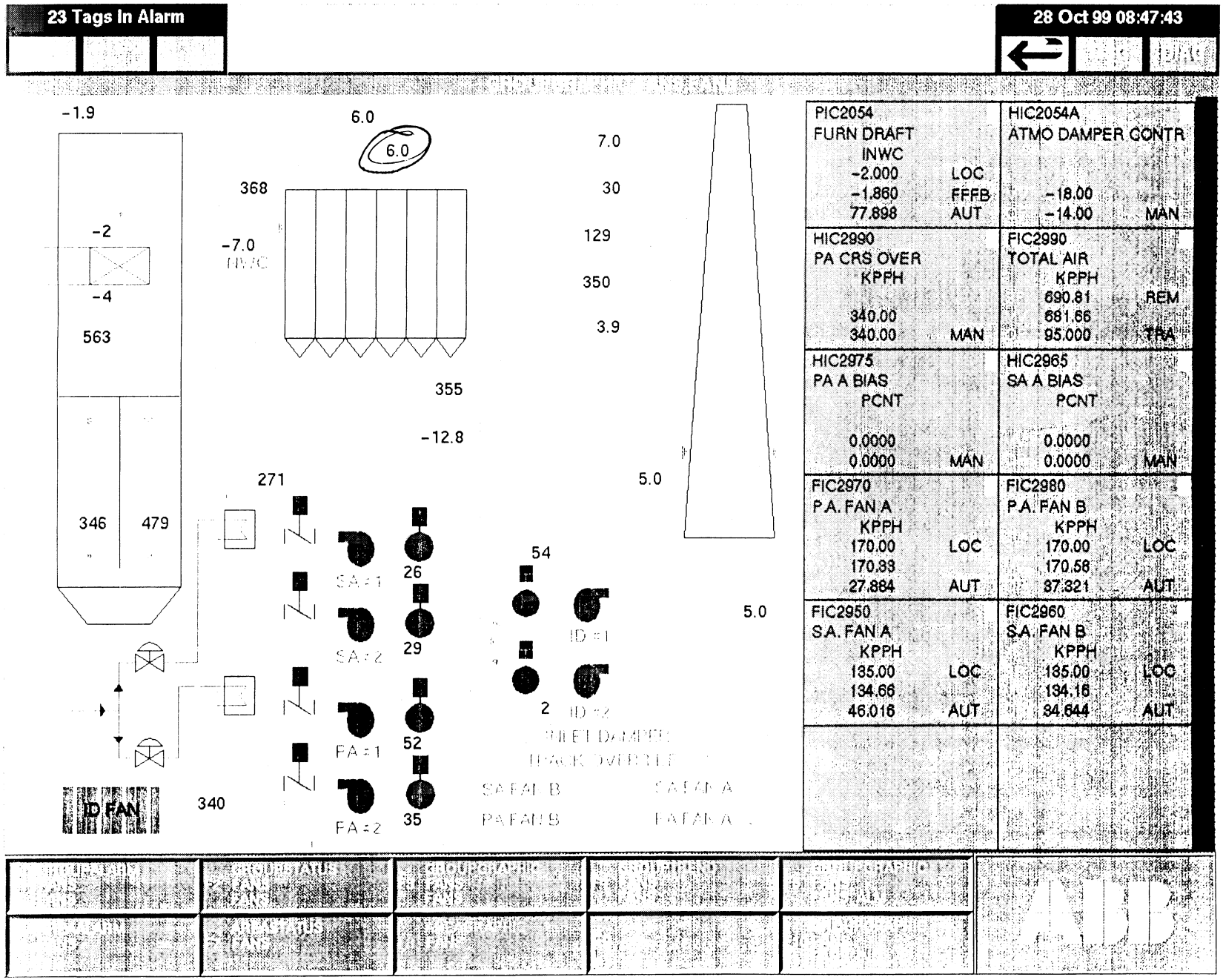
NEPCO Hg Testing October 28th & 29th 1999

| | | 10/28/1999 | | 10/29/1999 |
|---|---|---|---|---|
| | units | test 1 | test 2 | test 3 |
| start time | | 8:35 | 13:10 | 8:50 |
| end time | | 11:46 | 16:00 | 11:46 |
| fuel a start | lbs | 6289607 | 6583536 | 7968397 |
| fuel a end | lbs | 6484948 | 6788698 | 8177450 |
| fuel b start | lbs | 41451799 | 41761239 | 43171799 |
| fuel b end | lbs | 41658999 | 41969558 | 43384350 |
| lime a start | lbs | 12217663 | 12230998 | 12293755 |
| lime a end | lbs | 12226209 | 12240210 | 12301656 |
| lime b start | lbs | 4808979 | 4822232 | 4883343 |
| lime b end | lbs | 4817467 | 4831300 | 4890900 |
| | | | | |
| total fuel lbs | lbs | 402541 | 413481 | 421604 |
| total lime lbs | lbs | 17034 | 18280 | 15458 |

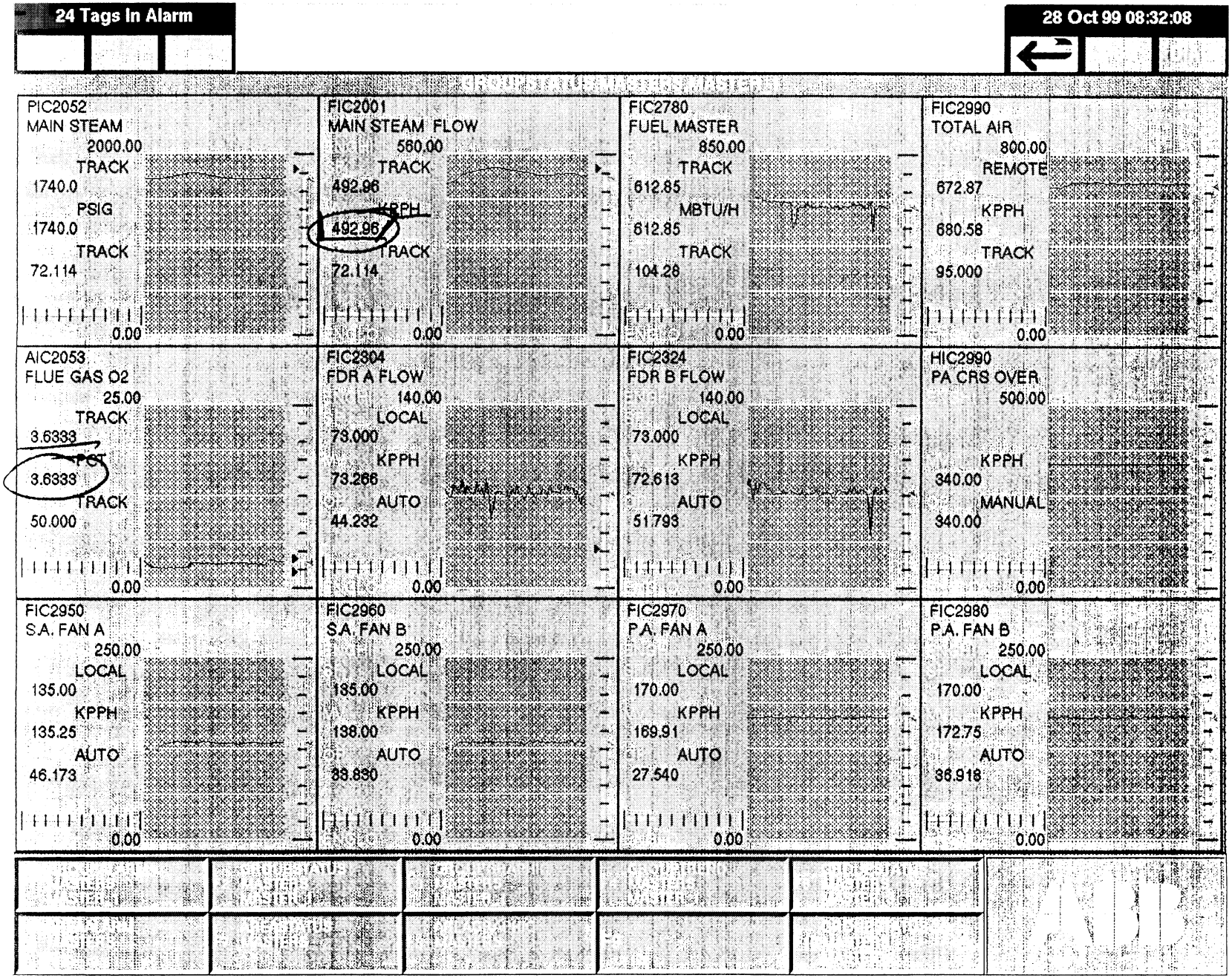
| | | | | |
|---|---|---|---|---|
| tons fuel | tons | 201.27 | 206.74 | 210.80 |
| tons lime | tons | 8.52 | 9.14 | 7.73 |

| | | | | |
|---|---|---|---|---|
| start net MW | MW | 49.8 | 50.7 | 50.5 |
| end net MW | MW | 51.3 | 50.1 | 49.8 |
| start DP | inch water | 6.0 | 5.8 | 5.8 |
| end DP | inch water | 5.8 | 5.5 | 5.7 |
| start steam | klb/hr | 493 | 493.7 | 489.6 |
| end steam | klb/hr | 497.3 | 484.8 | 491.9 |
| start O2 | % | 3.6 | 3.3 | 3.8 |
| end O2 | % | 3.8 | 3.3 | 3.6 |

START TEST 1


23 Tags In Alarm
28 Oct 99 08:47:43
-1.9
-2
-4
563
346
479
6.0
6.0
368
-7.0
355
-12.8
7.0
30
129
350
3.9
5.0
5.0
271
SA #1
SA #2
PA #1
PA #2
26
29
52
35
54
2
ID #1
ID #2
340
ID FAN
PIC2054
FURN DRAFT
INWC
-2.000 LOC
-1.860 FFFB
77.898 AUT
HIC2054A
ATMO DAMPER CONTR
-18.00
-14.00 MAN
HIC2990
PA CRS OVER
KPPH
340.00
340.00 MAN
FIC2990
TOTAL AIR
KPPH
690.81 REM
681.66
95.000 TRA
HIC2975
PA A BIAS
PCNT
0.0000
0.0000 MAN
HIC2965
SA A BIAS
PCNT
0.0000
0.0000 MAN
FIC2970
P.A. FAN A
KPPH
170.00 LOC
170.83
27.884 AUT
FIC2980
P.A. FAN B
KPPH
170.00 LOC
170.58
37.321 AUT
FIC2950
S.A. FAN A
KPPH
135.00 LOC
134.66
46.016 AUT
FIC2960
S.A. FAN B
KPPH
135.00 LOC
134.16
84.644 AUT

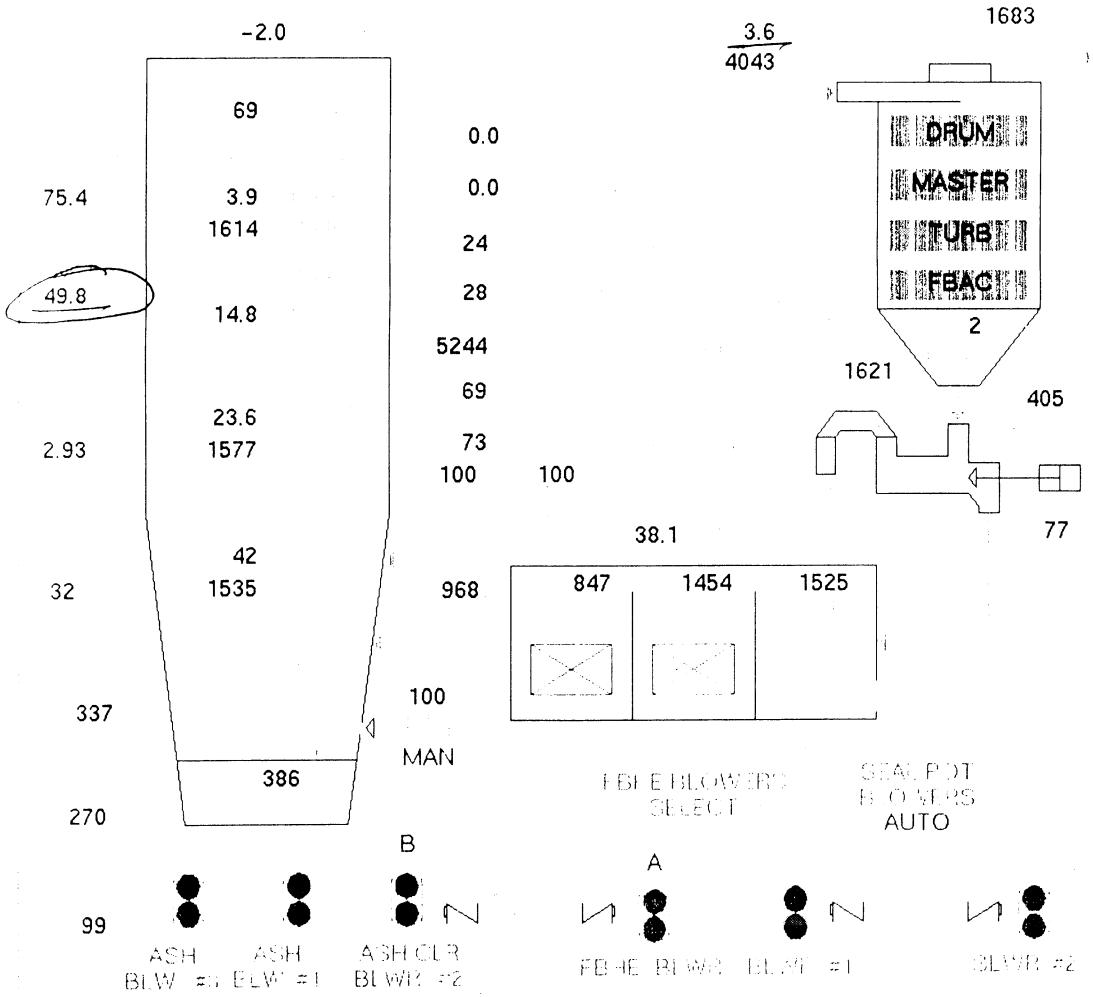
START TEST 1


24 Tags In Alarm
28 Oct 99 08:32:08
PIC2052
MAIN STEAM
2000.00
TRACK
1740.0
PSIG
1740.0
TRACK
72.114
0.00
FIC2001
MAIN STEAM FLOW
560.00
TRACK
492.96
KPPH
492.96
TRACK
72.114
0.00
FIC2780
FUEL MASTER
850.00
TRACK
612.85
MBTU/H
612.85
TRACK
104.28
0.00
FIC2990
TOTAL AIR
800.00
REMOTE
672.87
KPPH
680.58
TRACK
95.000
0.00
AIC2053
FLUE GAS O2
25.00
TRACK
3.6333
PCT
3.6333
TRACK
50.000
0.00
FIC2304
FDR A FLOW
140.00
LOCAL
73.000
KPPH
73.266
AUTO
44.232
0.00
FIC2324
FDR B FLOW
140.00
LOCAL
73.000
KPPH
72.613
AUTO
51.793
0.00
HIC2990
PA CRS OVER
500.00
KPPH
340.00
MANUAL
340.00
0.00
FIC2950
S.A. FAN A
250.00
LOCAL
135.00
KPPH
135.25
AUTO
46.173
0.00
FIC2960
S.A. FAN B
250.00
LOCAL
135.00
KPPH
138.00
AUTO
38.830
0.00
FIC2970
P.A. FAN A
250.00
LOCAL
170.00
KPPH
169.91
AUTO
27.540
0.00
FIC2980
P.A. FAN B
250.00
LOCAL
170.00
KPPH
172.75
AUTO
36.918
0.00

START TEST 1

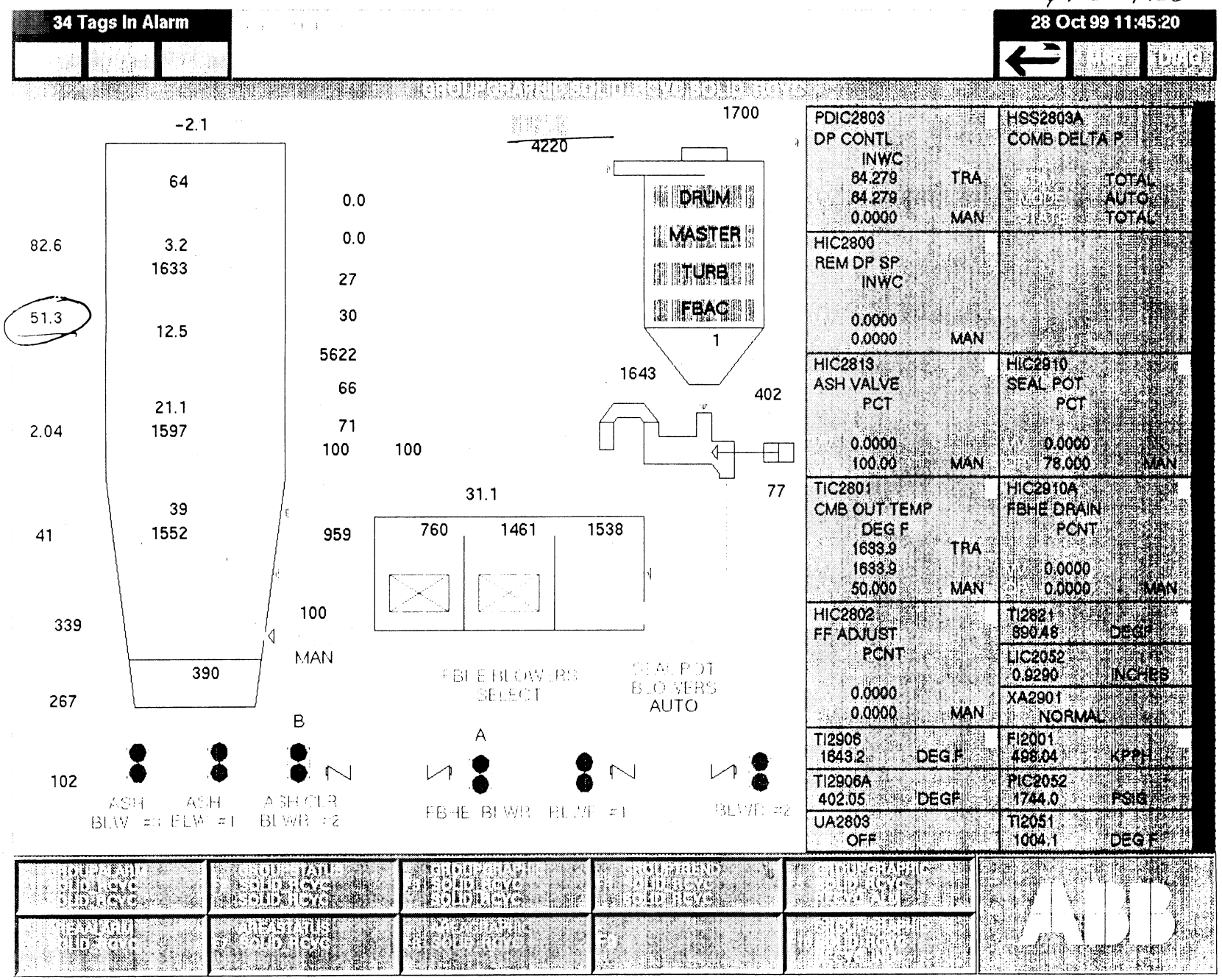
24 Tags In Alarm

28 Oct 99 08:32:30




| | |
|---|---|
| PDIC2803<br>DP CONTL<br>INWC<br>69.080 TRA<br>69.080<br>0.0000 MAN | HSS2803A<br>COMB DELTA P<br>TOTAL<br>AUTO<br>TOTAL |
| HIC2800<br>REM DP SP<br>INWC<br>0.0000<br>0.0000 MAN | |
| HIC2813<br>ASH VALVE<br>PCT<br>0.0000<br>100.00 MAN | HIC2910<br>SEAL POT<br>PCT<br>0.0000<br>78.000 MAN |
| TIC2801<br>CMB OUT TEMP<br>DEG F<br>1614.6 TRA<br>1614.6<br>50.000 MAN | HIC2910A<br>FBHE DRAIN<br>PCNT<br>0.0000<br>0.0000 MAN |
| HIC2802<br>FF ADJUST<br>PCNT<br>0.0000<br>0.0000 MAN | TI2821<br>386.51 DEGF<br>LIC2052<br>1.1274 INCHES<br>XA2901<br>NORMAL |
| TI2906<br>1621.2 DEG.F | FI2001<br>495.06 KPPH |
| TI2906A<br>405.37 DEGF | PIC2052<br>1742.0 PSIG |
| UA2803<br>OFF | TI2051<br>1003.3 DEG F |

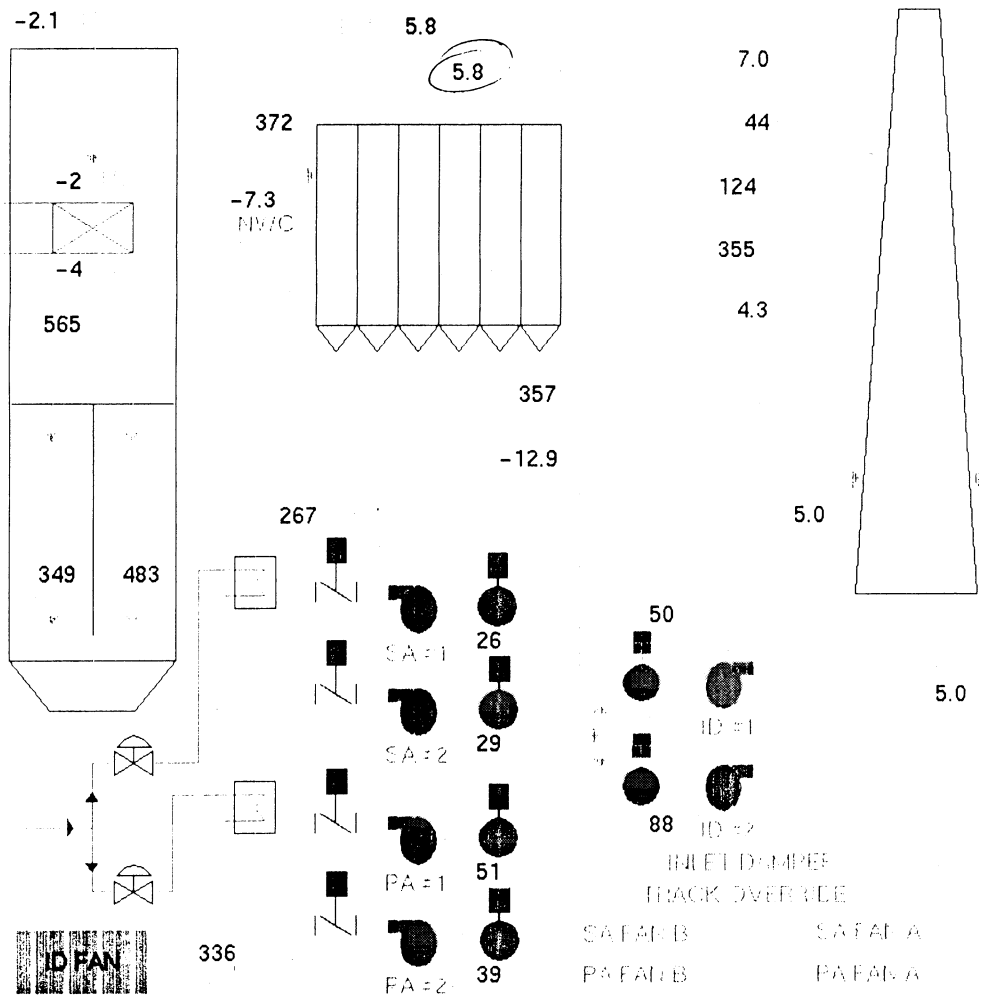
End Test 1


34 Tags In Alarm
28 Oct 99 11:45:20
-2.1
64
3.2
1633
12.5
21.1
1597
39
1552
390
82.6
51.3
2.04
41
339
267
102
B
A
4220
1700
DRUM
MASTER
TURB
FBAC
1
1643
402
77
0.0
0.0
27
30
5622
66
71
100
100
100
959
31.1
760
1461
1538
MAN
FBHE BLOWERS SELECT
SEAL POT BLOWERS AUTO
ASH BLW #1
ASH BLW #1
ASH CLR BLWR #2
FBHE BLWR
BLWR #1
BLWR #2
PDIC2803
DP CONTL
INWC
84.279 TRA
84.279
0.0000 MAN
HSS2803A
COMB DELTA P
TOTAL
AUTO
TOTAL
HIC2800
REM DP SP
INWC
0.0000
0.0000 MAN
HIC2813
ASH VALVE
PCT
0.0000
100.00 MAN
HIC2910
SEAL POT
PCT
0.0000
78.000 MAN
TIC2801
CMB OUT TEMP
DEG F
1633.9 TRA
1633.9
50.000 MAN
HIC2910A
FBHE DRAIN
PCNT
0.0000
0.0000 MAN
HIC2802
FF ADJUST
PCNT
0.0000
0.0000 MAN
TI2821
890.48 DEGF
LIC2052
0.9290 INCHES
XA2901
NORMAL
TI2906
1643.2 DEG F
FI2001
498.04 KPPH
TI2906A
402.05 DEGF
PIC2052
1744.0 PSIG
UA2803
OFF
TI2051
1004.1 DEG F

End Test 1

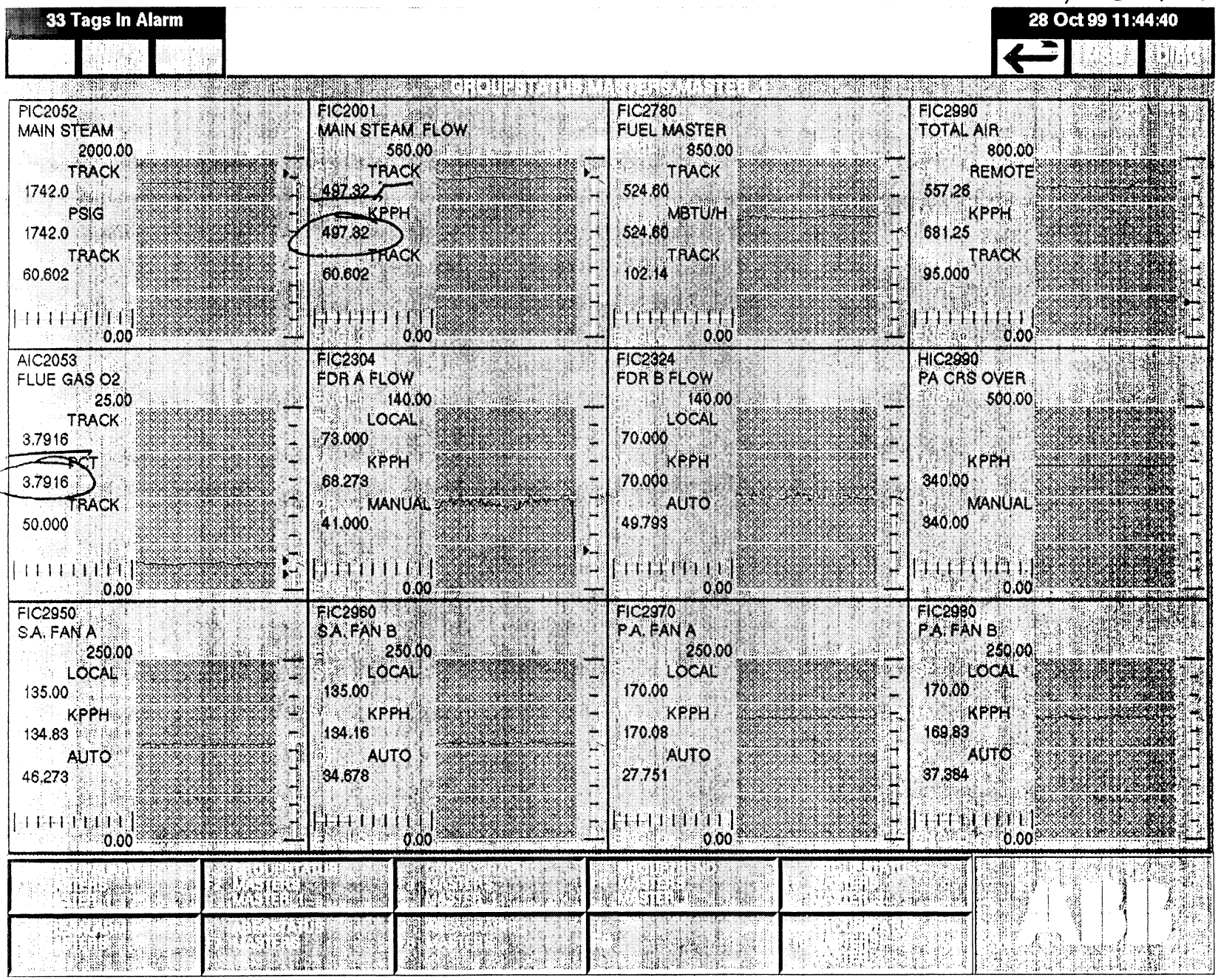
34 Tags In Alarm

28 Oct 99 11:45:58




| | | | | | |
|---|---|---|---|---|---|
| PIC2054 | | | HIC2054A | | |
| FURN DRAFT | | | ATMO DAMPER CONTR | | |
| INWC | | | | | |
| -2.000 | | LOC | -18.00 | | |
| -2.110 | | FFFB | -14.00 | | MAN |
| 76.442 | | AUT | | | |
| HIC2990 | | | FIC2990 | | |
| PA CRS OVER | | | TOTAL AIR | | |
| KPPH | | | KPPH | | |
| | | | 649.97 | | REM |
| 340.00 | | | 674.50 | | |
| 340.00 | | MAN | 95.000 | | TRK |
| HIC2975 | | | HIC2965 | | |
| PA A BIAS | | | SA A BIAS | | |
| PCNT | | | PCNT | | |
| 0.0000 | | | 0.0000 | | |
| 0.0000 | | MAN | 0.0000 | | MAN |
| FIC2970 | | | FIC2980 | | |
| P.A. FAN A | | | P.A. FAN B | | |
| KPPH | | | KPPH | | |
| 170.00 | | LOC | 170.00 | | LOC |
| 169.50 | | | 167.38 | | |
| 28.315 | | AUT | 38.288 | | AUT |
| FIC2950 | | | FIC2960 | | |
| S.A. FAN A | | | S.A. FAN B | | |
| KPPH | | | KPPH | | |
| 135.00 | | LOC | 135.00 | | LOC |
| 133.58 | | | 134.08 | | |
| 46.423 | | AUT | 35.145 | | AUT |

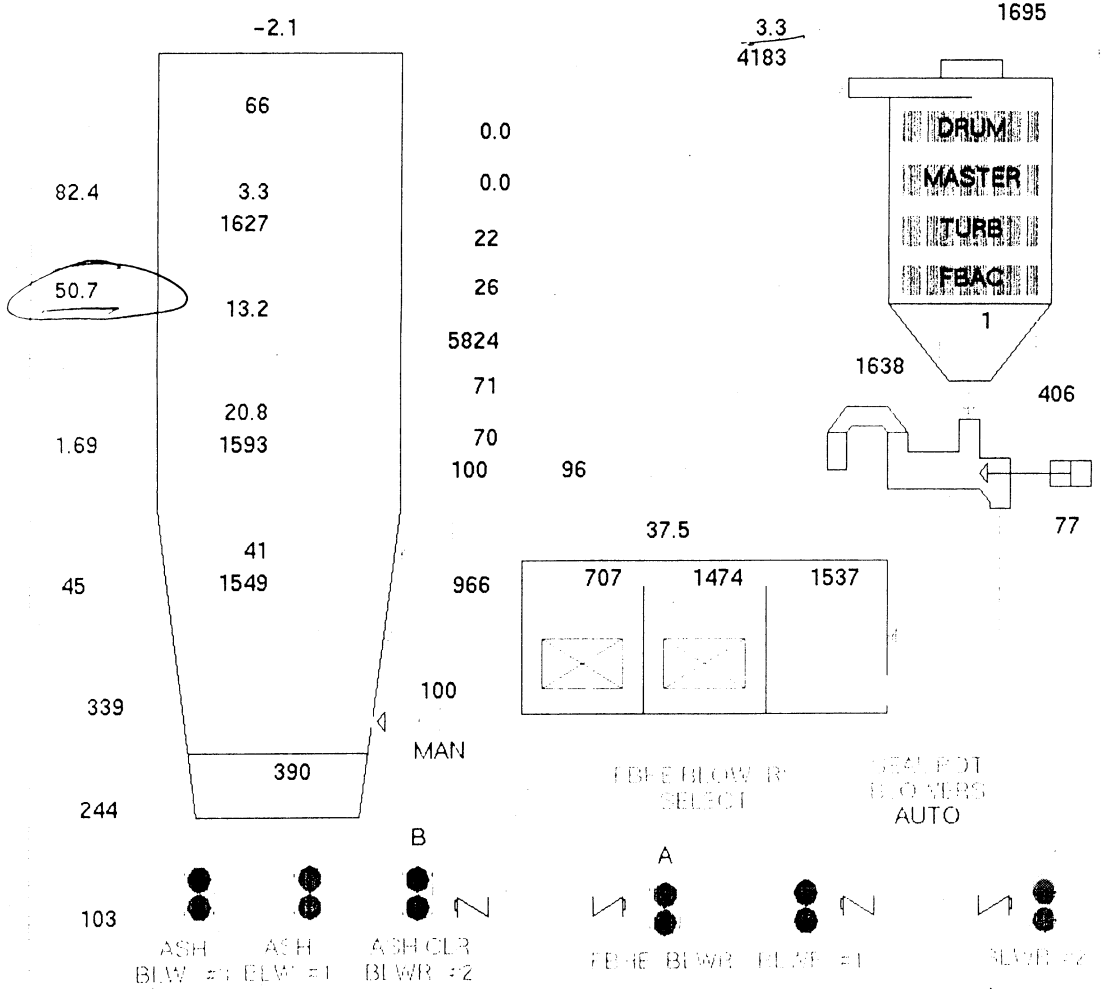
End Test 1


33 Tags In Alarm
28 Oct 99 11:44:40
PIC2052
MAIN STEAM
2000.00
TRACK
1742.0
PSIG
1742.0
TRACK
60.602
0.00
FIC2001
MAIN STEAM FLOW
560.00
TRACK
497.32
KPPH
497.32
TRACK
60.602
0.00
FIC2780
FUEL MASTER
850.00
TRACK
524.60
MBTU/H
524.60
TRACK
102.14
0.00
FIC2990
TOTAL AIR
800.00
REMOTE
557.26
KPPH
681.25
TRACK
95.000
0.00
AIC2053
FLUE GAS O2
25.00
TRACK
3.7916
PCT
3.7916
TRACK
50.000
0.00
FIC2304
FDR A FLOW
140.00
LOCAL
73.000
KPPH
68.273
MANUAL
41.000
0.00
FIC2324
FDR B FLOW
140.00
LOCAL
70.000
KPPH
70.000
AUTO
49.793
0.00
HIC2990
PA CRS OVER
500.00
KPPH
340.00
MANUAL
340.00
0.00
FIC2950
S.A. FAN A
250.00
LOCAL
135.00
KPPH
134.83
AUTO
46.273
0.00
FIC2960
S.A. FAN B
250.00
LOCAL
135.00
KPPH
134.16
AUTO
34.678
0.00
FIC2970
P.A. FAN A
250.00
LOCAL
170.00
KPPH
170.08
AUTO
27.751
0.00
FIC2980
P.A. FAN B
250.00
LOCAL
170.00
KPPH
169.83
AUTO
37.384
0.00

START TEST 2

35 Tags In Alarm

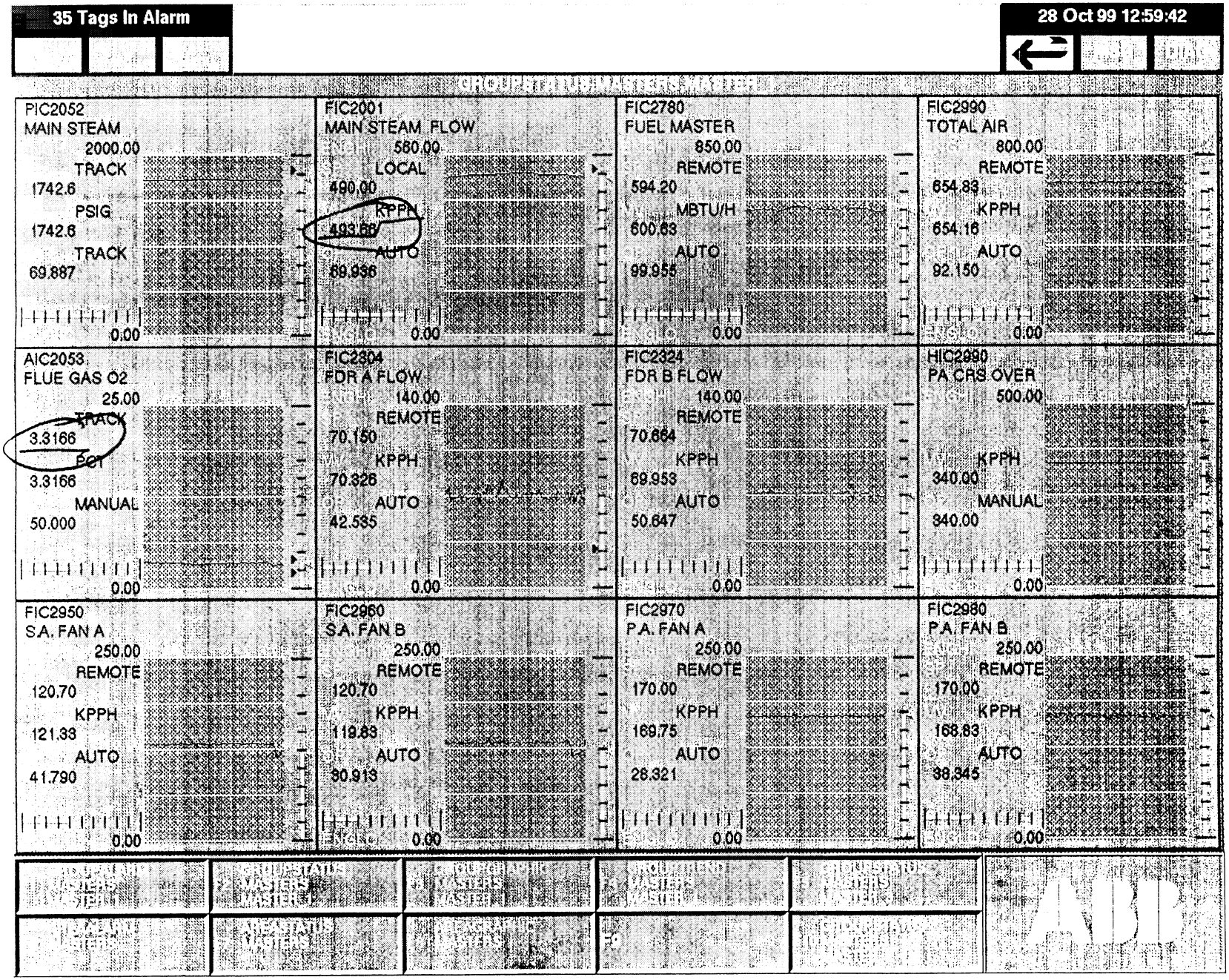
28 Oct 99 13:00:13




| | |
|---|---|
| PDIC2803<br>DP CONTL<br>INWC<br>65.680 TRA<br>65.680<br>0.0000 MAN | HSS2803A<br>COMB DELTA P<br>TOTAL<br>AUTO<br>TOTAL |
| HIC2800<br>REM DP SP<br>INWC<br>0.0000<br>0.0000 MAN | |
| HIC2818<br>ASH VALVE<br>PCT<br>0.0000<br>100.00 MAN | HIC2910<br>SEAL POT<br>PCT<br>0.0000<br>78.000 MAN |
| TIC2801<br>CMB OUT TEMP<br>DEG F<br>1627.6 TRA<br>1627.6<br>50.000 MAN | HIC2910A<br>FBHE DRAIN<br>PCNT<br>0.0000<br>0.0000 MAN |
| HIC2802<br>FF ADJUST<br>PCNT<br>0.0000<br>0.0000 MAN | TI2821<br>390.48 DEGF<br>LIC2052<br>0.9765 INCHES<br>XA2901<br>NORMAL |
| TI2906<br>1638.9 DEG.F | FI2001<br>492.37 KPPH |
| TI2906A<br>406.58 DEGF | PIC2052<br>1748.3 PSIG |
| UA2803<br>OFF | TI2051<br>1002.6 DEG F |

40

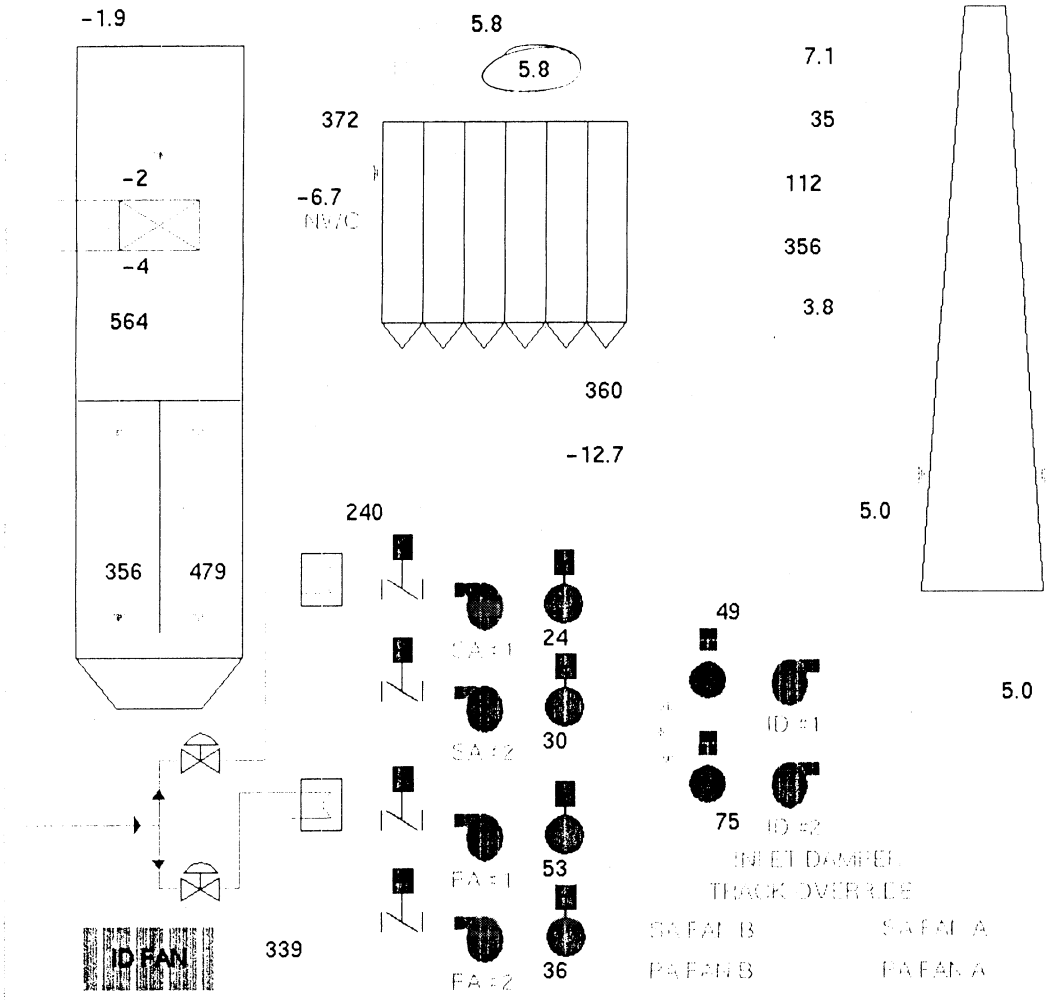
START TEST #2


35 Tags In Alarm
28 Oct 99 12:59:42
PIC2052
MAIN STEAM
2000.00
TRACK
1742.6
PSIG
1742.6
TRACK
69.887
0.00
FIC2001
MAIN STEAM FLOW
580.00
LOCAL
490.00
KPPH
493.68
AUTO
69.936
0.00
FIC2780
FUEL MASTER
850.00
REMOTE
594.20
MBTU/H
600.63
AUTO
99.955
0.00
FIC2990
TOTAL AIR
800.00
REMOTE
654.83
KPPH
654.16
AUTO
92.150
0.00
AIC2053
FLUE GAS O2
25.00
TRACK
3.3166
PCT
3.3166
MANUAL
50.000
0.00
FIC2304
FDR A FLOW
140.00
REMOTE
70.150
KPPH
70.326
AUTO
42.585
0.00
FIC2324
FDR B FLOW
140.00
REMOTE
70.664
KPPH
69.953
AUTO
50.647
0.00
HIC2990
PA CRS OVER
500.00
KPPH
340.00
MANUAL
340.00
0.00
FIC2950
S.A. FAN A
250.00
REMOTE
120.70
KPPH
121.33
AUTO
41.790
0.00
FIC2960
S.A. FAN B
250.00
REMOTE
120.70
KPPH
119.83
AUTO
30.913
0.00
FIC2970
P.A. FAN A
250.00
REMOTE
170.00
KPPH
169.75
AUTO
28.321
0.00
FIC2980
P.A. FAN B
250.00
REMOTE
170.00
KPPH
168.83
AUTO
38.845
0.00
ABB

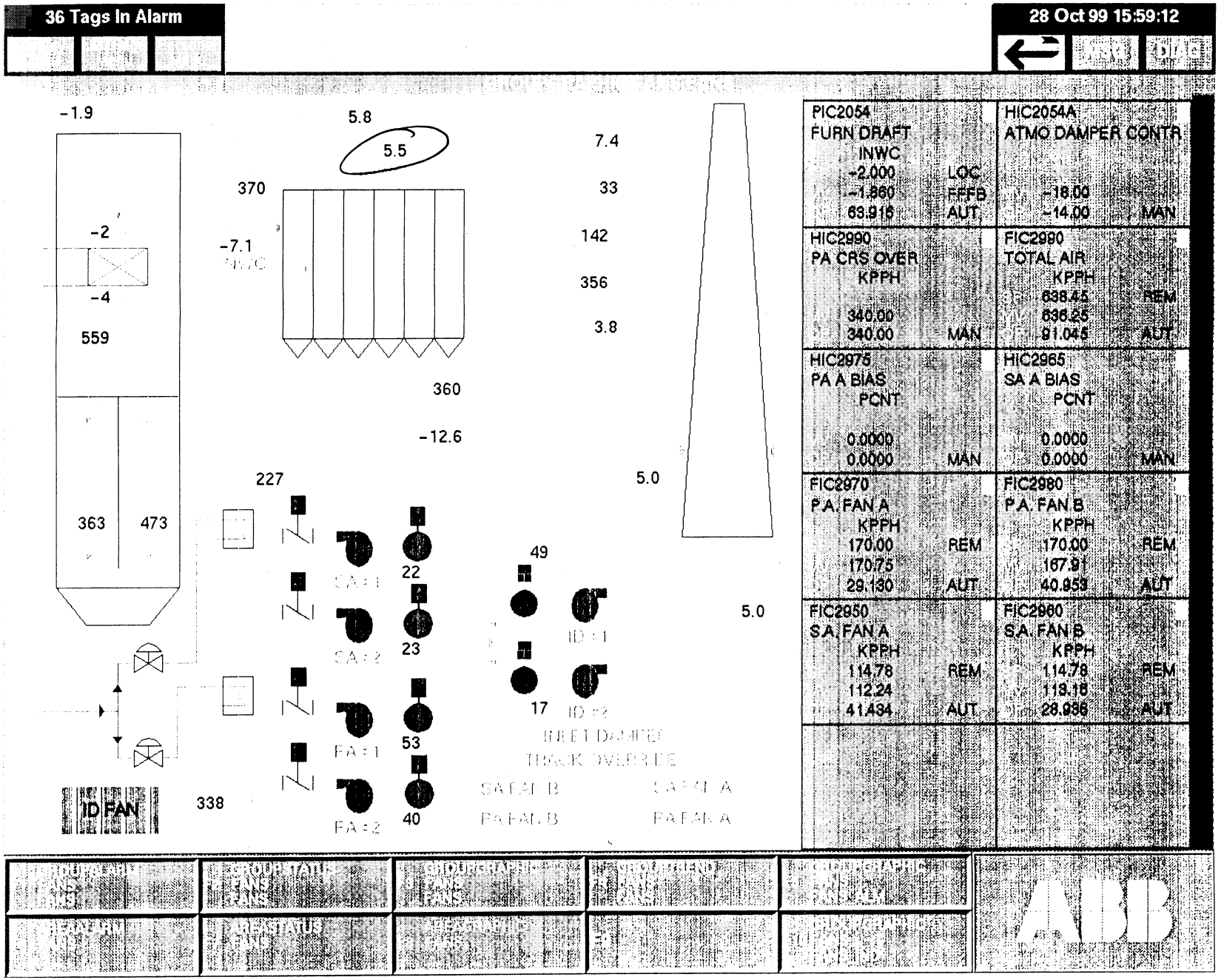
START TEST 2

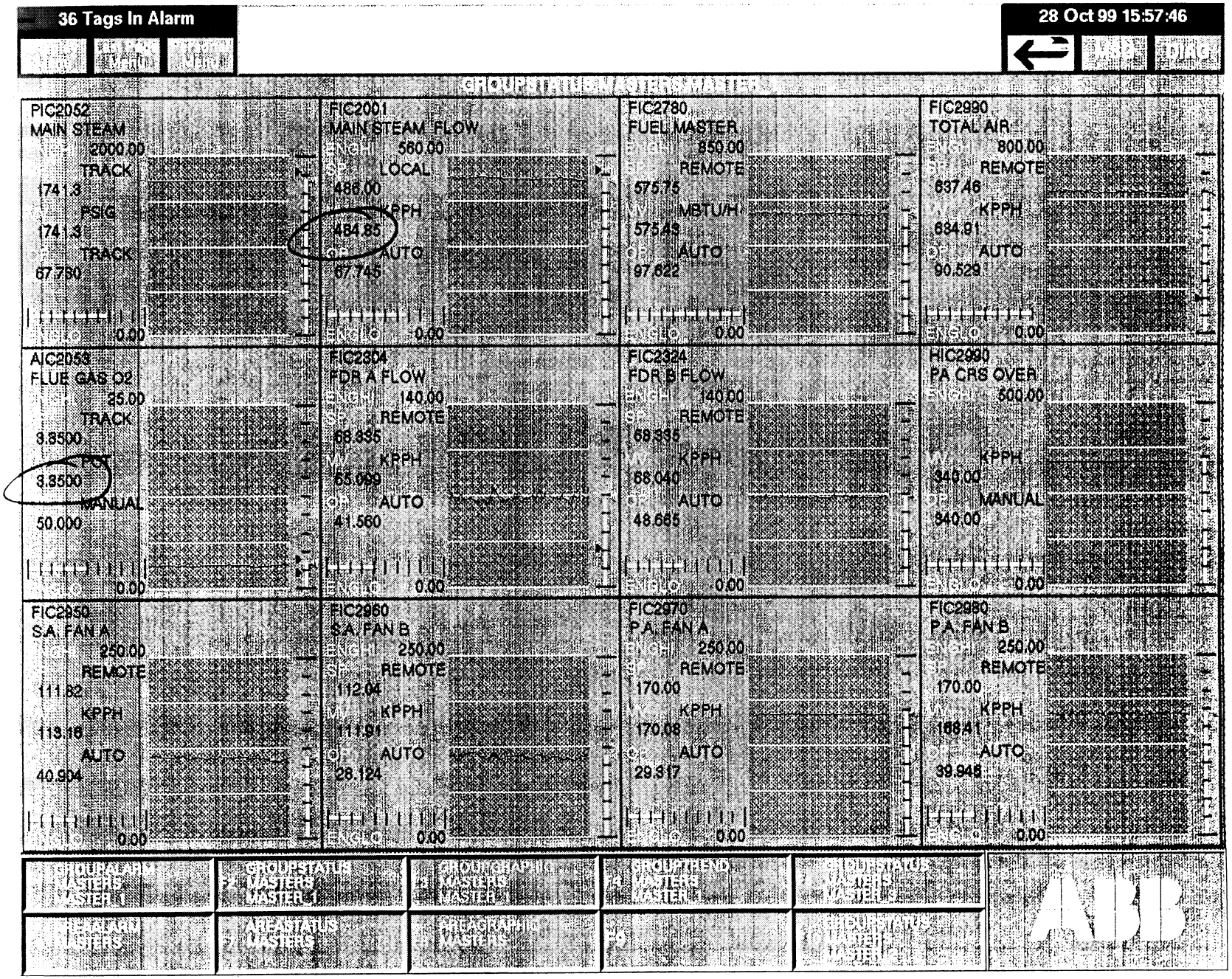
35 Tags In Alarm

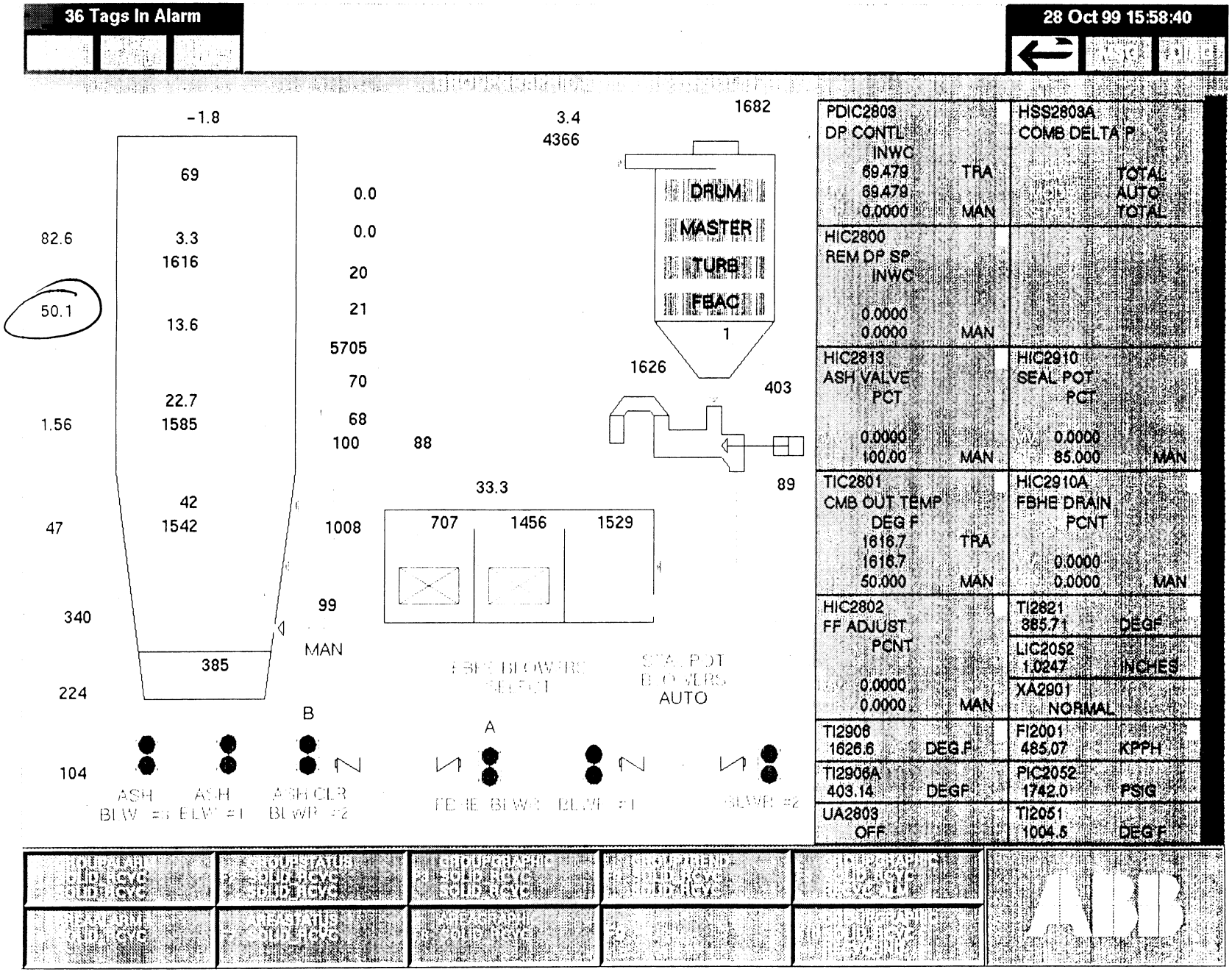
28 Oct 99 13:00:34

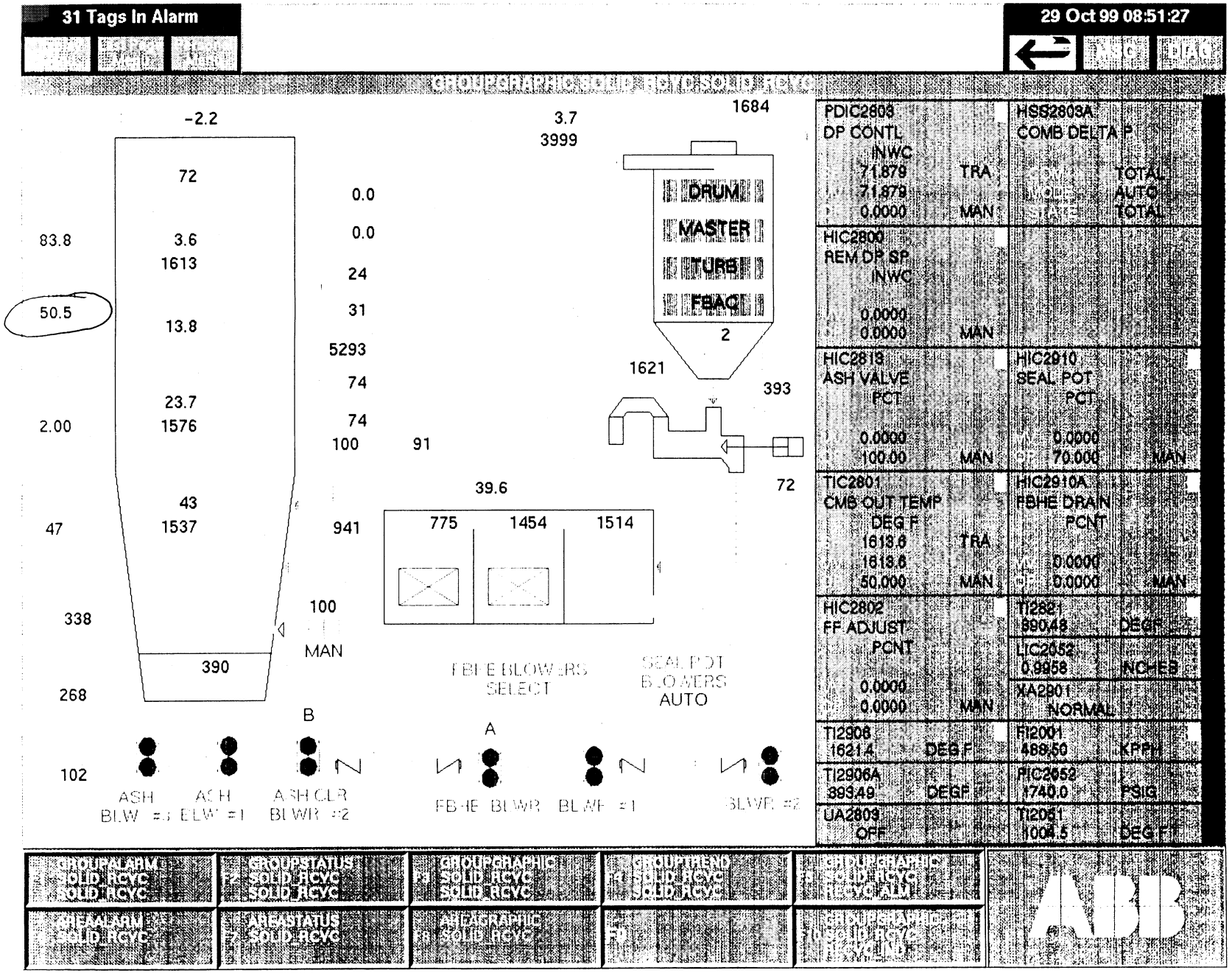


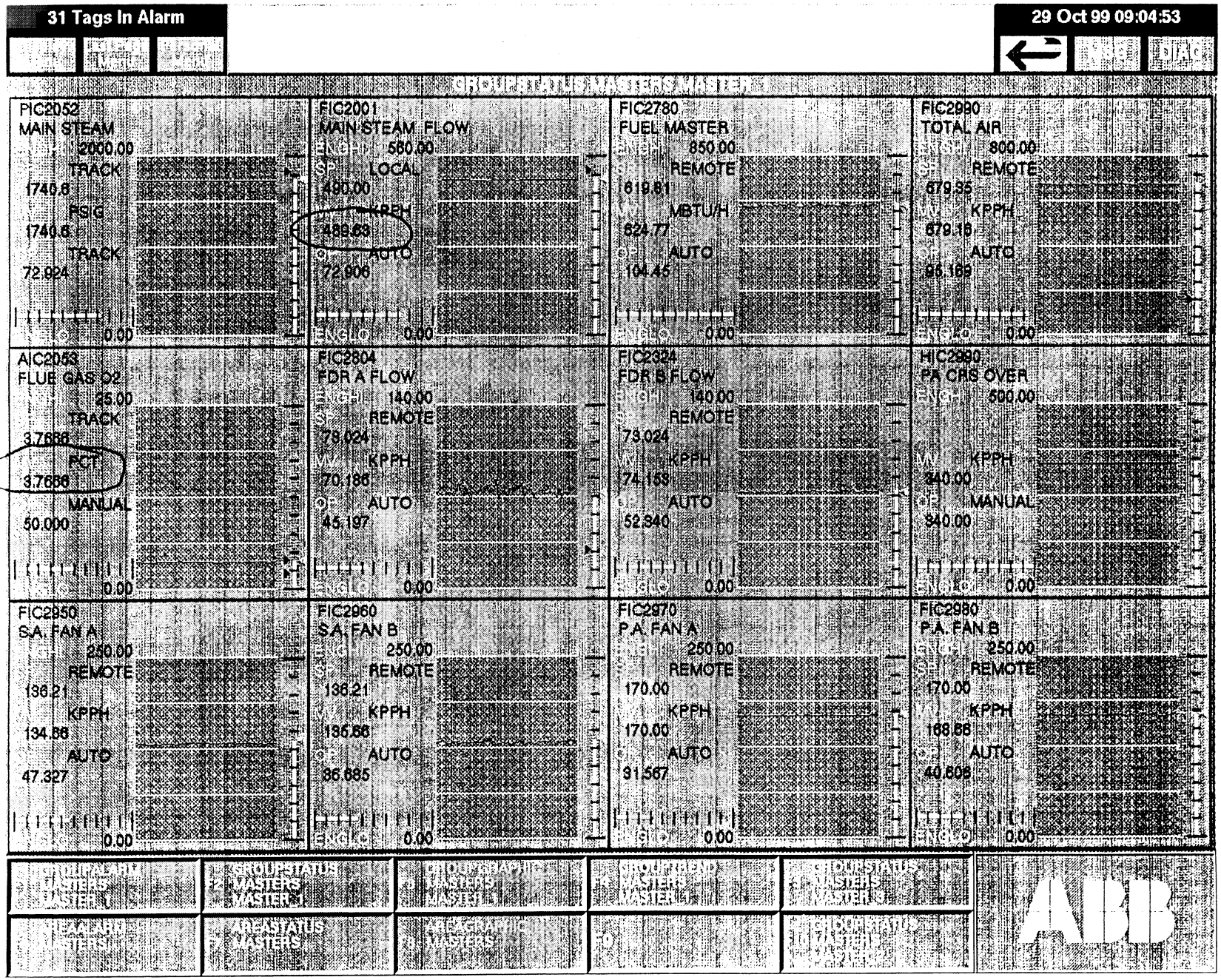

| | |
|---|---|
| PIC2054<br>FURN DRAFT<br>INWC<br>-2.000 LOC<br>-1.880 XXXX<br>64.571 AUT | HIC2054A<br>ATMO DAMPER CONTR<br><br>-18.00<br>-14.00 MAN |
| HIC2990<br>PA CRS OVER<br>KPPH<br><br>340.00<br>340.00 MAN | FIC2990<br>TOTAL AIR<br>KPPH<br>855.14 REM<br>858.91<br>92.583 AUT |
| HIC2975<br>PA A BIAS<br>PCNT<br><br>0.0000<br>0.0000 MAN | HIC2985<br>SA A BIAS<br>PCNT<br><br>0.0000<br>0.0000 MAN |
| FIC2970<br>P.A. FAN A<br>KPPH<br>170.00 REM<br>169.75<br>28.546 AUT | FIC2980<br>P.A. FAN B<br>KPPH<br>170.00 REM<br>169.58<br>38.487 AUT |
| FIC2950<br>S.A. FAN A<br>KPPH<br>121.84 REM<br>119.16<br>42.838 AUT | FIC2960<br>S.A. FAN B<br>KPPH<br>122.04 REM<br>120.83<br>31.308 AUT |

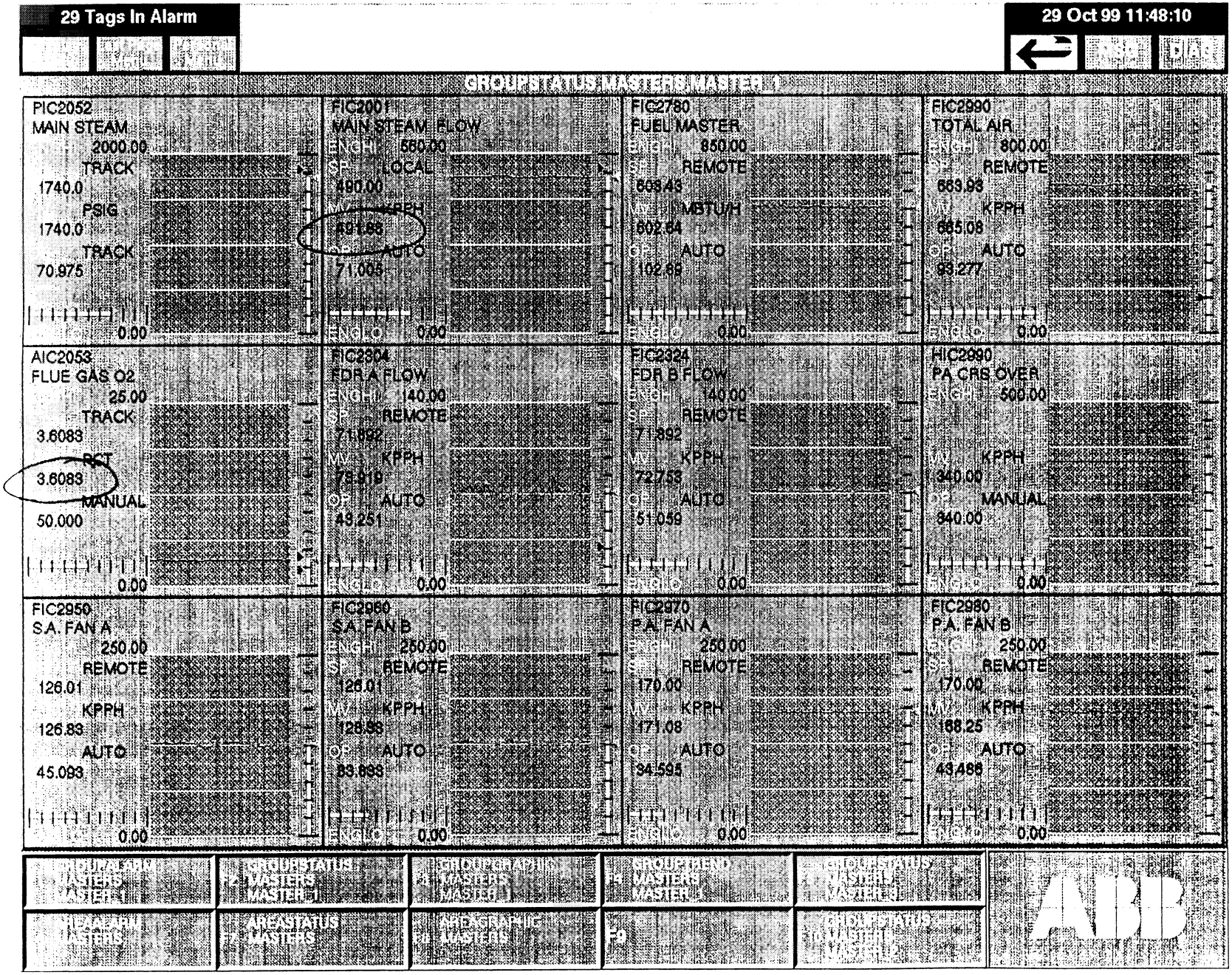

36 Tags In Alarm
28 Oct 99 15:59:12
-1.9
-2
-4
559
363
473
5.8
5.5
370
-7.1
360
-12.6
7.4
33
142
356
3.8
5.0
227
22
23
53
40
SA FAN
PA FAN
49
17
ID FAN
338
5.0
PIC2054
FURN DRAFT
INWC
-2.000
-1.860
63.916
LOC
FFFB
AUT
HIC2054A
ATMO DAMPER CONTR
-18.00
-14.00
MAN
HIC2990
PA CRS OVER
KPPH
340.00
340.00
MAN
FIC2990
TOTAL AIR
KPPH
638.45
636.25
91.045
REM
AUT
HIC2975
PA A BIAS
PCNT
0.0000
0.0000
MAN
HIC2965
SA A BIAS
PCNT
0.0000
0.0000
MAN
FIC2970
P.A. FAN A
KPPH
170.00
170.75
29.130
REM
AUT
FIC2980
P.A. FAN B
KPPH
170.00
167.91
40.959
REM
AUT
FIC2950
S.A. FAN A
KPPH
114.78
112.24
41.434
REM
AUT
FIC2960
S.A. FAN B
KPPH
114.78
113.18
28.936
REM
AUT
ABB

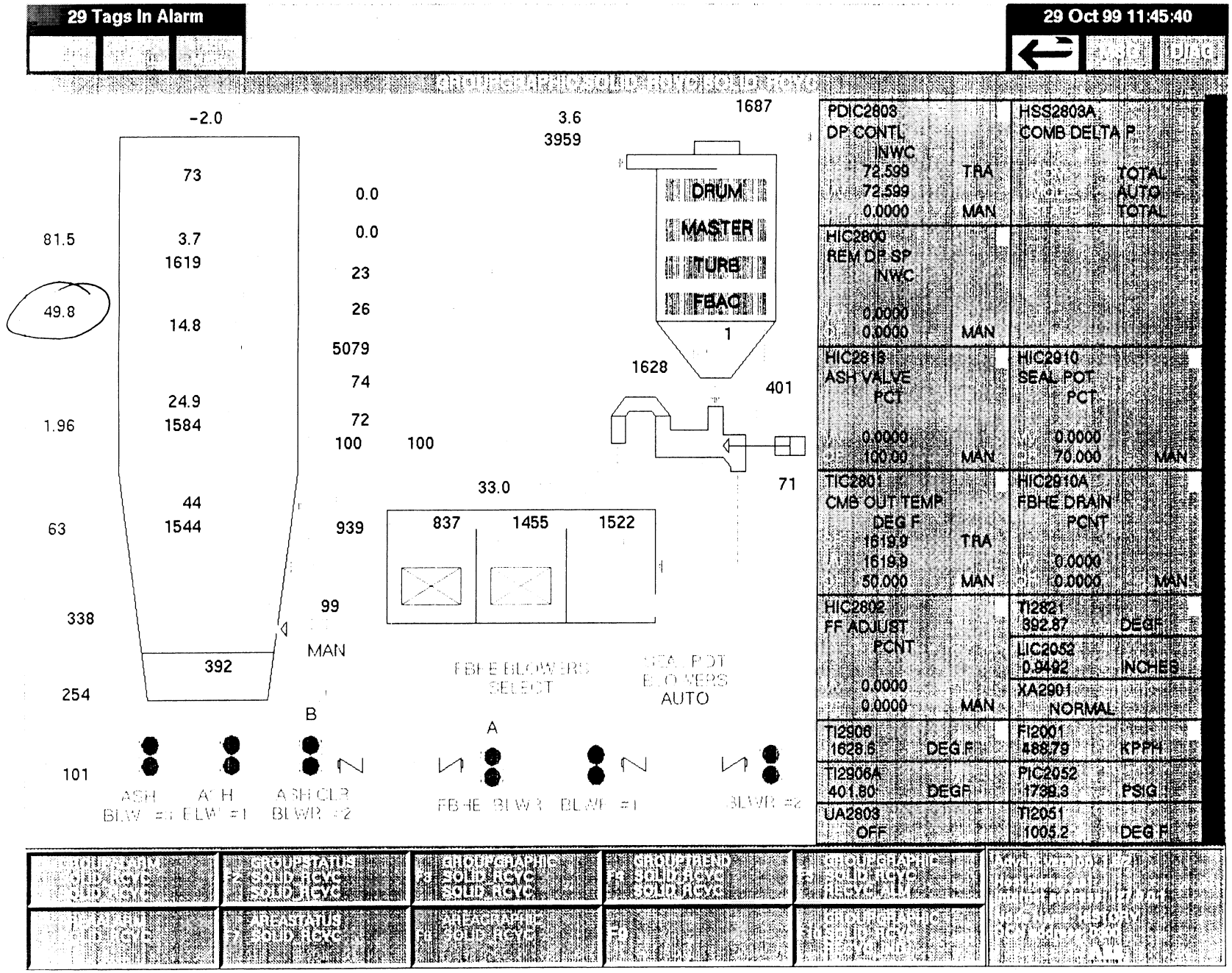

36 Tags In Alarm
28 Oct 99 15:57:46
GROUP STATUS MASTERS MASTER
PIC2052
MAIN STEAM
2000.00
TRACK
1741.3
PSIG
1741.3
TRACK
67.790
0.00
FIC2001
MAIN STEAM FLOW
560.00
LOCAL
486.00
KPPH
484.85
AUTO
67.745
0.00
FIC2780
FUEL MASTER
850.00
REMOTE
575.75
MBTU/H
575.43
AUTO
97.622
0.00
FIC2990
TOTAL AIR
800.00
REMOTE
637.46
KPPH
634.91
AUTO
90.529
0.00
AIC2053
FLUE GAS O2
25.00
TRACK
3.8500
POT
3.8500
MANUAL
50.000
0.00
FIC2304
FDR A FLOW
140.00
REMOTE
68.335
KPPH
65.099
AUTO
41.560
0.00
FIC2324
FDR B FLOW
140.00
REMOTE
68.335
KPPH
66.040
AUTO
48.665
0.00
HIC2990
PA CRS OVER
500.00
KPPH
340.00
MANUAL
340.00
0.00
FIC2950
S.A. FAN A
250.00
REMOTE
111.82
KPPH
113.16
AUTO
40.904
0.00
FIC2960
S.A. FAN B
250.00
REMOTE
112.04
KPPH
111.91
AUTO
28.124
0.00
FIC2970
P.A. FAN A
250.00
REMOTE
170.00
KPPH
170.08
AUTO
29.317
0.00
FIC2980
P.A. FAN B
250.00
REMOTE
170.00
KPPH
168.41
AUTO
39.948
0.00
GROUP ALARM MASTERS MASTER
GROUP STATUS MASTERS MASTER
GROUP GRAPHIC MASTERS MASTER
GROUP TREND MASTERS MASTER
ALARM MASTERS
AREA STATUS MASTERS
AREA GRAPHIC MASTERS
ABB


36 Tags In Alarm
28 Oct 99 15:58:40
-1.8
69
3.3
1616
13.6
22.7
1585
42
1542
82.6
50.1
1.56
47
340
224
104
385
0.0
0.0
20
21
5705
70
68
100
88
99
MAN
1008
3.4
4366
1682
DRUM
MASTER
TURB
FBAC
1
1626
403
89
33.3
707
1456
1529
B
A
ASH BLW #1
ASH BLWR #1
ASH CLR BLWR #2
FBHE BLWR
BLWR #1
BLWR #2
FBHE BLOWERS SELECT
SEAL POT BLOWERS AUTO
PDIC2803
DP CONTL
INWC
69.479 TRA
69.479
0.0000 MAN
HSS2803A
COMB DELTA P
TOTAL
AUTO
TOTAL
HIC2800
REM DP SP
INWC
0.0000
0.0000 MAN
HIC2813
ASH VALVE
PCT
0.0000
100.00 MAN
HIC2910
SEAL POT
PCT
0.0000
85.000 MAN
TIC2801
CMB OUT TEMP
DEG F
1616.7 TRA
1616.7
50.000 MAN
HIC2910A
FBHE DRAIN
PCNT
0.0000
0.0000 MAN
HIC2802
FF ADJUST
PCNT
0.0000
0.0000 MAN
TI2821
385.71 DEGF
LIC2052
1.0247 INCHES
XA2901
NORMAL
TI2906
1626.6 DEG F
FI2001
485.07 KPPH
TI2906A
403.14 DEGF
PIC2052
1742.0 PSIG
UA2803
OFF
TI2051
1004.5 DEG F


31 Tags In Alarm
29 Oct 99 08:51:27
-2.2
72
83.8
3.6
1613
50.5
13.8
23.7
2.00
1576
43
47
1537
338
390
268
102
ASH BLW #3
ASH BLW #1
ASH CLR BLWR #2
B
0.0
0.0
24
31
5293
74
74
100
MAN
3.7
3999
1684
DRUM
MASTER
TURB
FBAC
2
1621
393
72
91
39.6
775
1454
1514
941
100
A
FBHE BLOWERS SELECT
SEAL POT BLOWERS AUTO
FBHE BLWR
BLWR #1
BLWR #2
PDIC2803
DP CONTL
INWC
71.879 TRA
71.879
0.0000 MAN
HIC2800
REM DP SP
INWC
0.0000
0.0000 MAN
HIC2813
ASH VALVE
PCT
0.0000
100.00 MAN
TIC2801
CMB OUT TEMP
DEG F
1613.6 TRA
1613.6
50.000 MAN
HIC2802
FF ADJUST
PCNT
0.0000
0.0000 MAN
TI2908
1621.4 DEG F
TI2906A
393.49 DEGF
UA2803
OFF
HSS2803A
COMB DELTA P
TOTAL
AUTO
TOTAL
HIC2810
SEAL POT
PCT
0.0000
70.000 MAN
HIC2810A
FBHE DRAIN
PCNT
0.0000
0.0000 MAN
TI2821
890.48 DEGF
LIC2652
0.9958 INCHES
XA2901
NORMAL
FI2001
488.50 KPPH
PIC2652
1740.0 PSIG
TI2051
1004.5 DEG F
GROUPALARM
GROUPSTATUS
GROUPGRAPHIC
GROUPTREND
GROUPGRAPHIC
AREAALARM
AREASTATUS
AREAGRAPHIC
ABB


31 Tags In Alarm
29 Oct 99 09:04:53
PIC2052
MAIN STEAM
2000.00
TRACK
1740.6
PSIG
1740.6
TRACK
72.924
0.00
FIC2001
MAIN STEAM FLOW
560.00
SP LOCAL
490.00
KPPH
459.63
AUTO
72.906
0.00
FIC2780
FUEL MASTER
850.00
REMOTE
619.81
MBTU/H
624.77
AUTO
104.45
0.00
FIC2990
TOTAL AIR
800.00
REMOTE
679.95
KPPH
679.16
AUTO
96.169
0.00
AIC2053
FLUE GAS O2
25.00
TRACK
3.7686
PCT
3.7686
MANUAL
50.000
0.00
FIC2804
FDR A FLOW
140.00
REMOTE
78.024
KPPH
70.186
AUTO
45.197
0.00
FIC2324
FDR B FLOW
140.00
REMOTE
73.024
KPPH
74.153
AUTO
52.340
0.00
HIC2990
PA CRS OVER
500.00
KPPH
340.00
MANUAL
340.00
0.00
FIC2950
S.A. FAN A
250.00
REMOTE
136.21
KPPH
134.86
AUTO
47.327
0.00
FIC2960
S.A. FAN B
250.00
REMOTE
136.21
KPPH
136.86
AUTO
36.685
0.00
FIC2970
P.A. FAN A
250.00
REMOTE
170.00
KPPH
170.00
AUTO
31.567
0.00
FIC2980
P.A. FAN B
250.00
REMOTE
170.00
KPPH
168.86
AUTO
40.606
0.00
ABB


29 Tags In Alarm
29 Oct 99 11:48:10
GROUPSTATUS MASTERS/MASTER 1
PIC2052
MAIN STEAM
2000.00
TRACK
1740.0
PSIG
1740.0
TRACK
70.975
0.00
FIC2001
MAIN STEAM FLOW
ENG 550.00
SP LOCAL
490.00
MV KPPH
491.86
OP AUTO
71.005
ENG 0.00
FIC2780
FUEL MASTER
ENG 850.00
SP REMOTE
608.43
MV MBTU/H
602.64
OP AUTO
102.89
ENG 0.00
FIC2990
TOTAL AIR
ENG 800.00
SP REMOTE
683.93
MV KPPH
685.08
OP AUTO
93.277
ENG 0.00
AIC2053
FLUE GAS O2
25.00
TRACK
3.6083
PCT
3.6083
MANUAL
50.000
0.00
FIC2304
FDR A FLOW
ENG 140.00
SP REMOTE
71.892
MV KPPH
78.919
OP AUTO
43.251
ENG 0.00
FIC2324
FDR B FLOW
ENG 140.00
SP REMOTE
71.892
MV KPPH
72.753
OP AUTO
51.059
ENG 0.00
HIC2990
PA CRS OVER
ENG 500.00
MV KPPH
340.00
OP MANUAL
340.00
ENG 0.00
FIC2950
S.A. FAN A
250.00
REMOTE
126.01
KPPH
126.83
AUTO
45.093
0.00
FIC2960
S.A. FAN B
ENG 250.00
SP REMOTE
126.01
MV KPPH
126.83
OP AUTO
ENG 0.00
FIC2970
P.A. FAN A
ENG 250.00
SP REMOTE
170.00
MV KPPH
171.08
OP AUTO
34.595
ENG 0.00
FIC2980
P.A. FAN B
ENG 250.00
SP REMOTE
170.00
MV KPPH
168.25
OP AUTO
43.486
ENG 0.00
F1 GROUP ALARM MASTERS
F2 GROUPSTATUS MASTERS/MASTER 1
F3 GROUPEVENT MASTERS/MASTER 1
F4 GROUPTREND MASTERS/MASTER 1
F5 GROUPSTATUS MASTERS/MASTER 1
F6 HELP MASTERS
F7 AREASTATUS MASTERS
F8 AREAGRAPHIC MASTERS
F9
F10 GROUPSTATUS MASTERS/MASTER 1
ABB


29 Tags In Alarm
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24.9
1584
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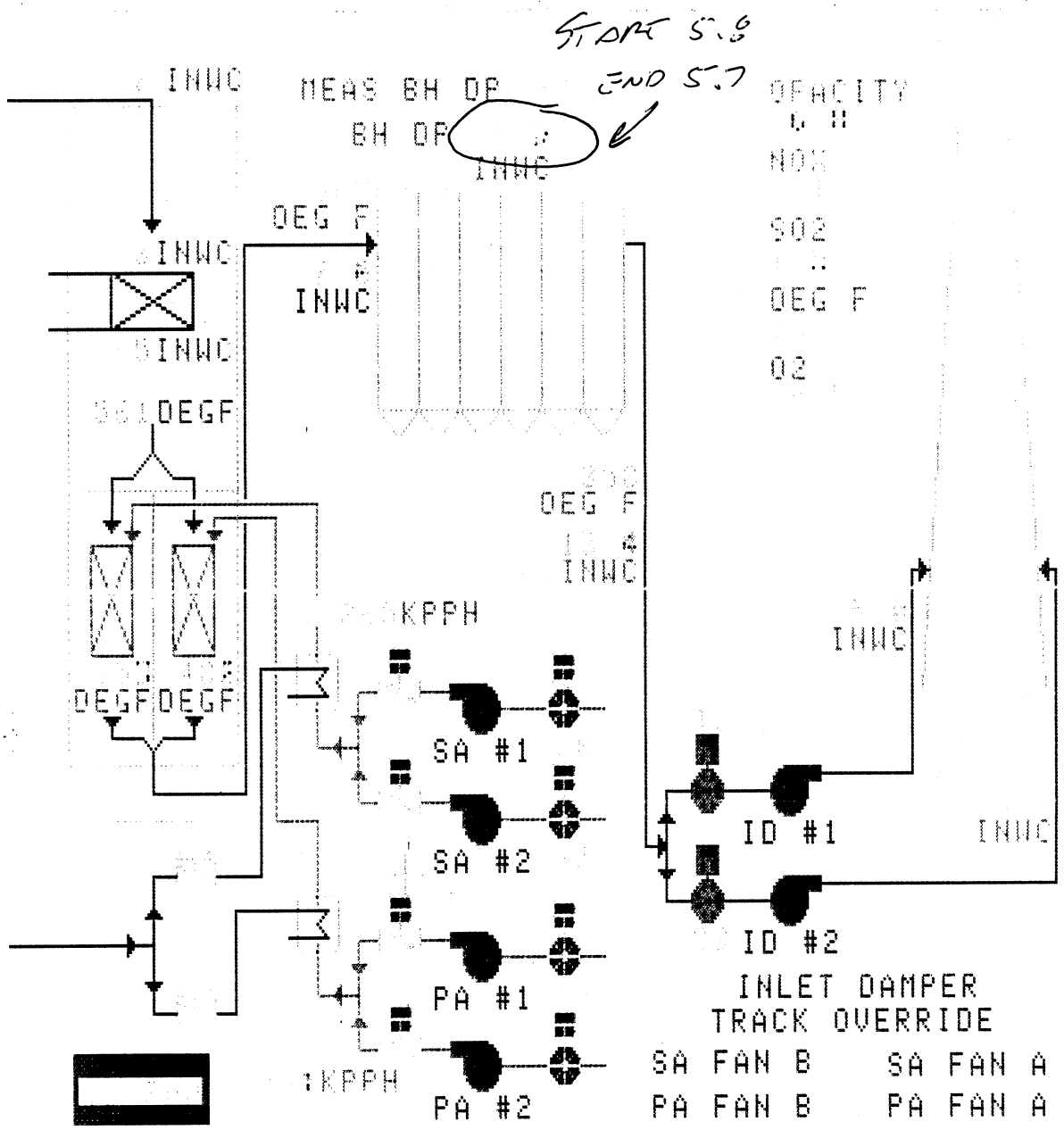
49.8
1.96
63
338
254
101
3.6
3959
1687
DRUM
MASTER
TURB
FBAC
1
1628
401
71
0.0
0.0
23
26
5079
74
72
100
100
33.0
837
1455
1522
939
99
MAN
B
A
FBHE BLOWERS SELECT
SEAL POT BLOWERS AUTO
ASH BLWR #1
ASH BLWR #1
ASH CLR BLWR #2
FBHE BLWR
BLWR #1
BLWR #2
PDIC2803
DP CONTL
INWC
72.599 TRA
72.599
0.0000 MAN
HSS2803A
COMB DELTA P
TOTAL
AUTO
TOTAL
HIC2800
REM DP SP
INWC
0.0000
0.0000 MAN
HIC2818
ASH VALVE
PCT
0.0000
100.00 MAN
HIC2910
SEAL POT
PCT
0.0000
70.000 MAN
TIC2801
CMB OUT TEMP
DEG F
1619.9 TRA
1619.9
50.000 MAN
HIC2910A
FBHE DRAIN
PCNT
0.0000
0.0000 MAN
HIC2802
FF ADJUST
PCNT
0.0000
0.0000 MAN
TI2821
392.87 DEGF
LIC2052
0.9492 INCHES
XA2901
NORMAL
TI2906
1628.6 DEG F
FI2001
488.79 KPPH
TI2906A
401.80 DEGF
PIC2052
1739.3 PSIG
UA2803
OFF
TI2051
1005.2 DEG F




PIC2054 FURN DRAFT INWC
SP -3.000 L
MV -2.200
OP 75 I FA

HIC2054A ATMO DAMPER
MV -18.00
OP -14.0 M

HIC2990 PA CRS OVER KPPH
MV 340.00
OP 340.0

FIC2990 TOTAL AIR KPPH
SP [illegible] R
MV 675.00
OP 94 A

HIC2975 PA A BIAS PCNT
MV 0.0000
OP 0.0

HIC2965 SA A BIAS PCNT
MV 0.0000
OP 0.0

FIC2970 P A FAN A KPPH
SP 170.00 R
MV 170.42
OP 30.9 A

FIC2980 P A FAN B KPPH
SP 170.00 R
MV 170.80
OP 40.2 A

FIC2950 S.A. FAN A KPPH
SP 130.00 R
MV 131.25
OP 44.7 A

FIC2960 S.A. FAN B KPPH
SP 130.00 R
MV 130.00
OP 35.9 A

| UNIT OVER | OVER VIEW | AREA | GROUP | ALARM | TREND | STATUS | GRAPH | DETAIL | ⇨ | LAST PAGE | MSG | FETCH ALARM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | M |

**APPENDIX 3**
LAB ANALYSIS

Speciated Hg

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ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

December 2, 1999

Mike Taylor
Catalyst Air Management Inc.
Fairview Technology Center
11020 Solway School Road
Suite 108
Knoxville TN 37931

Laboratory Project: 187595
Client Reference: Speciated Hg - Ontario Hydro Method

Dear Mr. Taylor:

The samples which were logged in on 01-NOV-99 have been analyzed as requested. The analytical results are enclosed in the attached report.

Please note that any unused portion of the samples will be disposed after 11-DEC-99, unless you have requested otherwise.

Thank you for the opportunity to provide these services to you. If you have any questions concerning this report, please contact a Client Services representative at 610/921-8833.

Sincerely,

Fred Usbeck, CIH
Director, Laboratory Services



4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

# ANALYTICAL REPORT

Client: Catalyst Air Management Inc.

Report to: Mike Taylor
Catalyst Air Management Inc.
Fairview Technology Center
11020 Solway School Road
Suite 108
Knoxville TN 37931

Project: 187595
Received: 01-NOV-99
Reported: 02-DEC-99

Project Description: Speciated Hg - Ontario Hydro Method

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Thimble/Ash, Run 1 Inlet: Filter # 33, 32, 51, 52, 53, 54** | | | | | |
| Lab Sample: 1380985 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 77.6 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| Total Particle Bound Mercury = Hg Ash (ug) + Hg in Probe Rinse (ug) | | | | | |
| Total Particle Bound Mercury = 77.6 ug | | | | | |
| **Thimble/Ash, Run 2 Inlet: Filter # 59, 56, 55, 57, 60, 61** | | | | | |
| Lab Sample: 1380986 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 70.3 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| Total Particle Bound Mercury = Hg Ash (ug) + Hg in Probe Rinse (ug) | | | | | |
| Total Particle Bound Mercury =70.3 ug | | | | | |
| **Thimble/Ash, Run 3 Inlet: Filter # 69, 67, 66, 65, 63, 62** | | | | | |
| Lab Sample: 1380987 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 82.9 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| Total Particle Bound Mercury = Hg Ash (ug) + Hg in Probe Rinse (ug) | | | | | |
| Total Particle Bound Mercury = 82.9 ug | | | | | |



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PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187595

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Thimble/Ash, Run 1 Stack: Filter # 48** | | | | | |
| Lab Sample: 1380988 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.02 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| Total Particle Bound Mercury = Hg Ash (ug) + Hg in Probe Rinse (ug) | | | | | |
| Total Particle Bound Mercury = < 0.02 ug | | | | | |
| **Thimble/Ash, Run 2 Stack: Filter # 50** | | | | | |
| Lab Sample: 1380989 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.02 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| Total Particle Bound Mercury = Hg Ash (ug) + Hg in Probe Rinse (ug) | | | | | |
| Total Particle Bound Mercury = < 0.02 ug | | | | | |
| **Thimble/Ash, Run 3 Stack: Filter # 49** | | | | | |
| Lab Sample: 1380990 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.02 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| Total Particle Bound Mercury = Hg Ash (ug) + Hg in Probe Rinse (ug) | | | | | |
| Total Particle Bound Mercury = < 0.02 ug | | | | | |
| **Thimble/Ash, Blank: Filter # 58** | | | | | |
| Lab Sample: 1380991 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.02 | ug/sample | Ont Hydro | 10-NOV-99 | JLP |
| **Cont #3 (KCl), Run 1 Inlet (Imp 1, 2, 3)** | | | | | |
| Lab Sample: 1380992 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |



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PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187595

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Cont #5 (KMNO4/H2SO4), Run 1 Inlet (Imp 5, 6, 7)** | | | | | |
| Lab Sample: 1380993 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.80 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| ** Note ** | | | | | |
| Total Elemental Mercury = HG in KMNO4 + HG in H2O2 | | | | | |
| Total Elemental Mercury =0.798 ug | | | | | |
| **Cont #5 (KMNO4/H2SO4), Run 1 Stack (Imp 5, 6, 7)** | | | | | |
| Lab Sample: 1380994 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.20 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| ** Note ** | | | | | |
| Total Elemental Mercury = HG in KMNO4 + HG in H2O2 | | | | | |
| Total Elemental Mercury = 0.197 ug | | | | | |
| **Cont #4 (HNO3/H2O2), Run 1 Stack (Imp 4)** | | | | | |
| Lab Sample: 1380995 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #3 (KCl), Run 1 Stack (Imp 1, 2. 3)** | | | | | |
| Lab Sample: 1380996 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.19 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |
| **Cont #3 (KCl), Run 2 Stack (Imp 1, 2. 3)** | | | | | |
| Lab Sample: 1380997 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |
| **Cont #3 (KCl), Run 2 Inlet (Imp 1, 2. 3)** | | | | | |
| Lab Sample: 1380998 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.1 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |

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ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187595

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Cont #5 (KMNO4/H2SO4), Run 2 Stack (Imp 5, 6, 7)** | | | | | |
| Lab Sample: 1380999 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.19 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| ** Note ** | | | | | |
| Total Elemental Mercury = HG in KMNO4 + HG in H2O2 | | | | | |
| Total Elemental Mercury = 0.191 ug | | | | | |
| **Cont #4 (HNO3/H2O2), Run 2 Stack (Imp 4)** | | | | | |
| Lab Sample: 1381000 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #3 (KCl), Run 3 Inlet (Imp 1, 2, 3)** | | | | | |
| Lab Sample: 1381001 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.1 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |
| **Cont #5 (KMNO4/H2SO4), Run 2 Inlet (Imp 5, 6, 7)** | | | | | |
| Lab Sample: 1381002 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.65 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| ** Note ** | | | | | |
| Total Elemental Mercury = HG in KMNO4 + HG in H2O2 | | | | | |
| Total Elemental Mercury = 0.645 ug | | | | | |
| **Cont #4 (HNO3/H2O2), Run 2 Inlet (Imp 4)** | | | | | |
| Lab Sample: 1381003 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |

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INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187595

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Cont #4 (HNO3/H2O2), Run 3 Inlet (Imp 4)** | | | | | |
| Lab Sample: 1381004 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| ** Note ** | | | | | |
| Total Elemental Mercury = HG in KMNO4 + HG in H2O2 | | | | | |
| Total Elemental Mercury = 0.627 ug | | | | | |
| **Cont #5 (KMNO4/H2SO4), Run 3 Inlet (Imp 5, 6, 7)** | | | | | |
| Lab Sample: 1381005 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.63 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #5 (KMNO4/H2SO4), Run 3 Stack (Imp 5, 6, 7)** | | | | | |
| Lab Sample: 1381006 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.1 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #3 (KCl), Run 3 Stack (Imp 1, 2, 3)** | | | | | |
| Lab Sample: 1381007 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.25 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |
| **Cont #4 (HNO3/H2O2), Run 3 Stack (Imp 4)** | | | | | |
| Lab Sample: 1381008 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| ** Note ** | | | | | |
| Total Elemental Mercury = HG in KMNO4 + HG in H2O2 | | | | | |
| Total Elemental Mercury = < 0.13 ug | | | | | |
| **Cont #2 (0.1N HNO3), Run 2 Stack (Nozzle Wash)** | | | | | |
| Lab Sample: 1381009 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.004 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |



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• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187595

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Cont #2 (0.1N HNO3), Run 3 Stack (Nozzle Wash)** | | | | | |
| Lab Sample: 1381010 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.007 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #2 (0.1N HNO3), Run 3 Inlet (Nozzle Wash)** | | | | | |
| Lab Sample: 1381011 | | | | | |
| sampled: 29-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | 0.022 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #2 (0.1N HNO3), Run 1 Inlet (Nozzle Wash)** | | | | | |
| Lab Sample: 1381012 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.01 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #2 (0.1N HNO3), Run 1 Stack (Nozzle Wash)** | | | | | |
| Lab Sample: 1381013 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.007 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #11 (Hydroxalamine) Blank** | | | | | |
| Lab Sample: 1381014 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.02 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #7 (0.1 N HNO3) Blank** | | | | | |
| Lab Sample: 1381015 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.02 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #9 (HNO3/H2O2) Blank** | | | | | |
| Lab Sample: 1381016 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |



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• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187595

| | RESULT | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|
| **Cont #8 (1N KCl) Blank** | | | | | |
| Lab Sample: 1381017 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| Result represents Oxidized Hg. | | | | | |
| **Cont #10 (KMNO4/H2SO4) Blank** | | | | | |
| Lab Sample: 1381018 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.1 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #4 (HNO3/H2O2), Run 1 Inlet (Imp 4)** | | | | | |
| Lab Sample: 1381019 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.2 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |
| **Cont #2 (0.1 N HNO3), Run 2 Inlet (Nozzle Wash)** | | | | | |
| Lab Sample: 1381020 | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | |
| **Hg by Ont. Hydro Method, Draft** | < 0.007 | ug/sample | Ont Hydro | 03-NOV-99 | JLP |

< Indicates less than the limit of quantitation.



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# CHAIN OF CUSTODY RECORD

187595

**PHILIP**
ANALYTICAL SERVICES
4418 Pottsville Pike
Reading, Pennsylvania 19605
(800) 345-4026 (610) 921-8833
Fax (610) 921-9667

PROVIDING A COMPLETE LINE OF INDUSTRIAL HYGIENE AND ENVIRONMENTAL SERVICES

| REPORT RESULTS TO: | | SEND INVOICE TO: | |
|---|---|---|---|
| NAME | Mike Taylor TITLE | PURCHASE ORDER NO. | JOB I.D.: |
| COMPANY | Catalyst | NAME | Same |
| MAILING ADDRESS | 11020 Solway School Rd, 108 | COMPANY | DEPT. |
| CITY, STATE, ZIP | Knoxville TN 37931 | ADDRESS | |
| TELEPHONE NO. | (423) 927-6603 FAX NO. (423) 927-4332 | CITY, STATE, ZIP | |

SPECIAL INSTRUCTIONS

Speciated Hg - Ontario Hydro Method

ANALYSIS REQUESTED

| SAMPLE IDENTIFICATION/DESCRIPTION | AIR VOL. | MATRIX TYPE | DATE SAMPLED | TIME SAMPLED | PRES | NO CONT | Hg | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| Filter 33 Run 1 Inlet | | | 10/28/99 | | | | | Run 1 Inlet F33 |
| Filter 32 Run 1 Inlet | | | | | | | | F32 |
| Filter 51 Run 1 Inlet | | | | | | | | F51 |
| Filter 52 Run 1 Inlet | | | | | | | | F52 |
| Filter 53 Run 1 Inlet | | | | | | | | F53 |
| Filter 54 Run 1 Inlet | | | | | | | | F54 |
| Filter 59 Run 2 Inlet | | | | | | | | Run 2 Inlet F59 |
| Filter 56 Run 2 Inlet | | | | | | | | F56 |
| Filter 55 Run 2 Inlet | | | | | | | | F55 |
| Filter 57 Run 2 Inlet | | | | | | | | F57 |
| Filter 60 Run 2 Inlet | | | | | | | | F60 |
| Filter 61 Run 2 Inlet | | | | | | | | F61 |

60

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| EMPTY CONTAINERS DISPATCHED BY: | DATE | TIME | RECEIVED BY | SAMPLER (SIGNATURE) | | | |
| RELINQUISHED BY | DATE | TIME | RECEIVED BY | RELINQUISHED BY | DATE | TIME | RECEIVED BY |
| | 10/30/99 | 7:30 | | | | | |
| RELINQUISHED BY | DATE | TIME | RECEIVED FOR LABORATORY BY | DATE | TIME | CONDITION OF SAMPLES UPON RECEIPT | CUSTODY SEALS INTACT |
| | | | | 11/1/99 | 0800 | | Y N (N/A) |

DATA DELIVERABLES
(ADDITIONAL CHARGES MAY APPLY)

- ☐ FULL
- ☒ REDUCED
- ☐ RESULTS ONLY
- ☐ OTHER (SPECIFY):

**PHILIP ANALYTICAL SERVICES**

4418 Pottsville Pike
Reading, Pennsylvania 19605
(215) 921-8833 (800) 345-4026 (610) 921-8833
FAX (215) 921-9667 Fax (610) 921-9667

# CHAIN OF CUSTODY RECORD

187595

PROVIDING A COMPLETE LINE OF INDUSTRIAL HYGIENE AND ENVIRONMENTAL SERVICES

| REPORT RESULTS TO: | | SEND INVOICE TO: | |
|---|---|---|---|
| NAME | Mike Taylor TITLE | PURCHASE ORDER NO. | JOB I.D.: |
| COMPANY | Catalyst Air Management | NAME | Same |
| MAILING ADDRESS | 11020 Solway School Road, 108 | COMPANY | DEPT. |
| CITY, STATE, ZIP | Knoxville TN 37931 | ADDRESS | |
| TELEPHONE NO. | (423) 927-6603 FAX NO (423) 927-4832 | CITY, STATE, ZIP | |

## SPECIAL INSTRUCTIONS

Speciated Hg Ontario Hydro Method

ANALYSIS REQUESTED

| SAMPLE IDENTIFICATION/DESCRIPTION | AIR VOL. | MATRIX TYPE | DATE SAMPLED | TIME SAMPLED | PRES | NO CONT | Hg | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| Filter 69 Run 3 Inlet | | | 10/29/99 | | | | | Run 3 Inlet F69 |
| Filter 67 Run 3 Inlet | | | | | | | | " " F67 |
| Filter 66 Run 3 Inlet | | | | | | | | " " F66 |
| Filter 65 Run 3 Inlet | | | | | | | | " " F65 |
| Filter 63 Run 3 Inlet | | | | | | | | " " F63 |
| * Filter 62 Run 3 Inlet | | | | | | | | " " F26 |
| Filter 48 Run 1 Stack | | | 10/28/99 | | | | | Run 1 Stack F48 |
| Filter 50 Run 2 Stack | | | 10/28/99 | | | | | Run 2 Stack F50 |
| Filter 49 Run 3 Stack | | | 10/29/99 | | | | | Run 3 Stack F49 |
| Filter 58 Blank | | | 10/28/99 | | | | | Filter Blank |

| EMPTY CONTAINERS DISPATCHED BY: | DATE | TIME | RECEIVED BY: | SAMPLER (SIGNATURE) | | | |
|---|---|---|---|---|---|---|---|
| RELINQUISHED BY: [signature] | DATE 10/30/99 | TIME 7/30 | RECEIVED BY: | RELINQUISHED BY: | DATE | TIME | RECEIVED BY: |
| RELINQUISHED BY: | DATE | TIME | RECEIVED FOR LABORATORY BY: (Neg) | DATE 11/1/99 | TIME 0800 | CONDITION OF SAMPLES UPON RECEIPT: | CUSTODY SEALS INTACT Y N N/A |

DATA DELIVERABLES (ADDITIONAL CHARGES MAY APPLY)

- ☐ FULL
- ☒ REDUCED
- ☐ RESULTS ONLY
- ☐ OTHER (SPECIFY):

* lost some sample due to lab accident, recovered most @ lab per V.O. (Neg)

ORIGINAL - LABORATORY COPY - YELLOW - REPORT COPY - PINK - CUSTOMER COPY

# CHAIN OF CUSTODY RECORD

**PHILIP ANALYTICAL SERVICES**
4418 Pottsville Pike
Reading, Pennsylvania 19605
(215) 926-8800 (800) 345-4026 (610) 921-8833
FAX (215) 927-9663 Fax (610) 921-9667

PROVIDING A COMPLETE LINE OF INDUSTRIAL HYGIENE AND ENVIRONMENTAL SERVICES

187595

| REPORT RESULTS TO: | | SEND INVOICE TO: | |
|---|---|---|---|
| NAME Mike Taylor | TITLE | PURCHASE ORDER NO. | JOB I.D.: |
| COMPANY Catalyst Air Management | | NAME Same | |
| MAILING ADDRESS 11020 Solway School Road, 108 | | COMPANY | DEPT. |
| CITY, STATE, ZIP Knoxville, TN 37931 | | ADDRESS | |
| TELEPHONE NO. (423) 927-6603 | FAX NO. (423) 927-4332 | CITY, STATE, ZIP | |

SPECIAL INSTRUCTIONS

Speciated Hg - Ontario Hydro

**ANALYSIS REQUESTED**

| SAMPLE IDENTIFICATION/DESCRIPTION | AIR VOL. | MATRIX TYPE | DATE SAMPLED | TIME SAMPLED | PRES | NO CONT | Hg | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| Run1 Inlet Container 3 | | | 10/28/99 | | | | | Imp 1,2,3 R1 In |
| Run1 Inlet Container 5 | | | 10/28/99 | | | | | Imp 5,6,7 R1 I |
| Run1 STACK Container 5 | | | 10/29/99 | | | | | Imp 5,6,7 R1 STA |
| Run1 STACK Container 4 | | | 10/29/99 | | | | | Imp 4 R1 STACK |
| Run1 STACK Container 3 | | | 10/29/99 | | | | | Imp 1,2,3 R1 STACK |
| Run 2 STACK Container 3 | | | 10/28/99 | | | | | Imp 1,2,3 R2 STACK |
| Run 2 Inlet Container 3 | | | 10/28/99 | | | | | Imp 1,2,3 R2 Inlet |
| Run 2 STACK Container 5 | | | 10/29/99 | | | | | Imp 5,6,7 R2 STAC |
| Run 2 STACK Container 4 | | | 10/29/99 | | | | | Imp 4 R2 STAC |
| Run3 Inlet Container 3 | | | 10/29/99 | | | | | Imp 1,2,3 R3 Inlet |
| Run 2 Inlet Container 5 | | | 10/28/99 | | | | | Imp 5,6,7 R2 Inlet |
| Run 2 Inlet Container 4 | | | 10/28/99 | | | | | Imp 4 R2 Inlet |

| EMPTY CONTAINERS DISPATCHED BY: | DATE | TIME | RECEIVED BY | SAMPLER (SIGNATURE) |
|---|---|---|---|---|
| | | | | |

| RELINQUISHED BY | DATE | TIME | RECEIVED BY | RELINQUISHED BY | DATE | TIME | RECEIVED BY |
|---|---|---|---|---|---|---|---|
| | 10/30/99 | 7:30 | | | | | |

| RELINQUISHED BY | DATE | TIME | RECEIVED FOR LABORATORY BY | DATE | TIME | CONDITION OF SAMPLES UPON RECEIPT | CUSTODY SEALS INTACT |
|---|---|---|---|---|---|---|---|
| | | | | 11/1/99 | 0800 | | Y N N/A |

DATA DELIVERABLES
(ADDITIONAL CHARGES MAY APPLY)

- ☐ FULL
- ☒ REDUCED
- ☐ RESULTS ONLY
- ☐ OTHER (SPECIFY):

82

ORIGINAL - LABORATORY COPY - YELLOW - REPORT COPY - PINK - CUSTOMER COPY

**PHILIP**
ANALYTICAL SERVICES
4418 Pottsville Pike
Reading, Pennsylvania 19605
(800) 345-4026 (610) 921-8833
Fax (610) 921-9667

# CHAIN OF CUSTODY RECORD

PROVIDING A COMPLETE LINE OF INDUSTRIAL HYGIENE AND ENVIRONMENTAL SERVICES

87595

| REPORT RESULTS TO: | | SEND INVOICE TO: | |
|---|---|---|---|
| NAME | Mik Taylor TITLE | PURCHASE ORDER NO. | JOB I.D.: |
| COMPANY | Catalyst Air Management, Inc | NAME | |
| MAILING ADDRESS | 11070 Solway School Road, 104 | COMPANY | DEPT. |
| CITY, STATE, ZIP | Knoxville TN 37931 | ADDRESS | |
| TELEPHONE NO | (423) 927 6603 FAX NO (423) 927-4832 | CITY, STATE, ZIP | |

SPECIAL INSTRUCTIONS

Speciated Hg - Ontario Hydro

**ANALYSIS REQUESTED**

| SAMPLE IDENTIFICATION/DESCRIPTION | AIR VOL. | MATRIX TYPE | DATE SAMPLED | TIME SAMPLED | PRES | NO CONT | Hg | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| Run 3 Inlet Container 4 | | | 10/29/99 | | | | | Imp 4 R3 Inlet |
| Run 3 Inlet Container 5 | | | 10/29/99 | | | | | Imp 5,6,7 R3 Inlet |
| Run 3 STACK Container 5 | | | 10/29/99 | | | | | Imp 5,6,7 R3 STACK |
| Run 3 STACK Container 3 | | | 10/29/99 | | | | | Imp 1,2,3 R3 STACK |
| Run 3 STACK Container 4 | | | 10/29/99 | | | | | Imp 4 R3 STACK |
| Run 2 STACK Container 2 | | | 10/29/99 | | | | | Nozzle Wash R2 STACK |
| Run 3 STACK Container 2 | | | 10/29/99 | | | | | Nozzle Wash R3 STACK |
| Run 3 Inlet Container 2 | | | 10/29/99 | | | | | Nozzle Wash R3 Inlet |
| Run 1 Inlet Container 2 | | | 10/29/99 | | | | | Nozzle Wash R1 Inlet |
| Run 1 STACK Container 2 | | | 10/29/99 | | | | | Nozzle Wash R1 STACK |
| Container 11 BLANK | | | 10/29/99 | | | | | Hydroxylamine BLANK |
| Container 7 BLANK | | | 10/29/99 | | | | | 0.1N HNO3 BLANK |

| EMPTY CONTAINERS DISPATCHED BY: | DATE | TIME | RECEIVED BY | SAMPLER (SIGNATURE) |
|---|---|---|---|---|
| | | | | |

| RELINQUISHED BY | DATE | TIME | RECEIVED BY | RELINQUISHED BY | DATE | TIME | RECEIVED BY |
|---|---|---|---|---|---|---|---|
| | 10/30/99 | 7:30 | | | | | |

| RELINQUISHED BY: | DATE | TIME | RECEIVED FOR LABORATORY BY | DATE | TIME | CONDITION OF SAMPLES UPON RECEIPT | CUSTODY SEALS INTACT |
|---|---|---|---|---|---|---|---|
| | | | | 11/1/99 | 0800 | | Y N N/A |

DATA DELIVERABLES
(ADDITIONAL CHARGES MAY APPLY)

- ☐ FULL
- ☒ REDUCED
- ☐ RESULTS ONLY
- ☐ OTHER (SPECIFY):

**PHILIP**
**ANALYTICAL SERVICES**
4418 Pottsville Pike
Reading, Pennsylvania 19605
~~(215) 921-8833~~ (800) 345-4026 (610) 921-8833
~~FAX (215) 921-9667~~ Fax (610) 921-9667

# CHAIN OF CUSTODY RECORD

HG → 187595
Coal → 187600

PROVIDING A COMPLETE LINE OF INDUSTRIAL HYGIENE AND ENVIRONMENTAL SERVICES

| REPORT RESULTS TO: | | SEND INVOICE TO: | |
|---|---|---|---|
| NAME Mike Taylor | TITLE | PURCHASE ORDER NO. | JOB I.D.: |
| COMPANY Catalyst Air Management Inc | | NAME Same | |
| MAILING ADDRESS 11020 Solway School Road, 108 | | COMPANY | DEPT. |
| CITY, STATE, ZIP Knoxville TN 37931 | | ADDRESS | |
| TELEPHONE NO. (423) 927-6603 | FAX NO. 423 927-4832 | CITY, STATE, ZIP | |

## SPECIAL INSTRUCTIONS

Speciated Hg - Ontario Hydro

## ANALYSIS REQUESTED

| SAMPLE IDENTIFICATION/DESCRIPTION | AIR VOL. | MATRIX TYPE | DATE SAMPLED | TIME SAMPLED | PRES | NO CONT | Hg | Cl | Ash Content % S | Heating Value | | | | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container 9 Blank | | | 10/28/99 | | | | | | | | | | | | | | | | | | $HNO_3$ / $H_2O_2$ Blank |
| Container 8 Blank | | | 10/28/99 | | | | | | | | | | | | | | | | | | 1N KCl Blank |
| Container 10 Blank | | | 10/28/99 | | | | | | | | | | | | | | | | | | $KMnO_4$ / $H_2SO_4$ Blank |
| Run 1 Inlet Container 4 | | | 10/28/99 | | | | | | | | | | | | | | | | | | Imp 4 Run 1 Inlet |
| Run 2 Inlet Container 2 | | | 10/28/99 | | | | | | | | | | | | | | | | | | Nozzle Wash R 2 Inlet |
| | | | | | | | | | | | | | | | | | | | | | |
| Run 1 Coal | | | 10/28/99 | | | A | / | / | / | / | / | | | | | | | | | | Coal / Culm |
| * Run 2 Coal | | | | | | | | | | | | | | | | | | | | | |
| * Run 3 Coal | | | | | | | | | | | | | | | | | | | | | |

| EMPTY CONTAINERS DISPATCHED BY: | DATE | TIME | RECEIVED BY: | SAMPLER (SIGNATURE) | | | |
|---|---|---|---|---|---|---|---|
| RELINQUISHED BY: [signature] | DATE 10/30/99 | TIME 7:30 | RECEIVED BY: | RELINQUISHED BY: | DATE | TIME | RECEIVED BY: |
| RELINQUISHED BY: | DATE | TIME | RECEIVED FOR LABORATORY BY: [signature] | DATE 11/1/99 | TIME 0800 | *CONDITION OF SAMPLES UPON RECEIPT: also rec'd Run #2 and #3 coal - not listed on orig. COC. [signature] | CUSTODY SEALS INTACT Y N N/A |

DATA DELIVERABLES
(ADDITIONAL CHARGES MAY APPLY)

- ☐ FULL
- ☒ REDUCED
- ☐ RESULTS ONLY
- ☐ OTHER (SPECIFY):

ORIGINAL - LABORATORY COPY - YELLOW - REPORT COPY - PINK - CUSTOMER COPY

Coal

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

November 15, 1999

Mike Taylor
Catalyst Air Management Inc.
Fairview Technology Center
11020 Solway School Road
Suite 108
Knoxville TN 37931

Laboratory Project: 187600
Client Reference: NEPCO Coal - 3 Runs

Dear Mr. Taylor:

The samples which were logged in on 01-NOV-99 have been analyzed as requested. The analytical results are enclosed in the attached report.

Please note that any unused portion of the samples will be disposed after 11-DEC-99, unless you have requested otherwise.

Thank you for the opportunity to provide these services to you. If you have any questions concerning this report, please contact a Client Services representative at 610/921-8833.

Sincerely,

Fred Usbeck, CIH
Director, Laboratory Services



4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

# Philip Analytical Services
## Quality Assurance Protocol

PAS Sample #: 1371027-1371029

Client Name: Catalyst

PAS Project #: 187600

Job ID :

Units: %,BTU/lb

O1 SUMMARY FORM

| Sample # & Parameter | Matrix Spike | | | | Matrix Spike Duplicate | | | | Laboratory Control Sample | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Conc. | Spike Conc. | Matrix Spike Conc. | Matrix Spike Recovery | Matrix Spike Dup Conc. | Matrix Spike Dup Recovery | Precision RPD | Method Blank | Spikes Conc. | Found Conc. | Recovery |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| Sample # & Parameter | Matrix Spike | | | | Duplicate | | | Laboratory Control Sample | | | Method Blank | Detection Limits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sample Conc. | Spike Conc. | Matrix Spike Conc. | Matrix Spike Recovery | Sample Conc. | Sample Duplicate Conc. | Precision RPD | Spikes Conc. | Found Conc. | Recovery | | |
| Ash | | | | | 60.0 | 60.1 | 0 | 11.9 | 11.8 | 99 | | 0.01 |
| Heating Value | | | | | 4988 | 4958 | 0.6 | 13350 | 13378 | 100 | | 50 |
| Sulfur | | | | | 0.37 | 0.37 | 0 | 1.76 | 1.78 | 101 | | 0.01 |
| Chlorine | | | | | 0.02 | 0.02 | 0 | 1.86 | 1.94 | 104 | | 0.01 |

| | |
|---|---|
| Matrix Spike | 75 - 125 |
| Laboratory Control Sample | 80 - 120 |
| Duplicate | 0 - 20 |

Page 3

**PHILIP ANALYTICAL SERVICES**

4418 Pottsville Pike
Reading, Pennsylvania 19605
~~XXXXXXXXXX~~ (800) 345-4026 (610) 921-8833
~~XXXXXXXXXXXXXX~~ Fax (610) 921-9667

# CHAIN OF CUSTODY RECORD

HG → 187595
Coal → 187600

PROVIDING A COMPLETE LINE OF INDUSTRIAL HYGIENE AND ENVIRONMENTAL SERVICES

| REPORT RESULTS TO: | | SEND INVOICE TO: | |
|---|---|---|---|
| NAME Mike Taylor | TITLE | PURCHASE ORDER NO. | JOB I.D. |
| COMPANY Catalyst Air Management Inc | | NAME Same | |
| MAILING ADDRESS 11020 Secway School Road, 108 | | COMPANY | DEPT. |
| CITY, STATE, ZIP Knoxville TN 37931 | | ADDRESS | |
| TELEPHONE NO. (423) 927-6603 | FAX NO 423 927-4832 | CITY, STATE, ZIP | |

SPECIAL INSTRUCTIONS

Speciated Hg - Ontario Hydro

ANALYSIS REQUESTED

| SAMPLE IDENTIFICATION/DESCRIPTION | AIR VOL. | MATRIX TYPE | DATE SAMPLED | TIME SAMPLED | PRES | NO CONT | Hg | Cl | Ash Content | % S | Heating Value | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container 9 Blank | | | 10/28/99 | | | | | | | | | $HNO_3$ / $H_2O_2$ Blan |
| Container 8 Blank | | | 10/28/99 | | | | | | | | | 1N KCl Blank |
| Container 10 Blank | | | 10/28/99 | | | | | | | | | $KMnO_4$ / $H_2SO_4$ Bl |
| Run 1 Inlet Container 4 | | | 10/28/99 | | | | | | | | | Imp 4 Run 1 In |
| Run 2 Inlet Container 2 | | | 10/28/99 | | | | | | | | | Nozzle Wash R 2 In |
| Run 1 Coal | | | 10/28/99 | | | M | / | / | / | / | / | Coal / Culm |
| * Run 2 Coal | | | | | | | | | | | | |
| * Run 3 Coal | | | | | | | | | | | | |

| EMPTY CONTAINERS DISPATCHED BY | DATE | TIME | RECEIVED BY | SAMPLER SIGNATURE | | | |
|---|---|---|---|---|---|---|---|
| RELINQUISHED BY [signature] | DATE 10/30/99 | TIME 7:30 | RECEIVED BY | RELINQUISHED BY | DATE | TIME | RECEIVED BY |
| RELINQUISHED BY | DATE | TIME | RECEIVED FOR LABORATORY BY [signature] | DATE 11/1/99 | TIME 0800 | * CONDITION OF SAMPLES UPON RECEIPT also rec'd Run #2 and #3 coal - not listed on orig. COC. [signature] | CUSTODY SEALS INTACT Y N |

DATA DELIVERABLES
ADDITIONAL CHARGES MAY APPLY

- [ ] FULL
- [x] REDUCED
- [ ] RESULTS ONLY
- [ ] OTHER (SPECIFY):

63

PHILIP
ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

# ANALYTICAL REPORT

Client: Catalyst Air Management Inc.

Report to: Mike Taylor
Catalyst Air Management Inc.
Fairview Technology Center
11020 Solway School Road
Suite 108
Knoxville TN 37931

Project: 187600
Received: 01-NOV-99
Reported: 15-NOV-99

Project Description: NEPCO Coal - 3 Runs

| | AS RECEIVED BASIS | DRY BASIS | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|---|
| **Run 1 Coal** | | | | | | |
| Lab Sample: 1381027 | | | | | | |
| sampled: 28-OCT-99 by: MJT | | | | | | |
| **Moisture, Total** | 9.51 | | % | D 3302 | 01-NOV-99 | GLB |
| **Mercury, Total** | 0.3 | 0.3 | mg/kg ppm | 7471 | 05-NOV-99 | SMW |
| **Chlorine, Total** | 0.03 | 0.03 | % | E776/300.0 | 04-NOV-99 | CMA |
| **Ash** | 52.8 | 58.3 | % | D 3174 | 08-NOV-99 | VJO |
| **Sulfur** | 0.39 | 0.43 | % | D 4239 | 04-NOV-99 | VJO |
| **Heating Value** | 4620 | 5110 | BTU/lb | D 3286 | 03-NOV-99 | GLB |
| **Run 2 Coal** | | | | | | |
| Lab Sample: 1381028 | | | | | | |
| sampled by: MJT | | | | | | |
| **Moisture, Total** | 8.54 | | % | D 3302 | 01-NOV-99 | GLB |
| **Mercury, Total** | 0.4 | 0.4 | mg/kg | 7471 | 05-NOV-99 | SMW |
| **Chlorine, Total** | 0.02 | 0.02 | % | E776/300.0 | 04-NOV-99 | CMA |
| **Ash** | 53.7 | 58.7 | % | D 3174 | 08-NOV-99 | VJO |
| **Sulfur** | 0.40 | 0.44 | % | D 4239 | 04-NOV-99 | VJO |
| **Heating Value** | 4620 | 5050 | BTU/lb | D 3286 | 03-NOV-99 | GLB |
| **Run 3 Coal** | | | | | | |
| Lab Sample: 1381029 | | | | | | |
| sampled by: MJT | | | | | | |
| **Moisture, Total** | 7.94 | | % | D 3302 | 01-NOV-99 | GLB |
| **Mercury, Total** | 0.3 | 0.3 | mg/kg | 7471 | 05-NOV-99 | SMW |
| **Chlorine, Total** | 0.02 | 0.02 | % | E776/300.0 | 04-NOV-99 | CMA |
| **Ash** | 56.2 | 61.0 | % | D 3174 | 08-NOV-99 | VJO |
| **Sulfur** | 0.35 | 0.38 | % | D 4239 | 04-NOV-99 | VJO |



4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

PHILIP ANALYTICAL SERVICES

INDUSTRIAL HYGIENE ENVIRONMENTAL TESTING

• EPA/NVLAP 101262-0 • NY DOH 10903 • NJ DEP 77678
• AIHA ACCREDITATION NO. 100439 • PA DER 06-353

Client: Catalyst Air Management Inc.
Project: 187600

| | AS RECEIVED BASIS | DRY BASIS | UNITS | METHOD | DATE | ANALYST |
|---|---|---|---|---|---|---|
| **Run 3 Coal** | | | | | | |
| Lab Sample: 1381029 - continued | | | | | | |
| **Heating Value** | 4530 | 4930 | BTU/lb | D 3286 | 03-NOV-99 | GLB |

< Indicates less than the limit of quantitation.



4418 POTTSVILLE PIKE, READING, PENNSYLVANIA 19605 610-921-8833 FAX 610-921-9667

**APPENDIX 4**
REFERENCE METHOD QUALITY ASSURANCE

**Catalyst Air Management, Inc.**

METER BOX NUMBER: **010**
DATE: 10/21/99
CALIBRATED BY: Nicely

BENCH METER CALIBRATION FACTOR: 1.001

| Orifice Manometer Setting (ΔH) In. $H_2O$ | Standard Test Meter Start: End: | ($V_w$) $ft^3$ | Dry Gas Meter Start: End: | ($V_d$) $ft^3$ | Standard Test Meter ($T_w$) °F | Dry Gas Meter Inlet ($T_{di}$) °F | Outlet ($T_{do}$) °F | Average ($T_d$) °F | Barometric Pressure ($P_b$) in. of Hg | Time (Time) min. | $Y_i$ | ΔH@i | $Q_m$ | $K_m$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0.50** | 611.669 | **5.085** | 27.713 | **5.106** | 67.0 | 74.8 | 70.8 | 72.8 | 29.58 | 11.37 | **1.01** | **1.43** | 0.447 | 0.804 |
| | 616.754 | | 32.819 | | | | | | | | | | | |
| **1.00** | 606.293 | **5.108** | 22.336 | **5.090** | 66.4 | 74.8 | 69.6 | 72.2 | 29.58 | 8.23 | **1.01** | **1.51** | 0.615 | 0.783 |
| | 611.401 | | 27.426 | | | | | | | | | | | |
| **2.00** | 600.824 | **5.188** | 16.953 | **5.091** | 66.0 | 73.8 | 69.0 | 71.4 | 29.58 | 6.17 | **1.03** | **1.69** | 0.821 | 0.740 |
| | 606.012 | | 22.044 | | | | | | | | | | | |
| **3.00** | 595.328 | **5.284** | 11.611 | **5.124** | 66.0 | 72.4 | 68.4 | 70.4 | 29.58 | 5.11 | **1.03** | **1.71** | 0.999 | 0.735 |
| | 600.612 | | 16.735 | | | | | | | | | | | |
| **4.00** | 589.784 | **5.279** | 6.264 | **5.091** | 65.8 | 71.0 | 69.5 | 70.3 | 29.58 | 4.31 | **1.04** | **1.64** | 1.180 | 0.751 |
| | 595.063 | | 11.355 | | | | | | | | | | | |

**Average:** **1.02** **1.60**

FORMULAS

$$Y_i = \frac{(V_w)(P_b)(T_d + 460)}{(V_d)\left(P_b + \frac{H}{13.6}\right)(T_w + 460)}$$

$$\Delta H@i = \frac{0.9244}{K_m^{\,2}}$$

$$K_m = Q_m \sqrt{\frac{(P_b)(29)}{(T_{do} + 460)(\Delta H)}}$$

$$Q_m = \frac{(V_d)(T_{do} + 460)}{(Time)(T_{do} + 460)}$$

**Catalyst Air Management, Inc.**

POST-TEST METER BOX CALIBRATION

METER BOX NUMBER: 010
DATE: 11/12/99
CALIBRATED BY: Nicely

PRETEST $Y_i$: 1.02
POST-TEST $Y_i$: 1.01
BENCH METER CALIBRATION FACTOR: 0.998
DIFFERENCE, %: -0.72

| Orifice Manometer Setting (ΔH) In. $H_2O$ | Standard Test Meter Start: End: | ($V_w$) $ft^3$ | Dry Gas Meter Start: End: | ($V_d$) $ft^3$ | Standard Test Meter ($T_w$) °F | Dry Gas Meter Inlet ($T_{di}$) °F | Outlet ($T_{do}$) °F | Average ($T_d$) °F | Barometric Pressure ($P_b$) in. of Hg | Time (Time) min. | $Y_i$ | ΔH@i | $Q_m$ | $K_m$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.35** | 872.212 | **10.198** | 162.053 | **10.160** | 52.0 | 60.2 | 53.6 | 56.9 | 29.87 | 15.00 | **1.01** | **1.63** | 0.673 | 0.752 |
| | 882.410 | | 172.213 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **1.35** | 882.410 | **10.146** | 172.213 | **10.137** | 52.0 | 67.4 | 55.4 | 61.4 | 29.87 | 15.00 | **1.01** | **1.66** | 0.668 | 0.745 |
| | 892.556 | | 182.350 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **1.35** | 892.556 | **10.092** | 182.350 | **10.117** | 52.0 | 71.0 | 57.8 | 64.4 | 29.51 | 15.00 | **1.02** | **1.70** | 0.666 | 0.737 |
| | 902.648 | | 192.467 | | | | | | | | | | | |

**Average:** **1.01** **1.67**

FORMULAS

$$Y_i = \frac{(V_w)(P_b)(T_d + 460)}{(V_d)\left(P_b + \frac{H}{13.6}\right)(T_w + 460)}$$

$$\Delta H@i = \frac{0.9244}{K_m^{\,2}}$$

$$K_m = Q_m \sqrt{\frac{(P_b)(29)}{(T_{do} + 460)(\Delta H)}}$$

$$Q_m = \frac{(V_d)(T_{do} + 460)}{(Time)(T_{do} + 460)}$$

**Catalyst Air Management, Inc.**
METER BOX CALIBRATION
METER BOX NUMBER: 040
DATE: 05/16/99
CALIBRATED BY: FERGUSON

BENCH METER CALIBRATION FACTOR: 1.004

| Orifice Manometer Setting (Δ H) | Standard Test Meter Start: | | Dry Gas Meter Start: | | Standard Test Meter | Dry Gas Meter | | | Barometric Pressure | Time (Time) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Inlet | Outlet | Average | | | | | | |
| | | ($V_w$) | | ($V_d$) | ($T_w$) | ($T_{di}$) | ($T_{do}$) | ($T_d$) | ($P_b$) | | | | | |
| In. $H_2O$ | End: | $ft^3$ | End: | $ft^3$ | °F | °F | °F | °F | in. of Hg | min. | $Y_i$ | ΔH@i | $Q_m$ | $K_m$ |
| **0.50** | 72.009 | **5.702** | 567.750 | **5.708** | 64.0 | 68.0 | 75.0 | 71.5 | 29.95 | 14.00 | **1.02** | **1.69** | 0.410 | 0.740 |
| | 77.711 | | 573.458 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **1.00** | 66.917 | **5.092** | 562.611 | **5.139** | 64.0 | 66.0 | 73.0 | 69.5 | 29.95 | 9.20 | **1.00** | **1.79** | 0.562 | 0.718 |
| | 72.009 | | 567.750 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **2.00** | 61.942 | **4.975** | 557.571 | **5.040** | 64.0 | 65.0 | 71.0 | 68.0 | 29.95 | 6.38 | **0.99** | **1.79** | 0.794 | 0.718 |
| | 66.917 | | 562.611 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **3.00** | 56.492 | **5.450** | 552.035 | **5.536** | 64.0 | 64.0 | 68.0 | 66.0 | 29.95 | 5.50 | **0.98** | **1.65** | 1.010 | 0.748 |
| | 61.942 | | 557.571 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **4.00** | 50.396 | **6.096** | 545.807 | **6.228** | 64.0 | 64.0 | 66.0 | 65.0 | 29.95 | 5.28 | **0.98** | **1.60** | 1.182 | 0.759 |
| | 56.492 | | 552.035 | | | | | | | | | | | |

**Average:** **0.99** **1.71**

FORMULAS

$$Y_i = \frac{(V_w)(P_b)(T_d + 460)}{(V_d)\left(P_b + \frac{H}{13.6}\right)(T_w + 460)}$$

$$\Delta H@i = \frac{0.9244}{K_m^{\,2}}$$

$$K_m = Q_m \sqrt{\frac{(P_b)(29)}{(T_{do} + 460)(\Delta H)}}$$

$$Q_m = \frac{(V_d)(T_{do} + 460)}{(Time)(T_{do} + 460)}$$

**Catalyst Air Management, Inc.**

POST-TEST METER BOX CALIBRATION

METER BOX NUMBER: **040**
DATE: 11/08/99
CALIBRATED BY: Jones

PRETEST $Y_i$: 0.99
POST-TEST $Y_i$: 0.96
BENCH METER CALIBRATION FACTOR: 1.004
DIFFERENCE, % -3.03

| Orifice Manometer Setting (ΔH) In. $H_2O$ | Standard Test Meter Start: End: | ($V_w$) $ft^3$ | Dry Gas Meter Start: End: | ($V_d$) $ft^3$ | Standard Test Meter ($T_w$) °F | Dry Gas Meter Inlet ($T_{di}$) °F | Outlet ($T_{do}$) °F | Average ($T_d$) °F | Barometric Pressure ($P_b$) in. of Hg | Time (Time) min. | $Y_i$ | ΔH@i | $Q_m$ | $K_m$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3.00** | 780.322 | **9.652** | 881.766 | **9.581** | 70.0 | 46.2 | 45.2 | 45.7 | 30.23 | 10.00 | **0.96** | **1.74** | 0.957 | 0.728 |
| | 789.974 | | 891.347 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **3.00** | 789.974 | **9.671** | 891.347 | **9.578** | 70.0 | 50.0 | 45.8 | 47.9 | 30.23 | 10.00 | **0.96** | **1.76** | 0.954 | 0.725 |
| | 799.645 | | 900.925 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| **3.00** | 799.645 | **9.663** | 900.925 | **9.579** | 70.0 | 55.6 | 47.6 | 51.6 | 30.23 | 10.00 | **0.97** | **1.78** | 0.950 | 0.721 |
| | 809.308 | | 910.504 | | | | | | | | | | | |

**Average:** **0.96** **1.76**

FORMULAS

$$Y_i = \frac{(V_w)(P_b)(T_d + 460)}{(V_d)\left(P_b + \frac{H}{13.6}\right)(T_w + 460)}$$

$$\Delta H@i = \frac{0.9244}{K_m^{\,2}}$$

$$K_m = Q_m \sqrt{\frac{(P_b)(29)}{(T_{do} + 460)(\Delta H)}}$$

$$Q_m = \frac{(V_d)(T_{do} + 460)}{(Time)(T_{do} + 460)}$$

**CATALYST AIR MANAGEMENT, INC.**

NOZZLE CALIBRATION SHEET

Client: TRACTEBEL
Job No: 103-010

Nozzle No. Inlet 1

| 1ST | 2ND | 3RD | AVG |
|---|---|---|---|
| 0.187 | 0.189 | 0.186 | 0.188 |

Nozzle No. Inlet 2

| 1ST | 2ND | 3RD | AVG |
|---|---|---|---|
| 0.188 | 0.188 | 0.187 | 0.188 |

Nozzle No. Inlet 3

| 1ST | 2ND | 3RD | AVG |
|---|---|---|---|
| 0.188 | 0.187 | 0.189 | 0.188 |

Nozzle No. Stack 1

| 1ST | 2ND | 3RD | AVG |
|---|---|---|---|
| 0.217 | 0.216 | 0.218 | 0.217 |

Nozzle No. Stack 2

| 1ST | 2ND | 3RD | AVG |
|---|---|---|---|
| 0.217 | 0.217 | 0.217 | 0.217 |

Nozzle No. Stack 3

| 1ST | 2ND | 3RD | AVG |
|---|---|---|---|
| 0.217 | 0.217 | 0.217 | 0.217 |

Calibrated By: M Tyl
Date: 10/28/99

## CATALYST AIR MANAGEMENT, INC

**Barometer Calibration Check**
Tractebel Power, Inc.
Job No. 103-010

**DATE:** 10/21/99
**CALIBRATED BY:** Jones

| | |
|---|---|
| Hg in glass Barometer (in Hg) | 29.88 |
| Aneroid Field Barometer (in Hg) | 29.89 |
| Difference | 0.01 |

## CATALYST AIR MANAGEMENT, INC

### K-TYPE THERMOCOUPLE CALIBRATION

**DATE:** 11/12/99
**CALIBRATED BY:** Ferguson

**Post Test Calibration Check**
Tractebel Power, Inc.
103-010

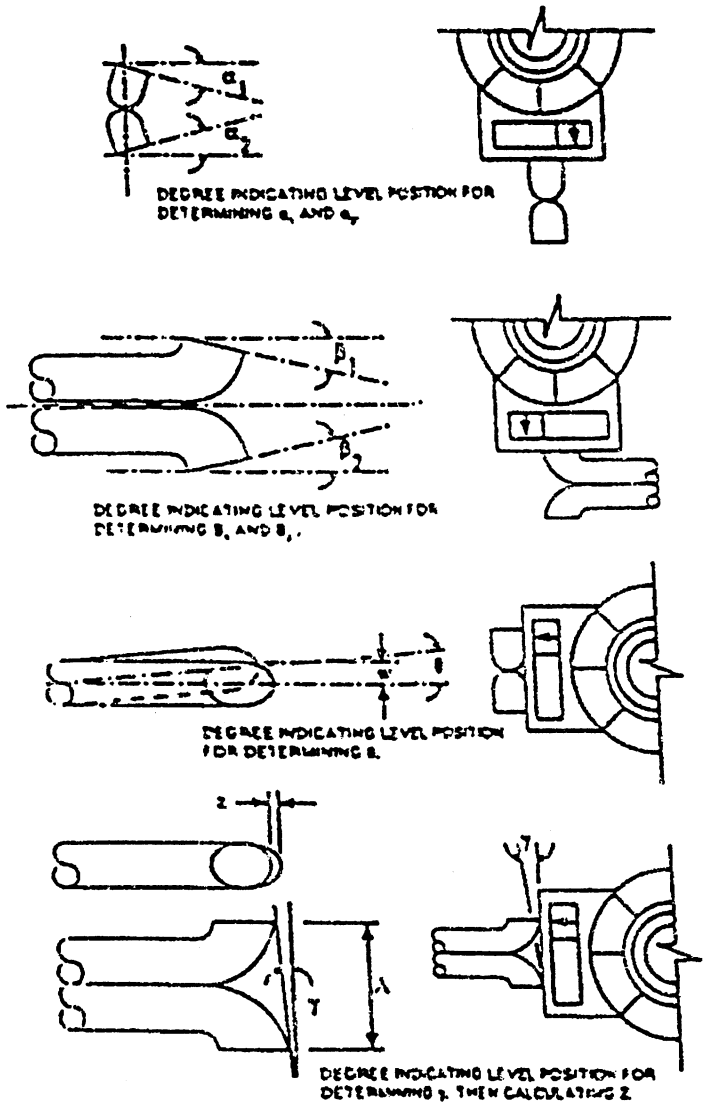
**AVG STACK TEMP:** 370 Inlet

| **Thermocouple No:** | **CAM 7-01** |
|---|---|
| Hg Thermometer | 360 |
| Thermocouple | 361 |
| Difference | -1 |

**AVG STACK TEMP:** 345 Stack

| **Thermocouple No:** | **CAM 8-01** |
|---|---|
| Hg Thermometer | 360 |
| Thermocouple | 360 |
| Difference | 0 |

# PITOT HEAD - CALIBRATON SHEET




| | |
|---|---|
| level and perpendicular? | YES |
| obstructions? | NO |
| damaged? | NO |
| $\alpha_1$ ($-10° < \alpha_1 < +10°$) | 1.0 |
| $\alpha_2$ ($-10° < \alpha_2 < +10°$) | 0 |
| $B_1$ ($-5° < B_1 < +5°$) | 1.0 |
| $B_2$ ($-5° < B_2 < +5°$) | 2.0 |
| $\gamma$ | 1.0 |
| $\theta$ | 1.0 |
| $z = A \tan \gamma$ ($\leq 0.125"$) | 0.0165 |
| $w = A \tan \theta$ ($\leq 0.03125"$) | 0.0165 |
| $D_1$ ($3/16" < D_1 < 3/8"$) | 0.375 |
| A | 0.946 |
| $A/2D_1$ ($1.05 < P_s/D_1 < 1.5$) | 1.261 |

*Certification*

I certify that the Type S pitot tube/probe ID# CAM 7-01 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor CD of 0.84.

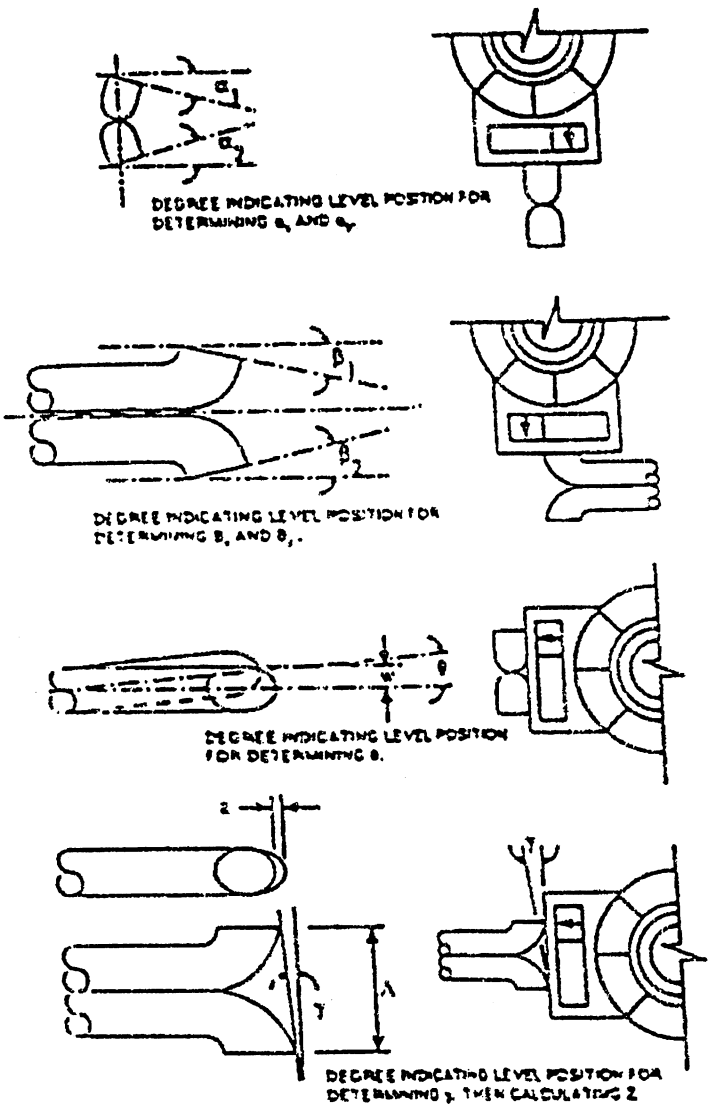
*Certified by* _____ 10-21-95

Personnel (signature/date)

_____ 10-21-95

Team Leader (signature/date)

# PITOT HEAD - CALIBRATON SHEET




| | |
|---|---|
| level and perpendicular? | YES |
| obstructions? | NO |
| damaged? | NO |
| $\alpha_1$ ($-10° < \alpha_1 < +10°$) | 0 |
| $\alpha_2$ ($-10° < \alpha_2 < +10°$) | 0 |
| $B_1$ ($-5° < B_1 < +5°$) | 2.0 |
| $B_2$ ($-5° < B_2 < +5°$) | 0 |
| γ | 1.0 |
| θ | 0 |
| $z = A \tan \gamma$ ($\leq 0.125"$) | 0.0164 |
| $w = A \tan \theta$ ($\leq 0.03125"$) | 0 |
| $D_t$ ($3/16" < D_t < 3/8"$) | 0.365 |
| A | 0.942 |
| $A/2D_t$ ($1.05 < P_a/D_t < 1.5$) | 1.29 |

*Certification*

I certify that the Type S pitot tube/probe ID# CAM 8.01 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor CD of 0.84.

Certified by

[signature] 10-21-95
Personnel (signature/date)

[signature] 10-21-95
Team Leader (signature/date)

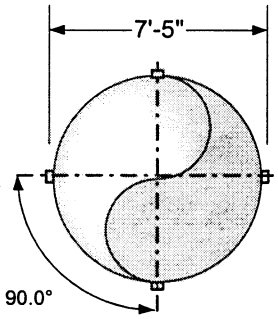
**APPENDIX 5**
FIGURES

ATALYST

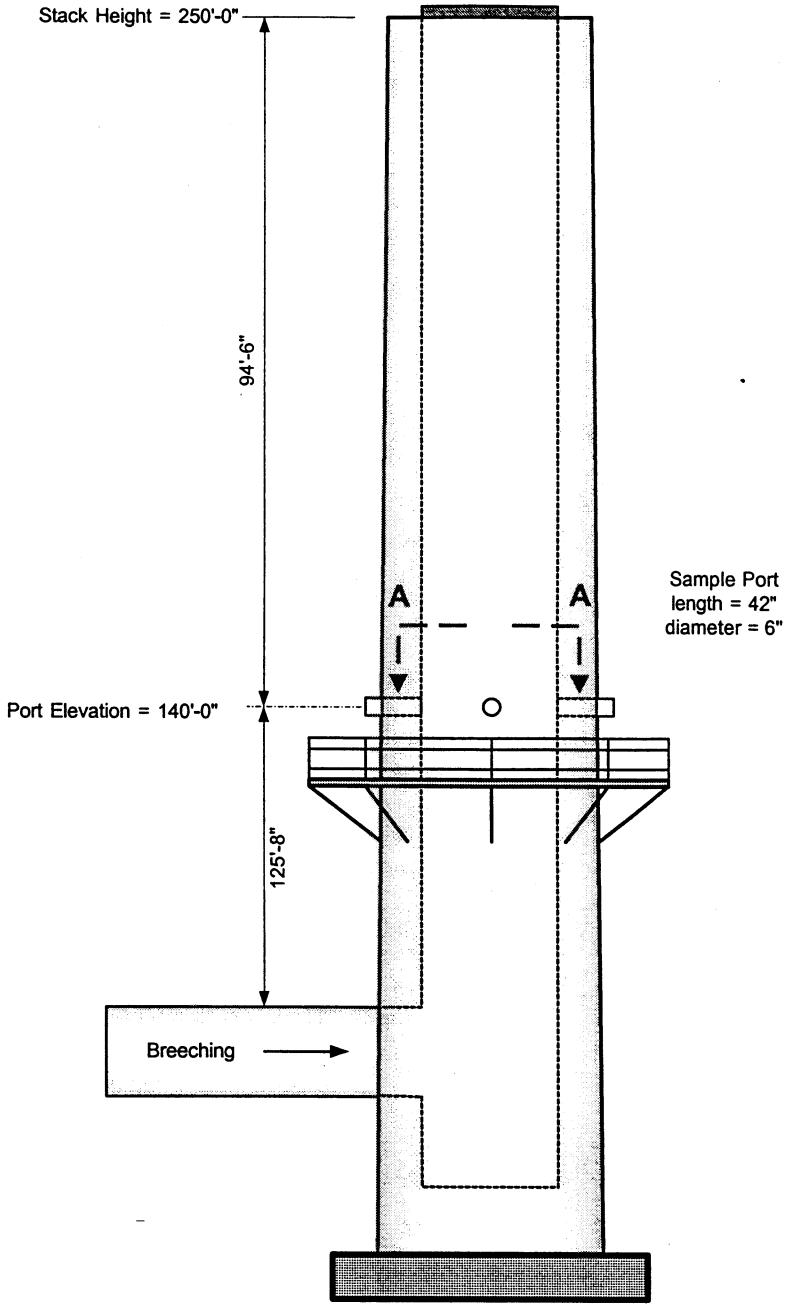
AIR MANAGEMENT, INC.

**TRAVERSE POINTS (Typ 4 Ports)**
(Inches) from inside of stack.

1. 3.96" + 42" port = 45.96"
2. 13.14" + 42" port = 55.14"
3. 26.30" + 42" port = 68.30"




**SECTION A - A**

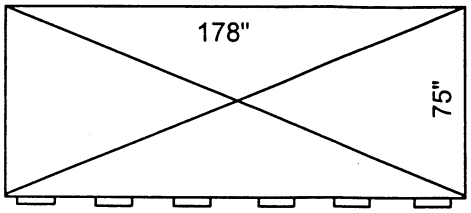



| | | |
|---|---|---|
| TITLE: **TRACTEBEL POWER, INC - KLINE TOWNSHIP COGENERATION** | | |
| DESCRIPTION: **STACK TEST PORT CONFIGURATION** | | DATE: 5/10/99 |
| SCALE: NONE | DRAWN BY: MJ TAYLOR | REVISED: |

Figure 4-1

ATALYST

AIR MANAGEMENT, INC.



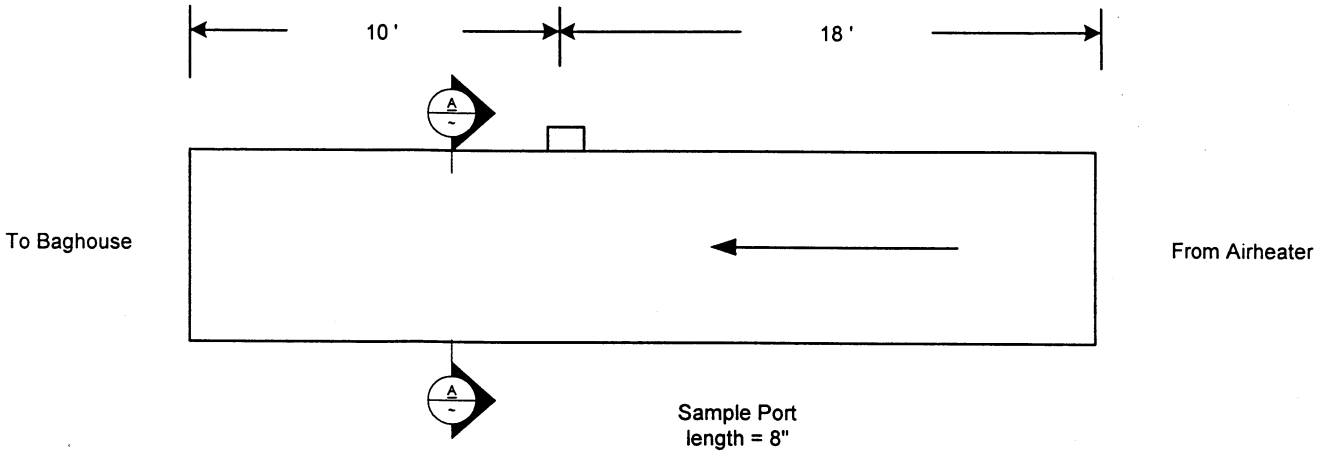

**SECTION A-A**

Equivalent Diameter = 105.5"

Area = 92.7 sq. ft.

## Sample Ports Traverse

1. 7.5" + 8" port = 15.5"
2. 22.5" + 8" port = 30.5"
3. 37.5" + 8" port = 45.5"
4. 52.5" + 8" port = 60.5"
5. 67.5" + 8" port = 75.5"




Sample Port
length = 8"
diameter = 4"

Figure 4-2

| | | |
|---|---|---|
| TITLE: TRACTEBEL POWER, INC. - KLINE TOWNSHIP COGENERATION | | |
| DESCRIPTION: BAGHOUSE INLET PORT CONFIGURATION | | DATE: 5/17/99 |
| SCALE: NONE | DRAWN BY: MJ TAYLOR | REVISED: |