

G/SA ENVIRONMENTAL TESTING CONSULTANTS

P.O. Box 807, Crown Point, IN 46307 TEL (219) 661-9900 / FAX (219) 661-9902

TABLE 2 EPA METHOD 29 METALS (ALUMINUM, AI) EMISSIONS TEST RESULTS

CLIENT: TODA
SOURCE TESTED: BF-330

JOB NO.: 11-T-697
DATA INPUT BY: ACF

INPUT DATA

	1	2
Run Number	1	2
Date	18-Jan-11	18-Jan-11
Sampling Location	OUTLET	OUTLET
Test Time, Start-Stop (24 Hour)	13:52-15:52	16:05-16:50
Sampling Time (Minutes)	90	36
Average Process Weight Rate (TPH)	N.A.	N.A.
Stack Area (Ft ²)	3.14	3.14
Pitot Tube Coefficient (Unitless)	0.84	0.84
Dry Gas Meter Correction Factor (Unitless)	0.980	0.980
Nozzle Area (Ft ²)	0.001037	0.001037
Barometric Pressure (In. Hg)	28.80	28.80
Static Pressure (In. H ₂ O)	0.01	0.01
Dry Gas Meter Sample Volume (DSV)	70.240	28.649
Average Dry Gas Meter Temperature (°F)	64.7	76.8
Average Orifice Meter Delta H (In. H ₂ O)	1.949	2.037
Volume Condensate Collected (MI)	10.0	2.0
Average CO ₂ Concentration (%)	0.0	0.0
Average O ₂ Concentration (%)	20.9	20.9
Average Square Root of Delta P (In. H ₂ O ^{1/2})	0.200	0.200
Average Stack Gas Temperature (°F)	74.6	75.8
AI Mass Concentration (Micrograms, µg)	379.000	306.000

CALCULATED DATA

Absolute Pressure (In. Hg)	28.80	28.80
Dry Gas Meter Sample Volume at Standard Conditions (DSCF)	67.022	26.723
Water Vapor Volume at Standard Conditions (SCF)	0.471	0.094
Moisture Fraction (Unitless)	0.007	0.004
Dry Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.84	28.84
Wet Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.76	28.80
Stack Gas Velocity (FPS)	11.5	11.5
Stack Gas Flow Rate at Actual Conditions (ACFM)	2,174	2,175
Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,053	2,056
Isokinetic Sampling (%)	110.0	109.4
AI Emission Concentration (Gr/DSCF)	8.73E-005	1.77E-004
AI Emission Concentration (Lb/DSCF)	1.25E-008	2.52E-008
AI Emission Rate (Lb/Hr)	0.0015	0.0031

Average Stack Gas Flow Rate at Actual Conditions (ACFM)
Average Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)
Average AI Emission Concentration (Gr/DSCF)
Average AI Emission Concentration (Lb/DSCF)
Average AI Emission Rate (Lb/Hr)

2,174
2,054
1.32E-004
1.89E-008
0.0023

Signature of Reviewer:

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TABLE 2A EPA METHOD 29 METALS (BORON, B) EMISSIONS TEST RESULTS

CLIENT: TODA
SOURCE TESTED: BF-330

JOB NO.: 11-T-697
DATA INPUT BY: ACF

INPUT DATA

	1	2
Run Number	1	2
Date	18-Jan-11	18-Jan-11
Sampling Location	OUTLET	OUTLET
Test Time, Start-Stop (24 Hour)	13:52-15:52	16:05-16:50
Sampling Time (Minutes)	90	36
Average Process Weight Rate (TPH)	N.A.	N.A.
Stack Area (Ft ²)	3.14	3.14
Pitot Tube Coefficient (Unitless)	0.84	0.84
Dry Gas Meter Correction Factor (Unitless)	0.980	0.980
Nozzle Area (Ft ²)	0.001037	0.001037
Barometric Pressure (In. Hg)	28.80	28.80
Static Pressure (In. H ₂ O)	0.01	0.01
Dry Gas Meter Sample Volume (DSV)	70.240	28.649
Average Dry Gas Meter Temperature (°F)	64.7	76.8
Average Orifice Meter Delta H (In. H ₂ O)	1.949	2.037
Volume Condensate Collected (ML)	10.0	2.0
Average CO ₂ Concentration (%)	0.0	0.0
Average O ₂ Concentration (%)	20.9	20.9
Average Square Root of Delta P (In. H ₂ O ^{1/2})	0.200	0.200
Average Stack Gas Temperature (°F)	74.6	75.8
B Mass Concentration (Micrograms, µg)	46.700	31.000

CALCULATED DATA

Absolute Pressure (In. Hg)	28.80	28.80
Dry Gas Meter Sample Volume at Standard Conditions (DSCF)	67.022	26.723
Water Vapor Volume at Standard Conditions (SCF)	0.471	0.094
Moisture Fraction (Unitless)	0.007	0.004
Dry Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.84	28.84
Wet Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.76	28.80
Stack Gas Velocity (FPS)	11.5	11.5
Stack Gas Flow Rate at Actual Conditions (ACFM)	2,174	2,175
Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,053	2,056
Isokinetic Sampling (%)	110.0	109.4
B Emission Concentration (Gr/DSCF)	1.08E-005	1.79E-005
B Emission Concentration (Lb/DSCF)	1.54E-009	2.56E-009
B Emission Rate (Lb/Hr)	0.0002	0.0003

Average Stack Gas Flow Rate at Actual Conditions (ACFM)
Average Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)
Average B Emission Concentration (Gr/DSCF)
Average B Emission Concentration (Lb/DSCF)
Average B Emission Rate (Lb/Hr)

2,174
2,054
1.43E-005
2.05E-009
0.0003

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TABLE 2B EPA METHOD 29 METALS (COBALT, CO) EMISSIONS TEST RESULTS

CLIENT: TODA
SOURCE TESTED: BF-330

JOB NO.: 11-T-697
DATA INPUT BY: ACF

INPUT DATA

	1	2
Run Number	1	2
Date	18-Jan-11	18-Jan-11
Sampling Location	OUTLET	OUTLET
Test Time, Start-Stop (24 Hour)	13:52-15:52	16:05-16:50
Sampling Time (Minutes)	90	36
Average Process Weight Rate (TPH)	N.A.	N.A.
Stack Area (Ft ²)	3.14	3.14
Pitot Tube Coefficient (Unitless)	0.84	0.84
Dry Gas Meter Correction Factor (Unitless)	0.980	0.980
Nozzle Area (Ft ²)	0.001037	0.001037
Barometric Pressure (In. Hg)	28.80	28.80
Static Pressure (In. H ₂ O)	0.01	0.01
Dry Gas Meter Sample Volume (DSV)	70.240	28.649
Average Dry Gas Meter Temperature (°F)	64.7	76.8
Average Orifice Meter Delta H (In. H ₂ O)	1.949	2.037
Volume Condensate Collected (ML)	10.0	2.0
Average CO ₂ Concentration (%)	0.0	0.0
Average O ₂ Concentration (%)	20.9	20.9
Average Square Root of Delta P (In. H ₂ O ^{1/2})	0.200	0.200
Average Stack Gas Temperature (°F)	74.6	75.8
Co Mass Concentration (Micrograms, µg)	5.940	103.000

CALCULATED DATA

Absolute Pressure (In. Hg)	28.80	28.80
Dry Gas Meter Sample Volume at Standard Conditions (DSCF)	67.022	26.723
Water Vapor Volume at Standard Conditions (SCF)	0.471	0.094
Moisture Fraction (Unitless)	0.007	0.004
Dry Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.84	28.84
Wet Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.76	28.80
Stack Gas Velocity (FPS)	11.5	11.5
Stack Gas Flow Rate at Actual Conditions (ACFM)	2,174	2,175
Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,053	2,056
Isokinetic Sampling (%)	110.0	109.4
Co Emission Concentration (Gr/DSCF)	1.37E-006	5.95E-005
Co Emission Concentration (Lb/DSCF)	1.95E-010	8.50E-009
Co Emission Rate (Lb/Hr)	0.0000	0.0010

Average Stack Gas Flow Rate at Actual Conditions (ACFM)
Average Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)
Average Co Emission Concentration (Gr/DSCF)
Average Co Emission Concentration (Lb/DSCF)
Average Co Emission Rate (Lb/Hr)

2,174
2,054
3.04E-005
4.35E-009
0.0005

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TABLE 2C EPA METHOD 29 METALS (LITHIUM, Li) EMISSIONS TEST RESULTS

CLIENT: TODA
SOURCE TESTED: BF-330

JOB NO.: 11-T-697
DATA INPUT BY: ACF

INPUT DATA

	1	2
Run Number	1	2
Date	18-Jan-11	18-Jan-11
Sampling Location	OUTLET	OUTLET
Test Time, Start-Stop (24 Hour)	13:52-15:52	16:05-16:50
Sampling Time (Minutes)	90	36
Average Process Weight Rate (TPH)	N.A.	N.A.
Stack Area (Ft ²)	3.14	3.14
Pitot Tube Coefficient (Unitless)	0.84	0.84
Dry Gas Meter Correction Factor (Unitless)	0.980	0.980
Nozzle Area (Ft ²)	0.001037	0.001037
Barometric Pressure (In. Hg)	28.80	28.80
Static Pressure (In. H ₂ O)	0.01	0.01
Dry Gas Meter Sample Volume (DSV)	70.240	28.649
Average Dry Gas Meter Temperature (°F)	64.7	76.8
Average Orifice Meter Delta H (In. H ₂ O)	1.949	2.037
Volume Condensate Collected (ML)	10.0	2.0
Average CO ₂ Concentration (%)	0.0	0.0
Average O ₂ Concentration (%)	20.9	20.9
Average Square Root of Delta P (In. H ₂ O ^{1/2})	0.200	0.200
Average Stack Gas Temperature (°F)	74.6	75.8
Li Mass Concentration (Micrograms, µg)	8.900	5.300

CALCULATED DATA

Absolute Pressure (In. Hg)	28.80	28.80
Dry Gas Meter Sample Volume at Standard Conditions (DSCF)	67.022	26.723
Water Vapor Volume at Standard Conditions (SCF)	0.471	0.094
Moisture Fraction (Unitless)	0.007	0.004
Dry Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.84	28.84
Wet Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.76	28.80
Stack Gas Velocity (FPS)	11.5	11.5
Stack Gas Flow Rate at Actual Conditions (ACFM)	2,174	2,175
Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,053	2,056
Isokinetic Sampling (%)	110.0	109.4
Li Emission Concentration (Gr/DSCF)	2.05E-006	3.06E-006
Li Emission Concentration (Lb/DSCF)	2.93E-010	4.37E-010
Li Emission Rate (Lb/Hr)	0.0000	0.0001

Average Stack Gas Flow Rate at Actual Conditions (ACFM)
Average Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)
Average Li Emission Concentration (Gr/DSCF)
Average Li Emission Concentration (Lb/DSCF)
Average Li Emission Rate (Lb/Hr)

2,174
2,054
2.56E-006
3.65E-010
0.0000

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TABLE 2D EPA METHOD 29 METALS (NICKEL, Ni) EMISSIONS TEST RESULTS

CLIENT: TODA
SOURCE TESTED: BF-330

JOB NO.: 11-T-697
DATA INPUT BY: ACF

INPUT DATA

	1	2
Run Number	1	2
Date	18-Jan-11	18-Jan-11
Sampling Location	OUTLET	OUTLET
Test Time, Start-Stop (24 Hour)	13:52-15:52	16:05-16:50
Sampling Time (Minutes)	90	36
Average Process Weight Rate (TPH)	N.A.	N.A.
Stack Area (Ft ²)	3.14	3.14
Pitot Tube Coefficient (Unitless)	0.84	0.84
Dry Gas Meter Correction Factor (Unitless)	0.980	0.980
Nozzle Area (Ft ²)	0.001037	0.001037
Barometric Pressure (In. Hg)	28.80	28.80
Static Pressure (In. H ₂ O)	0.01	0.01
Dry Gas Meter Sample Volume (DSV)	70.240	28.649
Average Dry Gas Meter Temperature (°F)	64.7	76.8
Average Orifice Meter Delta H (In. H ₂ O)	1.949	2.037
Volume Condensate Collected (ML)	10.0	2.0
Average CO ₂ Concentration (%)	0.0	0.0
Average O ₂ Concentration (%)	20.9	20.9
Average Square Root of Delta P (In. H ₂ O ^{1/2})	0.200	0.200
Average Stack Gas Temperature (°F)	74.6	75.8
Ni Mass Concentration (Micrograms, µg)	62.100	21.900

CALCULATED DATA

Absolute Pressure (In. Hg)	28.80	28.80
Dry Gas Meter Sample Volume at Standard Conditions (DSCF)	67.022	26.723
Water Vapor Volume at Standard Conditions (SCF)	0.471	0.094
Moisture Fraction (Unitless)	0.007	0.004
Dry Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.84	28.84
Wet Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.76	28.80
Stack Gas Velocity (FPS)	11.5	11.5
Stack Gas Flow Rate at Actual Conditions (ACFM)	2,174	2,175
Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,053	2,056
Isokinetic Sampling (%)	110.0	109.4
Ni Emission Concentration (Gr/DSCF)	1.43E-005	1.26E-005
Ni Emission Concentration (Lb/DSCF)	2.04E-009	1.81E-009
Ni Emission Rate (Lb/Hr)	0.0003	0.0002

Average Stack Gas Flow Rate at Actual Conditions (ACFM)
Average Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)
Average Ni Emission Concentration (Gr/DSCF)
Average Ni Emission Concentration (Lb/DSCF)
Average Ni Emission Rate (Lb/Hr)

2,174
2,054
1.35E-005
1.93E-009
0.0002

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TABLE 2E EPA METHOD 5 PARTICULATES FRONT HALF EMISSIONS TEST RESULTS

CLIENT: TODA
SOURCE TESTED: BF-330

JOB NO.: 11-T-697
DATA INPUT BY: ACF

INPUT DATA

	1	2
Run Number	1	2
Date	18-Jan-11	18-Jan-11
Sampling Location	OUTLET	OUTLET
Test Time, Start-Stop (24 Hour)	13:52-15:52	16:05-16:50
Sampling Time (Minutes)	90	36
Average Process Weight Rate (TPH)	N.A.	N.A.
Stack Area (Ft ²)	3.14	3.14
Pitot Tube Coefficient (Unitless)	0.84	0.84
Dry Gas Meter Correction Factor (Unitless)	0.980	0.980
Nozzle Area (Ft ²)	0.001037	0.001037
Barometric Pressure (In. Hg)	28.80	28.80
Static Pressure (In. H ₂ O)	0.01	0.01
Dry Gas Meter Sample Volume (DCF)	70.240	28.649
Average Dry Gas Meter Temperature (°F)	64.7	80.3
Average Orifice Meter Delta H (In. H ₂ O)	1.949	2.031
Volume Condensate Collected (MI)	8.0	3.0
Average CO ₂ Concentration (%)	0.0	0.0
Average O ₂ Concentration (%)	20.9	20.9
Average Square Root of Delta P (In. H ₂ O ^{1/2})	0.200	0.200
Average Stack Gas Temperature (°F)	74.6	84.5
PM Mass Concentration (Micrograms, µg)	14700.000	4660.000

CALCULATED DATA

Absolute Pressure (In. Hg)	28.80	28.80
Dry Gas Meter Sample Volume at Standard Conditions (DSCF)	67.022	26.554
Water Vapor Volume at Standard Conditions (SCF)	0.377	0.141
Moisture Fraction (Unitless)	0.006	0.005
Dry Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.84	28.84
Wet Molecular Weight of Stack Gas (Lb/Lb-Mole)	28.78	28.78
Stack Gas Velocity (FPS)	11.5	11.6
Stack Gas Flow Rate at Actual Conditions (ACFM)	2,173	2,193
Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,055	2,037
Isokinetic Sampling (%)	109.8	109.8
PM Emission Concentration (Gr/DSCF)	3.39E-003	2.71E-003
PM Emission Concentration (Lb/DSCF)	4.84E-007	3.87E-007
PM Emission Rate (Lb/Hr)	0.0596	0.0473
PM Emission Concentration (Lb/TPW)	ERR	ERR

Average Stack Gas Flow Rate at Actual Conditions (ACFM)	2,183
Average Stack Gas Flow Rate at Dry Standard Conditions (DSCFM)	2,046
Average PM Emission Concentration (Gr/DSCF)	3.05E-003
Average PM Emission Concentration (Lb/DSCF)	4.35E-007
Average PM Emission Rate (Lb/Hr)	0.0535
Average PM Emission Concentration (Lb/TPW)	ERR

Signature of Reviewer: