Centron Energy Corporation

"Reduce Hazardous Emissions and Improve Fuel Consumption"

Railroad Evaluation Summary Melvindale

January 21, 2010

Melvindale Evaluation

- Two lift vehicles and four spotters were in the evaluation
- Baseline emission data was taken on July 30, 2009
- Centron added to vehicles on August 1, 2009
- Final emission measurement was taken on September 10, 2009
- Fuel consumption data is from January 2009 thru November 2009 and is reported in the average gallons of fuel per lift

EQUIP NUMBER	YEAR	MANUF	DESCRIPTION	Engine Info
845	2004		Lift	Cummins Q Series
846	2004		Lift	Cummins Q Series
853	2007	Ottawa	Spotter	Cummins C Series
1942	2006	Tico	Spotter	Cummins B Series
1995	2007	Tico	Spotter	Cummins B Series
946	2008	Ottawa	Spotter	Cummins C Series

Emissions Evaluation Results

After six weeks of use of Centron:

- Emission of hazardous **Hydrocarbons reduced by 29%**
- Emission of hazardous **Nitrogen Oxides reduced by 23%**
- Emission of hazardous **Carbon Monoxide reduced by 23%**
- Visible **reduction in** the amount of **black smoke** and carbon
- Visible change in the condition of the vehicle fuel tanks – after Centron the **bottom of the fuel tank was visible and fuel was clear and bright.**

EQUIP NUMBER	BASELINE Emissions 7/30/09				
	HC	CO	CO2	O2	Nox
845	7	0.032	1.46	19.34	304
846	4	0.027	1.63	19.22	178
853	4	0.017	2.14	17.68	206
1942	12	0.031	2.01	18.05	255
1995	6	0.014	1.97	17.86	587
946	3	0.016	2.26	17.59	228
Fleet Average	**6**	**0.023**	**1.91**	**18.29**	**293**

EQUIP NUMBER	FINAL Emissions 9/10/09				
	HC	CO	CO2	O2	Nox
845	6	0.016	2.62	17.11	277
846	3	0.022	2.47	17.46	149
853	2	0.017	2.32	17.53	173
1942	7	0.026	2.05	18.02	197
1995	7	0.012	1.85	18.19	388
946	1	0.013	2.28	17.75	172
Fleet Average	**4**	**0.017**	**2.26**	**17.68**	**226**
% Change	**-28.6%**	**-23.0%**	**18.4%**	**-3.4%**	**-22.9%**

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Fuel Consumption Evaluation

- Fuel Consumption is reduced by an **average of 11.4%** from August thru November

- Gallons per Lift was used as a metric to account for the amount of work being done by the equipment

	January to July	August to November
Total Number of Lifts	40179	21555
Fuel Gallons Delivered	20658	9819
Average Gallons per Lift	0.514	0.456
% Change	**-11.4%**	

Carbon Footprint Evaluation

- Annual Carbon emissions are **reduced by 46 metric tons** through fuel savings

Before CENTRON

22.2	lbs of CO_2 per gallon of diesel fuel
40,000	Gallons of diesel fuel used per year
403	Metric Tons of CO_2 produced

After CENTRON

11.4%	Reduction in fuel usage
35,440	Gallons of diesel fuel used per year
4,560	Gallons of diesel fuel saved per year
357	Metric Tons of CO_2 produced

46	**Metric Ton REDUCTION in CO_2 produced**
11%	**NET Reduction of CO_2 produced**

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Evaluation Results - Conclusion

- **Centron:**
  - Reduced hazardous **Hydrocarbons by 29%**
  - Reduced hazardous **Nitrogen Oxides by 23%**
  - Reduced hazardous **Carbon Monoxide by 23%**
  - Reduced annual **carbon emissions by 46 Metric Tons**
  - Improved **Fuel Economy by an average of 11.4%**
  - Reduced **Visible Black Smoke**

- Centron also provides superior lubricity and protection against algae, sludge, and water contamination which all **reduce maintenance costs and increases vehicle uptime**
- Centron has a proprietary winter blend to provide these benefits for cold weather operation