



Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.



Matthew H. Mead, Governor

Todd Parfitt, Director

April 12, 2013

RE: WDEQ/AQD 2012 Engine Emissions Testing Nonattainment Area Addendum Report

Dear Wyoming Engine Operator:

During contract year 2012 the Air Quality Division conducted fifteen weeks of engine emissions testing statewide. The results of the testing are summarized in the 2012 Engine Emissions Study Summary Report dated September 28, 2012, and the attached 2012 Engine Emissions Testing Nonattainment Area Addendum Report.

The Division engine emissions monitoring test results for the first quarter of 2013 show that the operational and maintenance improvements in the nonattainment area continue to reduce instances of potential noncompliance. For results indicative of exceedances measured during Division engine emissions testing conducted since October 1, 2012, the Division has required operators to conduct the Administrator Directed Test Requirements specified in the April 11, 2012 cover letter for the Sublette County Addendum to the Contract Year 2011 Emission Study Report. Future engine emissions testing conducted by the Division may include on-site Reference Method testing to more accurately assess compliance with permitted emissions levels on a mass emissions rate (lb/hr) basis.

The results of Division engine emissions testing continue to be important for the Division and operators to assess the effectiveness of each individual operation's engine emissions management practices. The AQD has fully funded the engine emissions test project for the coming contract year and it is anticipated that field activities will resume in May. Field activities may include those of additional studies of engines that little data has previously been collected or ongoing compliance activities.

The Division greatly appreciates your continued cooperation as the engine emissions test program continues.

Sincerely,

Steven A. Dietrich
Administrator
Air Quality Division

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**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
MEMORANDUM**

TO: Steve Dietrich, Administrator *SD*
THROUGH: Lori Bocchino, Operating Permits Program Manager *LB*
Cole Anderson, NSR Program Manager
Bob Gill, Compliance Program Manager *BG*
District 1 -5 Engineers (Electronic)
FROM: Jon Walker, Air Quality Engineer *JW*
SUBJECT: 2012 Engine Emissions Testing Nonattainment Area Addendum
DATE: April 8, 2013

Summary

The Air Quality Division (AQD) conducted engine emissions testing in Sublette County during the week of October 29, 2012, and six weeks of testing in the ozone nonattainment area during the first quarter of 2013. The October 29 test week was part of an ongoing quarterly week-long assessment of engine emissions in Sublette County that has occurred since August of 2011. The purpose of the first quarter 2013 engine emissions testing was to ensure that engine emissions remain a top priority during the ozone season in the Upper Green River Basin.

The first quarter 2013 ozone nonattainment area engine emissions testing began with the Air Quality Division Administrator sending a November 5, 2012 letter to 19 engine operators informing them of the Division's plans to conduct engine emissions testing. Additional information and a request for needed input were sent to affected engine operators by November 26 e-mail and other correspondence. Four additional operators were eventually included bringing the total number of operators with engines in the nonattainment area to 23. The engines to be tested were determined by Division Program Managers. All notifications of test appointments were by e-mail. Typically, each engine operator was met at a predetermined location before proceeding to the source to be tested. The advance notice of appointments given to each operator was minimized to the amount of time necessary to ensure timely access to facilities. Engine emissions testing was conducted using reference method equipment and the procedures from the Wyoming Air Quality Division Portable Analyzer Monitoring Protocol.

The following tables summarize engine emissions test results by engine and facility type for the October 29 week and first quarter 2013 AQD engine emissions testing.

**Results of AQD Engine Emissions Testing
During the Week of October 29, 2012, in Sublette County**

Note: Preliminary tested levels shown below assume a default BSFC = 9400 Btu/hphr

Results by Engine Type	4SLB 3600 Cats Only	4SLB Excluding 3600 Cats	4SRB ≥500 HP	4SRB <500 HP	All Rich Burn	All Excluding 3600 Cats	All
Average HP	3703	1293	834	410	673	811	1100
# Tested	3	6	13	8	21	27	30
1 < g/hphr ≤ 2 x Permitted Level ⁽¹⁾	0	3	2	0	2	5	5
g/hphr > 2 x Permitted Level ⁽²⁾	0	0	1	1	2	2	2
% Failed	0%	50%	23%	12%	19%	26%	23%

(1) Monitoring test results may be indicative of g/hphr exceedance; Corrective action and Protocol portable analyzer testing required.

(2) Monitoring test results may be indicative of lb/hr exceedance; Reference Method testing required.

Results by Facility Type											
Major Facilities				Minor Facilities				Total Facilities			
# Visited	# Tested	#Failed	% Failed	# Visited	# Tested	#Failed	% Failed	# Visited	# Tested	# Failed	% Failed
2	4	0	0%	22	26	7	27%	24	30	7	23%

**Results of AQD Engine Emissions Testing
During the First Quarter of 2013 in the Ozone Nonattainment Area**

Note: Preliminary tested levels shown below assume a default BSFC = 9400 Btu/hphr

Results by Engine Type	4SLB 3600 Cats Only	4SLB Excluding 3600 Cats	4SRB ≥500 HP	4SRB <500 HP	2SLB	All Rich Burn	All Excluding 3600 Cats	All
Average HP	3385	1138	1128	227	382	894	987	1598
# Tested	17	19	17	6	2	23	44	61
1 < g/hphr ≤ 2 x Permitted Level ⁽¹⁾	0	5	2	1	0	3	8	8
g/hphr > 2 x Permitted Level ⁽²⁾	0	0	1	0	0	1	0	1
% Failed	0%	26%	17%	17%	0%	17%	20%	15%

(1) Monitoring test results may be indicative of g/hphr exceedance; Corrective action and Protocol portable analyzer testing required.

(2) Monitoring test results may be indicative of lb/hr exceedance; Reference Method testing required.

Results by Facility Type											
Major Facilities				Minor Facilities				Total Facilities			
# Visited	# Tested	#Failed	% Failed	# Visited	# Tested	#Failed	% Failed	# Visited	# Tested	# Failed	% Failed
11	25	1	4%	35	36	8	22%	46	61	9	15%

Discussion

The following observations are noted:

- 1) Operational, maintenance, equipment, and engine emissions monitoring improvements made by nonattainment area operations since August of 2011 have significantly improved the results of AQD engine emissions monitoring conducted since that time.
- 2) AQD monitoring results from the first quarter of 2013 indicate that the majority of instances of potential noncompliance may only be indicative of exceedances in pollutant specific emissions factors (g/hphr) and that they may not produce exceedances in mass emissions rates (lb/hr).
- 3) The majority of planned equipment improvements appear to be complete. Significant additional improvement in engine emissions management practices may result from training focused on troubleshooting engine emissions problems. Currently, corrective actions may not identify the root cause of engine emissions problems.
- 4) Continued oversight may be necessary to ensure that engine emissions remain a top priority during the ozone season in the Upper Green River Basin and at other times.
- 5) The first quarter 2013 AQD engine emissions monitoring effort was received well by the affected operations. To the extent possible, steps were taken to ensure that AQD emissions monitoring did not affect ongoing production activities.