



Title V Deviation Reports

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I. Introduction

All Title V Permit holders must submit a Deviation Report for any six-month period when a deviation from a Title V Permit requirement occurs¹. In addition, Title V Permit holders must submit a Permit Compliance Certification, at least annually, regardless if a permit deviation has occurred in the previous 12 months. The filing of a Deviation Report has been required since the mid-1990s for any Title V permit.² Since that time, as states and permit holders have addressed deviations, numerous interpretations for reporting or not reporting have been developed.

This paper investigated the differences in Deviation Reporting from eight refineries located in the Gulf Coast area. The semiannual Deviation Reports from these eight refineries were obtained for the most recent available 5-year period for each refinery. Each refinery represented a different company.

The size of the refineries range from less than 75,000 barrels per day (“BPD”) of crude capacity to greater than 400,000 BPD, with the average refinery crude capacity being 225,000 BPD. The number of Deviation Reports obtained for each refinery varied by availability of reports. The most Deviations Reports reviewed from one refinery was from a refinery which had sixteen (16), but reported quarterly. The fewest Deviation Reports reviewed for a refinery was seven (7). The span of time reviewed included from July 1, 2006 through December 31, 2012.

II. Deviation

The Environmental Protection Agency (“EPA”) definition of Deviation is:

***Deviation** means any situation in which an emissions unit fails to meet a permit term or condition. A deviation is not always a violation. A deviation can be determined by observation or through review of data obtained from any testing, monitoring, or recordkeeping established in accordance with paragraphs (a)(3)(i) and (a)(3)(ii) of this section. For a situation lasting more than 24 hours which constitutes a deviation, each 24 hour period is considered a separate deviation. Included in the meaning of deviation are any of the following:*

(1) A situation where emissions exceed an emission limitation or standard;

¹ 40 C.F.R. §71.6(a)(3)(iii)(A)

² 61 Federal Register 34236, July 1, 1996.



(2) A situation where process or emissions control device parameter values indicate that an emission limitation or standard has not been met;

(3) A situation in which observations or data collected demonstrates noncompliance with an emission limitation or standard or any work practice or operating condition required by the permit;

(4) A situation in which an exceedance or an excursion, as defined in part 64 of this chapter, occurs.³

Individual States that have received authority to administer the Title V Permit program in their state may have a different definition of **Deviation** than EPA, but the State definition should result in similar Deviation Reporting.

A Deviation Report must be certified by the facility's Responsible Official ("RO") attesting that the Report is truthful, accurate and complete based upon a Reasonable Inquiry.

Most Deviations can be considered a violation by the regulatory agency. The most common way to prevent a Deviation from becoming a violation is to present credible evidence to dispute or overturn the apparent noncompliance.

III. Deviation Report Data

Data from state agencies were obtained for the Deviation Reports for the last five years, where available. The Deviation Reports were then reviewed and each reported deviation was assigned to one of the following eight categories:

- Standard / Emission Limit
- Monitoring
- Recordkeeping
- Reporting
- Testing
- Repair
- Inspection
- Open-Ended-Line ("OEL")

Internally, we identified the specific applicable requirement that yielded the deviation, whether it was a Permit Condition, Special Condition, State Regulation, or Federal Regulation.

Shown on Table 1 is the summary of the Deviation Reports by category.

³ 40 C.F.R. §71.6(a)(iii)(C)



Table 1
Summary of Deviation Reports for Refineries

Facility	Begin Date	End Date	Total No. Deviations	% of Total Deviations								
				Standard/ Emission Limit	Monitoring	Recordkeeping	Reporting	Testing	Repair	Inspection	OEL	
Refinery A	2/20/2012	8/19/2012	614	602	3	0	0	0	0	0	9	
	8/20/2011	2/19/2012	197	138	0	0	0	0	0	0	59	
	2/20/2011	8/19/2011	2,164	2,161	0	0	0	0	0	0	3	
	8/20/2010	2/19/2011	2,006	2,006	0	0	0	0	0	0	0	
	2/20/2010	8/19/2010	330	322	6	0	2	0	0	0	0	
	8/20/2009	2/19/2010	1,788	1,788	0	0	0	0	0	0	0	
	2/20/2009	8/19/2009	3,157	3,135	15	0	0	0	1	0	6	
	8/20/2008	2/19/2009	1,682	1,650	0	0	0	0	0	0	32	
	TOTAL			11,938	11,802	24	0	2	0	1	0	109
	%				98.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%
Refinery B	1/1/2012	6/30/2012	291	289	0	2	0	0	0	0	0	
	7/1/2011	12/31/2011	280	244	2	33	1	0	0	0	0	
	1/1/2011	6/30/2011	192	178	12	1	2	0	0	0	0	
	7/1/2010	12/31/2010	181	85	80	17	0	0	0	0	0	
	1/1/2010	6/30/2010	94	74	7	13	0	0	0	0	0	
	7/1/2009	12/31/2009	76	68	6	1	1	0	0	0	0	
	1/1/2009	6/30/2009	70	63	6	1	0	0	0	0	0	
	7/1/2008	12/31/2008	80	72	7	1	0	0	0	0	0	
	5/8/2008	6/30/2008	33	27	5	1	0	0	0	0	0	
	11/6/2007	5/5/2008	140	87	30	24	0	0	0	0	0	
	5/6/2007	11/5/2007	412	151	79	182	1	0	0	0	0	
	TOTAL			1,849	1,338	233	274	5	0	0	0	0
%				72.3%	12.6%	14.8%	0.3%	0.0%	0.0%	0.0%	0.0%	



**Table 1 – (continued)
Summary of Deviation Reports for Refineries**

Facility	Begin Date	End Date	Total No. Deviations	% of Total Deviations								
				Standard/ Emission Limit	Monitoring	Recordkeeping	Reporting	Testing	Repair	Inspection	OEL	
Refinery C	5/22/2012	11/21/2012	40	37	1	1	0	1	0	0	0	
	11/22/2011	5/21/2012	38	27	2	6	3	1	0	0	0	
	5/22/2011	11/21/2011	95	80	4	5	5	1	0	0	0	
	11/22/2010	5/21/2011	36	22	5	7	1	1	0	0	0	
	5/22/2010	11/21/2010	46	41	3	0	3	0	0	0	0	
	11/22/2009	5/21/2010	29	26	2	2	0	0	0	0	0	
	5/22/2010	11/21/2009	40	32	5	2	1	0	0	0	0	
	11/22/2008	5/21/2009	45	33	5	6	1	0	0	0	0	
	TOTAL			369	297	27	28	13	4	0	0	0
	%				80.4%	7.3%	7.6%	3.6%	1.1%	0.0%	0.0%	0.0%
Refinery D	1/1/2012	6/30/2012	532	424	79	12	16	1	0	0	0	
	7/1/2011	12/31/2011	14,229	459	13,729	21	17	1	0	2	0	
	1/1/2011	6/30/2011	890	645	122	117	5	2	0	0	0	
	7/1/2010	12/31/2010	773	561	83	122	5	2	0	0	0	
	1/1/2010	6/30/2010	352	308	11	29	2	2	0	0	0	
	1/1/2009	6/30/2009	317	224	6	58	28	1	0	0	0	
	7/1/2008	12/31/2008	186	176	5	3	1	1	0	0	0	
	1/1/2007	6/30/2007	132	59	12	60	1	0	0	0	0	
	6/1/2006	12/31/2006	4,308	273	4,009	21	0	5	0	0	0	
	TOTAL			21,719	3,129	18,056	443	75	15	0	2	0
	%				14.4%	83.1%	2.0%	0.3%	0.1%	0.0%	0.0%	0.0%



Table 1 – (continued)
Summary of Deviation Reports for Refineries

Facility	Begin Date	End Date	Total No. Deviations	% of Total Deviations							
				Standard/Emission Limit	Monitoring	Recordkeeping	Reporting	Testing	Repair	Inspection	OEL
Refinery E	7/1/2012	12/31/2012	190	188	2	0	0	0	0	0	0
	1/1/2012	6/30/2012	212	211	1	0	0	0	0	0	0
	7/1/2011	12/31/2011	156	152	4	0	0	0	0	0	0
	1/1/2011	6/30/2011	106	105	1	0	0	0	0	0	0
	7/1/2010	12/31/2010	112	109	1	2	0	0	0	0	0
	1/1/2010	6/30/2010	519	490	28	1	0	0	0	0	0
	7/1/2009	12/31/2009	283	265	15	3	0	0	0	0	0
	1/1/2009	6/30/2009	607	543	53	11	0	0	0	0	0
	6/1/2008	12/31/2008	1,583	1,402	147	31	3	0	0	0	0
	1/1/2008	5/31/2008	1,147	721	421	4	1	0	0	0	0
	TOTAL			4,915	4,186	673	52	4	0	0	0
%				85.2%	13.7%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Refinery F	7/1/2011	12/31/2011	61	54	3	1	3	0	0	0	0
	1/1/2011	6/30/2011	145	135	9	0	0	1	0	0	0
	7/1/2010	12/31/2010	99	92	3	0	4	0	0	0	0
	1/1/2010	6/30/2010	73	70	1	1	1	0	0	0	0
	7/1/2009	12/31/2009	94	78	8	4	1	3	0	0	0
	1/1/2009	6/30/2009	115	93	13	1	1	7	0	0	0
	7/1/2008	12/31/2008	184	171	6	0	4	3	0	0	0
	TOTAL			771	693	43	7	14	14	0	0
%				89.9%	5.6%	0.9%	1.8%	1.8%	0.0%	0.0%	0.0%



Table 1 – (continued)
Summary of Deviation Reports for Refineries

Facility	Begin Date	End Date	Total No. Deviations	% of Total Deviations								
				Standard/Emission Limit	Monitoring	Recordkeeping	Reporting	Testing	Repair	Inspection	OEL	
Refinery G	4/1/2011	6/30/2011	81	80	1	0	0	0	0	0	0	
	1/1/2011	3/31/2011	29	28	1	0	0	0	0	0	0	
	10/1/2010	12/31/2010	100	99	1	0	0	0	0	0	0	
	7/1/2010	9/30/2010	25	24	1	0	0	0	0	0	0	
	4/1/2010	6/30/2010	49	48	1	0	0	0	0	0	0	
	1/1/2010	3/31/2010	29	27	2	0	0	0	0	0	0	
	10/1/2009	12/31/2009	41	40	1	0	0	0	0	0	0	
	7/1/2009	9/30/2009	6	6	0	0	0	0	0	0	0	
	4/1/2009	6/30/2009	39	37	2	0	0	0	0	0	0	
	1/1/2009	3/31/2009	45	45	0	0	0	0	0	0	0	
	10/1/2008	12/31/2008	23	22	1	0	0	0	0	0	0	
	7/1/2008	9/30/2008	80	59	21	0	0	0	0	0	0	
	2/16/2008	6/30/2008	128	114	14	0	0	0	0	0	0	
	9/1/2007	2/15/2008	131	131	0	0	0	0	0	0	0	
	5/22/2007	8/31/2007	126	126	0	0	0	0	0	0	0	
	11/23/2006	5/22/2007	52	52	0	0	0	0	0	0	0	
	TOTAL			984	938	46	0	0	0	0	0	0
	%				95.3%	4.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



**Table 1 – (continued)
Summary of Deviation Reports for Refineries**

Facility	Begin Date	End Date	Total No. Deviations	% of Total Deviations							
				Standard/Emission Limit	Monitoring	Recordkeeping	Reporting	Testing	Repair	Inspection	OEL
Refinery H	11/20/2011	5/20/2012	142	48	94	0	0	0	0	0	0
	5/20/2011	11/20/2011	176	88	88	0	0	0	0	0	0
	11/20/2010	5/20/2011	153	107	46	0	0	0	0	0	0
	5/20/2010	11/20/2010	342	126	216	0	0	0	0	0	0
	11/20/2009	5/20/2010	413	78	335	0	0	0	0	0	0
	5/20/2009	11/20/2009	3,114	2,519	594	1	0	0	0	0	0
	11/21/2008	5/20/2009	484	99	367	0	18	0	0	0	0
	5/21/2008	11/20/2008	300	221	79	0	0	0	0	0	0
	5/21/2007	5/20/2008	191	131	60	0	0	0	0	0	0
	TOTAL			5,315	3,417	1,879	1	18	0	0	0
%				64.3%	35.4%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
TOTAL - 8 Refineries			47,860	25,799	20,980	805	131	33	1	2	109
%				53.9%	43.8%	1.7%	0.3%	0.1%	0.0%	0.0%	0.2%



Table 1 demonstrates that total number of deviations reviewed for all eight refineries was 47,860. This represents an average of ~614 deviations per refinery per reporting period. There are wide variations by refinery with a maximum of 14,249 deviations in one reporting period and a minimum of 6 deviations in one reporting period.

The category with the most deviations was the “Standard/Emission Limit.” This indicates that the most deviations are associated with an exceedance of an emission limit or not complying with a specific condition in a permit. This deviation represented approximately 53.9% of all deviations. The second highest category of deviations was “Monitoring.” This deviation represented approximately 43.8% of all deviations. The six other categories represented only slightly over 2% of the deviations.

I also looked at the deviations based upon the size of the refinery (Crude Capacity – BPD). The crude capacity of the individual refineries was taken from the Department of Energy - Energy Information Administration *2012 Refinery Capacity Report*⁴. I then took the deviations and divided the number of deviations by the crude capacity of the refinery. I also took the total number of deviations by reporting period and divided by the crude capacity (in 100,000 BPD) and by the number of days in the reporting period.

Shown on Table 2 is the breakdown of deviations normalized to the crude capacity of the refinery and also to the deviations by capacity by day of the refinery.

Table 2
Deviations by Crude Capacity

Value	Deviations by Refinery per Reporting Period	Deviations by Refinery/ MBPD	Deviations/ 100,000 BPD-day
Maximum	14,229	49.41	27.00
Minimum	6	0.04	0.03
Average	614	3.08	1.72

These data demonstrate I believe that there is large difference in how individual refineries and individual companies treat deviations. Refinery C, which is a large refinery owned by a large multinational firm, consistently reported the fewest deviations in total number (29 – 46 Deviations per Period), and by normalized statistics (0.08 Deviations / MBPD and 0.04 Deviations / 100,000 BPD-day). Refinery D, which is a large refinery owned by a large independent firm consistently reported the most deviations in total number (132 – 14,229), and by normalized statistics (8.38 Deviations / MBPD and 4.53 Deviations / 100,000 BPD-day). This shows that some refineries have a Deviation Reporting over 100 times that of other similar refineries.

⁴ DOE-EIA, Refinery Capacity Report, Data as of January 1, 2012, June 2012.



Based upon this analysis, some refineries may be under reporting deviations. EPA and States have cautioned permit holders about not reporting all deviations. One of the most common reasons for under-reporting is to not include deviations that were reported during the semiannual period again on the Deviation Report. Unless your State has given your refinery clear guidance to not report previously reported deviations, you must report all deviations which occur during a six-month period in your semiannual Deviation Report, regardless if you have previously reported the deviation.

Also be careful that that some exceedances may result in more than one deviation. For example, an exceedance of an emission limit may cause a deviation of a state regulation and one of more separate federal regulations. This one exceedance may then cause two or more deviations.

IV. Refinery Reporting of SO₂ and H₂S

Spirit was recently asked to review the reporting of SO₂ and H₂S releases from refineries. The purpose of the review was to determine if refineries were using the Petroleum Exemption found in Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”) and separately to determine if refineries were reporting SO₂ to the National Response Center (“NRC”).

The term “hazardous substance” is defined in CERCLA Section 101(14) to include substances listed under four other environmental statutes. The definition excludes “petroleum, including crude oil or any fraction thereof,” unless specifically listed or designated under CERCLA. Potentially, naturally occurring H₂S contained in crude oil could be exempted from CERCLA reporting to the NRC, if a Reportable Quantity (“RQ”) was released (for H₂S, the RQ is 100 pounds).

As a reminder, the definition of “hazardous substance” also excludes natural gas, natural gas liquids, liquefied natural gas, and synthetic gas usable for fuel. Thus H₂S coming from a natural gas stream into a refinery could also be exempted.

A separate issue is how the release of sulfur dioxide (“SO₂”) is treated by refineries. SO₂ is not listed as a “hazardous substance” and is therefore not reportable to the NRC under CERCLA.⁵ SO₂ is however listed as an “extremely hazardous substance” (“EHS”) under Emergency Planning and Community Right-to-Know Act (“EPCRA”) (for SO₂ the EHS RQ is 500 pounds).⁶ As such SO₂ is reportable to the State Emergency Response Commission (“SERC”) and Local Emergency Planning Committee (“LEPC”).

Spirit reviewed the NRC air reports for all refineries located in Kansas, Louisiana, Oklahoma, and Texas for the years 2011 – 2012. This represents fifty (50) separate refineries, with a

⁵ 40 C.F.R. §302.4 - Table §302.4—List of Hazardous Substances and Reportable Quantities

⁶ 40 C.F.R. §355 - Appendix A to Part 355—The List of Extremely Hazardous Substances and Their Threshold Planning Quantities



listed combined crude capacity of 9.45 MMBPD, which is one-half of the current US refining capacity (18.9 MMBPD).⁷ These refineries ranged from 8.7 MBPD to 584.0 MBPD.

Shown on Table 3 is a summary of the release reporting information. Fourteen (14) of the refineries reported no NRC releases for the 2-year period. The remainder of the thirty-six (36) refineries reported a total of 631 releases during the two-year period. The most release reports for a refinery was eighty-three (83) for the 2-year period.

Thirty-one (31) of the thirty-six (36) refineries, which reported releases, reported H₂S releases. Thus, it would appear that few if any refineries use the Petroleum Exemption to not report H₂S.

Thirty-two (32) of the thirty-six (36) refineries, which reported releases, reported SO₂ releases. This indicates that most refineries report SO₂ releases to the NRC even though they are not required. In conversations with refiners, some believe that the SERC or the LEPC report releases to the NRC, even though the refiner did not.

⁷ DOE-EIA, Refinery Capacity Report, Data as of January 1, 2013, June 2013.



Table 3
NRC Reported Release – Refineries (KS, LA, OK, TX)

Refinery	Number of SO ₂ and/or H ₂ S Results	Number of H ₂ S Releases	Number of SO ₂ Releases	Unpaired SO ₂ Event(s)
1	32	21	11	2
2	14	12	2	1
3	1	1	0	0
4	5	1	4	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	1	0	1	1
9	18	11	7	1
10	0	0	0	0
11	0	0	0	0
12	6	1	5	5
13	23	13	10	7
14	4	3	1	0
15	17	5	12	9
16	49	25	24	18
17	3	0	3	3
18	0	0	0	0
19	0	0	0	0
20	8	5	3	0
21	0	0	0	0
22	2	1	1	1
23		0	0	0
24	0	0	0	0
25	0	0	0	0
26	62	47	15	15
27	26	21	5	0
28	28	15	13	5
29	2	1	1	0
30	2	1	1	0
31	16	5	11	9
32	1	1	0	0
33	14	11	3	2
34	59	31	28	4
35	38	21	17	4
36	4	0	4	1
37	0	0	0	0
38	1	0	1	1
39	12	8	4	1
40	0	0	0	0
41	1	1	0	0
42	83	38	45	13
43	5	1	4	3
44	7	2	5	4
45	0	0	0	0
46	66	39	27	1
47	3	1	2	1
48	7	5	2	2
49	0	0	0	0
50	11	6	5	3
Total	631	354	277	117



If you have any questions about this paper or about release reporting, please feel free to contact the writer directly. My contact information is included below.

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Disclaimer: The information provided in this presentation is intended solely as an educational resource, and should not be used as a substitute for careful review of the rulemaking and enforcement actions themselves and consultation with competent legal and technical professionals as to site-specific circumstances.

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