

# Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

December - 2016



## *Distribution:*

Fluid Minerals Group Manager, Washington Office  
NMSO, New Mexico State Director  
NMSO, Associate State Director  
NMSO, Petroleum Engineer  
Field Manager, Amarillo Field Office  
Assistant Field Managers (3)  
Team Leaders  
-Federal Leased Lands  
-Resources Evaluation & Gas Analysis  
-Division Of Helium Operations, -  
Engineering and Technical Support

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Amarillo, Texas

Compiled by: *Joan Grochowina*

Issued: May 11, 2017

***Revised***

**"Please Note: Data in this report is accurate as of print date;  
however all data is subject to change."**

Approved for Distribution: Joan Grochowina  
Helium Storage Analyst, AmFO

Date: June 9, 2017

Table 1 - Summary of Helium Operations

December - 2016

**Helium Enrichment Unit Operations**

Gas Processed	Month Gross Volume	Month Net Helium	Average Percent	Gross FYTD	Net FYTD
Measured Plant Feed (Mcf*)	498,427	84,475	16.95%	1,485,123	248,339
Helium Product (Mcf*)	110,575	81,814	73.99%	331,145	246,948
Residue Natural Gas (Mcf*)	251,071	23	0.01%	772,346	24

\* Volumes in Mcf at 14.65 psia & 60°F

**Natural Gas & Liquids Produced**

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf***)	274,194	842,394
NGL Sales (gallons)	84,961	276,474

\*\*\* Volumes in Mcf at 14.73 psia & 60°F

**Bush Dome Reservoir Operations**

Conservation gases from all sources	Month Gross Volume	Month Net Helium	Average Percent	Gross FYTD	Net FYTD
Total Withdrawn (Mcf*)	518,925	85,397	16.46%	1,577,994	259,748
Crude Injection (Mcf*)	3,808	2,813	73.88%	9,764	7,204
Crude Production (Mcf*)	0	0	00.00%	0	0

\* Volumes in Mcf at 14.65 psia & 60°F

**Storage Operations**

Conservation Helium	Volume Outstanding	Month	FYTD	CYTD	Cumulative
Conservation Crude Sale Volume Sold/Paid (Mcf*)		0	825,000	1,000,000	21,952,729
Conservation Crude Sale Volume Transferred (Mcf*)	15,000	0	825,000	1,000,000	21,937,729
Conservation Helium in Storage (EOM) (Mcf*)		4,482,648			

\* Volumes in Mcf at 14.65 psia & 60°F

**In Kind Helium**

	Month	FYTD	CYTD	Cumulative
Sale Volumes Transferred (Mcf*)	0	39,575	136,746	3,425,053
Sale Volumes Outstanding (Mcf*)	38,883			

\* Volumes in Mcf at 14.65 psia & 60°F

**Private Company Helium Storage Contracts**

Contact Activity	Month Gross Volume	Month Net Helium	Average Percent	Annual Helium FYTD
Crude Acquired (Mcf*)	30,953	20,871	67.43%	91,768
Crude Disposed (Mcf*)	125,257	90,485	72.24%	310,792
Net Balance (Mcf*)	(94,304)	(69,614)		(219,024)
Balance of Stored Helium End Of Month (Mcf*)		3,391,148		

\* Volumes in Mcf at 14.65 psia & 60°F

**Revenue / Charges**

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$661,247	\$2,053,191
Reservoir Management Fees Billed (\$)	\$172,999	\$345,999

**Field Compressor Charges (Charges Billed (\$))**

	Month	FYTD
Funded by the Refiners (provides for booster compression services)	\$0	\$0
Cliffside Refiners, LP, by Agreement #GDA010003 (reimburses BLM for fuel, labor, supplies, etc.)	\$0	\$0
Net-Total (Funded by the Refiners for compression costs.)	\$0	\$0

**Enrichment Unit Charges (Charges Billed (\$))**

	Month	FYTD
Reservoir Management Fees (RMF)	\$172,999	\$345,999
Total operating costs	(\$911,055)	(\$2,709,198)
Sub Total - Items provided by BLM	\$401,095	\$1,179,319
Total - Cliffside Refiners, LP, GDA030001	(\$509,960)	(\$1,529,879)

**Conservation Helium - Natural Gas - Liquid Sales (Charges Billed (\$))**

	Month	FYTD
Conservation Crude Helium Sales	\$0	\$0
In Kind Sales	\$3,090,475	\$3,090,475
Natural Gas & Liquid Sales	\$959,647	\$2,364,528

**Helium Resources Evaluation**

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$1,671,068	\$3,921,126
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 19

\*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

December - 2016

		Gross Withdrawal		Net Helium Withdrawal		Nitrogen		Methane	Methane	Ethane plus		Other (CO2, Ar, H2)	
		Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative
<b>TOTAL</b>		<b>518,925</b>	<b>227,810,639</b>	<b>85,397</b>	<b>42,571,025</b>	<b>129,494</b>	<b>56,144,638</b>	<b>271,952</b>	<b>115,506,268</b>	<b>27,510</b>	<b>11,677,088</b>	<b>4,572</b>	<b>1,911,620</b>
BIVINS A-3	Dec-16	0	10,961,112	0	3,548,629	0	2,772,147	0	4,159,383	0	407,301	0	73,653
BIVINS A-6	Dec-16	29,202	11,712,983	16,736	6,938,200	7,107	2,879,257	4,687	1,673,829	467	166,138	205	55,559
BIVINS A-13	Dec-16	30,835	8,699,184	10,555	4,533,111	7,656	2,235,314	11,154	1,692,067	1,240	188,067	230	50,626
BIVINS A-14	Dec-16	36,964	9,798,213	11,269	5,573,985	9,085	2,482,739	14,710	1,518,504	1,574	164,504	326	58,481
BIVINS A-4	Dec-16	36,531	13,715,847	4,216	2,417,019	8,815	3,323,155	20,936	7,135,683	2,181	717,569	384	122,421
BUSH A-2	Dec-16	42,069	13,420,786	3,879	1,976,352	10,568	3,292,454	24,673	7,291,753	2,667	748,539	282	111,689
Injection	Dec-16	3,808	66,474,735	2,813	48,019,788	884	17,121,580	85	780,676	0	37	24	552,655
inj Bivins A-3	Dec-16	0	(25,652,315)	0	(18,384,452)	0	(6,554,549)	0	(332,777)	0	0	0	(380,537)
inj Bivins A-6	Dec-16	(3,808)	(24,412,686)	(2,813)	(17,669,978)	(885)	(6,486,588)	(85)	(143,192)	(0)	(72)	(24)	(112,856)
inj Bivins A-13	Dec-16	0	(6,490,417)	0	(4,706,191)	0	(1,656,853)	0	(122,391)	0	(2)	0	(4,980)
inj Bivins A-14	Dec-16	0	(6,501,333)	0	(4,767,421)	0	(1,602,106)	0	(126,303)	0	(7)	0	(5,497)
inj Bivins A-4	Dec-16	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Dec-16	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Dec-16	0	1,254,876	0	924,742	0	270,231	0	48,129	0	3,199	0	8,575
BIVINS A-1	Dec-16	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Dec-16	20,533	14,112,608	688	1,884,368	4,803	3,455,169	13,461	7,870,126	1,380	785,003	201	117,942
BIVINS A-5	Dec-16	38,654	16,227,607	7,263	2,079,851	9,880	3,980,423	19,176	9,109,412	2,041	917,656	294	140,264
BIVINS A-7	Dec-16	19,968	11,927,102	5,875	2,820,162	5,214	3,004,538	7,897	5,458,304	853	557,085	130	87,013
BIVINS A-9	Dec-16	27,210	10,593,191	624	202,712	6,976	2,608,251	17,475	6,979,375	1,905	706,341	231	96,512
BIVINS A-11	Dec-16	19,498	6,567,231	576	142,670	4,964	1,634,549	12,418	4,287,243	1,352	440,889	188	61,881
BIVINS A-15	Dec-16	32,815	10,033,809	574	434,348	7,695	2,389,524	21,866	6,458,446	2,281	647,250	400	104,241
BIVINS B-1	Dec-16	32,962	8,252,158	758	305,008	8,353	2,002,115	22,246	5,320,882	1,444	540,543	162	83,609
BIVINS B-2	Dec-16	25,648	6,843,523	487	128,981	6,524	1,715,528	16,425	4,444,287	1,758	457,877	454	96,850
BUSH A-1	Dec-16	0	5,721,962	0	104,140	0	1,356,677	0	3,830,281	0	374,216	0	56,647
BUSH A-3	Dec-16	26,749	12,296,480	9,189	2,924,044	6,851	3,041,986	9,622	5,650,472	904	572,655	184	107,323
BUSH A-4	Dec-16	19,486	8,763,069	1,806	1,591,087	4,998	2,192,627	11,378	4,460,974	1,193	455,552	111	62,829
BUSH A-5	Dec-16	40,670	16,860,189	10,151	3,884,309	10,456	4,233,721	18,265	7,829,819	1,588	795,652	210	116,689
BUSH A-8	Dec-16	19,590	4,373,070	363	80,171	4,870	1,059,984	12,690	2,886,300	1,342	291,421	326	55,195
BUSH A-9	Dec-16	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Dec-16	15,653	4,614,537	319	134,040	3,763	1,103,799	10,292	3,017,126	1,060	306,444	219	53,129
BUSH B-1	Dec-16	3,889	3,355,802	69	62,971	918	796,236	2,582	2,242,392	282	221,355	38	32,847
FUQUA A-1	Dec-16	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Dec-16	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Dec-16	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Dec-16	376	0	6	0	86	0	252	0	29	0	3	0
field-wide pct				16.46%	18.69%	24.95%	24.65%	52.41%	50.70%	5.30%	5.13%	0.88%	0.84%

Latest estimates of reserves and feed to HEU

Based on NITEC's 2003 reserves study from NITEC's interim report

As of EOM Dec-16 Volumes in BCF

Initial Gas In Place	330.040	
Produced 1924 to 1961	48.830	
Injected 1924 to 1961	0.450	
Remaining Gas In Place 1961	281.660	
Left Behind Pipe, 1961	82.060	=====> 1.500 BCF of contained helium
Remaining in Place, 1961	199.600	
Gas In Place 1961	199.600	
Produced 1961 to July 2002	82.450	
Injected 1961 to July 2002	64.510	Net Helium
Remaining Gas In Place July 2002	181.660	33.997
Produced July 2002 through Dec 2002	1.096	0.743
Production 2003 - 15	90.147	23.308
Injection 2003 - 15	(1.394)	(1.137)
Produced to Date 2016	5.283	0.916
Injected to Date 2016	(0.029)	(0.021)
Amount of Raw Gas Available to CHEU	86.557	=====> 10.189 total helium in reservoir
Estimated Bottom Hole Pressure	318.782	est z-factor 0.980

\* All volumes on Table 2 are reported in Mcf at 14.65 psia & 60°F

### Table 3 - Gas Volumes & Inventory

December - 2016

#### Crude Helium Enrichment Unit Operations

		Gross Withdrawal		Net Helium Withdrawal		Nitrogen		Methane		Ethane plus		Other (CO <sub>2</sub> , Ar, H <sub>2</sub> )	
		Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative
Measured Feed	Dec-16	498,427	92,747,674	84,475	22,557,737	124,072	23,255,191	258,933	41,693,656	26,491	4,441,311	4,457	799,779
Calculated Feed	Dec-16	522,564	92,593,020	88,359	22,548,009	130,339	23,212,814	271,790	41,577,013	27,482	4,455,241	4,595	799,943
Feed to Box	Dec-16	518,748	92,011,266	88,359	22,548,187	130,339	23,212,896	271,790	41,577,059	27,482	4,455,242	779	217,882
Cheu Product	Dec-16	110,575	28,414,549	81,814	22,179,986	25,447	5,477,973	2,603	558,772	5	761	707	197,056
Residue	Dec-16	251,071	41,463,098	23	2,063	5,546	1,023,934	223,322	36,788,943	22,178	3,646,900	2	1,258
Cold Box Vent	Dec-16	77,357	15,565,531	47	89,363	68,476	13,789,067	8,821	1,625,809	0	118	12	61,174
Flare/Boot Strap	Dec-16	77,357	6,081,780	47	50,142	68,476	5,044,069	8,821	887,978	0	93,583	12	6,008
Fuel From Cheu	Dec-16	7,409	1,260,612	4	385	192	36,982	5,975	1,022,312	1,238	200,933	0	0
Shrinkage/Loss	Dec-16	2,784	453,310	0	0	0	0	0	0	2,784	453,310	0	0
Unaccounted*	Dec-16	45,414	3,142,006	4,249	176,492	23,202	2,292,295	17,922	668,142	(0)	1,371	41	3,707

\*Before October 2004, the values are estimated

#### Storage Operations

##### Inventory (contained helium)

	Government	Private
Beginning inventory	4,491,589	3,460,762
net acceptances +	0	0
redeliveries	0	(69,614)
In Kind Transfers	0	0
Conservation Crude Sales	0	0
Gain/loss	(8,941)	
Ending Inventory	4,482,648	3,391,148
Total Helium in Reservoir	10,189,327	
Total Helium in Storage	7,873,796	
Helium in native gas	2,315,531	

##### Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	44,225	32,033	72.43%
Measured to Pipeline (Private Plants)	30,953	20,959	67.71%
Measured from Pipeline (Private Plant)	125,258	90,485	72.24%
HEU Production	110,575	81,814	73.99%
Injection	3,808	2,813	73.88%
Production	0	0	
Ending Inventory	44,957	32,567	72.44%
Gain/Loss	(11,730)	(8,941)	

#### Tuck Trigg Reservoir Operations

Native Gas (Gross)	Since Field		
	Month	Fiscal Year	Discovery
Total in place, beg. of period	5,198,688	5,198,688	5,890,000
Recoverable in place, beg. of period	4,528,688	4,528,688	5,220,000
Production during period to date	0	0	691,312
Total in place, end of month	5,198,688	5,198,688	5,198,688
Recoverable in place, end of month	4,528,688	4,528,688	4,528,688

\* All volumes on Table 3 are reported in Mcf at 14.65 psia & 60°F

Table 4 - In Kind Helium Sales

December - 2016

	NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)**	
<b>In Kind Helium</b>										
<b>AirGas South West, Contract no. INC98-0101</b>									(billed quarterly)	
Month										
FYTD										
<b>AirGas North Central, Contract no. INC98-0102</b>										
Month										
FYTD										
<b>AirGas Intermountain, Contract no. INC98-0103</b>										
Month										
FYTD										
<b>Air Liquide Helium America, Inc., Contract no. INC98-0104</b>										
Month										
FYTD										
<b>Air Products, L.P., Contract no. INC98-0105</b>										
Month										
FYTD										
<b>Linde Gas North America, LLC, Contract no. INC98-0106</b>										
Month										
FYTD										
<b>Corp Brothers, Inc., Contract no. INC98-0107</b>										
Month										
FYTD										
<b>FIBA Technologies, Inc., Contract no. INC98-0108</b>										
Month										
FYTD										
<b>General Air Service &amp; Supply Co., Contract no. INC98-0109</b>										
Month										
FYTD										
<b>Praxair, Inc., Contract no. INC98-0112</b>										
Month										
FYTD										
<b>United States Welding, Inc., Contract no. INC98-0113</b>										
Month										
FYTD										
<b>Matheson Tri-Gas, Inc., Contract no. INC98-0114</b>										
Month										
FYTD										
<b>GT &amp; S, Contract no. INC00-0115</b>										
Month										
FYTD										
<b>Global Gases America, Contract no. INC13-0116</b>										
Month										
FYTD										
<b>Total month</b>	18,488	0	0	0	0	18,703	37,191	36,617	\$3,090,475	
<b>Total FYTD</b>	18,488	0	0	0	0	18,703	37,191	36,617	\$3,090,475	
<b>Total CYTD</b>	77,351	4	0	0	0	67,455	144,810	142,576	\$12,033,414	
<b>Cumulative</b>	1,904,509	108,677	450	271,584	421,753	811,369	3,518,342	3,463,861	\$201,961,886	
<b>In Kind Transfers</b>							Month	FYTD	CYTD	Cumulative
Transferred							0	39,575	136,746	3,425,053
Volume outstanding							38,883			

\* Volumes in Mcf at 14.7 psia & 70°F  
+ Volumes in Mcf at 14.65 psia & 60°F

\*\*Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

December - 2016

**Helium & Natural Gas Sales**

	Award Volume*	Outstanding*	Sales*	Charges Billed (\$)**	
<b>Conservation Helium</b>					
<b>(billed quarterly)</b>					
<b><u>Air Liquide Helium America, Inc.</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	0	\$0	
Cumulative	335,217		335,217	\$25,454,815	
<b><u>Air Products, L.P.</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	419,309	\$44,881,063	
Cumulative	8,448,745		8,448,745	\$610,716,090	
<b><u>Linde Gas North America, LLC</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	140,334	\$15,015,738	
Cumulative	6,170,987		6,170,987	\$419,707,591	
<b><u>Keyes Helium Co., LLC</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	21,844	\$2,337,308	
Cumulative	998,957		998,957	\$68,353,106	
<b><u>Matheson Tri-Gas, Inc.</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	46,700	\$4,996,900	
Cumulative	328,700		328,700	\$34,316,400	
<b><u>Praxair, Inc.</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	183,513	\$19,635,891	
Cumulative	5,403,189		5,403,189	\$404,125,671	
<b><u>Linde Gas, LLC discontinued 10 2008</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	0	\$0	
Cumulative	200,000		200,000	\$11,035,000	
<b><u>Global Gases America</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	13,300	\$1,423,100	
Cumulative	36,267		36,267	\$3,535,665	
<b><u>Airgas Merchant Gases</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	0	\$0	
Cumulative	15,667		15,667	\$1,488,365	
<b><u>IACX Energy</u></b>					
Month	0	0	0	\$0	
FYTD	0	0	0	\$0	
Cumulative	15,000		15,000	\$1,575,000	
<b>Total month</b>	0	0	0		0
<b>Total FYTD</b>	0	0	825,000		\$0
<b>Total CYTD</b>	1,000,000		1,000,000		\$0
<b>Cumulative</b>	21,952,729		21,952,729		\$1,580,307,703
<b>Conservation Crude Transfers</b>					
		Month	FYTD	CYTD	Cumulative
Transferred		0	825,000	1,000,000	21,937,729
Volume outstanding		15,000			

\* Volumes in Mcf at 14.65 psia & 60°F

**Natural Gas/Liquid Sales**

	Natural Gas (Mcf)***	NGLs (gal)	Decatherms	Avg Btu Value	Charges Billed (\$)**	
<b><u>El Paso Natural Gas</u></b>						
		Provides Measured Firm/Interruptible Transportation Services			(billed monthly)	
Month	274,194	---	251,072	916	(\$27,997)	
FYTD	842,394	---	772,347	917	(\$83,991)	
Cumulative	40,924,942	---	44,726,887	1,093	(\$4,668,370)	
<b><u>Minerals Management Service</u></b>						
		No Longer Provides Natural Gas Marketing Services				
Cumulative	---	---	---	---	(\$179,913)	
<b><u>Tenaska</u></b>						
		Purchaser - Natural Gas			\$/Unit	
Month	---	---	273,700	\$3.414719	\$934,609	
FYTD	---	---	842,200	\$2.717394	\$2,288,589	
Cumulative	---	---	44,467,305	\$4.543772	\$201,222,765	
<b><u>Sandstone</u></b>						
		Purchaser - Natural Gas Liquids				
Month	---	84,961	8,691	\$6.102370	\$53,036	
FYTD	---	276,474	28,969	\$5.520738	\$159,930	
Cumulative	---	12,356,868	1,314,958	\$11.482514	\$15,099,024	
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$\$)	
<b>Total month</b>	274,194	84,961	282,391	\$3.398292	\$959,647	
<b>Total FYTD</b>	842,394	276,474	871,169	\$2.714202	\$2,364,528	
<b>Total CYTD</b>	2,583,530	759,823	2,785,808	\$2.307326	\$6,427,767	
<b>Cumulative</b>	40,924,942	12,356,868	45,782,263	\$4.637168	\$211,473,506	

\*\*\* Volumes in Mcf at 14.73 psia & 60°F

\*\*Rounded to nearest dollar

## Table 6 - Helium Resources Evaluation

December - 2016

All Volumes in Mcf at 14.7 psia & 70°F

<b>Revenue Collected From Federal Leaseholds</b>	Month*	FYTD*
Fee Sales & Royalties	\$1,669,766	\$3,890,799
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$30,326	\$87,583
<b>Revenue Collected from Federal Lease Holds</b>	<b>\$1,671,068</b>	<b>\$3,921,126</b>

\*Totals do not sum

<b>Helium Analysis and Evaluation</b>	Month	FYTD
Number of Sample Request Letters Sent	0	0
Number of Samples Received	0	0
Number of Samples Analyzed	0	0
Total Number of Samples Analyzed For Resources Division	0	0
Total Number of Other Samples Analyzed (2)	19	39

### U. S. Helium Production

<i>Domestic</i>	FY Volume	CY Volume
2012 Helium Sold	4,531,140	4,645,930
2013 Helium Sold	4,725,187	4,623,130
2014 Helium Sold	3,815,746	3,463,698
2015 Helium Sold	3,282,185	3,104,695
2016 Helium Sold	4,559,100	4,644,278
Estimated Helium Resources as of 12/31/2006 (Mcf)		732,000,000

	FY-2014	CY-2014
<b>U.S. Helium Exports</b> (3)	2,553,129	2,432,311
<b>US Helium Imports</b>	491,006	565,023

(1) Includes drip gas sales & other miscellaneous gas sales.

(2) Includes pipeline, field survey, and other requested analyses.

(3) Data from Department of Commerce - Bureau of the Census.

# Table 7 - Helium Storage Contract Activity

December - 2016

All Volumes in Mcf at 14.65 psia & 60°F

	Metered Gas						Transferred Gas		Stored Helium EOM	Charges Month	Billed (\$)**	
	Gross Gas	Helium %	Helium	Helium			Helium				Month	FYTD
				FYTD	CYTD	Cumulative	Month	Cumulative				
<b>Total All Contracts*</b>												
Crude Acquired	30,953	67.4%	20,871	91,768	448,328	31,992,539	64,112	56,647,755				
Crude Disposed	125,257	72.2%	90,485	310,792	1,264,165	51,843,042	64,112	30,817,361			\$661,247	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718					<u>\$172,999</u>	RMF Fees
Net/Balance	(94,304)		(69,614)	(219,024)	(815,837)	(21,329,221)	0	25,830,394	3,391,148	\$834,246.48		\$2,399,190
<b>Total Prior Contracts (TERMINATED)</b>												
Crude Acquired				0	0	17,406,129	0	18,196,898				
Crude Disposed				0	0	11,830,863	0	19,148,768				
Grade-A Rdlvrd				0	0	1,478,718						
Number of trailers				0	0	9,834			0			
<b>Linde Gas North America, LLC, Contract no. 3249</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Praxair, Inc., Contract no. 3251</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Air Products, L.P., Contract no. 3256</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>IACX Energy, Contract no. 3297</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Pioneer Natural Resources USA, Inc, Contract no. 3286</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Keyes Helium Co., LLC, Contract no. 3287</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Air Liquide Helium America, Inc., Contract no. 3284</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Matheson Tri-Gas, Inc., Contract no. 3288</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Airgas Merchant Gases, Contract no. 3290</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Global Gases America, Contract no. 3293</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												
<b>Linn Operating, Inc., Contract no. 3296</b>												
Crude Acquired												
Crude Disposed												
Net/Balance												

<b>Government Helium</b>	
Remaining Crude Acquired beginning of the month	4,491,589
Crude Disposed: In Kind Sales transferred for the month	0
Conservation Crude Sales/Reserve Sell Down transferred (mont	0
Gains and Losses for the month	(8,941)
Net/Balance of Purchased Helium Remaining for Sale	4,482,648

\*Includes In Kind and Conservation Crude transfers from Government storage

\*\*Rounded to nearest dollar



Table 8 - Compression & CHEU (Charges & Operations) December - 2016

Field/CHEU Compressor Operations		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$3.41	\$2.76	\$4.85
Fuel used * (now includes field compression well head)	total MMBTU	8,879	24,333	1,735,256
Field Compression Fuel Cost *	\$dollars	\$0	\$0	\$658,447
CHEU Compression Fuel Cost *	\$dollars	\$18,261	\$39,019	\$4,335,023
CHEU Process Fuel Cost *	\$dollars	\$12,017	\$28,171	\$2,901,845
Rental compressor(s) fuel consumed (well head)	\$dollars	\$0	\$0	\$207,234
Rental Compressor(s) helium in fuel (Mcf x \$\$)	\$dollars	\$0	\$0	\$315,893
Rental compressor(s) helium in fuel (Mcf)	Mcf	0	0	3645
#1 Compressor run time *	hours	683	1,904	104,170
#2 Compressor run time *	hours	374	718	66,181
#3 Compressor run time *	hours	325	1,150	60,474

\* Field/CHEU Compressor Operations based on Dec 16 activity

Field Compressor Charges	Charges Billed (\$)*		
Linde Gas North America, LLC, Contract no. 3249			
Praxair, Inc., Contract no. 3251			
Air Products, L.P., Contract no. 3256			
Keyes Helium Co., LLC, Contract no. 3287			
SubTotal - Cliffside Refiners, LP (provides booster compression services)	\$0	\$0	(\$11,422,651)
Cliffside Refiners, LP, GDA010003 (BLM provided fuel *, labor, supplies, etc.)	\$0	\$0	\$2,880,795
Net Total - Cliffside Refiners, LP	\$0	\$0	(\$8,541,856)

\* BLM provided fuel cost is based on Nov 16 fuel consumed

\*Rounded to nearest dollar

Crude Helium Enrichment Unit (CHEU) CHEU Runtime	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	744	100.0%	2,038	92.3%	114,607
Producing residue gas	733	98.5%	1,982	89.7%	111,788
Producing helium product	689	92.7%	1,887	85.5%	108,233
Producing natural gas liquids	702	94.4%	1,933	87.6%	107,243

CHEU Charges	Charges Billed (\$)*		
	Month	FYTD	Cumulative
Reservoir Management Fees (RMF)	\$172,999	\$345,999	\$32,177,121
Total operating costs	(\$911,055)	(\$2,709,198)	(\$139,539,356)
Labor	\$161,237	\$483,710	\$14,822,326
Compressor fuel cost Nov 16	\$12,024	\$29,492	\$4,336,687
HEU fuel cost Nov 16	\$8,196	\$25,030	\$2,904,497
Electrical power cost Nov 16	\$136,057	\$390,343	\$20,841,323
Other	\$83,582	\$250,745	\$13,310,005
Sub Total - Items provided by BLM	\$401,095	\$1,179,319	\$59,424,192
Total - Cliffside Refiners, LP, GDA030001	(\$509,960)	(\$1,529,879)	(\$80,115,165)

\*Rounded to nearest dollar

CHEU Utility Usage	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Dec 16	3,123	9,083	548,722
Cheu Pure Water Usage (gallons) Dec 16	5,504	6,295	300,743
Electricity Metered (Kwh) consumed Nov 16	2,821,615	4,934,532	125,051,750