

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

October - 2019



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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Issued: April 14, 2020

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

Approved for Distribution: Samuel R.M. Burton

Date: April 14, 2020

Table 1 - Summary of Helium Operations

October - 2019

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	397,716	57,560	14.47%	397,716	57,560
Helium Product (Mcf*)	79,222	56,601	71.45%	79,222	56,601
Residue Natural Gas (Mcf*)	151,857	30	0.02%	151,857	30

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf****)	150,064	150,064
NGL Sales (gallons)	67,703	67,703

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

Bush Dome Reservoir Operations

Conservation gases from all sources	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Total Withdrawn (Mcf*)	400,085	57,478	14.37%	400,085	57,478
Crude Injection (Mcf*)	0	0	00.00%	0	0
Crude Production (Mcf*)	0	0	00.00%	0	0

* Volumes in Mcf at 14.65 psia & 60°F

Storage Operations

In Kind Helium	Month	FYTD	CYTD	Cumulative
Sale Volumes Transferred (Mcf*)	0	0	127,632	3,849,744
Sale Volumes Outstanding (Mcf*)	55,879			

* Volumes in Mcf at 14.65 psia & 60°F

Private Company Helium Storage Contracts

Contact Activity	Month	Month	Average Percent	Annual Helium FYTD
	Gross Volume	Net Helium		
Crude Acquired (Mcf*)	6,762	4,962	73.38%	4962
Crude Disposed (Mcf*)	69,553	49,955	71.82%	49955
Net Balance (Mcf*)	(62,791)	(44,993)		(44,993)
Balance of Stored Helium End Of Month (Mcf*)		2,384,894		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$541,763	\$541,763
Resource Management Fees Billed (\$)	\$0	\$0
Total Storage and RMF Collected	\$541,763	\$541,763

Conservation Helium - Natural Gas - Liquid Sales

(Charges Billed (\$))	Month	FYTD
In Kind Sales	\$0	\$0
Natural Gas & Liquid Sales	\$253,182	\$253,182

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$910,640	\$910,640
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 19

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

October - 2019

		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
TOTAL		400,085	244,814,600	57,478	45,274,648	98,837	60,354,982	216,087	124,443,855	23,569	12,659,900	4,114	2,081,214
BIVINS A-3	Oct-19	0	10,961,114	0	3,548,629	0	2,772,147	0	4,159,384	0	407,301	0	73,653
BIVINS A-6	Oct-19	34,666	13,269,054	12,408	7,584,822	8,634	3,267,365	11,999	2,133,617	1,348	215,754	277	67,497
BIVINS A-13	Oct-19	25,847	9,818,079	7,783	4,890,955	6,470	2,514,486	10,213	2,117,295	1,183	236,258	199	59,085
BIVINS A-14	Oct-19	30,689	11,098,269	7,084	5,924,487	7,518	2,802,259	14,197	2,075,746	1,597	225,409	293	70,368
BIVINS A-4	Oct-19	26,313	14,880,716	2,446	2,540,651	6,283	3,602,961	15,651	7,811,738	1,633	789,872	301	135,494
BUSH A-2	Oct-19	5,919	14,084,633	252	2,023,057	1,479	3,459,256	3,731	7,692,332	418	793,762	38	116,226
Injection	Oct-19	0	66,474,735	0	48,019,788	0	17,121,580	0	780,676	0	37	0	552,655
inj Bivins A-3	Oct-19	0	(25,652,315)	0	(18,384,452)	0	(6,554,549)	0	(332,777)	0	0	0	(380,537)
inj Bivins A-6	Oct-19	0	(24,412,686)	0	(17,669,978)	0	(6,486,588)	0	(143,192)	0	(72)	0	(112,856)
inj Bivins A-13	Oct-19	0	(6,490,417)	0	(4,706,191)	0	(1,656,853)	0	(122,391)	0	(2)	0	(4,980)
inj Bivins A-14	Oct-19	0	(6,501,333)	0	(4,767,421)	0	(1,602,106)	0	(126,303)	0	(7)	0	(5,497)
inj Bivins A-4	Oct-19	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Oct-19	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Oct-19	0	1,254,876	0	924,742	0	270,231	0	48,129	0	3,199	0	8,575
BIVINS A-1	Oct-19	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Oct-19	15,036	14,792,459	462	1,907,127	3,511	3,613,678	9,862	8,313,305	1,051	833,555	150	124,795
BIVINS A-5	Oct-19	20,552	17,087,630	3,612	2,236,101	5,199	4,199,177	10,434	9,540,314	1,138	964,848	168	147,191
BIVINS A-7	Oct-19	12,233	12,352,686	3,654	2,946,571	3,149	3,114,616	4,809	5,625,367	537	576,230	85	89,901
BIVINS A-9	Oct-19	23,729	11,638,925	705	230,458	6,013	2,873,923	15,082	7,648,676	1,715	780,237	214	105,632
BIVINS A-11	Oct-19	15,596	7,190,760	471	161,108	3,912	1,791,484	9,928	4,685,267	1,122	484,697	164	68,204
BIVINS A-15	Oct-19	28,523	11,178,991	479	453,927	6,585	2,655,222	19,055	7,223,849	2,031	727,277	373	118,717
BIVINS B-1	Oct-19	27,290	9,340,174	629	330,344	6,663	2,267,173	17,802	6,022,221	1,840	621,264	356	99,171
BIVINS B-2	Oct-19	24,063	7,801,181	448	146,940	6,053	1,955,631	15,402	5,060,220	1,693	524,669	467	113,720
BUSH A-1	Oct-19	0	5,721,962	0	104,140	0	1,356,677	0	3,830,281	0	374,216	0	56,647
BUSH A-3	Oct-19	21,919	13,287,044	6,856	3,242,350	5,488	3,291,516	8,460	6,023,392	925	613,985	189	115,801
BUSH A-4	Oct-19	20,260	9,490,407	1,421	1,652,766	5,177	2,378,590	12,235	4,889,461	1,313	502,616	116	66,974
BUSH A-5	Oct-19	34,543	18,280,192	8,127	4,243,933	8,754	4,594,440	15,724	8,448,175	1,727	867,930	211	125,714
BUSH A-8	Oct-19	14,159	4,981,334	258	91,289	3,496	1,210,134	9,153	3,280,785	992	333,294	261	65,833
BUSH A-9	Oct-19	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Oct-19	13,982	5,102,026	302	144,699	3,346	1,220,679	9,180	3,336,524	952	340,032	203	60,092
BUSH B-1	Oct-19	4,765	3,496,788	82	65,426	1,109	829,124	3,170	2,336,294	355	231,664	49	34,280
FUQUA A-1	Oct-19	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Oct-19	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Oct-19	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Oct-19	544	0	9	0	127	0	360	0	40	0	6	0
field-wide pcts				14.37%	18.49%	24.70%	24.65%	54.01%	50.83%	5.89%	5.17%	1.03%	0.85%

Latest estimates of reserves and feed to HEU

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

As of EOM Oct-19 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 - 18	108.029	26.256
Injection 2003 - 18	(1.423)	(1.159)
Produced to Date 2019	4.450	0.671
Injected to Date 2019	0.000	0.000
Amount of Raw Gas Available to CHEU	69.508	=====> 7.486 total helium in reservoir
Estimated Bottom Hole Pressure	256.059	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

October - 2019

Crude Helium Enrichment Unit Operations

		Gross Withdrawal		Net Helium Withdrawal		Nitrogen		Methane		Ethane plus		Other (CO2, Ar, H2)	
		Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative
Measured Feed	Oct-19	397,716	109,716,103	57,560	25,238,657	98,276	27,454,922	214,422	50,617,575	23,389	5,437,900	4,068	967,049
Calculated Feed	Oct-19	399,541	109,592,836	57,468	25,234,471	98,710	27,417,401	215,726	50,516,617	23,528	5,454,999	4,108	969,347
Feed to Box	Oct-19	395,959	108,866,212	57,468	25,234,650	98,710	27,417,483	215,726	50,516,663	23,528	5,454,994	526	242,422
Cheu Product	Oct-19	79,222	32,059,949	56,601	24,869,225	20,299	6,333,580	1,815	635,481	2	922	506	220,741
Residue	Oct-19	151,857	50,325,964	30	2,202	3,672	1,225,547	134,419	44,655,163	13,735	4,441,788	0	1,265
Cold Box Vent	Oct-19	60,390	17,926,277	435	91,394	50,689	15,897,589	9,099	1,875,378	122	245	44	61,671
Flare/Boot Strap	Oct-19	60,390	8,442,526	435	52,173	50,689	7,152,592	9,099	1,137,547	122	93,710	44	6,504
Fuel From Cheu	Oct-19	5,904	1,491,578	3	501	153	42,964	4,761	1,208,586	987	239,527	0	0
Shrinkage/Loss	Oct-19	6,017	578,057	0	0	0	0	0	0	6,017	578,057	0	0
Unaccounted*	Oct-19	52,550	4,263,993	(859)	165,790	12,809	3,072,699	40,754	1,020,633	(122)	975	(33)	3,896

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)			Crude Helium Pipeline			
	Government	Private		Gross	Net Helium	Percent
Beginning inventory	2,809,679	2,429,887	Beginning inventory	29,052	20,965	72.16%
net acceptances +	0	0	Measured to Pipeline (Private Plants)	6,762	4,965	73.43%
redeliveries	0	(44,993)	Measured from Pipeline (Private Plant:	69,553	49,955	71.82%
In Kind Transfers	0	0	HEU Production	79,222	56,601	71.45%
Conservation Crude Sales	0	0	Injection	0	0	00.00%
Gain/loss	(2,125)		Production	0	0	
Ending Inventory	2,807,554	2,384,894	Ending Inventory	42,469	30,450	71.70%
Total Helium in Reservoir	7,485,704		Gain/Loss	(3,014)	(2,125)	
Total Helium in Storage	5,192,448					
Helium in native gas	2,293,256					

Tuck Triqq Reservoir Operations

Native Gas (Gross)	Month	Since Field	
		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

October - 2019

NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)***
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In Kind Helium

(billed quarterly)

Airgas Merchant Gases, Contract no.										
Month										
FYTD										
Air Liquide Helium America, Inc., Contract no. INC18-0104										
Month										
FYTD										
Air Products, L.P., Contract no. INC18-0105										
Month										
FYTD										
Messer, LLC, Contract no. INC18-0106										
Month										
FYTD										
Praxair, Inc., Contract no. INC18-0112										
Month										
FYTD										
Matheson Tri-Gas, Inc., Contract no. INC18-0114										
Month										
FYTD										
Global Gases America, Contract no. INC18-0116										
Month										
FYTD										
Total month							0	0	\$0	
Total FYTD							0	0	\$0	
Total CYTD							57,861	133	\$12,348,973	
Cumulative							2,133,065	108,818	\$240,719,427	
In Kind Transfers							Month	FYTD	CYTD	Cumulative
Transferred							0	0	127,632	3,849,744
Volume outstanding							55,879			

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

**Rounded to nearest dollar

Natural Gas / Natural Gas Liquid Sales

	Natural Gas (Mcf)***	NGLs (gal)	Decatherms	Avg Btu Value	Charges Billed (\$)***
El Paso Natural Gas					
Provides Measured Firm/Interruptible Transportation Services (billed monthly)					
Month	150,064	---	165,631	1,104	\$0
FYTD	150,064	---	165,631	1,104	\$0
Cumulative	49,666,102	---	54,080,400	1,089	(\$5,088,325)
Minerals Management Service					
No Longer Provides Natural Gas Marketing Services					
Cumulative	---	---	---	---	(\$179,913)
ETC Marketing Ltd					
Purchaser - Natural Gas					
Month	---	---	171,800	\$1.245927	\$214,050
FYTD	---	---	171,800	\$1.245927	\$214,050
Cumulative	---	---	53,977,159	\$4.093597	\$220,134,170
Sandstone					
Purchaser - Natural Gas Liquids					
Month	---	67,703	7,331	\$5.337866	\$39,132
FYTD	---	67,703	7,331	\$5.337866	\$39,132
Cumulative	---	15,515,524	1,653,973	\$10.385128	\$17,176,722
Total					
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$\$)
Total month	150,064	67,703	179,131	\$1.413391	\$253,182
Total FYTD	150,064	67,703	179,131	\$1.413391	\$253,182
Total CYTD	1,954,106	769,442	2,271,231	\$1.006633	\$2,286,295
Cumulative	49,666,102	15,515,524	55,631,132	\$4.185951	\$232,042,653

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

October - 2019

Helium & Natural Gas Sales

This Table has been suspended as of 9/30/2018, BLM is no longer selling crude helium on the Open Market per Helium Stewardship Act of 2013.

Table 6 - Helium Resources Evaluation

October - 2019

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$850,558	\$850,558
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$60,082	\$60,082
Revenue Collected from Federal Lease Holds	\$910,640	\$910,640

*Totals do not sum

Helium Analysis and Evaluation	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	19

U. S. Helium Production

<i>Domestic</i>	FY Volume	CY Volume
2013 Helium Sold	4,725,187	4,623,130
2014 Helium Sold	4,279,765	4,166,708
2015 Helium Sold	3,815,746	3,463,698
2016 Helium Sold	3,282,185	3,466,014
2017 Helium Sold	4,559,100	4,644,278
Estimated Helium Resources as of 12/31/2016 (Mcf)		723,000,000

	FY-2017	CY-2017
U.S. Helium Exports (3)	2,520,645	2,451,207
US Helium Imports	731,407	666,908

(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

October - 2019

All Volumes in Mcf at 14.65 psia & 60°F

	Metered Gas						Transferred Gas		Stored Helium EOM	Charges Billed (\$)**	
	Gross Gas	Helium %	Helium	Helium			Helium			Month	FYTD
	Month			FYTD	CYTD	Cumulative	Month	Cumulative			
Total All Contracts*											
1	Crude Acquired	6,762	73.4%	4,962	4,962	96,493	27,462,715	3,849	61,222,583		
2	Crude Disposed	69,553	71.8%	49,955	49,955	747,902	54,858,365	3,849	26,915,995		\$541,762.85 Storage Fees
3	Grade-A Rdlvrd	0		0	0	0	1,478,718				\$0.00 RMF Fees
4	Net/Balance	(62,791)		(44,993)	(44,993)	(651,409)	(28,874,368)	0	34,306,588	2,384,894	\$541,762.85 \$541,763
Total Prior Contracts (TERMINATED)											
5	Crude Acquired			0	0	17,406,129		0	18,235,232		
6	Crude Disposed			0	0	11,830,863		0	19,187,102		
7	Grade-A Rdlvrd			0	0	1,478,718					
8	Number of trailers			0	0	9,834				0	
3 Messer, LLC, Contract no. 3249											
9	Crude Acquired										
10	Crude Disposed										
11	Net/Balance										
5 Praxair, Inc., Contract no. 3251											
12	Crude Acquired										
13	Crude Disposed										
14	Net/Balance										
2 Air Products, L.P., Contract no. 3256											
15	Crude Acquired										
16	Crude Disposed										
17	Net/Balance										
1 Air Liquide Helium America, Inc., Contract no. 3284											
18	Crude Acquired										
19	Crude Disposed										
20	Net/Balance										
4 Keyes Helium Co., LLC, Contract no. 3287											
24	Crude Acquired										
25	Crude Disposed										
26	Net/Balance										
20 Matheson Tri-Gas, Inc., Contract no. 3288											
27	Crude Acquired										
28	Crude Disposed										
29	Net/Balance										
24 Airgas Merchant Gases, Contract no. 3290											
30	Crude Acquired										
31	Crude Disposed										
32	Net/Balance										
25 Global Gases America, Contract no. 3293											
36	Crude Acquired										
37	Crude Disposed										
38	Net/Balance										
26 Riviera Energy, Contract no. 3296											
39	Crude Acquired										
40	Crude Disposed										
41	Net/Balance										
27 IACX Energy, Contract no. 3297											
42	Crude Acquired										
43	Crude Disposed										
44	Net/Balance										
28 Uniper Global Commodities North America LLC, Contract no. 3298											
45	Crude Acquired										
46	Crude Disposed										
47	Net/Balance										

Government Helium		
Remaining Crude Acquired beginning of the month		2,809,679
Crude Disposed: In Kind Sales transferred for the month		0
52 Conservation Crude Sales/Reserve Sell Down transferred (month)		0
53 Gains and Losses for the month		(2,125)
54 Net/Balance of Purchased Helium Remaining for Sale		2,807,554

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

55 ** New Contracts

Table 8 - Compression & CHEU (Operations)

October - 2019

Field/CHEU Compressor Operations

		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$1.25		
Fuel used * (now includes field compression well head)	total MMBTU	7,327	7,327	2,003,342
#1 Compressor run time *	hours	720	720	124,264
#2 Compressor run time *	hours	720	720	84,466
#3 Compressor run time *	hours	0	0	68,855

* Field/CHEU Compressor Operations based on Oct 19 activity

Crude Helium Enrichment Unit (CHEU)

CHEU Runtime

	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	672	90.4%	672	90.4%	138,775
Producing residue gas	647	86.9%	647	86.9%	135,596
Producing helium product	609	81.8%	609	81.8%	131,722
Producing natural gas liquids	634	85.3%	634	85.3%	130,944

CHEU Utility Usage

	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Oct 19	3,218	3,218	649,325
Cheu Pure Water Usage (gallons) Oct 19	710	710	326,503
Electricity Metered (Kwh) CHEU consumed Sep 19	2,358,967	2,358,967	215,554,594

Booster Compressor operations and Usage

	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Sep 19	6,615	6,615	6,615