

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

November - 2019



Distribution:

Fluid Minerals Group Manager, Washington Office
NMSO, New Mexico State Director
NMSO, Associate State Director
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-Federal Leased Lands
-Resources Evaluation & Gas Analysis
-Division Of Helium Operations, -
Engineering and Technical Support

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"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: September 22, 2020

Table 1 - Summary of Helium Operations

November - 2019

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	340,104	49,580	14.58%	737,821	107,140
Helium Product (Mcf*)	70,802	50,464	71.27%	150,024	107,064
Residue Natural Gas (Mcf*)	118,108	0	0.00%	269,965	30

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf****)	116,948	267,012
NGL Sales (gallons)	51,895	119,598

*** 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Total Withdrawn (Mcf*)	349,681	50,912	14.56%	749,765	108,390
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*)	48,787	48,787	176,419	3,898,531
Sale Volumes Outstanding (Mcf*)	7,092			

* Volumes in Mcf at 14.65 psia & 60°F

Private Company Helium Storage Contracts

Contact Activity	Month	Month	Average Percent	Annual
	Gross Volume	Net Helium		Helium FYTD
Crude Acquired (Mcf*)	6,827	5,044	73.88%	10006
Crude Disposed (Mcf*)	79,705	57,129	71.68%	107084
Net Balance (Mcf*)	(72,878)	(52,085)		(97,078)
Balance of Stored Helium End Of Month (Mcf*)		2,381,596		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$896,791	\$1,438,554
Resource Management Fees Billed (\$)	\$274,102	\$274,102
Total Storage and RMF Collected	\$1,170,893	\$1,712,656

Conservation Helium - Natural Gas - Liquid Sales

(Charges Billed (\$))	Month	FYTD
In Kind Sales	\$0	\$0
Natural Gas & Liquid Sales	\$246,452	\$499,634

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$1,814,138	\$2,724,778
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 7

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

November - 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		349,681	245,164,281	50,912	45,325,560	86,130	60,441,112	187,940	124,631,796	21,060	12,680,960	3,638	2,084,852
BIVINS A-3	Nov-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	Nov-19	32,218	13,301,272	11,349	7,596,171	8,017	3,275,383	11,324	2,144,941	1,270	217,023	258	67,754
BIVINS A-13	Nov-19	23,635	9,841,714	7,152	4,898,107	5,917	2,520,403	9,313	2,126,607	1,072	237,330	181	59,266
BIVINS A-14	Nov-19	26,917	11,125,186	6,036	5,930,523	6,593	2,808,852	12,619	2,088,365	1,413	226,822	257	70,625
BIVINS A-4	Nov-19	22,478	14,903,194	2,063	2,542,714	5,340	3,608,301	13,380	7,825,119	1,432	791,304	263	135,757
BUSH A-2	Nov-19	7,370	14,092,003	314	2,023,371	1,838	3,461,094	4,639	7,696,971	531	794,293	48	116,274
Injection	Nov-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	Nov-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	Nov-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	Nov-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	Nov-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	Nov-19	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Nov-19	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Nov-19	0	1,254,876	0	924,742	0	270,231	0	48,129	0	3,199	0	8,575
BIVINS A-1	Nov-19	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Nov-19	13,117	14,805,576	398	1,907,524	3,056	3,616,734	8,587	8,321,892	943	834,498	134	124,929
BIVINS A-5	Nov-19	17,246	17,104,876	3,014	2,239,114	4,355	4,203,532	8,753	9,549,067	981	965,829	144	147,335
BIVINS A-7	Nov-19	11,120	12,363,806	3,345	2,949,915	2,856	3,117,472	4,341	5,629,708	500	576,730	78	89,979
BIVINS A-9	Nov-19	19,999	11,658,924	590	231,048	5,035	2,878,958	12,681	7,661,357	1,508	781,745	184	105,816
BIVINS A-11	Nov-19	13,229	7,203,989	386	161,494	3,302	1,794,787	8,412	4,693,679	987	485,684	141	68,345
BIVINS A-15	Nov-19	22,860	11,201,851	380	454,308	5,236	2,660,458	15,237	7,239,086	1,698	728,975	309	119,026
BIVINS B-1	Nov-19	22,859	9,363,033	522	330,867	5,565	2,272,738	14,878	6,037,099	1,587	622,852	306	99,477
BIVINS B-2	Nov-19	20,688	7,821,868	382	147,322	5,147	1,960,778	13,234	5,073,454	1,516	526,185	409	114,129
BUSH A-1	Nov-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	Nov-19	19,930	13,306,974	6,222	3,248,571	4,981	3,296,497	7,683	6,031,075	869	614,854	175	115,976
BUSH A-4	Nov-19	17,048	9,507,455	1,243	1,654,008	4,341	2,382,931	10,224	4,899,685	1,138	503,755	102	67,077
BUSH A-5	Nov-19	29,543	18,309,735	6,948	4,250,882	7,473	4,601,913	13,419	8,461,594	1,520	869,450	183	125,897
BUSH A-8	Nov-19	12,168	4,993,503	220	91,509	2,986	1,213,119	7,843	3,288,628	888	334,181	232	66,065
BUSH A-9	Nov-19	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Nov-19	12,052	5,114,078	258	144,958	2,877	1,223,556	7,895	3,344,420	841	340,873	180	60,272
BUSH B-1	Nov-19	5,204	3,501,992	91	65,517	1,214	830,338	3,478	2,339,772	366	232,030	55	34,335
FUQUA A-1	Nov-19	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Nov-19	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Nov-19	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Nov-19	407	0	7	0	97	0	267	0	30	0	6	0
field-wide pcts				14.56%	18.49%	24.63%	24.65%	53.75%	50.84%	6.02%	5.17%	1.04%	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 Nov-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	4.800	0.722
Injected to Date 2019	0.000	0.000
Amount of Raw Gas Available to CHEU	69.158	=====> 7.435 total helium in reservoir
Estimated Bottom Hole Pressure	254.773	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

November - 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	Nov-19	340,104	110,056,208	49,580	25,288,237	83,777	27,538,698	182,733	50,800,308	20,478	5,458,378	3,536	970,586
Calculated Feed	Nov-19	349,274	109,942,110	50,905	25,285,376	86,033	27,503,434	187,673	50,704,290	21,030	5,476,030	3,632	972,979
Feed to Box	Nov-19	346,111	109,212,323	50,905	25,285,555	86,033	27,503,516	187,673	50,704,336	21,030	5,476,024	470	242,892
Cheu Product	Nov-19	70,802	32,130,751	50,464	24,919,689	18,117	6,351,697	1,768	637,249	3	925	450	221,191
Residue	Nov-19	118,108	50,444,072	0	2,202	3,261	1,228,808	103,975	44,759,138	10,871	4,452,659	0	1,265
Cold Box Vent	Nov-19	50,708	17,976,985	289	91,683	42,825	15,940,415	7,582	1,882,959	(0)	245	12	61,683
Flare/Boot Strap	Nov-19	50,708	8,493,234	289	52,462	42,825	7,195,417	7,582	1,145,128	(0)	93,710	12	6,516
Fuel From Cheu	Nov-19	5,558	1,497,136	3	503	144	43,108	4,483	1,213,069	929	240,456	0	0
Shrinkage/Loss	Nov-19	7,474	585,532	0	0	0	0	0	0	7,474	585,532	0	0
Unaccounted*	Nov-19	68,448	4,332,441	(789)	165,001	15,138	3,087,837	54,099	1,074,733	0	975	(1)	3,896

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)

	Government	Private
Beginning inventory	2,807,554	2,384,894
net acceptances + redeliveries	0	0
In Kind Transfers	(48,787)	48,787
Conservation Crude Sales	0	0
Gain/loss	(2,310)	
Ending Inventory	2,756,457	2,381,596
Total Helium in Reservoir	7,434,792	
Total Helium in Storage	5,138,053	
Helium in native gas	2,296,739	

Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	42,469	30,450	71.70%
Measured to Pipeline (Private Plants)	6,827	5,044	73.88%
Measured from Pipeline (Private Plant:	79,705	57,129	71.68%
HEU Production	70,802	50,464	71.27%
Injection	0	0	00.00%
Production	0	0	
Ending Inventory	37,042	26,519	71.59%
Gain/Loss	(3,350)	(2,310)	

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

November - 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. INC98-0102										
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							48,787	48,787	176,419	3,898,531
Volume outstanding							7,092			

* 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	116,948	---	128,714	1,101	\$0
FYTD	267,012	---	294,345	1,102	\$0
Cumulative	49,783,050	---	54,209,114	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	---	---	132,000	\$1.617828	\$213,553
FYTD	---	---	303,800	\$1.407516	\$427,603
Cumulative	---	---	54,109,159	\$4.087557	\$220,347,723
Sandstone					
Purchaser - Natural Gas Liquids					
Month	---	51,895	5,627	\$5.846595	\$32,899
FYTD	---	119,598	12,958	\$5.558781	\$72,031
Cumulative	---	15,567,419	1,659,600	\$10.369740	\$17,209,621
Total					
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$\$)
Total month	116,948	51,895	137,627	\$1.790725	\$246,452
Total FYTD	267,012	119,598	316,758	\$1.577337	\$499,634
Total CYTD	2,071,054	821,337	2,408,858	\$1.051431	\$2,532,747
Cumulative	49,783,050	15,567,419	55,768,759	\$4.180040	\$232,289,105

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

November - 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

November - 2019

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$1,812,110	\$2,662,668
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$62,110	\$122,191
Revenue Collected from Federal Lease Holds	\$1,814,138	\$2,724,778

*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)	7	26

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

November - 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
				FYTD	CYTD	Cumulative	Month	Cumulative			
Total All Contracts*											
Crude Acquired	6,827	73.9%	5,044	10,006	101,537	27,467,759	56,801	61,279,662			
Crude Disposed	79,705	71.7%	57,129	107,084	805,031	54,915,494	8,014	26,924,009			\$896,791.30 Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718					\$274,102.14 RMF Fees
Net/Balance	(72,878)		(52,085)	(97,078)	(703,494)	(28,926,453)	48,787	34,355,653	2,381,596	\$1,170,893.43	\$1,712,656
Total Prior Contracts (TERMINATED)											
Crude Acquired				0	0	17,406,129	0	18,235,232			
Crude Disposed				0	0	11,830,863	0	19,187,102			
Grade-A Rdlvrd				0	0	1,478,718					
Number of trailers				0	0	9,834			0		
Messer, LLC, Contract no. 3249											
Crude Acquired											
Crude Disposed											
Net/Balance											
Praxair, Inc., Contract no. 3251											
Crude Acquired											
Crude Disposed											
Net/Balance											
Air Products, L.P., Contract no. 3256											
Crude Acquired											
Crude Disposed											
Net/Balance											
Air Liquide Helium America, Inc., Contract no. 3284											
Crude Acquired											
Crude Disposed											
Net/Balance											
Keyes Helium Co., LLC, Contract no. 3287											
Crude Acquired											
Crude Disposed											
Net/Balance											
Matheson Tri-Gas, Inc., Contract no. 3288											
Crude Acquired											
Crude Disposed											
Net/Balance											
Airgas Merchant Gases, Contract no. 3290											
Crude Acquired											
Crude Disposed											
Net/Balance											
Global Gases America, Contract no. 3293											
Crude Acquired											
Crude Disposed											
Net/Balance											
Scout Energy Partners, Contract no. 3294											
Crude Acquired											
Crude Disposed											
Net/Balance											
IACX Energy, Contract no. 3297											
Crude Acquired											
Crude Disposed											
Net/Balance											
Uniper Global Commodities North America LLC, Contract no. 3298											
Crude Acquired											
Crude Disposed											
Net/Balance											

Government Helium	
Remaining Crude Acquired beginning of the month	2,807,554
Crude Disposed: In Kind Sales transferred for the month	(48,787)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Losses for the month	(2,310)
Net/Balance of Purchased Helium Remaining for Sale	2,756,457

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

** New Contracts

Table 8 - Compression & CHEU (Operations)

November - 2019

Field/CHEU Compressor Operations		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$1.62		
Fuel used * (now includes field compression well head)	total MMBTU	7,147	14,474	2,010,489
#1 Compressor run time *	hours	0	720	124,264
#2 Compressor run time *	hours	540	1,260	85,006
#3 Compressor run time *	hours	536	536	69,391

* Field/CHEU Compressor Operations based on Nov 19 activity

Crude Helium Enrichment Unit (CHEU) CHEU Runtime	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	576	80.0%	1,249	85.3%	139,352
Producing residue gas	554	76.9%	1,201	82.0%	136,150
Producing helium product	533	74.0%	1,142	78.0%	132,256
Producing natural gas liquids	553	76.8%	1,188	81.1%	131,497

CHEU Utility Usage	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Nov 19	22,862	26,080	672,187
Cheu Pure Water Usage (gallons) Nov 19	298	1,008	326,801
Electricity Metered (Kwh) CHEU consumed Oct 19	2,092,813	4,451,780	217,647,407

Booster Compressor operations and Usage	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Oct 19	27,779	34,394	34,394