

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

March - 2020



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: January 29, 2021

"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: January 29, 2021

Table 1 - Summary of Helium Operations

March - 2020

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	440,271	66,040	15.00%	2,603,363	387,693
Helium Product (Mcf*)	91,992	65,925	71.66%	542,487	388,646
Residue Natural Gas (Mcf*)	217,451	9	0.00%	1,139,990	64

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf****)	215,079	1,127,137
NGL Sales (gallons)	81,617	429,872

*** 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Total Withdrawn (Mcf*)	450,305	66,599	14.79%	2,628,930	389,987
Crude Injection (Mcf*)	1,959	1,345	68.66%	1,959	1,345
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*)	6,413	112,261	60,792	3,962,005
Sale Volumes Outstanding (Mcf*)	37,019			

* 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*)	14,778	10,452	70.73%	55973
Crude Disposed (Mcf*)	89,779	63,424	70.64%	412747
Net Balance (Mcf*)	(75,001)	(52,972)		(356,774)
Balance of Stored Helium End Of Month (Mcf*)		2,185,374		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$923,493	\$5,314,664
Resource Management Fees Billed (\$)	\$274,090	\$1,370,462
Total Storage and RMF Collected	\$1,197,583	\$6,685,126

Conservation Helium - Natural Gas - Liquid Sales

(Charges Billed (\$))	Month	FYTD
In Kind Sales	\$4,735,831	\$8,970,741
Natural Gas & Liquid Sales	\$175,193	\$1,445,081

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$2,151,580	\$10,681,975
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 17

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

March - 2020

		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		450,305	247,043,445	66,599	45,607,158	111,617	60,909,312	242,550	125,648,007	24,647	12,774,968	4,891	2,104,001
BIVINS A-3	Mar-20	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	Mar-20	39,403	13,478,503	13,611	7,657,998	9,808	3,319,504	14,078	2,207,724	1,592	224,102	315	69,175
BIVINS A-13	Mar-20	31,525	9,974,299	9,258	4,936,925	7,890	2,553,593	12,660	2,179,968	1,474	243,528	242	60,286
BIVINS A-14	Mar-20	37,460	11,278,407	8,188	5,964,145	9,155	2,846,341	17,749	2,160,824	2,006	235,000	362	72,097
BIVINS A-4	Mar-20	31,383	15,027,637	2,891	2,554,255	7,607	3,638,526	19,034	7,900,706	1,484	796,933	368	137,217
BUSH A-2	Mar-20	4,386	14,114,179	192	2,024,333	1,138	3,466,765	2,876	7,711,292	152	795,373	28	116,416
Injection	Mar-20	1,959	66,476,694	1,345	48,021,133	550	17,122,130	52	780,728	1	38	11	552,666
inj Bivins A-3	Mar-20	0	(25,652,315)	0	(18,384,452)	0	(6,554,549)	0	(332,777)	0	0	0	(380,537)
inj Bivins A-6	Mar-20	(1,959)	(24,414,645)	(1,321)	(17,671,299)	(563)	(6,487,151)	(64)	(143,255)	(0)	(73)	(11)	(112,867)
inj Bivins A-13	Mar-20	0	(6,490,417)	0	(4,706,191)	0	(1,656,853)	0	(122,391)	0	(2)	0	(4,980)
inj Bivins A-14	Mar-20	0	(6,501,333)	0	(4,767,421)	0	(1,602,106)	0	(126,303)	0	(7)	0	(5,497)
inj Bivins A-4	Mar-20	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Mar-20	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Mar-20	0	1,254,876	0	924,742	0	270,231	0	48,129	0	3,199	0	8,575
BIVINS A-1	Mar-20	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Mar-20	18,658	14,880,062	568	1,909,813	4,437	3,634,461	12,466	8,371,705	997	838,395	190	125,687
BIVINS A-5	Mar-20	25,053	17,205,736	4,458	2,257,060	6,428	4,229,495	12,913	9,601,276	1,045	969,728	209	148,177
BIVINS A-7	Mar-20	15,251	12,425,861	4,643	2,968,794	3,965	3,133,670	6,039	5,654,423	497	578,560	107	90,415
BIVINS A-9	Mar-20	23,407	11,761,996	698	234,118	5,830	2,904,939	14,605	7,726,865	2,020	789,249	255	106,824
BIVINS A-11	Mar-20	18,255	7,277,993	535	163,696	4,504	1,813,317	11,437	4,741,005	1,550	490,842	229	69,132
BIVINS A-15	Mar-20	23,959	11,308,048	390	456,062	5,441	2,684,910	15,771	7,310,314	1,988	736,385	369	120,376
BIVINS B-1	Mar-20	29,363	9,485,142	682	333,717	7,284	2,303,077	19,472	6,118,205	1,531	629,029	394	101,114
BIVINS B-2	Mar-20	23,619	7,924,916	425	149,210	5,828	1,986,667	14,889	5,139,768	1,941	533,256	537	116,014
BUSH A-1	Mar-20	0	5,721,962	0	104,140	0	1,356,677	0	3,830,281	0	374,216	0	56,647
BUSH A-3	Mar-20	25,877	13,417,043	8,223	3,283,637	6,551	3,324,444	10,076	6,074,059	800	617,956	228	116,947
BUSH A-4	Mar-20	23,834	9,600,963	1,688	1,660,787	6,138	2,407,201	14,515	4,957,006	1,357	508,340	137	67,629
BUSH A-5	Mar-20	40,196	18,475,791	9,373	4,289,937	10,319	4,644,671	18,740	8,539,030	1,513	875,219	251	126,934
BUSH A-8	Mar-20	16,118	5,057,418	284	92,657	3,904	1,228,861	10,251	3,330,105	1,328	338,617	351	67,180
BUSH A-9	Mar-20	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Mar-20	16,943	5,182,204	374	146,459	4,118	1,240,161	11,307	3,390,006	890	344,287	253	61,290
BUSH B-1	Mar-20	5,613	3,523,998	94	65,895	1,286	835,452	3,683	2,354,461	481	233,620	69	34,570
FUQUA A-1	Mar-20	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Mar-20	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Mar-20	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Mar-20	269	0	4	0	62	0	180	0	19	0	3	0
field-wide pcts				14.79%	18.46%	24.79%	24.66%	53.86%	50.86%	5.47%	5.17%	1.09%	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 Mar-20 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 - 19	113.305	27.048
Injection 2003 - 19	(1.423)	(1.159)
Produced to Date 2020	1.402	0.211
Injected to Date 2020	(0.002)	(0.001)
Amount of Raw Gas Available to CHEU	67.281	=====> 7.155 total helium in reservoir
Estimated Bottom Hole Pressure	247.867	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

March - 2020

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	Mar-20	440,271	111,921,750	66,040	25,568,790	109,200	28,003,606	236,301	51,808,321	23,961	5,551,458	4,769	989,575
Calculated Feed	Mar-20	450,603	111,821,376	66,960	25,567,331	111,728	27,971,701	242,396	51,720,216	24,628	5,570,003	4,891	992,125
Feed to Box	Mar-20	446,329	111,075,047	66,960	25,567,510	111,728	27,971,783	242,396	51,720,262	24,628	5,569,998	616	245,495
Cheu Product	Mar-20	91,992	32,523,214	65,925	25,201,270	23,336	6,451,020	2,137	646,284	3	935	591	223,704
Residue	Mar-20	217,451	51,314,096	9	2,235	5,916	1,252,280	191,761	45,526,146	19,766	4,532,171	0	1,265
Cold Box Vent	Mar-20	63,782	18,251,437	65	92,123	54,015	16,174,286	9,690	1,923,042	(0)	245	13	61,740
Flare/Boot Strap	Mar-20	14,052	8,588,580	728	53,852	4,013	7,263,324	8,216	1,169,520	1,090	95,341	6	6,542
Fuel From Cheu	Mar-20	7,001	1,526,802	4	518	181	43,876	5,647	1,236,995	1,170	245,413	0	0
Shrinkage/Loss	Mar-20	2,600	592,821	0	0	0	0	0	0	2,600	592,821	0	0
Unaccounted*	Mar-20	49,451	4,587,909	230	162,987	24,268	3,188,985	24,947	1,231,052	0	974	7	3,911

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)

	Government	Private
Beginning inventory	2,690,066	2,231,933
net acceptances +	0	0
redeliveries	0	(52,972)
In Kind Transfers	(6,413)	6,413
Conservation Crude Sales	0	0
Gain/loss	(5,047)	0
Ending Inventory	2,678,606	2,185,374
Total Helium in Reservoir	7,154,540	
Total Helium in Storage	4,863,980	
Helium in native gas	2,290,559	

Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	36,132	25,986	71.92%
Measured to Pipeline (Private Plants)	14,778	10,453	70.73%
Measured from Pipeline (Private Plant)	89,779	63,428	70.65%
HEU Production	91,992	65,925	71.66%
Injection	1,959	1,345	68.66%
Production	0	0	
Ending Inventory	45,903	32,651	71.13%
Gain/Loss	(5,260)	(4,940)	

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

March - 2020

NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)***	
In Kind Helium (billed quarterly)									
Airgas Merchant Gases, Contract no. INC18-0102									
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									
	21,328	43	0	0	0	28,219	49,591	48,823	\$4,735,831
Total FYTD									
	41,623	96	0	0	0	53,152	94,870	93,401	\$8,970,741
Total CYTD									
	21,328	43	0	0	0	28,219	49,591	48,823	\$4,735,831
Cumulative									
	2,174,688	108,913	450	271,593	422,045	1,084,156	4,061,845	3,998,949	\$249,690,168

* 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	215,079	---	236,693	1,100	\$0
FYTD	1,127,137	---	1,240,721	1,101	\$0
Cumulative	50,643,175	---	55,155,490	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	---	---	259,900	\$0.638451	\$165,933
FYTD	---	---	1,274,000	\$0.968653	\$1,234,064
Cumulative	---	---	55,079,359	\$4.030198	\$221,154,184
Sandstone Purchaser - Natural Gas Liquids					
Month	---	81,617	8,809	\$1.051214	\$9,260
FYTD	---	429,872	46,452	\$4.542672	\$211,016
Cumulative	---	15,877,693	1,693,094	\$10.246688	\$17,348,606
Total					
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$\$)
Total month	215,079	81,617	268,709	\$0.651982	\$175,193
Total FYTD	1,127,137	429,872	1,320,452	\$1.094383	\$1,445,081
Total CYTD	674,767	228,589	791,558	\$0.822434	\$651,004
Cumulative	50,643,175	15,877,693	56,772,453	\$4.122794	\$233,234,552

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

March - 2020

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

March - 2020

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$2,151,498	\$10,613,534
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$68,442	\$367,774
Revenue Collected from Federal Lease Holds	\$2,151,580	\$10,681,975

*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)	17	80

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

March - 2020

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	Cumulative		Month	FYTD
	Month		FYTD	CYTD	Cumulative					
Total All Contracts*										
Crude Acquired	14,778	70.7%	10,452	55,973	32,785	27,513,726	16,217	61,428,925		
Crude Disposed	89,779	70.6%	63,424	412,747	223,999	55,221,157	9,804	26,978,179	\$923,492.54	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718			<u>\$274,090.06</u>	RMF Fees
Net/Balance	(75,001)		(52,972)	(356,774)	(191,214)	(29,186,149)	6,413	34,450,746	2,185,374	\$1,197,582.60 \$6,685,126
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	2,690,066
Crude Disposed: In Kind Sales transferred for the month	(6,413)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Losses for the month	(5,047)
Net/Balance of Purchased Helium Remaining for Sale	2,678,606

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

** New Contracts

Table 8 - Compression & CHEU (Operations)

March - 2020

Field/CHEU Compressor Operations		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$0.64		
Fuel used * (now includes field compression well head)	total MMBTU	8,646	49,548	2,045,563
#1 Compressor run time *	hours	88	1,158	124,702
#2 Compressor run time *	hours	675	3,743	87,489
#3 Compressor run time *	hours	606	3,298	72,153

* Field/CHEU Compressor Operations based on Mar 20 activity

Crude Helium Enrichment Unit (CHEU) CHEU Runtime	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	718	96.5%	4,143	94.3%	142,246
Producing residue gas	711	95.5%	4,072	92.7%	139,022
Producing helium product	675	90.7%	3,952	90.0%	135,066
Producing natural gas liquids	704	94.6%	4,048	92.2%	134,357

CHEU Utility Usage	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Mar 20	2,997	39,370	685,477
Cheu Pure Water Usage (gallons) Mar 20	240	2,324	328,117
Electricity Metered (Kwh) CHEU consumed Feb 20	2,789,278	14,967,397	228,163,024

Booster Compressor Operations and Usage	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Feb 20	771,592	2,020,331	2,020,331