

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

March - 2021



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)
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-Federal Leased Lands
-Resources Evaluation & Gas Analysis
-Division Of Helium Operations, -
Engineering and Technical Support

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Compiled by: David Reeves
Amarillo, Texas
Issued: May 2, 2022

**"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:

May 2, 2022

Table 1 - Summary of Helium Operations

March - 2021

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	241,758	28,292	11.70%	2,233,061	279,243
Helium Product (Mcf*)	40,593	27,981	68.93%	413,021	287,119
Residue Natural Gas (Mcf*)	102,943	3	0.00%	997,420	19

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf****)	100,668	979,193
NGL Sales (gallons)	44,658	377,728

*** 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Total Withdrawn (Mcf*)	238,191	25,424	10.67%	2,201,809	271,116
Crude Injection (Mcf*)	4,576	3,170	69.27%	80,974	56,258
Crude Production (Mcf*)	0	0	00.00%	588	392

* Volumes in Mcf at 14.65 psia & 60°F

Storage Operations

In Kind Helium	Month	FYTD	CYTD	Cumulative
Sale Volumes Transferred (Mcf*)	8,292	108,106	59,695	4,175,164
Sale Volumes Outstanding (Mcf*)	(21,837)			

* 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*)	29,494	21,067	71.43%	93,442
Crude Disposed (Mcf*)	69,735	49,296	70.69%	290,279
Net Balance (Mcf*)	(40,241)	(28,229)		(196,837)
Balance of Stored Helium End Of Month (Mcf*)		2,160,082		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$636,390	\$3,624,130
Resource Management Fees Billed (\$)	\$263,097	\$1,315,496
Total Storage and RMF Collected	\$899,487	\$4,939,626

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

	Month	FYTD
In Kind Sales	\$6,243,831	\$6,243,831
Natural Gas & Liquid Sales	\$308,100	\$7,093,479

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$2,171,941	\$11,914,139
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 5

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

March - 2021

		Gross Withdrawal		Net Helium Withdrawal		Nitrogen		Methane	Methane	Ethane plus		Other (CO2, Ar, H2)	Cumulative
		Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	Cumulative	Month	
TOTAL		238,191	251,081,932	25,424	46,105,402	70,505	61,925,775	127,970	127,897,951	12,331	13,007,218	1,961	2,145,587
BIVINS A-3	Mar-21	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-21	1,218	13,508,320	406	7,677,634	656	3,328,507	153	2,208,733	0	224,104	3	69,343
BIVINS A-13	Mar-21	19,456	10,292,522	2,152	5,019,537	16,156	2,651,077	1,060	2,301,940	(0)	257,284	88	62,685
BIVINS A-14	Mar-21	21,097	11,642,095	4,027	6,035,289	5,115	2,934,701	10,556	2,341,161	1,192	255,293	208	75,651
BIVINS A-4	Mar-21	16,306	15,310,395	1,453	2,578,984	3,936	3,705,866	9,901	8,070,217	934	815,026	82	140,302
BUSH A-2	Mar-21	4,923	14,177,519	199	2,026,943	1,221	3,482,508	3,093	7,751,095	378	800,130	33	116,844
Injection	Mar-21	4,576	66,746,479	3,170	48,210,160	1,268	17,195,233	111	786,385	0	45	27	554,658
inj Bivins A-3	Mar-21	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-21	(4,278)	(24,682,042)	(2,933)	(17,858,331)	(1,214)	(6,559,973)	(106)	(149,152)	(0)	(83)	(25)	(114,504)
inj Bivins A-13	Mar-21	(298)	(6,492,805)	(33)	(4,707,225)	(247)	(1,657,688)	(16)	(122,847)	0	(51)	(1)	(4,995)
inj Bivins A-14	Mar-21	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-21	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Mar-21	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Mar-21	0	1,257,144	0	926,242	0	270,854	0	48,257	0	3,205	0	8,588
BIVINS A-1	Mar-21	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Mar-21	11,299	15,069,521	354	1,915,694	2,799	3,680,977	7,865	8,502,417	269	844,281	12	126,153
BIVINS A-5	Mar-21	12,512	17,427,379	2,324	2,296,590	3,142	4,285,225	6,184	9,713,079	754	982,447	108	150,039
BIVINS A-7	Mar-21	7,896	12,565,706	2,366	3,010,996	1,998	3,169,621	3,031	5,709,158	439	584,580	62	91,351
BIVINS A-9	Mar-21	15,182	12,018,302	463	241,932	3,847	2,969,874	9,657	7,889,917	1,078	807,448	137	109,131
BIVINS A-11	Mar-21	9,818	7,448,266	295	168,763	2,439	1,855,703	6,275	4,849,898	704	502,975	105	70,927
BIVINS A-15	Mar-21	16,717	11,567,751	273	460,306	3,818	2,744,357	11,227	7,484,712	1,179	754,619	220	123,758
BIVINS B-1	Mar-21	17,011	9,774,628	405	340,293	4,403	2,374,090	11,780	6,308,038	398	645,456	26	106,750
BIVINS B-2	Mar-21	14,932	8,182,613	272	153,904	3,729	2,051,111	9,589	5,305,330	1,045	551,181	297	121,086
BUSH A-1	Mar-21	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-21	13,497	13,651,520	4,343	3,358,752	3,436	3,383,930	5,266	6,165,278	404	625,565	47	117,995
BUSH A-4	Mar-21	13,427	9,824,420	784	1,674,924	3,423	2,464,111	8,226	5,092,865	916	523,573	78	68,947
BUSH A-5	Mar-21	21,477	18,853,499	4,685	4,374,232	5,427	4,740,171	10,085	8,714,703	1,147	895,110	133	129,283
BUSH A-8	Mar-21	8,708	5,205,627	159	95,309	2,138	1,265,251	5,642	3,426,265	605	348,868	164	69,934
BUSH A-9	Mar-21	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Mar-21	9,451	5,339,659	205	149,875	2,265	1,277,865	6,211	3,493,424	646	355,097	124	63,398
BUSH B-1	Mar-21	3,262	3,578,937	55	66,823	751	848,129	2,178	2,391,150	243	237,686	35	35,150
FUQUA A-1	Mar-21	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Mar-21	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Mar-21	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Mar-21	541	0	0	0	536	0	4	0	1	0	0	0
field-wide pct's				10.67%	18.36%	29.60%	24.66%	53.73%	50.94%	5.18%	5.18%	0.82%	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-21 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 - 20	117.747	27.641
Injection 2003 - 20	(1.660)	(1.325)
Produced to Date 2021	0.999	0.116
Injected to Date 2021	(0.035)	(0.024)
Amount of Raw Gas Available to CHEU	63.513	=====> 6.845 total helium in reservoir
Estimated Bottom Hole Pressure	234.002	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 - 2021

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-21	241,758	116,006,774	28,292	26,077,495	64,451	29,019,655	132,607	54,080,723	14,070	5,797,030	2,338	1,031,871
Calculated Feed	Mar-21	239,303	115,945,330	26,360	26,128,168	70,625	29,010,011	128,018	53,971,066	12,330	5,802,083	1,970	1,034,000
Feed to Box	Mar-21	237,632	115,162,296	26,360	26,128,347	70,625	29,010,093	128,018	53,971,112	12,330	5,802,078	299	250,666
Cheu Product	Mar-21	40,593	33,261,237	27,981	25,716,781	11,366	6,651,781	1,000	663,535	1	954	245	228,187
Residue	Mar-21	102,943	53,143,327	3	2,277	3,552	1,301,923	89,973	47,137,463	9,415	4,700,399	0	1,265
Cold Box Vent	Mar-21	33,727	18,835,942	555	94,114	27,500	16,667,696	5,658	2,011,924	2	336	11	61,872
Flare/Boot Strap	Mar-21	6,284	8,821,525	107	62,731	1,862	7,333,579	3,922	1,309,035	392	109,552	1	6,628
Fuel From Cheu	Mar-21	3,157	1,591,972	2	551	82	45,564	2,546	1,289,554	528	256,303	0	0
Shrinkage/Loss	Mar-21	1,994	631,554	0	0	0	0	0	0	1,994	631,554	0	0
Unaccounted*	Mar-21	48,934	5,186,551	(2,288)	197,369	26,263	3,411,537	24,919	1,572,380	(2)	884	42	4,381

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)

	Government	Private
Beginning inventory	2,377,672	2,180,019
net acceptances +	0	0
redeliveries	0	(28,229)
In Kind Transfers	(8,292)	8,292
Conservation Crude Sales	0	0
Gain/loss	(3,250)	0
Ending Inventory	2,366,130	2,160,082
Total Helium in Reservoir	6,845,322	
Total Helium in Storage	4,526,212	
Helium in native gas	2,319,110	

Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	43,085	29,531	68.54%
Measured to Pipeline (Private Plants)	29,494	21,076	71.46%
Measured from Pipeline (Private Plant:	69,735	49,399	70.84%
HEU Production	40,593	27,981	68.93%
Injection	4,576	3,170	69.27%
Production	0	0	
Ending Inventory	32,336	22,769	70.42%
Gain/Loss	(6,526)	(3,250)	49.81%

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 - 2021

NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)**		
In Kind Helium								(billed quarterly)		
Airgas Merchant Gases, Contract no.										
Month										
FYTD										
Air Liquide Helium America, Inc., Contract no. INC22-0104										
Month										
FYTD										
Air Products, L.P., Contract no. INC22-0105										
Month										
FYTD										
Messer, LLC, Contract no. INC22-0106										
Month										
FYTD										
Linde, Contract no. INC22-0112										
Month										
FYTD										
Matheson Tri-Gas, Inc., Contract no. INC22-0114										
Month										
FYTD										
Global Gases America, Contract no. INC22-0116										
Month										
FYTD										
Total month	41,628	26	7	1	0	22,402	64,063	63,069	\$6,243,831	
Total FYTD	41,628	26	7	1	0	22,402	64,063	63,069	\$6,243,831	
Total CYTD	41,628	26	7	1	0	22,402	64,063	63,069	\$6,243,831	
Cumulative	2,266,536	108,950	462	271,595	422,045	1,148,990	4,218,578	4,153,252	\$264,783,503	
In Kind Transfers							Month	FYTD	CYTD	Cumulative
Transferred							8,292	108,106	59,695	4,175,164
Volume outstanding							(21,837)			

* 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 (\$)**
EI Paso Natural Gas	<Chk Data>	Provides Measured Firm/Interruptible Transportation Services			(billed monthly)
Month	100,668	---	110,821	1,101	\$0
FYTD	979,193	---	1,077,753	1,101	\$0
Cumulative	52,442,352	---	57,136,543	1,090	(\$5,088,325)
Minerals Management Service	No Longer Provides Natural Gas Marketing Services				
Cumulative	---	---	---	---	(\$179,913)
ETC Marketing Ltd		Purchaser - Natural Gas		\$\$/Unit	
Month	---	---	117,100	\$2.303057	\$269,688
FYTD	---	---	1,120,100	\$6.132313	\$6,868,803
Cumulative	---	---	57,141,959	\$4.025752	\$229,212,786
Sandstone		Purchaser - Natural Gas Liquids			
Month	---	44,658	4,827	\$7.957664	\$38,412
FYTD	---	377,728	40,775	\$5.510127	\$224,675
Cumulative	---	16,587,362	1,769,940	\$9.959853	\$17,628,342
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$)
Total month	100,668	44,658	121,927	\$2.526919	\$308,100
Total FYTD	979,193	377,728	1,160,875	\$6.110459	\$7,093,479
Total CYTD	436,938	168,710	526,783	\$10.896599	\$5,740,143
Cumulative	52,442,352	16,587,362	58,911,899	\$4.114609	\$241,572,890

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

March - 2021

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 - 2021

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$2,055,787	\$11,788,641
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$125,498	\$380,603
Revenue Collected from Federal Lease Holds	\$2,171,941	\$11,914,139

*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)	5	68

U. S. Helium Production

<i>Domestic</i>			CY Volume
2016 Helium Sold			3,294,447
2017 Helium Sold			3,703,527
2018 Helium Sold			3,529,583
2019 Helium Sold			3,229,482
2020 Helium Sold			2,972,672
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 - 2021

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	Month	FYTD	CYTD	Cumulative						
Total All Contracts*											
Crude Acquired	29,494	71.4%	21,067	93,442	46,145	27,707,482	31,738	61,939,515			
Crude Disposed	69,735	70.7%	49,296	290,279	135,851	55,653,364	23,446	27,179,227		\$636,389.80	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718				<u>\$263,096.71</u>	RMF Fees
Net/Balance	(40,241)		(28,229)	(196,837)	(89,706)	(29,424,600)	8,292	34,760,288	2,160,082	\$899,486.51	\$4,939,626
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											
Linde, 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	2,377,672
Crude Disposed: In Kind Sales transferred for the month	(8,292)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Losses for the month	(3,250)
Net/Balance of Purchased Helium Remaining for Sale	2,366,130

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

** New Contracts

Table 8 - Compression & CHEU (Operations)

March - 2021

Field/CHEU Compressor Operations		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$2.30		
Fuel used * (now includes field compression well head)	total MMBTU	3,284	44,141	2,126,539
#1 Compressor run time *	hours	0	1,157	126,470
#2 Compressor run time *	hours	316	3,663	93,811
#3 Compressor run time *	hours	277	2,167	77,095

* Field/CHEU Compressor Operations based on Mar 21 activity

Crude Helium Enrichment Unit (CHEU) CHEU Runtime	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	412	55.4%	3,885	88.9%	149,309
Producing residue gas	393	52.8%	3,730	85.4%	145,896
Producing helium product	369	49.5%	3,601	82.4%	141,648
Producing natural gas liquids	367	49.4%	3,551	81.3%	141,020

CHEU Utility Usage	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Mar 21	1,491	16,896	720,123
Cheu Pure Water Usage (gallons) Mar 21	294	6,334	336,524
Electricity Metered (Kwh) CHEU consumed Feb 21	2,615,332	16,171,611	257,199,420

Booster Compressor Operations and Usage	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Feb 21	577,940	4,009,405	9,149,485