

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

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

List of Tables

Table 1 - Summary of Helium Operations
Table 2 - Bush Dome Reservoir Operations
Table 3 - Gas Volumes & Inventory
Table 4 - In Kind Helium Sales
Table 4 - Natural Gas / Natural Gas Liquid Sales
Table 5 - Conservation Crude Sales/Reserve Sell-down
Table 6 - Helium Resources Evaluation
Table 7 - Helium Storage Contract Activity
Table 8 - Compression & CHEU (Operations)

Compiled by: David Reeves
Amarillo, Texas
Issued: June 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 27, 2022

Table 1 - Summary of Helium Operations

April - 2021

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	202,432	24,483	12.09%	2,435,492	303,727
Helium Product (Mcf*)	36,491	25,282	69.28%	449,512	312,402
Residue Natural Gas (Mcf*)	66,148	0	00.00%	1,063,569	19

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf***)	65,370	1,044,563
NGL Sales (gallons)	37,410	415,138

*** 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Total Withdrawn (Mcf*)	200,438	22,380	11.17%	2,402,247	293,496
Crude Injection (Mcf*)	4,969	3,459	69.61%	85,942	59,717
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*)	9,803	117,909	69,498	4,184,967
Sale Volumes Outstanding (Mcf*)	(31,640)			

* 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*)	25,388	18,087	71.24%	111,529
Crude Disposed (Mcf*)	51,647	36,690	71.04%	326,969
Net Balance (Mcf*)	(26,259)	(18,603)		(215,440)
Balance of Stored Helium End Of Month (Mcf*)		2,151,282		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$608,208	\$4,232,338
Resource Management Fees Billed (\$)	\$263,097	\$1,578,592
Total Storage and RMF Collected	\$871,304	\$5,810,930

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

	Month	FYTD
In Kind Sales	\$0	\$6,360,750
Natural Gas & Liquid Sales	\$178,729	\$7,272,208

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$2,007,132	\$13,921,272
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 5

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

April - 2021

		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		200,438	251,282,370	22,380	46,127,782	58,086	61,983,861	106,343	128,004,294	11,689	13,018,906	1,940	2,147,527
BIVINS A-3	Apr-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	Apr-21	2,884	13,511,204	1,889	7,679,522	886	3,329,393	93	2,208,826	(0)	224,104	16	69,358
BIVINS A-13	Apr-21	15,367	10,307,890	1,700	5,021,237	12,761	2,663,837	838	2,302,778	(0)	257,284	69	62,754
BIVINS A-14	Apr-21	16,069	11,658,164	3,038	6,038,327	3,882	2,938,583	8,076	2,349,237	913	256,206	159	75,810
BIVINS A-4	Apr-21	13,355	15,323,750	1,190	2,580,173	3,224	3,709,090	8,109	8,078,326	765	815,791	67	140,369
BUSH A-2	Apr-21	5,170	14,182,689	167	2,027,111	1,033	3,483,541	2,617	7,753,711	1,147	801,276	206	117,050
Injection	Apr-21	4,969	66,751,448	3,459	48,213,618	1,364	17,196,597	115	786,499	1	46	30	554,688
inj Bivins A-3	Apr-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	Apr-21	(4,667)	(24,686,709)	(3,145)	(17,861,476)	(1,380)	(6,561,353)	(114)	(149,266)	(0)	(83)	(28)	(114,532)
inj Bivins A-13	Apr-21	(302)	(6,493,107)	(33)	(4,707,259)	(251)	(1,657,938)	(16)	(122,863)	0	(51)	(1)	(4,996)
inj Bivins A-14	Apr-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	Apr-21	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Apr-21	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Apr-21	0	1,257,144	0	926,242	0	270,854	0	48,257	0	3,205	0	8,588
BIVINS A-1	Apr-21	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Apr-21	9,342	15,078,863	292	1,915,986	2,314	3,683,291	6,503	8,508,920	222	844,503	10	126,164
BIVINS A-5	Apr-21	10,323	17,437,702	1,919	2,298,509	2,582	4,287,807	5,073	9,718,152	655	983,101	94	150,133
BIVINS A-7	Apr-21	6,257	12,571,964	1,736	3,012,732	1,466	3,171,087	2,219	5,711,377	695	585,275	142	91,493
BIVINS A-9	Apr-21	12,515	12,030,817	382	242,314	3,179	2,973,053	7,953	7,897,870	889	808,337	113	109,243
BIVINS A-11	Apr-21	7,939	7,456,205	241	169,005	1,978	1,857,682	5,071	4,854,968	565	503,540	84	71,011
BIVINS A-15	Apr-21	14,834	11,582,585	243	460,549	3,396	2,747,753	9,959	7,494,671	1,041	755,660	195	123,953
BIVINS B-1	Apr-21	13,857	9,788,485	330	340,623	3,586	2,377,676	9,596	6,317,634	324	645,780	21	106,771
BIVINS B-2	Apr-21	12,510	8,195,123	229	154,133	3,134	2,054,246	8,027	5,313,358	869	552,050	250	121,335
BUSH A-1	Apr-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	Apr-21	12,164	13,663,684	3,914	3,362,666	3,097	3,387,027	4,746	6,170,025	364	625,929	43	118,038
BUSH A-4	Apr-21	11,303	9,835,723	635	1,675,559	2,855	2,466,967	6,877	5,099,742	863	524,436	73	69,020
BUSH A-5	Apr-21	17,637	18,871,136	3,827	4,378,059	4,424	4,744,595	8,210	8,722,913	1,058	896,167	118	129,402
BUSH A-8	Apr-21	7,424	5,213,051	134	95,443	1,830	1,267,081	4,808	3,431,072	513	349,381	140	70,074
BUSH A-9	Apr-21	(0)	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Apr-21	8,112	5,347,771	176	150,051	1,944	1,279,808	5,331	3,498,755	555	355,652	106	63,504
BUSH B-1	Apr-21	3,376	3,582,313	57	66,881	780	848,908	2,253	2,393,403	250	237,935	36	35,185
FUQUA A-1	Apr-21	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Apr-21	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Apr-21	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Apr-21	460	0	0	0	456	0	3	0	1	0	0	0
field-wide pcts				11.17%	18.36%	28.98%	24.67%	53.06%	50.94%	5.83%	5.18%	0.97%	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 Apr-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	1.200	0.139
Injected to Date 2021	(0.040)	(0.028)
Amount of Raw Gas Available to CHEU	63.317	=====> 6.826 total helium in reservoir
Estimated Bottom Hole Pressure	233.283	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

April - 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	Apr-21	202,432	116,209,206	24,483	26,101,979	54,324	29,073,979	109,522	54,190,246	12,063	5,809,093	2,039	1,033,910
Calculated Feed	Apr-21	201,430	116,146,759	23,111	26,151,280	58,294	29,068,304	106,389	54,077,455	11,688	5,813,771	1,948	1,035,949
Feed to Box	Apr-21	199,735	115,362,031	23,111	26,151,458	58,294	29,068,386	106,389	54,077,501	11,688	5,813,765	254	250,920
Cheu Product	Apr-21	36,491	33,297,729	25,282	25,742,064	10,073	6,661,853	916	664,450	1	955	220	228,407
Residue	Apr-21	66,148	53,209,476	0	2,277	2,720	1,304,643	57,420	47,194,883	6,009	4,706,407	0	1,265
Cold Box Vent	Apr-21	26,313	18,862,255	105	94,219	22,236	16,689,932	3,965	2,015,889	1	337	6	61,879
Flare/Boot Strap	Apr-21	20,155	8,841,680	195	62,926	5,748	7,339,327	12,808	1,321,843	1,398	110,949	6	6,634
Fuel From Cheu	Apr-21	2,492	1,594,464	1	552	65	45,628	2,010	1,291,564	416	256,720	0	0
Shrinkage/Loss	Apr-21	3,864	635,418	0	0	0	0	0	0	3,864	635,418	0	0
Unaccounted*	Apr-21	44,271	5,230,822	(2,473)	194,896	17,453	3,428,990	29,270	1,601,650	(1)	883	22	4,403

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)

	Government	Private
Beginning inventory	2,366,130	2,160,082
net acceptances +	0	0
redeliveries	0	(18,603)
In Kind Transfers	(9,803)	9,803
Conservation Crude Sales	0	0
Gain/loss	(2,848)	0
Ending Inventory	2,353,478	2,151,282
Total Helium in Reservoir	6,826,400	
Total Helium in Storage	4,504,760	
Helium in native gas	2,321,640	

Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	32,336	22,769	70.42%
Measured to Pipeline (Private Plants)	25,388	18,087	71.24%
Measured from Pipeline (Private Plant)	51,647	36,690	71.04%
HEU Production	36,491	25,282	69.28%
Injection	4,969	3,459	69.61%
Production	0	0	
Ending Inventory	32,815	23,141	70.52%
Gain/Loss	(4,784)	(2,848)	59.54%

Tuck Trigg 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

April - 2021

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										
0	0	0	0	0	0	0	0	\$0		
Total FYTD										
41,628	26	7	1	0	23,602	65,263	64,250	\$6,360,750		
Total CYTD										
41,628	26	7	1	0	23,602	65,263	63,069	\$6,360,750		
Cumulative										
2,266,536	108,950	462	271,595	422,045	1,150,190	4,219,777	4,153,252	\$264,900,422		
In Kind Transfers							Month	FYTD	CYTD	Cumulative
Transferred							9,803	117,909	69,498	4,184,967
Volume outstanding							(31,640)			

* Volumes in Mcf at 14.7 psia & 70°F

**Rounded to nearest dollar

+ Volumes in Mcf at 14.65 psia & 60°F

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	65,370	---	71,970	1,101	\$0
FYTD	1,044,563	---	1,149,723	1,101	\$0
Cumulative	52,507,722	---	57,208,513	1,090	(\$5,088,325)
Minerals Management Service					
No Longer Provides Natural Gas Marketing Services					
Cumulative	---	---	---	---	(\$179,913)
ETC Marketing Ltd					
Purchaser - Natural Gas					
Month	---	---	68,000	\$2.197831	\$149,453
FYTD	---	---	1,188,100	\$5.907126	\$7,018,256
Cumulative	---	---	57,209,959	\$4.023579	\$229,362,238
Sandstone					
Purchaser - Natural Gas Liquids					
Month	---	37,410	4,055	\$7.219958	\$29,277
FYTD	---	415,138	44,830	\$5.664786	\$253,952
Cumulative	---	16,624,772	1,773,995	\$9.953590	\$17,657,619
Total					
	Natural Gas (Mcf)**	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$\$)
Total month	65,370	37,410	72,055	\$2.480458	\$178,729
Total FYTD	1,044,563	415,138	1,232,930	\$5.898314	\$7,272,208
Total CYTD	502,308	206,120	598,838	\$9.883929	\$5,918,872
Cumulative	52,507,722	16,624,772	58,983,954	\$4.112613	\$241,751,619

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

April - 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

April - 2021

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$2,126,096	\$13,914,738
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$6,534	\$387,137
Revenue Collected from Federal Lease Holds	\$2,007,132	\$13,921,272

*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	73

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

April - 2021

All Volumes in Mcf at 14.65 psia & 60°F

	Metered Gas						Transferred Gas Helium		Stored Helium EOM	Charges Billed (\$)**	
	Gross Gas	Helium % Month	Helium	FYTD	Helium CYTD	Cumulative	Month	Cumulative		Month	FYTD
Total All Contracts*											
Crude Acquired	25,388	71.2%	18,087	111,529	64,232	27,725,569	16,424	61,956,283			
Crude Disposed	51,647	71.0%	36,690	326,969	172,541	55,690,054	6,621	27,185,848		\$608,207.69	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718				<u>\$263,096.71</u>	RMF Fees
Net/Balance	(26,259)		(18,603)	(215,440)	(108,309)	(29,443,203)	9,803	34,770,435	2,151,282	\$871,304.40	\$5,810,930
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											
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											
Global Gases America, Contract no. 3293											
Crude Acquired											
Crude Disposed											
Net/Balance											
IACX Energy, Contract no. 3297											
Crude Acquired											
Crude Disposed											
Net/Balance											

Government Helium	
Remaining Crude Acquired beginning of the month	2,366,130
Crude Disposed: In Kind Sales transferred for the month	(9,803)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Loses for the month	(2,848)
Net/Balance of Purchased Helium Remaining for Sale	2,353,478

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

** New Contracts

Table 8 - Compression & CHEU (Operations)

April - 2021

Field/CHEU Compressor Operations

		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$2.20		
Fuel used * (now includes field compression well head)	total MMBTU	3,537	47,678	2,130,076
#1 Compressor run time *	hours	0	1,157	126,470
#2 Compressor run time *	hours	323	3,986	94,134
#3 Compressor run time *	hours	209	2,376	77,304

* Field/CHEU Compressor Operations based on Apr 21 activity

Crude Helium Enrichment Unit (CHEU)

CHEU Runtime

	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	371	51.5%	4,256	83.6%	149,680
Producing residue gas	342	47.6%	4,072	80.0%	146,238
Producing helium product	322	44.7%	3,923	77.1%	141,970
Producing natural gas liquids	330	45.9%	3,882	76.3%	141,350

CHEU Utility Usage

	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Apr 21	1,692	18,588	721,815
Cheu Pure Water Usage (gallons) Apr 21	142	6,476	336,666
Electricity Metered (Kwh) CHEU consumed Mar 21	1,612,328	17,783,939	258,811,748

Booster Compressor Operations and Usage

	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Mar 21	392,986	4,402,391	9,542,471