

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

May - 2021



Distribution:

Fluid Minerals Group Manager, Washington Office
NMSO, New Mexico 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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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

May - 2021

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	436,275	54,075	12.39%	2,871,768	357,802
Helium Product (Mcf*)	84,404	59,973	71.05%	533,917	372,374
Residue Natural Gas (Mcf*)	240,525	0	00.00%	1,304,094	19

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf****)	236,219	1,280,782
NGL Sales (gallons)	84,505	499,643

*** 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Total Withdrawn (Mcf*)	432,409	50,703	11.73%	2,834,656	344,199
Crude Injection (Mcf*)	10,638	7,470	70.22%	96,580	67,187
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*)	48,550	166,459	118,048	4,233,517
Sale Volumes Outstanding (Mcf*)	(79,006)			

* 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*)	31,641	22,851	72.22%	134,380
Crude Disposed (Mcf*)	93,503	65,736	70.30%	392,705
Net Balance (Mcf*)	(61,862)	(42,885)		(258,325)
Balance of Stored Helium End Of Month (Mcf*)		2,156,947		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$670,076	\$4,902,414
Resource Management Fees Billed (\$)	\$263,097	\$1,841,689
Total Storage and RMF Collected	\$933,173	\$6,744,103

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

	Month	FYTD
In Kind Sales	\$0	\$6,360,750
Natural Gas & Liquid Sales	\$753,945	\$8,026,153

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$2,121,631	\$16,042,903
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 13

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

May - 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		432,409	251,714,779	50,703	46,178,485	127,254	62,111,115	226,116	128,230,409	24,281	13,043,188	4,054	2,151,581
BIVINS A-3	May-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	May-21	7,233	13,518,437	5,055	7,684,577	1,974	3,331,367	161	2,208,987	0	224,104	44	69,402
BIVINS A-13	May-21	35,578	10,343,468	3,935	5,025,172	29,544	2,693,382	1,939	2,304,717	(0)	257,284	160	62,914
BIVINS A-14	May-21	39,169	11,697,332	7,455	6,045,782	9,522	2,948,105	19,595	2,368,832	2,214	258,420	383	76,193
BIVINS A-4	May-21	29,509	15,353,258	2,629	2,582,803	7,123	3,716,214	17,918	8,096,244	1,691	817,482	148	140,517
BUSH A-2	May-21	7,105	14,189,793	227	2,027,338	1,400	3,484,941	3,546	7,757,257	1,702	802,979	229	117,279
Injection	May-21	10,638	66,762,086	7,470	48,221,088	2,873	17,199,471	229	786,728	1	46	65	554,753
inj Bivins A-3	May-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	May-21	(10,638)	(24,697,347)	(7,468)	(17,868,943)	(2,877)	(6,564,230)	(228)	(149,494)	(0)	(84)	(65)	(114,597)
inj Bivins A-13	May-21	0	(6,493,107)	0	(4,707,259)	0	(1,657,938)	0	(122,863)	0	(51)	0	(4,996)
inj Bivins A-14	May-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	May-21	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	May-21	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	May-21	0	1,257,144	0	926,242	0	270,854	0	48,257	0	3,205	0	8,588
BIVINS A-1	May-21	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	May-21	19,459	15,098,322	609	1,916,595	4,820	3,688,111	13,545	8,522,465	463	844,966	21	126,185
BIVINS A-5	May-21	24,304	17,462,006	4,529	2,303,039	6,103	4,293,910	12,004	9,730,156	1,455	984,556	213	150,346
BIVINS A-7	May-21	14,721	12,586,685	4,032	3,016,764	3,420	3,174,507	5,195	5,716,572	1,649	586,924	425	91,918
BIVINS A-9	May-21	26,520	12,057,337	838	243,152	6,669	2,979,721	16,861	7,914,731	1,909	810,245	244	109,487
BIVINS A-11	May-21	16,918	7,473,123	510	169,514	4,200	1,861,882	10,808	4,865,776	1,218	504,758	181	71,192
BIVINS A-15	May-21	30,840	11,613,425	504	461,053	7,043	2,754,796	20,701	7,515,372	2,186	757,846	406	124,359
BIVINS B-1	May-21	29,257	9,817,742	696	341,320	7,572	2,385,248	20,261	6,337,895	685	646,465	44	106,815
BIVINS B-2	May-21	25,612	8,220,735	468	154,601	6,394	2,060,640	16,436	5,329,793	1,797	553,847	517	121,852
BUSH A-1	May-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	May-21	26,653	13,690,337	8,577	3,371,243	6,786	3,393,812	10,400	6,180,425	797	626,726	93	118,131
BUSH A-4	May-21	23,209	9,858,932	1,287	1,676,846	5,883	2,472,850	14,196	5,113,937	1,700	526,136	143	69,163
BUSH A-5	May-21	40,230	18,911,366	8,649	4,386,708	10,130	4,754,725	18,903	8,741,817	2,290	898,458	258	129,659
BUSH A-8	May-21	14,480	5,227,531	260	95,702	3,551	1,270,632	9,385	3,440,457	1,010	350,392	275	70,349
BUSH A-9	May-21	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	May-21	15,715	5,363,486	341	150,392	3,765	1,283,574	10,328	3,509,083	1,075	356,727	206	63,710
BUSH B-1	May-21	5,898	3,588,211	100	66,981	1,358	850,267	3,935	2,397,338	441	238,376	63	35,249
FUQUA A-1	May-21	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	May-21	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	May-21	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	May-21	6	0	0	0	6	0	0	0	0	0	0	0
field-wide pcts				11.73%	18.35%	29.43%	24.68%	52.29%	50.94%	5.62%	5.18%	0.94%	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 May-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	1.632	0.189
Injected to Date 2021	(0.051)	(0.035)
Amount of Raw Gas Available to CHEU	62.895	=====> 6.783 total helium in reservoir
Estimated Bottom Hole Pressure	231.731	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

May - 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	May-21	436,275	116,645,481	54,075	26,156,054	119,278	29,193,257	233,288	54,423,534	25,349	5,834,442	4,285	1,038,195
Calculated Feed	May-21	435,739	116,582,498	53,044	26,204,324	128,152	29,196,457	226,187	54,303,642	24,281	5,838,052	4,074	1,040,023
Feed to Box	May-21	432,256	115,794,287	53,044	26,204,502	128,152	29,196,539	226,187	54,303,687	24,281	5,838,047	591	251,511
Cheu Product	May-21	84,404	33,382,133	59,973	25,802,036	22,075	6,683,929	1,834	666,284	1	956	521	228,928
Residue	May-21	240,525	53,450,001	0	2,277	6,189	1,310,832	212,105	47,406,988	22,179	4,728,586	53	1,318
Cold Box Vent	May-21	65,092	18,927,347	35	94,254	55,821	16,745,753	9,215	2,025,104	5	341	17	61,895
Flare/Boot Strap	May-21	2,343	8,844,023	(189)	62,738	2,232	7,341,559	301	1,322,144	(2)	110,947	1	6,636
Fuel From Cheu	May-21	7,669	1,602,133	4	556	199	45,827	6,185	1,297,749	1,281	258,001	0	0
Shrinkage/Loss	May-21	822	636,240	0	0	0	0	0	0	822	636,240	0	0
Unaccounted*	May-21	31,400	5,262,222	(6,779)	188,118	41,637	3,470,627	(3,453)	1,598,197	(5)	879	(1)	4,402

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)

	Government	Private
Beginning inventory	2,353,478	2,151,282
net acceptances + redeliveries	0	0
In Kind Transfers	(48,550)	48,550
Conservation Crude Sales	0	0
Gain/loss	(5,589)	0
Ending Inventory	2,299,339	2,156,947
Total Helium in Reservoir	6,783,167	
Total Helium in Storage	4,456,286	
Helium in native gas	2,326,881	

Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	32,815	23,141	70.52%
Measured to Pipeline (Private Plants)	31,641	22,853	72.23%
Measured from Pipeline (Private Plant)	93,503	65,736	70.30%
HEU Production	84,404	59,973	71.05%
Injection	10,638	7,470	70.22%
Production	0	0	
Ending Inventory	38,327	27,172	70.90%
Gain/Loss	(6,393)	(5,589)	87.43%

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

May - 2021

	NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)***
In Kind Helium									
Month									
FYTD									
Month									
FYTD									
Month									
FYTD									
Total month	0	0	0	0	0	0	0	1	\$0
Total FYTD	41,628	26	7	1	0	23,602	65,263	64,253	\$6,360,750
Total CYTD	41,628	26	7	1	0	23,602	65,263	64,253	\$6,360,750
Cumulative	2,266,536	108,950	462	271,595	422,045	1,150,190	4,219,777	4,154,436	\$264,900,422

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	236,219	---	260,449	1,103	\$0
FYTD	1,280,782	---	1,410,172	1,101	\$0
Cumulative	52,743,941	---	57,468,962	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	---	---	264,190	\$2.571558	\$679,380
FYTD	---	---	1,452,290	\$5.300343	\$7,697,636
Cumulative	---	---	57,474,149	\$4.016905	\$230,041,618
Sandstone		Purchaser - Natural Gas Liquids			
Month	---	84,505	9,181	\$8.121698	\$74,565
FYTD	---	499,643	54,011	\$6.082421	\$328,518
Cumulative	---	16,709,277	1,783,176	\$9.944158	\$17,732,185
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$/Per Unit (\$/Dth)	Total (\$)
Total month	236,219	84,505	273,371	\$2.757956	\$753,945
Total FYTD	1,280,782	499,643	1,506,301	\$5.328386	\$8,026,153
Total CYTD	738,527	290,625	872,209	\$7.650480	\$6,672,818
Cumulative	52,743,941	16,709,277	59,257,325	\$4.106363	\$242,505,564

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

May - 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

May - 2021

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$2,118,883	\$16,033,621
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$9,282	\$396,419
Revenue Collected from Federal Lease Holds	\$2,121,631	\$16,042,903

*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)	13	86

U. S. Helium Production

Domestic

	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

May - 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	31,641	72.2%	22,851	134,380	87,083	27,748,420	61,464	62,017,898		
Crude Disposed	93,503	70.3%	65,736	392,705	238,277	55,755,790	12,914	27,198,762	\$670,076.43	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718			<u>\$263,096.71</u>	RMF Fees
Net/Balance	(61,862)		(42,885)	(258,325)	(151,194)	(29,486,088)	48,550	34,819,136	2,156,947	\$933,173.13 \$6,744,103
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	2,353,478
Crude Disposed: In Kind Sales transferred for the month	(48,550)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Losses for the month	(5,589)
Net/Balance of Purchased Helium Remaining for Sale	2,299,339

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

** New Contracts

Table 8 - Compression & CHEU (Operations)

May - 2021

Field/CHEU Compressor Operations		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$2.57		
Fuel used * (now includes field compression well head)	total MMBTU	8,873	56,551	2,138,949
#1 Compressor run time *	hours	3	1,160	126,473
#2 Compressor run time *	hours	714	4,700	94,848
#3 Compressor run time *	hours	734	3,110	78,038

* Field/CHEU Compressor Operations based on May 21 activity

Crude Helium Enrichment Unit (CHEU) CHEU Runtime	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	738	99.2%	4,993	85.6%	150,418
Producing residue gas	738	99.2%	4,810	82.5%	146,976
Producing helium product	738	99.2%	4,661	79.9%	142,708
Producing natural gas liquids	732	98.4%	4,614	79.1%	142,083

CHEU Utility Usage	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage May 21	2,847	21,435	724,662
Cheu Pure Water Usage (gallons) May 21	233	6,709	336,899
Electricity Metered (Kwh) CHEU consumed Apr 21	1,418,054	19,201,993	260,229,802

Booster Compressor Operations and Usage	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Apr 21	332,461	4,734,852	9,874,932