

# Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

February - 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

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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

## February - 2021

### Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	342,593	40,864	11.93%	1,991,303	250,951
Helium Product (Mcf*)	63,560	43,335	68.18%	372,428	259,139
Residue Natural Gas (Mcf*)	139,744	13	0.01%	894,477	16

\* Volumes in Mcf at 14.65 psia & 60°F

### Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf****)	137,267	878,525
NGL Sales (gallons)	43,063	333,070

\*\*\* 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Total Withdrawn (Mcf*)	336,363	39,177	11.65%	1,963,619	245,692
Crude Injection (Mcf*)	31	20	63.40%	76,398	53,089
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*)	42,364	99,814	51,403	4,166,872
Sale Volumes Outstanding (Mcf*)	(76,614)			

\* 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*)	17,661	12,359	69.98%	72,375
Crude Disposed (Mcf*)	69,819	47,824	68.50%	240,983
Net Balance (Mcf*)	(52,158)	(35,465)		(168,608)
Balance of Stored Helium End Of Month (Mcf*)		2,180,019		

\* Volumes in Mcf at 14.65 psia & 60°F

### Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$622,842	\$2,987,740
Resource Management Fees Billed (\$)	\$263,097	\$1,052,399
Total Storage and RMF Collected	\$885,939	\$4,040,139

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

	Month	FYTD
In Kind Sales	\$0	\$0
Natural Gas & Liquid Sales	\$4,825,441	\$6,785,379

### Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$1,861,599	\$9,742,198
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 13

\*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

February - 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
<b>TOTAL</b>		<b>336,363</b>	<b>250,843,742</b>	<b>39,177</b>	<b>46,079,978</b>	<b>90,573</b>	<b>61,855,269</b>	<b>186,075</b>	<b>127,769,981</b>	<b>17,656</b>	<b>12,994,887</b>	<b>2,882</b>	<b>2,143,626</b>
BIVINS A-3	Feb-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	Feb-21	6,799	13,507,102	4,033	7,677,227	2,382	3,327,851	349	2,208,580	1	224,103	34	69,340
BIVINS A-13	Feb-21	27,149	10,273,066	4,250	5,017,385	13,253	2,634,920	8,611	2,300,880	804	257,284	231	62,597
BIVINS A-14	Feb-21	27,692	11,620,998	5,332	6,031,262	6,718	2,929,586	13,811	2,330,605	1,559	254,101	272	75,444
BIVINS A-4	Feb-21	23,368	15,294,088	2,074	2,577,531	5,626	3,701,930	14,153	8,060,316	1,368	814,091	148	140,221
BUSH A-2	Feb-21	6,798	14,172,596	275	2,026,745	1,685	3,481,287	4,268	7,748,002	522	799,751	47	116,811
Injection	Feb-21	31	66,741,904	20	48,206,990	10	17,193,965	1	786,274	0	45	0	554,630
inj Bivins A-3	Feb-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	Feb-21	(1)	(24,677,764)	(0)	(17,855,398)	(0)	(6,558,759)	(0)	(149,046)	(0)	(83)	(0)	(114,478)
inj Bivins A-13	Feb-21	(30)	(6,492,507)	(3)	(4,707,192)	(25)	(1,657,440)	(2)	(122,830)	0	(51)	(0)	(4,994)
inj Bivins A-14	Feb-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	Feb-21	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Feb-21	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Feb-21	0	1,257,144	0	926,242	0	270,854	0	48,257	0	3,205	0	8,588
BIVINS A-1	Feb-21	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Feb-21	16,097	15,058,222	504	1,915,340	3,987	3,678,178	11,205	8,494,552	383	844,012	18	126,141
BIVINS A-5	Feb-21	16,476	17,414,867	3,069	2,294,266	4,158	4,282,083	8,186	9,706,895	926	981,693	137	149,931
BIVINS A-7	Feb-21	10,565	12,557,810	3,206	3,008,630	2,705	3,167,623	4,097	5,706,127	483	584,141	74	91,289
BIVINS A-9	Feb-21	20,506	12,003,120	625	241,469	5,196	2,966,027	13,044	7,880,260	1,456	806,370	185	108,994
BIVINS A-11	Feb-21	13,618	7,438,448	407	168,468	3,380	1,853,264	8,706	4,843,623	980	502,270	144	70,822
BIVINS A-15	Feb-21	24,856	11,551,034	405	460,033	5,675	2,740,539	16,690	7,473,485	1,763	753,440	324	123,538
BIVINS B-1	Feb-21	24,120	9,757,617	574	339,889	6,242	2,369,688	16,703	6,296,258	564	645,058	36	106,725
BIVINS B-2	Feb-21	21,483	8,167,681	390	153,632	5,362	2,047,382	13,795	5,295,741	1,511	550,136	424	120,788
BUSH A-1	Feb-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	Feb-21	18,411	13,638,024	5,925	3,354,408	4,687	3,380,493	7,184	6,160,012	550	625,162	64	117,948
BUSH A-4	Feb-21	18,880	9,810,994	1,118	1,674,140	4,806	2,460,689	11,541	5,084,639	1,304	522,657	110	68,869
BUSH A-5	Feb-21	28,927	18,832,022	6,383	4,369,547	7,368	4,734,744	13,664	8,704,618	1,337	893,963	174	129,150
BUSH A-8	Feb-21	12,659	5,196,918	226	95,150	3,098	1,263,113	8,215	3,420,623	885	348,263	235	69,770
BUSH A-9	Feb-21	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Feb-21	13,146	5,330,207	285	149,670	3,150	1,275,600	8,639	3,487,213	899	354,451	172	63,274
BUSH B-1	Feb-21	4,815	3,575,675	81	66,768	1,108	847,377	3,214	2,388,972	361	237,443	51	35,115
FUQUA A-1	Feb-21	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Feb-21	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Feb-21	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Feb-21	802	0	0	0	795	0	5	0	1	0	0	0
field-wide pct's				11.65%	18.37%	26.93%	24.66%	55.32%	50.94%	5.25%	5.18%	0.86%	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 Feb-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	0.761	0.091
Injected to Date 2021	(0.030)	(0.021)
Amount of Raw Gas Available to CHEU	63.746	=====> 6.868 total helium in reservoir
Estimated Bottom Hole Pressure	234.861	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

February - 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	Feb-21	342,593	115,765,016	40,864	26,049,203	90,376	28,955,204	189,817	53,948,116	18,474	5,782,960	3,061	1,029,533
Calculated Feed	Feb-21	337,672	115,706,027	39,976	26,101,809	90,741	28,939,386	186,412	53,843,048	17,656	5,789,753	2,887	1,032,030
Feed to Box	Feb-21	335,169	114,924,664	39,976	26,101,987	90,741	28,939,468	186,412	53,843,094	17,656	5,789,747	384	250,367
Cheu Product	Feb-21	63,560	33,220,645	43,335	25,688,801	17,933	6,640,415	1,915	662,534	2	953	375	227,942
Residue	Feb-21	139,744	53,040,384	13	2,274	3,805	1,298,371	122,996	47,047,491	12,929	4,690,983	0	1,265
Cold Box Vent	Feb-21	44,032	18,802,215	131	93,558	36,082	16,640,196	7,807	2,006,265	0	334	11	61,861
Flare/Boot Strap	Feb-21	42,349	8,815,241	1,622	62,624	11,406	7,331,717	26,857	1,305,113	2,447	109,159	17	6,627
Fuel From Cheu	Feb-21	5,561	1,588,815	3	549	144	45,482	4,485	1,287,008	929	255,776	0	0
Shrinkage/Loss	Feb-21	1,348	629,559	0	0	0	0	0	0	1,348	629,559	0	0
Unaccounted*	Feb-21	38,575	5,137,617	(5,128)	199,657	21,371	3,385,274	22,350	1,547,461	(0)	886	(19)	4,340

\*Before October 2004, the values are estimated

### Storage Operations

Inventory (contained helium)			Crude Helium Pipeline			
	Government	Private	Gross	Net Helium	Percent	
Beginning inventory	2,427,351	2,173,120	41,868	28,994	69.25%	
net acceptances +	0	0	17,661	12,364	70.01%	
redeliveries	0	(35,465)	69,820	47,827	68.50%	
In Kind Transfers	(42,364)	42,364	HEU Production	63,560	43,335	68.18%
Conservation Crude Sales	0	0	Injection	31	20	63.40%
Gain/loss	(7,315)	0	Production	0	0	
Ending Inventory	2,377,672	2,180,019	Ending Inventory	43,085	29,531	68.54%
Total Helium in Reservoir	6,867,576		Gain/Loss	(10,152)	(7,315)	72.05%
Total Helium in Storage	4,557,691					
Helium in native gas	2,309,885					

### Tuck Triqq Reservoir Operations

Native Gas (Gross)	Month	Fiscal Year	Since Field
			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

February - 2021

NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)**
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**In Kind Helium**

(billed quarterly)

<b>Airgas Merchant Gases, Contract no.</b>											
Month											
FYTD											
<b>Air Liquide Helium America, Inc., Contract no. INC22-0104</b>											
Month											
FYTD											
<b>Air Products, L.P., Contract no. INC22-0105</b>											
Month											
FYTD											
<b>Messer, LLC, Contract no. INC22-0106</b>											
Month											
FYTD											
<b>Linde, Contract no. INC22-0112</b>											
Month											
FYTD											
<b>Matheson Tri-Gas, Inc., Contract no. INC22-0114</b>											
Month											
FYTD											
<b>Global Gases America, Contract no. INC22-0116</b>											
Month											
FYTD											
<b>Total month</b>	0	0	0	0	0	0	0	0	\$0		
<b>Total FYTD</b>	0	0	0	0	0	0	0	0	\$0		
<b>Total CYTD</b>	0	0	0	0	0	0	0	0	\$0		
<b>Cumulative</b>	2,224,908	108,924	455	271,594	422,045	1,126,588	4,154,514	4,090,183	\$258,539,672		
<b>In Kind Transfers</b>								Month	FYTD	CYTD	Cumulative
Transferred								42,364	99,814	51,403	4,166,872
Volume outstanding								(76,614)			

\* 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 (\$)**
<b>EI Paso Natural Gas</b>	<Chk Data>	Provides Measured Firm/Interruptible Transportation Services			(billed monthly)
Month	137,267	---	151,132	1,101	\$0
FYTD	878,525	---	966,932	1,101	\$0
Cumulative	52,341,684	---	57,025,722	1,089	(\$5,088,325)
<b>Minerals Management Service</b>	No Longer Provides Natural Gas Marketing Services				
Cumulative	---	---	---	---	(\$179,913)
<b>ETC Marketing Ltd</b>		Purchaser - Natural Gas		\$\$/Unit	
Month	---	---	160,800	\$29.789955	\$4,790,225
FYTD	---	---	1,003,000	\$6.579377	\$6,599,115
Cumulative	---	---	57,024,859	\$4.029289	\$228,943,098
<b>Sandstone</b>		Purchaser - Natural Gas Liquids			
Month	---	43,063	4,640	\$7.589619	\$35,216
FYTD	---	333,070	35,948	\$5.181478	\$186,264
Cumulative	---	16,542,704	1,765,113	\$9.965328	\$17,589,931
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$)
<b>Total month</b>	137,267	43,063	165,440	\$29.167315	<b>\$4,825,441</b>
<b>Total FYTD</b>	878,525	333,070	1,038,948	\$6.531009	<b>\$6,785,379</b>
<b>Total CYTD</b>	336,270	124,052	404,856	\$13.417223	<b>\$5,432,043</b>
<b>Cumulative</b>	52,341,684	16,542,704	58,789,972	\$4.117902	<b>\$241,264,790</b>

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

\*\*Rounded to nearest dollar

## Table 5 - Conservation Crude Sales/Reserve Sell-down

February - 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

February - 2021

All Volumes in Mcf at 14.7 psia & 70°F

<b>Revenue Collected From Federal Leaseholds</b>	Month*	FYTD*
Fee Sales & Royalties	\$1,921,774	\$9,732,855
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$9,344	\$255,105
Revenue Collected from Federal Lease Holds	\$1,861,599	\$9,742,198

\*Totals do not sum

<b>Helium Analysis and Evaluation</b>	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	63

### 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
<b>U.S. Helium Exports</b> (3)	2,520,645	2,451,207
<b>US Helium Imports</b>	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

February - 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	Helium	Month	Cumulative		Month	FYTD
	Month	Month	FYTD	CYTD	Cumulative	Month	Cumulative				
<b>Total All Contracts*</b>											
Crude Acquired	17,661	70.0%	12,359	72,375	25,078	27,686,415	61,344	61,907,287			
Crude Disposed	69,819	68.5%	47,824	240,983	86,555	55,604,068	18,980	27,155,781		\$622,841.81	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718				<u>\$263,096.71</u>	RMF Fees
Net/Balance	(52,158)		(35,465)	(168,608)	(61,477)	(29,396,371)	42,364	34,751,506	2,180,019	\$885,938.52	\$4,040,139
<b>Total Prior Contracts (TERMINATED)</b>											
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		
<b>Messer, LLC, Contract no. 3249</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Linde, Contract no. 3251</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Air Products, L.P., Contract no. 3256</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Air Liquide Helium America, Inc., Contract no. 3284</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Keyes Helium Co., LLC, Contract no. 3287</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Matheson Tri-Gas, Inc., Contract no. 3288</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Airgas Merchant Gases, Contract no. 3290</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Global Gases America, Contract no. 3293</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Scout Energy Partners, Contract no. 3294</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>IACX Energy, Contract no. 3297</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											
<b>Uniper Global Commodities North America LLC, Contract no. 3298</b>											
Crude Acquired											
Crude Disposed											
Net/Balance											

<b>Government Helium</b>	
Remaining Crude Acquired beginning of the month	2,427,351
Crude Disposed: In Kind Sales transferred for the month	(42,364)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Losses for the month	(7,315)
Net/Balance of Purchased Helium Remaining for Sale	2,377,672

\*Includes In Kind and Conservation Crude transfers from Government storage

\*\*Rounded to nearest dollar

\*\* New Contracts



## Table 8 - Compression & CHEU (Operations)

February - 2021

<b>Field/CHEU Compressor Operations</b>		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$29.79		
Fuel used * (now includes field compression well head)	total MMBTU	7,465	40,857	2,123,255
#1 Compressor run time *	hours	94	1,157	126,470
#2 Compressor run time *	hours	597	3,347	93,495
#3 Compressor run time *	hours	428	1,890	76,818

\* Field/CHEU Compressor Operations based on Feb 21 activity

<b>Crude Helium Enrichment Unit (CHEU) CHEU Runtime</b>	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	672	100.0%	3,473	95.8%	148,897
Producing residue gas	603	89.8%	3,337	92.1%	145,502
Producing helium product	594	88.4%	3,233	89.2%	141,280
Producing natural gas liquids	508	75.6%	3,184	87.9%	140,653

<b>CHEU Utility Usage</b>	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Feb 21	2,819	15,405	718,632
Cheu Pure Water Usage (gallons) Feb 21	382	6,040	336,229
Electricity Metered (Kwh) CHEU consumed Jan 21	2,640,514	13,556,279	254,584,088

<b>Booster Compressor Operations and Usage</b>	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Jan 21	674,610	3,431,465	8,571,545