

Bureau of Land Management

Amarillo Field Office

Helium Operations

Statistical Report

for

December - 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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Amarillo, Texas
Issued: March 4, 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:

March 4, 2022

Table 1 - Summary of Helium Operations

December - 2020

Helium Enrichment Unit Operations

Gas Processed	Month	Month	Average Percent	Gross FYTD	Net FYTD
	Gross Volume	Net Helium			
Measured Plant Feed (Mcf*)	343,414	45,039	13.12%	1,217,448	157,253
Helium Product (Mcf*)	66,666	46,298	69.45%	228,419	160,547
Residue Natural Gas (Mcf*)	95,337	0	00.00%	551,923	0

* Volumes in Mcf at 14.65 psia & 60°F

Natural Gas & Liquids Produced

Gas Processed	Month	FYTD
Natural Gas Sales (Mcf***)	93,067	542,255
NGL Sales (gallons)	52,076	209,018

*** 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Total Withdrawn (Mcf*)	339,389	44,475	13.10%	1,202,346	154,726
Crude Injection (Mcf*)	19,670	13,607	69.18%	45,996	32,045
Crude Production (Mcf*)	588	392	66.60%	588	392

* Volumes in Mcf at 14.65 psia & 60°F

Storage Operations

In Kind Helium	Month	FYTD	CYTD	Cumulative
Sale Volumes Transferred (Mcf*)	8,492	48,411	214,256	4,115,469
Sale Volumes Outstanding (Mcf*)	(25,211)			

* 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*)	18,033	12,819	71.09%	47,297
Crude Disposed (Mcf*)	54,986	39,273	71.42%	154,428
Net Balance (Mcf*)	(36,953)	(26,454)		(107,131)
Balance of Stored Helium End Of Month (Mcf*)		2,190,093		

* Volumes in Mcf at 14.65 psia & 60°F

Revenue / Charges

Helium Storage Contracts (Charges Billed (\$))	Month	FYTD
Storage Fees Billed (\$)	\$590,126	\$1,767,424
Resource Management Fees Billed (\$)	\$263,097	\$526,206
Total Storage and RMF Collected	\$853,223	\$2,293,630

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

	Month	FYTD
In Kind Sales	\$0	\$0
Natural Gas & Liquid Sales	\$286,352	\$1,353,336

Helium Resources Evaluation

	Month	FYTD
Revenue Collected from Federal Lease Holds	\$1,751,922	\$5,752,227
Helium Sample Collection Report for month	Submitted - 0	Received - 0
		Analyzed - 13

*Rounded to nearest dollar

Table 2 - Bush Dome Reservoir Operations

December - 2020

		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	Cumulative
TOTAL		339,389	250,082,468	44,475	45,989,011	83,945	61,659,818	187,958	127,344,947	18,910	12,953,188	4,101	2,135,503
BIVINS A-3	Dec-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	Dec-20	6,430	13,500,273	4,407	7,673,174	1,818	3,325,460	168	2,208,231	0	224,103	38	69,305
BIVINS A-13	Dec-20	27,214	10,210,644	7,245	5,004,012	6,800	2,612,866	11,626	2,276,948	1,334	254,727	209	62,091
BIVINS A-14	Dec-20	29,984	11,553,721	5,749	6,018,320	7,280	2,913,242	14,983	2,297,051	1,679	250,323	294	74,785
BIVINS A-4	Dec-20	22,635	15,240,759	1,973	2,572,832	5,382	3,689,184	13,561	8,028,256	1,457	810,767	263	139,721
BUSH A-2	Dec-20	6,121	14,160,281	250	2,026,250	1,526	3,478,261	3,861	7,740,338	446	798,725	38	116,707
Injection	Dec-20	19,670	66,711,502	13,607	48,185,946	5,486	17,185,496	458	785,571	0	44	119	554,446
inj Bivins A-3	Dec-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	Dec-20	(19,670)	(24,647,531)	(13,552)	(17,834,484)	(5,531)	(6,550,315)	(467)	(148,356)	(1)	(82)	(119)	(114,295)
inj Bivins A-13	Dec-20	0	(6,492,339)	0	(4,707,153)	0	(1,657,381)	0	(122,769)	0	(44)	0	(4,992)
inj Bivins A-14	Dec-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	Dec-20	0	(2,527,801)	0	(1,848,815)	0	(601,353)	0	(42,016)	0	0	0	(35,617)
inj Bush A-2	Dec-20	0	(867,658)	0	(625,258)	0	(215,406)	0	(13,980)	0	0	0	(13,015)
Production	Dec-20	588	1,257,144	392	926,242	168	270,854	26	48,257	0	3,205	3	8,588
BIVINS A-1	Dec-20	0	2,686,608	0	48,896	0	636,995	0	1,798,415	0	175,704	0	26,597
BIVINS A-2	Dec-20	16,657	15,021,824	521	1,914,201	4,126	3,669,162	11,595	8,469,215	396	843,145	18	126,101
BIVINS A-5	Dec-20	17,458	17,374,945	3,189	2,286,913	4,404	4,272,016	8,728	9,686,999	991	979,422	146	149,596
BIVINS A-7	Dec-20	11,539	12,532,231	3,485	3,000,907	2,961	3,161,075	4,501	5,696,175	513	582,966	79	91,109
BIVINS A-9	Dec-20	20,290	11,955,584	619	240,019	5,142	2,953,981	12,907	7,850,023	1,441	802,995	183	108,566
BIVINS A-11	Dec-20	13,601	7,406,725	406	167,522	3,384	1,845,389	8,695	4,823,330	972	499,998	143	70,486
BIVINS A-15	Dec-20	22,252	11,500,802	362	459,215	5,091	2,729,066	14,944	7,439,739	1,565	749,899	290	122,884
BIVINS B-1	Dec-20	23,726	9,702,888	525	338,633	5,718	2,356,000	15,287	6,259,645	1,032	643,430	1,165	105,180
BIVINS B-2	Dec-20	20,752	8,119,452	377	152,756	5,189	2,035,347	13,329	5,264,750	1,447	546,761	410	119,837
BUSH A-1	Dec-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	Dec-20	20,970	13,592,293	6,748	3,339,693	5,339	3,368,851	8,182	6,142,168	627	623,794	73	117,788
BUSH A-4	Dec-20	18,589	9,768,934	1,139	1,671,624	4,739	2,449,984	11,343	5,058,959	1,258	519,746	110	68,621
BUSH A-5	Dec-20	31,030	18,762,751	6,842	4,354,338	7,845	4,717,186	14,500	8,672,055	1,650	890,450	193	128,722
BUSH A-8	Dec-20	12,249	5,169,035	219	94,653	3,008	1,256,284	7,945	3,402,524	849	346,324	229	69,250
BUSH A-9	Dec-20	0	3,860,915	0	105,037	0	930,915	0	2,537,187	0	253,463	0	34,312
BUSH A-11	Dec-20	12,859	5,300,548	279	149,026	3,081	1,268,494	8,451	3,467,720	880	352,422	168	62,885
BUSH B-1	Dec-20	5,033	3,565,527	85	66,597	1,161	845,042	3,360	2,382,194	374	236,686	53	35,007
FUQUA A-1	Dec-20	0	2,954,098	0	53,854	0	702,798	0	1,975,175	0	193,573	0	28,699
FUQUA A-2	Dec-20	0	132,119	0	2,404	0	31,322	0	88,458	0	8,637	0	1,297
FUQUA A-3	Dec-20	0	9,303,912	0	577,005	0	2,277,687	0	5,790,357	0	583,701	0	75,162
TT Fuel	Dec-20	1,520	0	0	0	1,508	0	10	0	2	0	0	0
field-wide pct's				13.10%	18.39%	24.73%	24.66%	55.38%	50.92%	5.57%	5.18%	1.21%	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 Dec-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	4.441	0.593
Injected to Date 2020	(0.237)	(0.166)
Amount of Raw Gas Available to CHEU	64.477	=====> 6.937 total helium in reservoir
Estimated Bottom Hole Pressure	237.550	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

December - 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	Dec-20	343,414	114,991,161	45,039	25,955,505	84,022	28,758,946	190,432	53,517,029	19,983	5,737,785	3,937	1,021,896
Calculated Feed	Dec-20	343,557	114,933,486	48,370	26,003,151	84,065	28,741,067	188,078	53,417,381	18,909	5,748,046	4,136	1,023,841
Feed to Box	Dec-20	339,849	114,159,407	48,370	26,003,329	84,065	28,741,149	188,078	53,417,427	18,909	5,748,041	428	249,462
Cheu Product	Dec-20	66,666	33,076,636	46,298	25,590,209	18,266	6,599,709	1,697	658,686	1	949	404	227,082
Residue	Dec-20	95,337	52,697,830	0	2,258	2,576	1,288,981	84,077	46,746,293	8,685	4,659,033	0	1,265
Cold Box Vent	Dec-20	44,538	18,694,264	44	93,296	37,244	16,550,743	7,241	1,988,069	0	319	9	61,836
Flare/Boot Strap	Dec-20	54,738	8,770,112	(165)	60,915	14,065	7,319,334	37,000	1,276,654	3,838	106,599	(0)	6,610
Fuel From Cheu	Dec-20	4,074	1,575,920	2	543	106	45,148	3,285	1,276,608	681	253,621	0	0
Shrinkage/Loss	Dec-20	5,704	624,523	0	0	0	0	0	0	5,704	624,523	0	0
Unaccounted*	Dec-20	68,792	5,029,936	2,191	201,586	11,809	3,339,220	54,777	1,483,894	(0)	900	16	4,336

*Before October 2004, the values are estimated

Storage Operations

Inventory (contained helium)

	Government	Private
Beginning inventory	2,461,257	2,208,055
net acceptances +	0	0
redeliveries	0	(26,454)
In Kind Transfers	(8,492)	8,492
Conservation Crude Sales	0	0
Gain/loss	(7,796)	0
Ending Inventory	2,444,969	2,190,093
Total Helium in Reservoir	6,937,499	
Total Helium in Storage	4,635,062	
Helium in native gas	2,302,437	

Crude Helium Pipeline

	Gross	Net Helium	Percent
Beginning inventory	43,052	30,546	70.95%
Measured to Pipeline (Private Plants)	18,033	12,819	71.09%
Measured from Pipeline (Private Plant)	54,986	39,324	71.52%
HEU Production	66,666	46,298	69.45%
Injection	19,670	13,607	69.18%
Production	588	392	66.60%
Ending Inventory	41,624	29,328	70.46%
Gain/Loss	(12,059)	(7,796)	64.65%

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

December - 2020

NASA*	Navy*	Army*	Air Force*	DOE*	Other Fed*	Subtotal*	In Kind+	Charges Billed (\$)**
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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	0	0	0	0	0	0	0	0	\$0		
Total CYTD	71,548	54	5	2	0	70,650	142,260	140,057	\$13,585,335		
Cumulative	2,224,908	108,924	455	271,594	422,045	1,126,588	4,154,514	4,090,183	\$258,539,672		
In Kind Transfers								Month	FYTD	CYTD	Cumulative
Transferred								8,492	48,411	214,256	4,115,469
Volume outstanding								(25,211)			

* 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	93,067	---	103,298	1,110	\$0
FYTD	542,255	---	597,056	1,101	\$0
Cumulative	52,005,414	---	56,655,846	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	---	---	113,800	\$2.263078	\$257,538
FYTD	---	---	611,500	\$2.060478	\$1,259,982
Cumulative	---	---	56,633,359	\$3.962868	\$223,603,964
Sandstone Purchaser - Natural Gas Liquids					
Month	---	52,076	5,616	\$5.130714	\$28,814
FYTD	---	209,018	22,592	\$4.132164	\$93,354
Cumulative	---	16,418,652	1,751,757	\$9.988269	\$17,497,021
	Natural Gas (Mcf)***	NGLs (gal)	Purchased (Dth's)	\$\$ Per Unit (\$\$/Dth)	Total (\$\$)
Total month	93,067	52,076	119,416	\$2.397939	\$286,352
Total FYTD	542,255	209,018	634,092	\$2.134289	\$1,353,336
Total CYTD	2,037,006	769,548	2,404,221	\$1.351456	\$3,249,199
Cumulative	52,005,414	16,418,652	58,385,116	\$4.053418	\$235,832,747

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

**Rounded to nearest dollar

Table 5 - Conservation Crude Sales/Reserve Sell-down

December - 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

December - 2020

All Volumes in Mcf at 14.7 psia & 70°F

Revenue Collected From Federal Leaseholds	Month*	FYTD*
Fee Sales & Royalties	\$1,731,113	\$5,676,183
Natural Gas Royalties (1)	\$0	\$0
Natural Gas Rentals	\$0	\$0
Other	\$76,044	\$176,242
Revenue Collected from Federal Lease Holds	\$1,751,922	\$5,752,227

*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	37

U. S. Helium Production

<i>Domestic</i>			CY Volume
2013 Helium Sold			4,623,130
2014 Helium Sold			4,166,708
2015 Helium Sold			3,463,698
2016 Helium Sold			3,466,014
2017 Helium Sold			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

December - 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	Month	FYTD	CYTD	Cumulative						
Total All Contracts*											
Crude Acquired	18,033	71.1%	12,819	47,297	180,396	27,661,337	52,561	61,792,895			
Crude Disposed	54,986	71.4%	39,273	154,428	520,355	55,517,513	44,069	27,133,264		\$590,125.89	Storage Fees
Grade-A Rdlvrd	0		0	0	0	1,478,718				<u>\$263,096.71</u>	RMF Fees
Net/Balance	(36,953)		(26,454)	(107,131)	(339,959)	(29,334,894)	8,492	34,659,631	2,190,093	\$853,222.60	\$2,293,630
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	2,461,257
Crude Disposed: In Kind Sales transferred for the month	(8,492)
Conservation Crude Sales/Reserve Sell Down transferred (month)	0
Gains and Losses for the month	(7,796)
Net/Balance of Purchased Helium Remaining for Sale	2,444,969

*Includes In Kind and Conservation Crude transfers from Government storage

**Rounded to nearest dollar

** New Contracts

Table 8 - Compression & CHEU (Operations)

December - 2020

Field/CHEU Compressor Operations		Month	FYTD	Cumulative
Spot gas fuel price *	\$ per/MMBTU	\$2.26		
Fuel used * (now includes field compression well head)	total MMBTU	6,617	24,737	2,107,135
#1 Compressor run time *	hours	393	942	126,255
#2 Compressor run time *	hours	591	2,036	92,184
#3 Compressor run time *	hours	0	879	75,807

* Field/CHEU Compressor Operations based on Dec 20 activity

Crude Helium Enrichment Unit (CHEU) CHEU Runtime	Month		FYTD		Cumulative
	Runtime Hrs	Percent	Runtime Hrs	Percent	Runtime Hrs
Processing feed gas	622	83.6%	2,087	94.5%	147,511
Producing residue gas	585	78.6%	2,023	91.6%	144,189
Producing helium product	578	77.6%	1,930	87.4%	139,977
Producing natural gas liquids	540	72.6%	1,974	89.4%	139,443

CHEU Utility Usage	Month	FYTD	Cumulative
Cheu Fuel Gas (Mcf) usage Dec 20	3,117	9,602	712,829
Cheu Pure Water Usage (gallons) Dec 20	3,667	4,953	335,143
Electricity Metered (Kwh) CHEU consumed Nov 20	3,131,771	8,209,285	249,237,094

Booster Compressor Operations and Usage	Month	FYTD	Cumulative
Electricity Metered (Kwh) Booster Compressor consumed Nov 20	796,126	2,072,047	7,212,127