

Case Study #1

Uinta Basin – Oil Well

Page (47)



Uinta Basin Composition Study

Comprehensive Final Report

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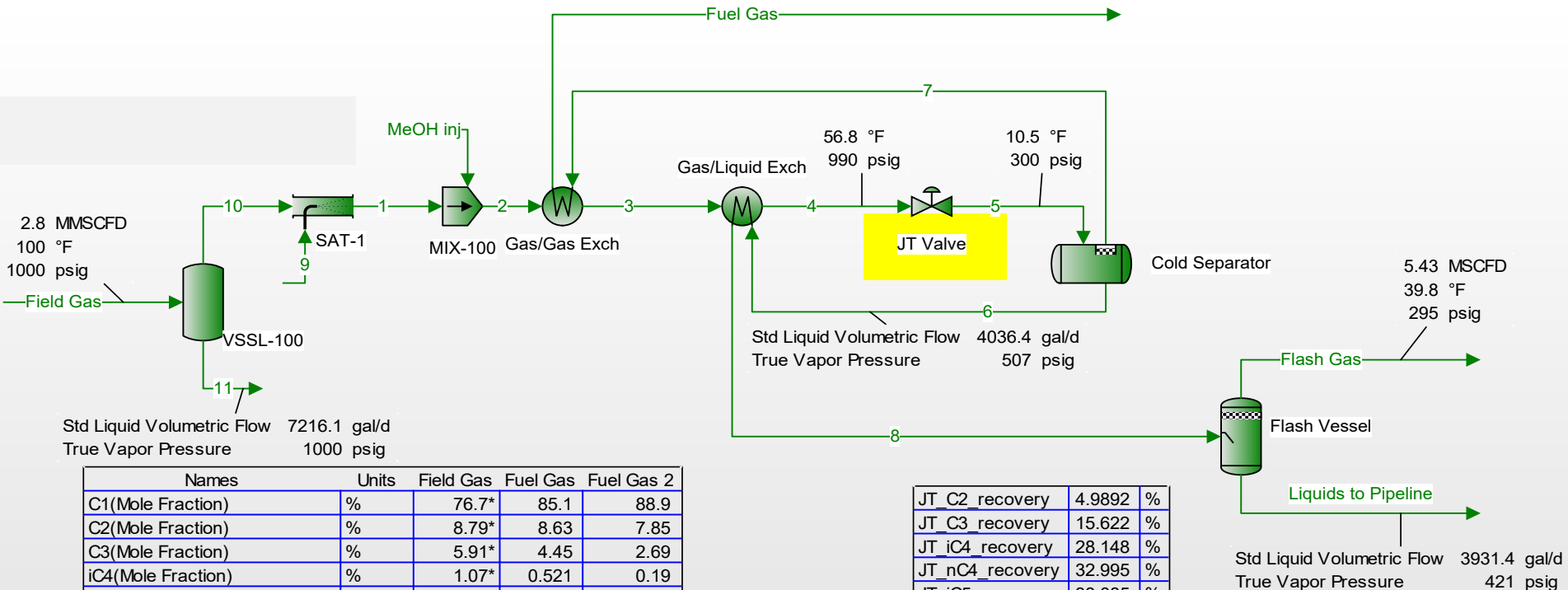
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Uinta Basin Composition Study | 1

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Table C3-4. Mean ($\bar{X}$) weight percent and relative standard deviation (RSD) calculated for raw gas composition for each geological formation. N = sample size. Blue indicates RSD of the three most abundant components passing the screening threshold (RSD < 33.3%).

Compound	GR Oil well N = 17		GRWA Oil well N = 22		WA Oil well N = 9		MV Gas well N = 8		WAMV Gas well N = 8	
	$\bar{X}$	RSD	$\bar{X}$	RSD	$\bar{X}$	RSD	$\bar{X}$	RSD	$\bar{X}$	RSD
Methane	49.530	13.4%	57.210	22.1%	51.760	14.3%	71.034	4.5%	77.038	6.8%
Ethane	10.631	21.0%	11.202	25.8%	13.227	18.6%	10.367	4.2%	9.627	18.6%
Propane	10.490	14.9%	8.575	29.3%	9.523	16.5%	6.956	7.6%	4.485	28.2%
Isobutane	2.506	27.3%	1.933	39.8%	2.223	17.8%	1.801	7.5%	1.448	49.8%
n-Butane	5.832	20.5%	4.330	39.7%	4.710	24.0%	2.575	9.7%	1.556	38.8%
Isopentane	2.904	33.3%	1.996	52.0%	2.249	28.5%	1.114	13.0%	0.832	40.2%
n-Pentane	3.868	32.7%	2.748	50.2%	3.011	33.8%	0.957	16.1%	0.668	48.9%
Cyclopentane	0.365	44.4%	0.197	69.1%	0.152	41.7%	0.060	22.2%	0.040	59.5%
n-Hexane	2.536	44.8%	1.983	55.7%	2.212	46.7%	0.526	23.9%	0.380	50.1%
Cyclohexane	0.704	41.5%	0.508	53.5%	0.542	43.9%	0.301	35.9%	0.230	35.2%
Other hexanes	3.226	41.8%	2.176	54.4%	2.360	39.5%	0.880	20.8%	0.707	39.9%
Heptanes	2.631	35.7%	2.352	60.8%	2.700	66.0%	0.783	82.7%	0.583	53.4%
Methylcyclohexane	0.852	28.1%	0.743	47.0%	0.838	47.2%	0.776	98.4%	0.520	46.5%
2,2,4- Trimethylpentane	0.002	48.9%	0.001	72.9%	0.001	66.8%	0.000	116.6%	0.000	73.0%
Benzene	0.156	45.5%	0.161	61.6%	0.246	66.5%	0.062	26.1%	0.098	40.9%
Toluene	0.236	30.7%	0.256	58.4%	0.396	59.9%	0.240	108.9%	0.284	53.4%
Ethylbenzene	0.026	40.7%	0.026	53.9%	0.030	45.7%	0.015	95.8%	0.019	69.7%
Xylenes	0.173	31.8%	0.216	57.4%	0.291	40.8%	0.152	79.7%	0.190	45.0%
Octanes	1.737	24.0%	1.750	46.4%	1.917	35.0%	0.792	115.3%	0.576	60.0%
Nonanes	0.253	26.5%	0.426	93.7%	0.443	35.7%	0.136	75.3%	0.165	63.8%
Decanes plus	1.342	37.7%	1.209	41.1%	1.168	35.6%	0.472	80.7%	0.553	54.8%



Std Liquid Volumetric Flow 7216.1 gal/d
True Vapor Pressure 1000 psig

Names	Units	Field Gas	Fuel Gas	Fuel Gas 2
C1(Mole Fraction)	%	76.7*	85.1	88.9
C2(Mole Fraction)	%	8.79*	8.63	7.85
C3(Mole Fraction)	%	5.91*	4.45	2.69
iC4(Mole Fraction)	%	1.07*	0.521	0.19
nC4(Mole Fraction)	%	2.49*	0.898	0.273
iC5(Mole Fraction)	%	1*	0.16	0.0316
nC5(Mole Fraction)	%	1.33*	0.153	0.028
Cyclopentane(Mole Fraction)	%	0.129*	0.00885	0.00154
nC6(Mole Fraction)	%	1.66*	0.0324	0.00385
Cyclohexane(Mole Fraction)	%	0.208*	0.00302	0.000375
Heptane(Mole Fraction)	%	0.653*	0.00238	0.000249
Std Vapor Volumetric Flow	MSCFD	2800*	2425	2282
Net Ideal Gas Heating Value	Btu/ft ³	1291	1073	1014
Gross Ideal Gas Heating Value	Btu/ft ³	1418	1185	1122

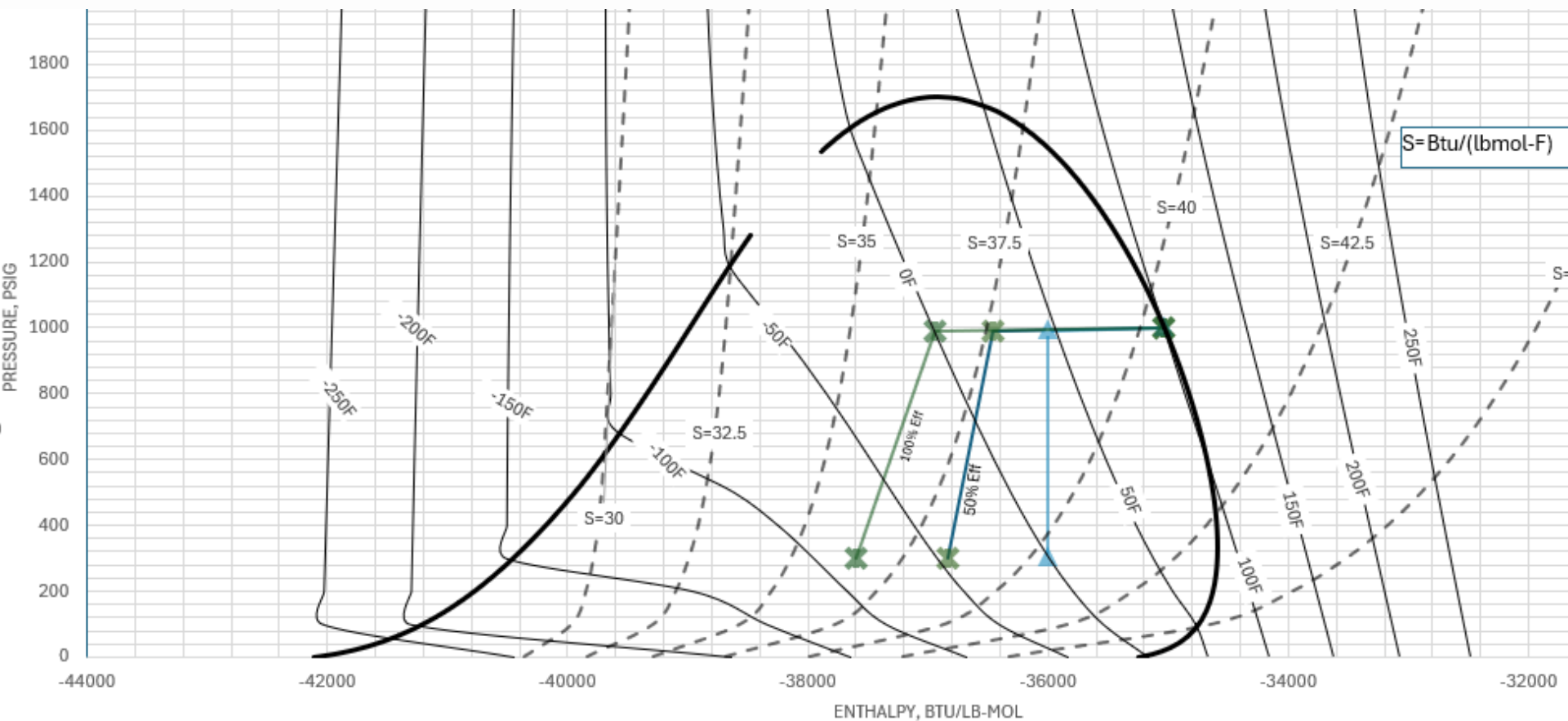
JT_C2_recovery	4.9892	%
JT_C3_recovery	15.622	%
JT_iC4_recovery	28.148	%
JT_nC4_recovery	32.995	%
JT_iC5_recovery	38.085	%
JT_nC5_recovery	37.108	%
JT_C6_recovery	26.632	%





Uinta Oil Well P-H Diagram

Radius1





Uinta Basin – Oil Well

	JT Skid	with Expander	Difference	Benefit
Temp (°F)	10.5	-34.2	44.7	Condensate
NGL's (gpd)	4,036	7,728	91%	\$\$\$
Electricity (kW)	0	30	~	177 metric tons (CO ₂) prevented*
Fuel Gas (BTU/ft ³)	1073	1014	-5%	5.8% reduction THC emissions 5.5% reduction greenhouse (CO _{2e})

* [Greenhouse Gas Equivalencies Calculator](#) | [US EPA](#)