THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-W
HOURS 493-517

	GAS ANALYSES			
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	36.55	38.14	36.71	37.133
H_2 2.016	60.06	58.57	60.24	59.624
CO_2 44.010	2.42	2.95	2.71	2.693
N_2 28.016	0.24	0.11	0.07	0.140
CH_4 16.042	0.73	0.23	0.27	0.410
			M. W.	12.89316
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	9.83	9.52	8.04	9.130
H_2 2.016	33.10	35.25	36.40	34.917
CO_2 44.010	33.96	33.50	33.64	33.700
N_2 28.016	2.11	1.81	1.79	1.903
CH_4 16.042	9.52	8.51	8.67	8.900
C_2H_4 28.052	2.65	2.79	2.82	2.753
C_2H_6 30.068	1.44	1.47	1.46	1.457
C_3H_6 42.078	2.92	2.87	2.96	2.917
C_3H_8 44.094	0.31	0.30	0.29	0.300
C_4H_8 56.104	1.89	1.86	1.90	1.883
C_4H_{10} 58.120	0.72	0.65	0.67	0.680
C_5H_{10} 70.130	0.99	0.99	0.96	0.980
C_5H_{12} 72.146	0.20	0.13	0.13	0.153
C_6H_{12} 84.156	0.36	0.35	0.27	0.327
			M. W.	25.14805

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.30	10.495 0.038			21.066
14.369	14.369		14.369	CO_2 44.010	1.64	0.209	0.209		0.418
23.072		46.144		N_2 28.016	2.15	0.273			
1.042	1.042		2.084	CH_4 16.042	81.75	10.397	10.397	41.588	
0.054				C_2H_4 30.068	6.80	0.865	1.730	5.190	
0.159	0.159	0.636		C_2H_6 44.094	4.91	0.625	1.875	5.000	
				C_4H_{10} 58.120	1.68	0.214	0.856	2.140	
		9.188	4.594	C_5H_{12} 72.146	0.77	0.098	0.490	1.176	
	15.570	55.968	21.047	MW=	20.27602				
	100.08	101.59	97.97	TOTAL			15.557	55.094	21.484

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	279.12	306.45
OIL	63.34	63.34
WATER	129.12	129.12
TOTAL	471.58	498.91
FRESH FEED	498.91	
WEIGHT BALANCE	94.52	
WET GAS FACTOR	1097914	
INDICATED LOSS—S C F H	412	

GAS FLOW RATES						
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED 79.31	6.163	421.2 20.878	103.8 0.9603	2245376 1.4985	14685	38.696
WET GAS 158.44	6.179	1.70 4.050	70.4 0.9901	1151182 1.0729	4212	11.099
RECYCLE 79.31	8.942	422.8 20.917	129.4 0.9392	1.0729	14948	39.389
BLEED 5.02	8.375	20.917	1.0000	1.0729	944	2.487
NATURAL GAS 28.43	7.479	442.1 21.373	198.2 0.8889	1427795 1.1949	4827	12.719
OXYGEN 27.07	6.992	444.8 21.436	79.4 0.9818	--	3983	10.495
STEAM 215.7	4.946	44.3 0.3427		366#/hr		

LIQUID PRODUCT RATES								
HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
OIL	4'9½"	255.47	62	0.9990	255.21	52.4 6.406	1634.88	
	0'5"	22.13	60	1.0000	22.13	52.6 6.399	141.61	
					*4.21		*27.00	
					237.29		1520.27	63.34
								9.887
WATER	7'7"	401.69	75	0.99832	401.02	10.9 8.276	3318.84	
	0'6½"	28.77	60	1.00000	28.77	10.9 8.276	238.10	
	0'4"	17.70	65	0.99953	17.69	10.9	146.40	
	0'3½"	15.49	62	0.99982	15.49	8.276	128.20	129.12
					374.45		3098.94	15.602

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-X
HOURS 517-541

	GAS ANALYSES			
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	37.92	38.40	37.61	37.977
H_2 2.016	58.37	58.13	59.18	58.560
CO_2 44.010	2.76	2.94	2.91	2.870
N_2 28.016	0.07	0.24	0.09	0.133
CH_4 16.042	0.88	0.29	0.21	0.460
			M. W.	13.1921
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	9.92	9.75	9.86	9.843
H_2 2.016	34.26	33.74	35.46	34.486
CO_2 44.010	32.20	34.43	33.64	33.423
N_2 28.016	1.63	1.69	1.73	1.683
CH_4 16.042	10.34	9.34	9.00	9.560
C_2H_4 28.052	2.86	2.81	2.55	2.740
C_2H_6 30.068	1.44	1.46	1.47	1.457
C_3H_6 42.078	2.77	2.54	2.52	2.610
C_3H_8 44.094	0.30	0.30	0.26	0.287
C_4H_8 56.104	2.00	1.64	1.57	1.737
C_4H_{10} 58.120	0.70	0.69	0.70	0.697
C_5H_{10} 70.130	1.07	1.01	0.82	0.967
C_5H_{12} 72.146	0.14	0.14	0.14	0.140
C_6H_{12} 84.156	0.37	0.46	0.28	0.370
			M. W.	25.0685

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.23	10.290 0.029			20.638
14.638	14.638		14.638	CO_2 44.010	1.06	0.135	0.135		0.270
22.573		45.146		N_2 28.016	2.29	0.293			
1.106	1.106		2.212	CH_4 16.042	82.20	10.506	10.506	42.024	
0.051				C_2H_4 30.068	6.81	0.870	1.740	5.220	
0.177	0.177	0.708		C_2H_6 44.094	4.85	0.620	1.860	4.960	
				C_4H_{10} 58.120	1.78	0.227	0.908	2.270	
		8.968	4.484	C_5H_{12} 72.146	0.78	0.100	0.500	1.200	
	15.921	54.822	21.334	MW=	20.151661				
	101.74	98.47	102.04	TOTAL			15.649	55.674	20.908

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	282.20	306.86
OIL	58.66	58.66
WATER	142.97	142.97
TOTAL	483.83	508.49
FRESH FEED	508.49	
WEIGHT BALANCE	95.15	
WET GAS FACTOR	1087384	
INDICATED LOSS—S C F H	373	

GAS FLOW RATES						
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED 79.31	6.229	420.6 20.864	106.7 0.9580	2194495 1.4814	14628	38.545
WET GAS 158.44	6.275	1.70 4.050	73.4 0.9873	1154835 1.0746	4272	11.257
RECYCLE 79.31	8.950	421.9 20.895	132.6 0.9368	1.0746	14931	39.344
BLEED 5.02	8.250	20.895	1.0000	1.0746	930	2.451
NATURAL GAS 28.43	7.492	442.0 21.371	197.9 0.8890	1436606 1.1986	4850	12.780
OXYGEN 27.07	6.992	444.9 21.093	83.4 0.9782	--	3905	10.290
STEAM 215.7	5.079	43.6 0.3403		373#/hr		

LIQUID PRODUCT RATES								
HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL	#	# HR GAL HR
OIL	7'1"	375.50	82	0.9891	371.41	52.11 8.416	2382.97	
	4'9½"	255.47	62	0.9990	255.21	52.4 6.406	1634.88	
	2'3½"	121.98	64	0.9980	121.74	52.1	781.08	
	0'5"	22.13	84	0.9881	21.87	6.416	140.32	
					*2.96		*19.00	58.66
					219.03		1407.85	9.126
WATER	7'4"	388.59	82	0.99726	387.53	11.0 8.270	3204.87	
	0'4"	17.70	65	0.99953	17.69	10.9 8.276	146.40	
	1'1½"	58.47	78	0.99788	58.35	11.0	482.55	
	0'3"	13.28	64	0.99963	13.28	8.270	109.83	
					414.91		3431.19	142.97
								17.288

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-Y
HOURS 541-565

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400'	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.26	10.422 0.033			20.910	WET GAS	284.41	309.35
CO 28.010	39.21	38.15	38.28	38.547	14.711	14.711		14.711	CO_2 44.010	1.18	0.151	0.151		0.302	OIL	57.97	57.97
H_2 2.016	57.78	58.02	58.43	58.076	22.163		44.326		N_2 28.016	2.10	0.269				WATER	137.76	137.76
CO_2 44.010	1.79	2.92	2.67	2.460	0.939	0.939		1.878	CH_4 16.042	83.39	10.700	10.700	42.800		TOTAL	480.14	505.08
N_2 28.016	0.38	0.30	0.25	0.310	0.118				C_2H_4 30.068	6.28	0.806	1.612	4.836		FRESH FEED	505.08	
CH_4 16.042	0.84	0.61	0.37	0.607	0.232	0.232	0.928		C_2H_6 44.094	4.45	0.571	1.713	4.568		WEIGHT BALANCE	95.06	
			M. W.	13.2346977					C_4H_{10} 58.120	1.62	0.208	0.832	2.080				
			H_2O 18.016				9.690	4.845	C_5H_{12} 72.146	0.72	0.092	0.460	1.104		WET GAS FACTOR	1087690	
						15.882	54.944	21.434	MW=	19.879726					INDICATED LOSS—S C F H	384	
			BALANCE			102.68	99.20	101.05	TOTAL			15.468	55.388	21.212			

WET GAS					GAS FLOW RATES												LIQUID PRODUCT RATES					
CO 28.010	9.93	9.64	9.64	9.737		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL/HR
H_2 2.016	33.78	35.50	35.62	34.966	FRESH FEED 79.31	6.221	415.6 20.744	108.1 0.9568	2187432 1.4790	14483	38.163	OIL	6'4"	336.22	70	0.9951	334.57	52.0 6.420	2147.94	
CO_2 44.010	32.58	32.99	33.24	32.937									2'3½"	121.98	64	0.9980	121.74	52.1 6.416	781.08	
N_2 28.016	1.87	1.91	1.63	1.803	WET GAS 158.44	6.375	1.76 4.057	75.0 0.9859	1174553 1.0838	4379	11.539						43.82		+24.50	57.97
CH_4 16.042	11.03	10.10	9.28	10.137													216.65		1391.36	9.027
C_2H_4 28.052	2.66	2.60	2.55	2.603	RECYCLE 79.31	8.283	418.1 20.804	134.4 0.9353	1.0838	13854	36.506									
C_2H_6 33.068	1.28	1.34	1.33	1.317																
C_3H_6 42.078	2.61	2.58	3.00	2.730	BLEED 5.02	8.384	20.804	1.0000	1.0838	949	2.501									
C_3H_8 44.094	0.30	0.34	0.32	0.320								WATER	7'1"	375.50	82	0.99726	374.47	11.0 8.270	3096.87	
C_4H_8 56.104	1.70	1.47	1.71	1.627	NATURAL GAS 28.43	7.508	438.4 21.286	199.5 0.8880	1456257 1.2068	4869	12.830		1'1½"	58.47	78	0.99788	58.35	11.0 8.270	482.55	
C_4H_{10} 58.120	0.68	0.42	0.54	0.547									1'10½"	98.28	82	0.99726	98.01	11.0	801.54	
C_5H_{10} 70.130	0.96	0.73	0.75	0.813	OXYGEN 27.07	7.008	441.4 21.356	85.7 0.9761	—	3955	10.422		0'3"	13.28	70	0.99896	13.27	8.270	109.74	137.76
C_5H_{12} 72.146	0.19	0.13	0.13	0.150													400.86		3306.12	16.703
C_6H_{12} 84.156	0.43	0.25	0.26	0.313	STEAM 215.7	4.704	46.9 0.3510		356#/hr											
			M. W.	24.64766																

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-Z
HOURS 565-589

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.21	10.337 0.027			20.728	WET GAS	292.75	317.24
CO 28.010	40.47	40.33	39.32	40.040	15.074	15.074		15.074	CO_2 44.010	1.47	0.186	0.186		0.372	OIL	58.67	58.67
H_2 2.016	56.56	56.14	57.45	56.717	21.352		42.074		N_2 28.016	0.26	0.033				WATER	135.83	135.83
CO_2 44.010	1.80	2.85	2.74	2.463	0.927	0.927		1.854	CH_4 16.042	81.81	10.354	10.354	41.416		TOTAL	487.25	511.74
N_2 28.016	0.02	0.33	0.29	0.213	0.080				C_2H_6 30.068	9.41	1.191	2.382	7.146		FRESH FEED	511.74	
CH_4 16.042	1.15	0.35	0.20	0.567	0.214	0.214	0.856		C_3H_8 44.094	4.49	0.568	1.704	4.544		WEIGHT BALANCE	95.21	
			M. W.	13.59322					C_4H_{10} 58.120	1.58	0.200	0.800	2.000				
			H_2O 18.016				10.527	5.264	C_5H_{12} 72.146	0.77	0.097	0.485	1.164		WET GAS FACTOR	1083654	
						16.215	54.087	22.192	MW=	20.19399					INDICATED LOSS—S C F H	379	
			BALANCE			101.91	96.12	105.18	TOTAL			15.911	56.270	21.100			

WET GAS					GAS FLOW RATES												LIQUID PRODUCT RATES					
CO 28.010	8.53	7.92	8.49	8.313		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL/HR
H_2 2.016	34.83	34.74	39.65	36.407	FRESH FEED 79.31	6.129	412.5 20.669	87.7 0.9744	2129738 1.4594	14287	37.647	OIL	7'3½"	385.32	74	0.9930	382.62	52.3 6.410	2452.59	
CO_2 44.010	33.22	33.91	29.95	32.360									6'4"	336.22	70	0.9951	334.57	52.0 6.420	2147.94	
N_2 28.016	1.80	1.77	1.85	1.807	WET GAS 158.44	6.596	1.74 4.055	77.2 0.9839	1180641 1.0866	4531	11.939		3'5"	183.46	68	0.9961	182.74	52.3	1171.36	
CH_4 16.042	11.04	9.00	8.85	9.630									0'3"	13.28	89	0.9856	13.09	6.410	83.91	
C_2H_4 28.052	2.58	2.75	2.63	2.653	RECYCLE 79.31	8.213	m414.4 20.715	137.3 0.9331	1.0866	13681	36.050						+2.50		+16.00	58.67
C_2H_6 33.068	1.35	1.44	1.34	1.377													220.20		1408.10	9.175
C_3H_6 42.078	2.58	3.28	2.74	2.867	BLEED 5.02	8.196	20.715	1.0000	1.0866	926	2.440									
C_3H_8 44.094	0.34	0.40	0.29	0.343								WATER						11.1		
C_4H_8 56.104	1.71	2.33	1.67	1.903	NATURAL GAS 28.43	7.517	433.3 21.166	201.3 0.8868	1433594 1.1973	4803	12.656							8.270		
C_4H_{10} 58.120	0.68	0.67	1.34	0.897																
C_5H_{10} 70.130	0.93	1.22	0.80	0.983	OXYGEN 27.07	7.008	435.8 21.225	87.8 0.9743	—	3923	10.337									135.83
C_5H_{12} 72.146	0.14	0.13	0.13	0.133																
C_6H_{12} 84.156	0.27	0.44	0.27	0.327	STEAM 215.7	4.467	41.3 0.3328		321#/hr											
			M. W.	24.52056																

NOTE: A leak occurred in the line between the accumulator and the water gauging tank. A wet gas loss of 379 SCFH (average of periods X and Y) was assumed and gross water yield calculated to be 16.424

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-AA
HOURS 589-613

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	39.31	39.94	39.09	39.446
H_2 2.016	56.36	56.74	57.25	56.783
CO_2 44.010	2.75	2.70	2.94	2.797
N_2 28.016	0.31	0.20	0.20	0.237
CH_4 16.042	1.27	0.42	0.52	0.737
			M. W.	13.609157
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	7.47	7.95	7.54	7.653
H_2 2.016	34.16	36.11	35.88	35.384
CO_2 44.010	34.53	35.00	35.43	34.987
N_2 28.016	2.07	1.86	1.91	1.947
CH_4 16.042	10.35	8.35	9.16	9.287
C_2H_4 28.052	2.76	2.58	2.53	2.623
C_2H_6 33.068	1.33	1.36	1.29	1.327
C_3H_6 42.078	2.69	2.55	2.60	2.613
C_3H_8 44.094	0.35	0.33	0.29	0.323
C_4H_8 56.104	2.00	1.79	1.55	1.780
C_4H_{10} 58.120	0.62	0.60	0.60	0.607
C_5H_{10} 70.130	1.13	1.00	0.79	0.973
C_5H_{12} 72.146	0.15	0.14	0.14	0.143
C_6H_{12} 84.156	0.39	0.38	0.29	0.353
			M. W.	25.100789

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.24	10.361 0.030			20.782
14.825	14.825		14.825	CO_2 44.010	1.08	0.135	0.135		0.270
21.342		42.684		N_2 28.016	2.45	0.307			
1.051	1.051		2.102	CH_4 16.042	81.04	10.168	10.168	40.672	
0.089				C_2H_6 30.068	7.20	0.903	1.806	5.418	
0.277	0.277	1.108		C_3H_8 44.094	5.20	0.652	1.956	5.216	
				C_4H_{10} 58.120	1.85	0.232	0.928	2.320	
		9.750	4.875	C_5H_{12} 72.146	0.94	0.118	0.590	1.416	
	16.153	53.542	21.802	MW=	20.450113				
	103.66	97.27	103.56	TOTAL			15.583	55.042	21.052

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	291.02	320.52
OIL	57.09	57.09
WATER	133.88	133.88
TOTAL	481.99	511.49
FRESH FEED	511.49	
WEIGHT BALANCE	94.23	
WET GAS FACTOR	1101367	
INDICATED LOSS—S C F H	446	

GAS FLOW RATES							
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED 79.31	6.092	413.0 20.681	82.9 0.9787	2127244 1.4585	14263	37.584
WET GAS 158.44	6.479	1.75 4.056	76.9 0.9841	1153350 1.0739	4400	11.594
RECYCLE 79.31	8.150	414.2 20.710	137.2 0.9332	1.0739	13415	35.349
BLEED 5.02	8.158	20.710	1.0000	1.0739	911	2.401
NATURAL GAS 28.43	7.517	434.1 21.185	205.6 0.8839	1415640 1.1898	4761	12.545
OXYGEN 27.07	7.008	436.8 21.249	86.4 0.9755	--	3932	10.361
STEAM 215.7	4.667	41.6 0.3337		336#/hr		

HOUR	GAGE	GAL.
OIL	7'4½"	390.78
	4'½"	216.19
20hrs		
WATER	7'2½"	382.05
	2'4"	124.28
	1'7"	82.59
	0'3½"	15.49

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
70	0.9951	388.87	51.6 6.434	2501.99	
74	0.9930	214.68		1381.25	
		+3.26		+21.00	57.09
		177.45		1141.74	8.875
84	0.99692	380.87	11.0 8.270	3149.79	
80	0.99759	123.98	"	1025.31	
84	0.99692	82.34	"	680.95	
76	0.99819	15.46	"	127.85	
		323.77		2677.58	133.88
					161.89

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-BB
HOURS 613-637

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	37.77	37.65	37.27	37.563
H_2 2.016	60.36	59.15	59.65	59.720
CO_2 44.010	0.66	2.62	2.62	1.967
N_2 28.016	0.14	0.14	0.16	0.147
CH_4 16.042	1.07	0.44	0.30	0.603
			M. W.	12.72894
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	10.51	9.40	8.93	9.613
H_2 2.016	36.11	35.60	36.58	36.096
CO_2 44.010	30.63	33.05	33.47	32.383
N_2 28.016	1.74	1.88	1.90	1.840
CH_4 16.042	10.08	8.96	8.64	9.227
C_2H_4 28.052	2.63	2.76	2.74	2.710
C_2H_6 33.068	1.25	1.30	1.27	1.273
C_3H_6 42.078	2.82	2.69	2.49	2.667
C_3H_8 44.094	0.28	0.30	0.29	0.290
C_4H_8 56.104	1.95	1.83	1.67	1.817
C_4H_{10} 58.120	0.53	0.70	0.68	0.637
C_5H_{10} 70.130	1.00	1.02	0.93	0.983
C_5H_{12} 72.146	0.13	0.14	0.14	0.137
C_6H_{12} 84.156	0.34	0.37	0.27	0.327
			M. W.	24.51385

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.21	10.335 0.026			20.722
14.583	14.583		14.583	CO_2 44.010	1.32	0.166	0.166		0.332
23.184		46.368		N_2 28.014	1.80	0.226			
0.764	0.764		1.528	CH_4 16.042	81.59	10.238	10.238	40.952	
0.057				C_2H_6 30.068	7.17	0.900	1.800	5.400	
0.234	0.234	0.936		C_3H_8 44.094	5.27	0.661	1.983	5.288	
		7.862	4.943	C_4H_{10} 58.120	1.78	0.223	0.892	2.230	
		8.874	4.437	C_5H_{12} 72.146	0.86	0.108	0.540	1.296	
	15.581	56.178	20.548	MW=	20.37571				
	99.76	101.83	97.60	TOTAL			15.619	55.166	21.054

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	285.32	305.85
OIL	56.48	56.48
WATER	131.83	131.83
TOTAL	473.63	494.16
FRESH FEED	494.16	
WEIGHT BALANCE	95.85	
WET GAS FACTOR	1071954	
INDICATED LOSS—S C F H	318	

GAS FLOW RATES							
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED 79.31	6.108	410.5 20.620	83.7 0.9780	2274344 1.5081	14733	38.822
WET GAS 158.44	6.429	1.75 4.056	77.3 0.9838	1180965 1.0867	4417	11.639
RECYCLE 79.31	8.125	413.0 20.681	134.3 0.9354	1.0867	13547	35.697
BLEED 5.02	7.488	20.681	1.0000	1.0867	845	2.227
NATURAL GAS 28.43	7.517	431.7 21.128	204.2 0.8848	1420809 1.1920	4762	12.548
OXYGEN 27.07	7.017	434.0 21.183	87.4 0.9746	--	3922	10.335
STEAM 215.7	4.975	43.1 0.3388		364#/hr		

HOUR	GAGE	GAL.
OIL	4'4¼"	232.56
	0'5¼"	23.23
WATER	7'0½"	372.23
	1'7"	82.59
	2'0½"	107.43
	0'3"	13.28

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
70	0.9951	231.42	51.8 6.427	1487.34	
68	0.9961	23.14	51.6 6.434	148.88	
		+2.65		+17.00	
		210.93		1355.46	56.48
					8.789
85	0.99674	371.02	11.0 8.270	3068.34	
84	0.99692	82.34	11.0 8.270	680.95	
80	0.99759	107.17	11.0	886.30	
68	0.99920	13.27	8.270	109.74	
		382.58		3163.95	131.83
					15.941

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-CC
HOURS 637-661

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.21	10.324 0.027			20.702	WET GAS	293.08	312.04
CO 28.010	37.67	38.32	37.98	37.990	14.430	14.430		14.430	CO_2 44.010	1.27	0.161	0.161		0.322	OIL	57.33	57.33
H_2 2.016	57.84	58.08	58.31	58.077	22.060		44.120		N_2 28.016	1.41	0.179				WATER	135.32	135.32
CO_2 44.010	2.79	2.86	3.00	2.883	1.095	1.095		2.190	CH_4 16.042	83.06	10.529	10.529	42.116		TOTAL	485.73	504.69
N_2 28.016	0.40	0.17	0.38	0.317	0.120				C_2H_4 30.068	5.76	0.857	1.714	5.142		FRESH FEED	504.69	
CH_4 16.042	1.30	0.57	0.33	0.733	0.279	0.279	1.116		C_2H_6 44.094	4.75	0.602	1.806	4.816		WEIGHT BALANCE	96.24	
			M. W.	13.28704					C_4H_{10} 58.120	1.78	0.226	0.904	2.260				
			H_2O 18.016				9.529	4.765	C_5H_{12} 72.146	0.76	0.096	0.480	1.152		WET GAS FACTOR	1064692	
						15.904	54.765	21.385	MW=	20.05555					INDICATED LOSS—S C F H	285	
			BALANCE			101.35	98.70	101.72	TOTAL			15.594	55.486	21.024			

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	4.94	5.17	4.84	4.983		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL HR
H_2 2.016	33.81	34.33	35.92	34.687	FRESH FEED		408.4	83.0	2178814			OIL	7'1"	375.50	83	0.9886	371.22	51.9 6.423	2384.35	
CO_2 44.010	33.11	34.23	34.43	33.924	79.31	6.117	20.569	0.9786	1.4761	14415	37.984		4'4¼"	232.56	70	0.9951	231.42	51.8 6.427	1487.34	
N_2 28.016	2.71	2.08	2.03	2.273			1.75	76.0	1148387				1'8"	87.01	64	0.9980	86.84	51.9	557.77	
CH_4 16.042	12.72	10.78	10.16	11.220	WET GAS 158.44	6.504	4.056	0.9850	1.0716	4412	11.626		0'3¼"	14.38	72	0.9941	14.30	6.423	91.85	
C_2H_4 28.052	3.14	3.14	3.10	3.127			410.5	127.5									+2.02		+13.00	57.33
C_2H_6 33.068	1.66	1.69	1.62	1.657	RECYCLE 79.31	8.075	20.620	0.9408	1.0716	13313	35.080						214.36		1375.93	8.932
C_3H_6 42.078	3.21	3.43	3.12	3.253																
C_3H_8 44.094	0.36	0.42	0.31	0.363	BLEED 5.02	7.996	20.620	1.0000	1.0716	887	2.337	WATER	6'11"	366.77	88	0.99619	365.37	10.8 8.282	3025.99	
C_4H_8 56.104	2.02	2.31	2.10	2.143			428.8	198.3	1443490				2'0½"	107.43	80	0.99759	107.17	11.0 8.270	886.30	
C_4H_{10} 58.120	0.59	0.65	0.76	0.667	NATURAL GAS 28.43	7.525	21.059	0.8888	1.2015	4811	12.677		2'9½"	149.62	80	0.99759	149.26	10.8	1236.17	
C_5H_{10} 70.130	1.09	1.19	1.07	1.117			431.5	85.2					0'3½"	15.49	70	0.99896	15.47	8.282	128.12	
C_5H_{12} 72.146	0.21	0.16	0.21	0.193	OXYGEN 27.07	7.017	21.123	0.9766	--	3918	10324						391.99		3247.74	135.32
C_6H_{12} 84.156	0.43	0.42	0.33	0.393			44.3													16.333
			M. W.	25.20926	STEAM 215.7	4.925	0.3427	364#/hr												

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-DD
HOURS 661-685

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.11	10.390 0.014			20.808	WET GAS	285.81	320.03
CO 28.010	39.47	39.09	39.48	39.347	14.996	14.996		14.996	CO_2 44.010	0.80	0.103	0.103		0.206	OIL	59.55	59.55
H_2 2.016	56.60	57.34	57.22	57.053	21.745		43.490		N_2 28.016	0.15	0.019				WATER	135.59	135.59
CO_2 44.010	2.32	2.75	2.72	2.597	0.990	0.990		1.980	CH_4 16.042	86.24	11.074	11.074	44.296		TOTAL	480.95	515.17
N_2 28.016	0.42	0.39	0.24	0.350	0.133				C_2H_4 30.068	6.02	0.773	1.546	4.638		FRESH FEED	515.17	
CH_4 16.042	1.19	0.43	0.34	0.653	0.249	0.249	0.996		C_2H_6 44.094	4.22	0.542	1.626	4.336		WEIGHT BALANCE	93.36	
			M. W.	13.51703			12.152		C_4H_{10} 58.120	1.65	0.212	0.848	2.120				
			H_2O 18.016				10.114	5.057	C_5H_{12} 72.146	0.81	0.104	0.520	1.248		WET GAS FACTOR	1119729	
						16.235	54.600	22.033	MW=	19.47815					INDICATED LOSS—S C F H	524	
			BALANCE			103.30	96.40	104.85	TOTAL			15.717	56.638	21.014			

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	8.65	9.08	8.29	8.673		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL HR
H_2 2.016	33.81	33.73	34.49	34.010	FRESH FEED		410.3	79.0	2141742			OIL	5'9"	305.66	64	0.9980	305.05	51.2 6.448	1966.96	
CO_2 44.010	32.14	33.41	33.87	33.140	79.31	6.154	20.616	0.9822	1.4635	14464	38.113		1'8"	87.01	64	0.9980	86.84	51.9 6.423	557.77	
N_2 28.016	1.38	1.50	1.40	1.426			1.72	72.5	1168507								+3.10		+20.00	59.55
CH_4 16.042	13.20	11.20	11.28	11.893	WET GAS 158.44	6.385	4.052	0.9882	1.0810	4378	11.536						221.31		1429.19	9.221
C_2H_4 26.052	2.72	2.81	2.74	2.757			411.4	125.0												
C_2H_6 33.068	1.30	1.36	1.38	1.347	RECYCLE 79.31	8.042	20.642	0.9428	1.0810	13418	35.357									
C_3H_6 42.078	2.80	2.91	2.76	2.823																
C_3H_8 44.094	0.31	0.34	0.31	0.320	BLEED 5.02	8.125	20.642	1.0000	1.0810	910	2.398	WATER	7'6"	397.32	88	0.99619	395.81	10.8 8.282	3278.10	
C_4H_8 56.104	1.84	1.84	1.71	1.797			431.2	198.4	1486280				2'9½"	149.62	80	0.99759	149.26	10.8 8.282	1236.17	
C_4H_{10} 58.120	0.48	0.50	0.58	0.520	NATUPAL GAS 28.43	7.492	21.116	0.8887	1.2191	4873	12.841		2'11-3/4	159.99	78	0.99788	159.65	"	1322.22	
C_5H_{10} 70.130	0.94	0.88	0.84	0.887			434.5	81.3					0'3"	13.28	70	0.99896	13.27	"	109.90	
C_5H_{12} 72.146	0.12	0.12	0.12	0.120	OXYGEN 27.07	7.013	21.194	0.9801	--	3943	10.390						392.93		3254.25	135.59
C_6H_{12} 84.156	0.31	0.32	0.23	0.287			46.8													16.372
			M. W.	24.77519	STEAM 21.57	5.338	0.3508		404#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-EE
HOURS 685-709

GAS ANALYSES					GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.22	10.377 0.028			20.810	WET GAS	278.58	304.58
CO 28.010	38.26	38.65	38.08	38.330	14.622	14.622		14.622	CO_2 44.010	1.69	0.212	0.212		0.424	OIL	63.28	63.28
H_2 2.016	58.83	56.46	58.99	58.094	22.162		44.324		N_2 28.016	0.62	0.078				WATER	139.69	139.69
CO_2 44.010	2.07	4.13	2.44	2.880	1.099	1.099		2.198	CH_4 16.042	81.64	10.229	10.229	40.916		TOTAL	481.55	507.55
N_2 28.016	--	0.31	0.15	0.153	0.058				C_2H_6 30.068	7.44	0.932	1.864	5.592		FRESH FEED	507.55	
CH_4 16.042	0.84	0.45	0.34	0.543	0.207	0.207	0.828		C_3H_8 44.094	5.30	0.664	1.992	5.312		WEIGHT BALANCE	94.88	
			M. W	13.30487					C_4H_{10} 58.120	2.09	0.262	1.048	2.620				
			H_2O 18.016				9.808	4.904	C_5H_{12} 72.146	1.00	0.125	0.625	1.500		WET GAS FACTOR	1093330	
						15.928	54.960	21.724	MW	20.594766					INDICATED LOSS—S C F H	392	
			BALANCE			99.74	98.25	102.31	TOTAL			15.970	55.940	21.234			

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	6.05	6.66	6.55	6.420		$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F H	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL HR
H_2 2.016	34.14	34.43	33.66	34.076	FRESH FEED		409.6	76.8	2175894			OIL	7'3¼"	385.32	75	0.9925	382.43	51.5 6.427	2461.70	
CO_2 44.010	33.72	33.34	34.32	33.793	79.31	6.104	20.599	0.9842	1.4751	14477	38.148		5'9"	305.66	64	0.9980	305.05	51.2 6.448	1966.96	
N_2 28.016	1.78	2.12	2.43	2.110	WET GAS		1.74	70.7	1150072				3'2½"	172.54	64	0.9980	172.19	51.5	1108.39	
CH_4 16.042	12.59	10.78	10.49	11.287	158.44	6.158	4.055	0.9899	1.0724	4200	11.067		0'3"	13.28	85	0.9876	13.12	6.437	84.45	63.28
C_2H_4 28.052	3.23	3.48	3.15	3.287	RECYCLE		410.2	122.5									236.45		1518.68	9.852
C_2H_6 30.068	1.25	1.71	1.56	1.507	79.31	8.042	20.613	0.9448	1.0724	13321	35.101									
C_3H_6 42.078	2.98	3.18	3.03	3.063	BLEED															
C_3H_8 44.094	0.40	0.32	0.32	0.347	5.02	8.179	20.613	1.0000	1.0724	908	2.393	WATER	7'2"	379.86	83	0.99709	378.75	10.9 8.276	3134.54	
C_4H_8 56.104	1.73	1.89	2.01	1.877	NATURAL GAS		431.1	197.4	1405696				2'11-3/4	159.99	78	0.99788	159.65	10.8 8.282	1322.22	
C_4H_{10} 58.120	0.75	0.50	0.74	0.663	28.43	7.513	21.114	0.8894	1.1856	4755	12.530		3'9¼"	202.01	78	0.99788	201.58	10.9	1668.28	
C_5H_{10} 70.130	0.85	0.97	1.04	0.953	OXYGEN		434.1	79.3					0'3½"	15.49	72	0.99872	15.47	8.276	128.03	
C_5H_{12} 72.146	0.23	0.22	0.30	0.250	27.07	6.992	21.185	0.9820	--	3938	10.377						405.21		3352.57	139.69
C_6H_{12} 84.156	0.30	0.40	0.40	0.367	STEAM		46.0													16.884
			M. W.	25.17233	215.7	5.375	0.3482		404#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-FF
HOURS 709-733

GAS ANALYSES					GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.23	10.311 0.029			20.680	WET GAS	277.10	302.19
CO 28.010	37.69	38.12	38.09	37.966	14.552	14.552		14.552	CO_2 44.010	1.60	0.200	0.200		0.400	OIL	59.50	59.50
H_2 2.016	58.65	59.04	59.22	58.970	22.603		45.206		N_2 28.016	0.45	0.056				WATER	136.37	136.37
CO_2 44.010	2.42	2.37	2.35	2.380	0.912	0.912		1.824	CH_4 16.042	81.75	10.221	10.221	40.884		TOTAL	472.97	498.06
N_2 28.016	0.20	0.05	0.10	0.117	0.045				C_2H_6 30.068	7.78	0.973	1.946	5.838		FRESH FEED	498.06	
CH_4 16.042	1.04	0.42	0.24	0.567	0.217	0.217	0.868		C_3H_8 44.094	5.33	0.666	1.998	5.328		WEIGHT BALANCE	94.96	
			M. W	12.99429					C_4H_{10} 58.120	1.98	0.248	0.992	2.480				
			H_2O 18.016				9.592	4.796	C_5H_{12} 72.146	0.88	0.110	0.550	1.320		WET GAS FACTOR	1090544	
						15.681	55.666	21.172	MW	20.49333					INDICATED LOSS—S C F H	378	
			BALANCE			98.58	99.67	100.44	TOTAL			15.907	55.850	21.080			

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	5.89	6.02	6.57	6.160		$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F H	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL HR
H_2 2.016	34.73	34.86	34.91	34.834	FRESH FEED		407.7	75.5	2227901			OIL	7'1-3/4	378.77	68	0.9961	377.29	51.3 6.445	2431.63	
CO_2 44.010	32.92	33.88	33.52	33.440	79.31	6.067	20.552	0.9855	1.4926	14546	38.329		3'2½"	172.54	64	0.9980	172.19	51.5 6.437	1108.39	
N_2 28.016	1.79	1.86	1.99	1.880	WET GAS		1.66	71.4	1150698				0'7½"	33.06	64	0.9980	32.99	51.3	212.62	
CH_4 16.042	12.04	10.56	9.86	10.820	158.44	6.146	4.045	0.9892	1.0727	4180	11.014		0'4¼"	18.81	64	0.9980	18.77	6.445	120.97	
C_2H_4 28.052	3.35	3.46	3.19	3.333	RECYCLE		406.9	123.8									42.02		413.00	59.50
C_2H_6 30.068	1.49	1.53	1.64	1.553	79.31	8.092	20.533	0.9438	1.0727	13341	35.154						221.34		1427.89	9.223
C_3H_6 42.078	3.00	3.11	2.96	3.023	BLEED															
C_3H_8 44.094	0.25	0.35	0.27	0.290	5.02	8.558	20.533	1.0000	1.0727	946	2.493	WATER	7'3½"	386.41	85	0.99674	385.15	11.0 8.270	3185.19	
C_4H_8 56.104	1.99	2.03	2.12	2.047	NATURAL GAS		426.4	198.0	1412654				3'9¼"	202.01	78	0.99788	201.58	10.9 8.276	1668.28	
C_4H_{10} 58.120	0.81	0.63	1.05	0.830	28.43	7.521	21.002	0.8890	1.1886	4745	12.503		4'2-3/4	226.01	77	0.99804	225.57	11.0	1865.46	
C_5H_{10} 70.130	1.11	1.08	1.17	1.120	OXYGEN		429.1	78.4					0'3"	13.28	82	0.99726	13.24	8.270	109.49	136.37
C_5H_{12} 72.146	0.23	0.23	0.30	0.253	27.07	6.983	21.067	0.9827	--	3913	10.311						395.90		3272.88	16.496
C_6H_{12} 84.156	0.40	0.40	0.45	0.417	STEAM		45.2													
			M. W.	25.158639	215.7	5.488	0.3457		409#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-HH
HOURS 757-781

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.16	10.445 0.021			20.932	WET GAS	283.34	306.71
CO 28.010	37.24	38.10	37.28	37.540	14.753	14.753		14.753	CO_2 44.010	1.53	0.197	0.197		0.394	OIL	62.57	62.57
H_2 2.016	59.16	59.46	59.49	59.370	23.331		46.662		N_2 28.016	--					WATER	138.21	138.21
CO_2 44.010	2.65	1.93	2.73	2.437	0.958	0.958		1.916	CH_4 16.042	84.75	10.893	10.893	43.572		TOTAL	484.12	507.49
N_2 28.016	0.14	0.16	0.31	0.203	0.080				C_2H_6 30.068	6.55	0.842	1.684	5.052		FRESH FEED	507.49	
CH_4 16.042	0.81	0.35	0.19	0.450	0.177	0.177	0.708		C_3H_8 44.094	4.59	0.590	1.770	4.720		WEIGHT BALANCE	95.39	
			M. W.	12.91344			9.276	4.657	C_4H_{10} 58.120	1.67	0.215	0.860	2.150				
			H_2O 18.016				9.295	4.648	C_5H_{12} 72.146	0.75	0.096	0.480	1.152		WET GAS FACTOR	1082480	
						15.888	56.665	21.317	MW	19.82522					INDICATED LOSS—S C F H	353	
			BALANCE			100.03	100.03	99.96	TOTAL			15.884	56.646	21.326			

WET GAS					GAS FLOW RATES											LIQUID PRODUCT RATES					
CO 28.010	5.04	5.07	5.52	5.210		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
H_2 2.016	36.05	35.20	32.56	34.603	FRESH FEED		417.3	77.2	2241850			OIL	7'4½"	390.78	78	0.9911	387.30	50.9 6.459	2501.57	
CO_2 44.010	33.79	35.25	36.04	35.027	79.31	6.142	20.785	0.9838	1.4973	14914	39.299		4'10½"	259.84	63	0.9985	259.45	51.2 6.448	1672.93	
N_2 28.016	1.64	1.86	2.50	2.000	WET GAS		1.71	71.5	1151803				2'2¼"	115.92	64	0.9980	115.69	50.9	747.24	
CH_4 16.042	12.69	10.92	10.96	11.524	158.44	6.279	4.051	0.9891	1.0732	4278	11.273		0'3"	13.28	74	0.9930	13.19	6.459	85.19	
C_2H_4 28.052	2.95	3.11	3.25	3.103	RECYCLE		418.2	123.6									+1.70		+11.00	62.57
C_2H_6 30.068	1.40	1.46	1.53	1.463	79.31	8.154	20.806	0.9440	1.0732	13631	35.918						232.05		1501.69	9.669
C_3H_6 42.078	2.58	2.77	2.81	2.720	BLEED															
C_3H_8 44.094	0.30	0.31	0.31	0.307	5.02	8.054	20.806	1.0000	1.0732	903	2.379	WATER	7'4½"	390.78	82	0.99726	389.71	10.8 8.282	3227.58	
C_4H_8 56.104	1.64	1.82	2.07	1.843	NATURAL GAS		436.8	198.7	1460261				5'0¼"	267.47	80	0.99759	266.83	10.8 8.282	2209.89	
C_4H_{10} 58.120	0.58	0.60	0.64	0.607	28.43	7.521	21.249	0.8885	1.2084	4878	12.854		5'5-3/4	291.48	78	0.99788	290.86	10.8	2408.90	
C_5H_{10} 70.130	0.81	1.03	1.13	0.990	OXYGEN		440.7	79.8					0'3"	13.28	86	0.99656	13.23	8.282	109.57	
C_5H_{12} 72.146	0.21	0.22	0.21	0.213	27.07	6.992	21.340	0.9815	--	3964	10.445						409.51		3317.02	138.21
C_6H_{12} 84.156	0.32	0.38	0.47	0.390	STEAM		44.8													16.688
			M. W.	25.13449	215.7	5.442	0.3444		404#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-GG
HOURS 733-757

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2000	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.17	10.456 0.022			20.956	WET GAS	275.42	302.68
CO 28.010	38.68	37.92	38.38	38.327	14.928	14.928		14.928	CO_2 44.010	1.29	0.164	0.164		0.328	OIL	61.18	61.18
H_2 2.016	57.39	60.22	59.23	58.946	22.959		45.918		N_2 28.016	0.12	0.015				WATER	138.34	138.34
CO_2 44.010	2.73	0.73	1.77	1.743	0.679	0.679		1.358	CH_4 16.042	83.39	10.626	10.626	42.054		TOTAL	474.94	502.20
N_2 28.016	0.07	0.75	0.31	0.377	0.147				C_2H_6 30.068	7.33	0.934	1.868	5.604		FRESH FEED	502.20	
CH_4 16.042	1.13	0.38	0.31	0.607	0.236	0.236	0.944		C_3H_8 44.094	5.16	0.658	1.974	5.264		WEIGHT BALANCE	94.57	
			M. W.	12.89383			9.920	4.998	C_4H_{10} 58.120	1.83	0.233	0.932	2.330				
			H_2O 18.016				9.958	4.979	C_5H_{12} 72.146	0.71	0.090	0.450	1.080		WET GAS FACTOR	1098976	
						15843	56.820	21.265	MW	20.08824					INDICATED LOSS—S C F H	423	
			BALANCE			98.93	100.07	99.91	TOTAL			16.014	56.782	21.284			

WET GAS					GAS FLOW RATES											LIQUID PRODUCT RATES					
CO 28.010	5.09	6.33	4.94	5.453		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
H_2 2.016	32.68	36.32	38.42	35.806	FRESH FEED		418.0	76.1	2245259			OIL	4'10½"	259.84	63	0.9985	259.45	51.2 6.448	1672.93	
CO_2 44.010	34.94	32.22	31.70	32.920	79.31	6.071	20.801	0.9849	1.4984	14781	38.949		0'7½"	33.06	64	0.9980	32.99	51.3 6.445	212.62	
N_2 28.016	2.16	1.96	1.91	2.010	WET GAS		1.74	71.3	1183542								+1.24		+8.00	
CH_4 16.042	13.24	11.06	10.51	11.503	158.44	6.179	4.055	0.9893	1.0879	4273	11.260						227.70		1468.31	61.18
C_2H_4 28.052	3.10	3.17	3.23	3.167	RECYCLE		418.5	126.2												9.488
C_2H_6 30.068	1.61	1.56	1.60	1.590	79.31	8.125	20.813	0.9419	1.0879	13743	36213									
C_3H_6 42.078	3.13	3.31	3.33	3.257	BLEED															
C_3H_8 44.094	0.37	0.35	0.36	0.360	5.02	8.121	20.813	1.0000	1.0879	923	2.432	WATER	7'1"	375.50	78	0.99788	374.70	10.8 8.282	3103.27	
C_4H_8 56.104	1.74	1.93	1.96	1.877	NATURAL GAS		437.7	200.5	1441141				4'2-3/4	226.01	77	0.99804	225.57	11.0 8.270	1865.46	
C_4H_{10} 58.120	0.55	0.51	0.64	0.567	28.43	7.508	21.270	0.8873	1.2005	4836	12.743		5'0¼"	267.47	80	0.99759	266.83	10.8	2209.89	
C_5H_{10} 70.130	0.87	0.94	0.92	0.877	OXYGEN		441.0	79.1					0'3½"	15.49	94	0.99505	15.41	8.282	127.63	138.34
C_5H_{12} 72.146	0.22	0.21	0.23	0.220	27.07	6.992	21.347	0.9821		3968	10.456						400.55		3320.07	16.690
C_6H_{12} 84.156	0.40	0.23	0.25	0.293	STEAM		43.9													
			M. W.	24.460459	215.7	5.654	0.3414		416#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-II
HOURS 781-796

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	1800	2200	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.22	10.324 0.028			20.704	WET GAS	288.87	307.30
CO 28.010	40.61	37.51	37.63	38.583	14.752	14.752		14.752	CO_2 44.010	1.48	0.189	0.189		0.378	OIL	62.38	62.38
H_2 2.016	53.11	58.97	59.34	57.140	21.848		43.696		N_2 28.016	0.13	0.017				WATER	145.82	145.82
CO_2 44.010	3.38	2.43	2.26	2.690	1.029	1.092		2.058	CH_4 16.042	83.91	10.690	10.690	42.760		TOTAL	497.07	515.50
N_2 28.016	1.82	0.21	0.10	0.710	0.271				C_2H_4 30.068	6.79	0.865	1.730	5.190		FRESH FEED	515.50	
CH_4 16.042	1.08	0.88	0.67	0.877	0.335	0.335	1.340		C_2H_6 44.094	4.75	0.605	1.815	4.840		WEIGHT BALANCE	96.42	
			M. W.	13.48251					C_3H_{10} 58.120	1.84	0.234	0.936	2.340				
			H_2O 18.016				9.991	4.996	C_5H_{12} 72.146	0.88	0.112	0.560	1.344		WET GAS FACTOR	1063800	
						16.179	55.027	21.806	MW	20.059386					INDICATED LOSS—S C F H	284	
			BALANCE			101.63	97.44	103.43	TOTAL			15.920	56.474	21.082			

WET GAS					GAS FLOW RATES												LIQUID PRODUCT RATES Basis 15 hours					
						√h	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
CO 28.010	6.03	6.08	5.89	6.000			414.8	87.1	2147226			OIL	4'11"	262.02	78	0.9911	259.69	50.5 6.473	1680.97	
H_2 2.016	35.10	35.49	34.94	35.176	FRESH FEED															
CO_2 44.010	33.37	33.07	33.03	33.157	79.31	6.180	20.724	0.9749	1.4653	14510	38.235		2'2¼"	115.92	64	0.9980	115.69	50.9 6.459	747.24	
N_2 28.016	1.33	1.57	1.60	1.500			1.75	79.0	1176165								+0.31		+2.00	62.38
CH_4 16.042	13.22	12.17	11.41	12.267	WET GAS 158.44	6.507	4.056	0.9822	1.0845	4454	11.736						144.31		935.73	9.621
C_2H_4 28.052	3.08	3.07	3.21	3.120			417.1	126.7												
C_2H_6 30.068	1.41	1.45	1.48	1.447	RECYCLE 79.31	8.167	20.780	0.9414	1.0845	13742	36.211									
C_3H_6 42.078	2.79	2.90	3.30	2.997																
C_3H_8 44.094	0.26	0.29	0.33	0.293	BLEED 5.02	8.147	20.780	1.0000	1.0845	922	2.430	WATER	7'5"	392.96	80	0.99759	392.01	10.8 8.282	3246.63	
C_4H_8 56.104	1.62	1.86	2.36	1.947			435.2	195.4	1443214				5'5-3/4	291.48	78	0.99788	290.86	10.8 8.282	2408.90	
C_4H_{10} 58.120	0.46	0.57	0.69	0.573	NATURAL GAS 28.43	7.493	21.211	0.8907	1.2013	4835	12.740		3'4½"	181.27	88	0.99619	180.58	10.8	1495.56	
C_5H_{10} 70.130	0.87	1.00	1.27	1.047			439.3	91.3					0'4"	17.70	89	0.99600	17.63	8.282	146.01	
C_5H_{12} 72.146	0.15	0.14	0.14	0.143	OXYGEN 27.07	6.993	21.307	0.9713	--	3918	10.324						264.10		2187.28	145.82
C_6H_{12} 84.156	0.31	0.34	0.35	0.333			44.7													17.607
			M. W.	24.613877	STEAM 215.7	5.453	0.3440		405#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-JJ
HOURS 796-806

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	2200	0600	--	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.34	10.506 0.041			21.094	WET GAS	264.11	276.07
CO 28.010	36.67	37.63		37.150	14.373	14.373		14.373	CO_2 44.010	1.50	0.180	0.180		0.360	OIL	68.44	68.44
H_2 2.016	59.30	59.12		59.210	22.907		45.814		N_2 28.016	0.63	0.076				WATER	155.23	155.23
CO_2 44.010	2.54	2.52		2.530	0.979	0.979		1.958	CH_4 16.042	83.97	10.101	10.101	40.404		TOTAL	487.78	499.74
N_2 28.016	0.15	0.29		0.220	0.085				C_2H_4 30.068	6.66	0.801	1.602	4.806		FRESH FEED	499.74	
CH_4 16.042	1.34	0.44		0.890	0.344	0.344	1.376		C_2H_6 44.094	4.49	0.540	1.620	4.320		WEIGHT BALANCE	97.61	
			M. W.	12.91725					C_3H_{10} 58.120	1.68	0.202	0.808	2.020				
			H_2O 18.016				7.831	3.916	C_5H_{12} 72.146	0.73	0.088	0.440	1.056		WET GAS FACTOR	1045284	
						15.696	55.021	20.247	MW	19.901349					INDICATED LOSS—S C F H	181	
			BALANCE			106.41	104.59	94.37	TOTAL			14.751	52.606	21.454			

WET GAS					GAS FLOW RATES												LIQUID PRODUCT RATES Basis 10 hours					
						√h	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
CO 28.010	4.75	5.70		5.225			420.3	70.5	2241189			OIL	6'10-3/4	365.68	70	0.9951	363.89	50.1	2360.55	
H_2 2.016	29.61	33.88		31.745	FRESH FEED															
CO_2 44.010	32.16	35.59		33.875	79.31	5.989	20.856	0.9900	1.4971	14682	38.688		4'11¼	263.11	82	0.9891	260.24	6.497	1688.18	
N_2 28.016	1.67	1.93		1.800			1.52	67.1	1153019								+1.85		+12.00	68.44
CH_4 16.042	20.12	11.81		15.965	WET GAS 158.44	5.867	4.027	0.9932	1.0738	3992	10.519						105.50		684.37	10.550
C_2H_4 28.052	2.81	2.70		2.755			420.8	118.8												
C_2H_6 30.068	1.87	1.53		1.700	RECYCLE 79.31	8.120	20.869	0.9479	1.0738	13680	36.047									
C_3H_6 42.078	2.93	2.37		2.650																
C_3H_8 44.094	0.47	0.10		0.285	BLEED 5.02	8.160	20.869	1.0000	1.0738	918	2.419	WATER	7'0"	371.14	80	0.99759	370.25	10.7	3068.26	
C_4H_8 56.104	1.78	1.58		1.680			438.0	198.4	1454675				3'5"	183.46	83	0.99709	182.93	8.287	1515.94	
C_4H_{10} 58.120	0.67	1.15		0.910	NATURAL GAS 28.43	7.040	21.277	0.8887	1.2061	4565	12.029						187.32		1552.32	155.23
C_5H_{10} 70.130	0.83	0.91		0.870			440.8	72.1												18.732
C_5H_{12} 72.146	0.15	0.35		0.250	OXYGEN 27.07	6.980	21.342	0.9886		3987	10.506									
C_6H_{12} 84.156	0.18	0.40		0.290			45.8													
			M. W.	25.107994	STEAM 215.7	5.830	0.3476		437#/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-KK
HOURS 806-830

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.17	10.242 0.022			20.528	WET GAS	273.29	304.64
CO 28.010	36.66	37.81	37.80	37.423	14.371	14.371		14.371	CO_2 44.010	1.35	0.173	0.173		0.346	OIL	64.57	64.57
H_2 2.016	57.10	58.83	59.19	58.373	22.416		44.832		N_2 28.016	0.46	0.059				WATER	139.77	139.77
CO_2 44.010	4.72	2.43	2.50	3.217	1.235	1.235		2.470	CH_4 16.042	83.84	10.727	10.727	42.908		TOTAL	477.63	508.98
N_2 28.016	0.23	0.17	0.13	0.177	0.068				C_2H_6 30.068	6.83	0.874	1.748	5.244		FRESH FEED	508.98	
CH_4 16.042	1.29	0.76	0.38	0.810	0.311	0.311	1.244		C_3H_8 44.094	4.90	0.614	1.842	4.912		WEIGHT BALANCE	93.84	
			M. W.	13.25431					C_4H_{10} 58.120	1.70	0.218	0.872	2.180				
			H_2O 18.016				9.271	4.636	C_5H_{12} 72.146	0.85	0.109	0.545	1.308		WET GAS FACTOR	1114713	
						15.917	55.347	21.477	MW	19.998459					INDICATED LOSS—S C F H 482		
			BALANCE			100.06	97.87	102.89	TOTAL			15.907	56.552	20.874			

WET GAS					GAS FLOW RATES													LIQUID PRODUCT RATES					
CO 28.010	5.66	7.53	5.93	6.374		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
H_2 2.016	34.64	35.43	36.01	35.360	FRESH FEED 79.31		419.9	81.9	2184195			OIL	7'1"	375.50	69	0.9956	373.85	50.1	2425.16	
CO_2 44.010	32.82	32.38	34.77	33.324		6.088	20.847	0.9796	1.4779	14573	38.401		6'10-3/4	365.68	70	0.9951	363.89	6.487	2360.55	
N_2 28.016	1.74	1.47	1.78	1.663	WET GAS 158.44		1.75	75.0	1173200				4'5-3/4	239.01	66	0.9970	238.29	50.4 6.476	1543.17	
CH_4 16.042	13.27	11.25	10.72	11.747		6.125	4.056	0.9859	1.0831	4203	11.075		0'3"	13.28	62	0.9990	13.27	50.1 6.487	86.08	
C_2H_4 28.052	2.43	2.85	2.59	2.623	RECYCLE 79.31		420.4	123.7									+4.32		+28.00	64.57
C_2H_6 30.068	1.71	1.49	1.46	1.553		8.188	20.859	0.9439	1.0831	13848	36.490						239.30		1549.70	9.971
C_3H_6 42.078	2.85	2.94	2.56	2.783	BLEED 5.02															
C_3H_8 44.094	0.36	0.36	0.28	0.333		8.467	20.859	1.0000	1.0831	960	2.530	WATER	7'4"	388.59	80	0.99759	387.65	10.7	3212.46	
C_4H_8 56.104	2.43	2.18	1.97	2.193	NATURAL GAS 28.43		439.2	199.6	1447611				7'0"	371.14	80	0.99759	370.25	8.287	3068.26	
C_4H_{10} 58.120	0.56	0.56	0.64	0.587		7.504	21.305	0.8879	1.2032	4856	12.796		7'3½"	386.41	81	0.99743	385.42	10.8 8.282	3192.05	
C_5H_{10} 70.130	1.11	0.98	0.87	0.987	OXYGEN 27.07		442.4	84.8					0'3"	13.28	64	0.99963	13.28	10.7 8.287	110.05	
C_5H_{12} 72.146	0.13	0.20	0.19	0.173		6.988	21.033	0.9770	--	3887	10.242		0'7"	30.98	67	0.99932	30.96	10.8	256.41	
C_6H_{12} 84.156	0.29	0.38	0.23	0.300	STEAM 215.7		44.2						0'3½"	15.49	65	0.99953	15.48	8.282	128.21	139.77
			M. W.	24.67608		5.592	0.3424		413#/hr								405.02		3354.40	16.876

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 59-LL
HOURS 830-843

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	1800		AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.19	10.256 0.024			20.560	WET GAS	286.29	299.69
CO 28.010	37.40	37.34		37.370	14.346	14.346		14.346	CO_2 44.010	1.23	0.156	0.156		0.312	OIL	58.71	58.71
H_2 2.016	58.78	58.91		58.845	22.592		45.184		N_2 28.016	0.94	0.119				WATER	139.40	139.40
CO_2 44.010	2.23	2.58		2.405	0.923	0.923		1.846	CH_4 16.042	82.12	10.411	10.411	41.644		TOTAL	484.40	497.80
N_2 28.016	0.28	0.28		0.280	0.107				C_2H_6 30.068	6.83	0.866	1.732	5.196		FRESH FEED	497.80	
CH_4 16.042	1.31	0.89		1.100	0.422	0.422	1.688		C_3H_8 44.094	5.99	0.759	2.277	6.072		WEIGHT BALANCE	97.31	
			M. W.	12.966999					C_4H_{10} 58.120	1.83	0.232	0.928	2.320				
			H_2O 18.016				9.520	4.760	C_5H_{12} 72.146	0.87	0.110	0.550	1.320		WET GAS FACTOR	1046805	
						15.691	56.392	20.952	MW	20.425305					INDICATED LOSS—S C F H 210		
			BALANCE			97.74	99.72	100.38	TOTAL			16.054	56.552	20.872			

WET GAS					GAS FLOW RATES													LIQUID PRODUCT RATES					Basis 13 hours
CO 28.010	5.51	5.46		5.485		$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR	
H_2 2.016	35.58	35.86		35.720	FRESH FEED 79.31		420.3	95.4	2232590			OIL	6'9½"	360.22	84	0.9881	355.93	50.3 6.480	2306.43		
CO_2 44.010	32.82	33.39		33.105		6.092	20.857	0.9676	1.4942	14569	38.390		4'5-3/4	239.01	66	0.9970	238.29	50.4 6.476	1543.17		
N_2 28.016	1.48	0.94		1.210	WET GAS 158.44		1.71	84.8	1193734								117.64		763.26	58.71	
CH_4 16.042	12.89	13.13		13.010		6.542	4.051	0.9766	1.0926	4480	11.805									9.049	
C_2H_4 28.052	2.96	2.71		2.835	RECYCLE 79.31		419.8	127.0													
C_2H_6 30.068	1.55	1.51		1.530		8.208	20.845	0.9412	1.0926	13954	36.769										
C_3H_6 42.078	3.01	2.87		2.940	BLEED 5.02																
C_3H_8 44.094	0.38	0.38		0.380		8.192	20.845	1.0000	1.0926	937	2.469	WATER	4'8½"	251.11	96	0.99467	249.77	10.8	2068.60		
C_4H_8 56.104	2.03	1.86		1.945	NATURAL GAS 28.43		437.5	197.6	1417359				0'7"	30.98	67	0.99932	30.96	8.282	256.41		
C_4H_{10} 58.120	0.62	0.64		0.630		7.517	21.265	0.8893	1.1905	4811	12.677						218.81		1812.19	139.40	
C_5H_{10} 70.130	0.86	0.78		0.820	OXYGEN 27.07		441.4	100.8												16.832	
C_5H_{12} 72.146	0.14	0.21		0.175		6.992	21.356	0.9629	--	3892	10.256										
C_6H_{12} 84.156	0.17	0.26		0.215	STEAM 215.7		45.1														
			M. W.	24.25163		5.633	0.3453		420#/hr												

RUN NO. 60-0 (A-D)
HOURS 0-88
CATALYST

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

	FRESH FEED %	FRESH FEED m/hr	FRESH FEED #/hr	WET GAS %	WET GAS At Wt. Balance m/hr	WET GAS At Wt. Balance #/hr	RECYCLE m/hr	COMBINED FEED m/hr	EFFLUENT m/hr	NET CHANGE m/hr	NET CHANGE #/hr	CONDENSATE #/MCF	CONDENSATE #/gal	CONDENSATE gal/hr	CONDENSATE gal/MCF
CO 28.010		11.181						17.579		-9.352	-261.95				
H_2 2.016		17.318						36.056		-12.152	-24.50				
CO_2 44.010										1.937	85.25	7.883			
N_2 28.016															
CH_4 16.042										0.668	10.72	0.991			
C_2H_4 28.052										0.164	4.60	0.425			
C_2H_6 30.068										0.092	2.77	0.256			
C_1+C_2											18.09	1.673			
C_3H_6 42.078										0.198	8.33	0.770	4.32	1.928	0.178
C_3H_8 44.094										0.031	1.37	0.127	4.24	0.323	0.030
C_4H_8 56.104										0.148	8.30	0.767	5.00	1.660	0.153
C_4H_{10} 58.120										0.059	3.43	0.317	4.86	0.706	0.065
C_5H_{10} 70.130										0.064	4.49	0.415	5.45	0.824	0.076
C_5H_{12} 72.146										0.016	1.15	0.106	5.25	0.219	0.020
C_6H_{12} 84.156										0.019	1.60	0.148	5.54	0.289	0.027
C_3-C_6											28.67	2.651		5.949	0.550
TOTAL															
H_2+CO		28.499	10815 SCFH					53.635		-21.504					
H_2/CO			Factor 924641												

Weight Recovery, %	93.7	Catalyst Age, hrs. Ave.	40	Space Velocity, vhv	1431	RECOVERED OIL	55.48
Pressure, psig	369	Inlet Velocity, Ft/sec	0.88	Catalyst Vol., CF	7.82	TOTAL OIL	84.15
Temperature, °F	657	Bed Depth, Ft	11.9	Weight, #	1096	WATER SOLUBLE CHEMICALS	4.71 / 7.31
Recycle Ratio	1.48	Bed Density, #/CF	144	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$	= 10.30	TOTAL LIQUID PRODUCTS C_3+	96.17
						NET WATER	84.28
						GROSS WATER	95.62
						HYDROCARBON TOTAL—C_1+	114.26

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
61.49	83.64	70.17	75.46	53.20	33.70	40.09	84.07

YIELD BASIS H_2+CO FED — YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	66.8	5.672	98.0	5.559
400-550	18.2	1.545	91.4	1.412
550 +	15.0	1.274	114.6	1.460

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	40.5	3.374		
C_3 POLY GASO.	87.5	2.952	0.494	
C_3 POLY TAR	12.5	0.422	0.056	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.03	0.006	68.0
C_4 POLY GASO.	5.98	7.24	1.210	1.5
C_4H_{10}	4.86	3.43	0.706	68.0
C_4-FREE GASO.			7.385	5.8
C_4 POLY TAR	7.53	1.03	0.137	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	9.307	0.8606	4666
GAS OIL	1.412	0.1306	708
FUEL OIL	1.460	0.1350	732
POLY TAR	0.193	0.0178	97
TOTAL	12.372	1.1440	6202
W. S. CHEM.	0.564 / 0.876	0.0521 / 0.0810	282 / 439
TOTAL	13.813	1.2771	6924

Form ML—11 AI=(37.83)(0.6101)=23.08 Acids = (0.117)(42.1)=4.93%

g/NCM = 16.91 × #/MCF *9488 MCFH H_2 + CO, Bbl/Day = 5421.6 × gal/MCF

RUN NO. 60-1 (E-G)
HOURS 88-160
CATALYST Fresh CM&S

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

	FRESH FEED %	FRESH FEED m/hr	FRESH FEED #/hr	WET GAS %	WET GAS At Wt. Balance m/hr	WET GAS At Wt. Balance #/hr	RECYCLE m/hr	COMBINED FEED m/hr	EFFLUENT m/hr	NET CHANGE m/hr	NET CHANGE #/hr	CONDENSATE #/MCF	CONDENSATE #/gal	CONDENSATE gal/hr	CONDENSATE gal/MCF
CO 28.010		11.154						18.133		-9.266	-259.54				
H_2 2.016		17.516						38.560		-11.824	-23.84				
CO_2 44.010										2.174	95.68	8.794			
N_2 28.016															
CH_4 16.042										0.588	9.43	0.867			
C_2H_4 28.052										0.168	4.71	0.433			
C_2H_6 30.068										0.080	2.41	0.222			
C_1+C_2											16.55	1.521			
C_3H_6 42.078										0.213	8.96	0.824	4.32	2.074	0.191
C_3H_8 44.094										0.040	1.76	0.162	4.24	0.415	0.038
C_4H_8 56.104										0.148	8.30	0.763	5.00	1.660	0.153
C_4H_{10} 58.120										0.046	2.67	0.245	4.86	0.549	0.050
C_5H_{10} 70.130										0.062	4.35	0.400	5.45	0.798	0.073
C_5H_{12} 72.146										0.003	0.22	0.020	5.25	0.042	0.004
C_6H_{12} 84.156										0.021	1.77	0.163	5.54	0.319	0.029
C_3-C_6											28.03	2.576		5.857	0.538
TOTAL															
H_2+CO		28.670	10880 SCFH					56.693		-21.090					
H_2/CO			Factor 919117												

Weight Recovery, %	94.27	Catalyst Age, hrs. Ave.	97	Space Velocity, vhv	1222	RECOVERED OIL	52.47
Pressure, psig	366	Inlet Velocity, Ft/sec	0.89	Catalyst Vol., CF	8.91	TOTAL OIL	80.50
Temperature, °F	654	Bed Depth, Ft	13.5	Weight, #	1437	WATER SOLUBLE CHEMICALS	4.56 / 8.10
Recycle Ratio	1.51	Bed Density, #/CF	161	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$	= 8.90	TOTAL LIQUID PRODUCTS C_3+	93.16
						NET WATER	75.13
						GROSS WATER	87.79
						HYDROCARBON TOTAL—C_1+	109.71

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
59.09	83.07	67.50	73.56	51.10	30.66	37.20	84.91

YIELD BASIS H_2+CO FED — YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	71.7	5.819	98.0	5.703
400-550	16.6	1.347	91.4	1.231
550 +	11.7	0.950	114.6	1.089

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	34.2	3.064		
C_3 POLY GASO.	87.5	2.681	0.448	
C_3 POLY TAR	12.5	0.383	0.051	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.72	0.144	68.0
C_4 POLY GASO.	5.98	6.63	1.109	1.5
C_4H_{10}	4.86	2.67	0.549	68.0
C_4-FREE GASO.			7.310	5.8
C_4 POLY TAR	7.53	0.95	0.126	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	9.112	0.8375	4541
GAS OIL	1.231	0.1131	613
FUEL OIL	1.089	0.1001	543
POLY TAR	0.177	0.0163	88
TOTAL	11.609	1.0670	5785
W. S. CHEM.	0.558 / 0.992	0.0513 / 0.0912	278 / 494
TOTAL	13.159	1.2095	6557

Form ML—11 AI = 34.96 x 0.5777 = 20.20

g/NCM = 16.91 × #/MCF *9488 MCFH H_2 + CO, Bbl/Day = 5421.6 × gal/MCF

SUMMARY OF SYNTHESIS RUN NO. 60

Period	A		B		C		D		E		F		G	
Hours	0-25		25-40		40-64		64-88		88-112		112-136		136-160	
Press., Psig	403		406		405		406		406		406		403	
Temp. °F.	659		651		661		657		655		654		652	
Flow Rates-SCFH														
Fresh Feed	10746		11361		11290		11286		11222		11214		11179	
Recycle	13789		17492		17875		17058		17038		16971		16844	
Wet Gas (Adj.)	2333		4972		5501		4796		4559		4607		4587	
Catalyst Data (by Δp)														
Weight, lbs.	1245		971		992		1177		1479		1441		1390	
Vol.-Cu. Ft.	11.02		6.61		6.44		7.22		8.91		8.90		8.91	
Depth.-Ft.	16.70		10.01		9.76		10.94		13.50		13.48		13.50	
Feed Rates-H_2+CO														
SCFH	10391		11042		10963		10967		10883		10900		10857	
SCFH/Sq.Ft.	15744		16730		16611		16617		16489		16515		16450	
SCFH/CF Cat.	943		1670		1702		1519		1221		1225		1219	
SCFH/# Cat.	8.35		11.37		11.05		9.32		7.36		7.56		7.81	
Recycle Ratio	1.28		1.54		1.58		1.51		1.52		1.51		1.51	
Inlet Vel.Ft/Sec.	0.77		0.91		0.93		0.90		0.89		0.89		0.89	
Ratio of H_2/CO in														
Fresh Feed	1.46		1.60		1.56		1.57		1.57		1.56		1.58	
Combined Feed	2.09		2.09		2.06		1.99		2.14		2.11		2.13	
Wet Gas	7.59		2.75		2.70		2.58		3.08		2.97		3.00	
Consumed	1.38		1.29		1.19		1.31		1.27		1.27		1.29	
Yields/MCF of CO+H_2 Fed	lbs.	gal.	lbs.	gal.	lbs.	gal.	lbs.	gal.	lbs.	gal.	lbs.	gal.	lbs.	gal.
C_3	0.88		0.94		1.07		0.79		1.05		0.91		1.00	
C_4	1.22		0.99		1.15		0.94		1.03		0.92		1.08	
C_5	0.63		0.48		0.48		0.48		0.38		0.42		0.45	
C_6	0.21		0.14		0.08		0.17		0.15		0.19		0.14	
C_3 - C_6	2.94	0.60	2.55	0.53	2.78	0.58	2.38	0.49	2.61	0.55	2.44	0.51	2.67	0.56
400 EP	4.12	0.65	3.12	0.49	2.69	0.43	2.96	0.47	3.41	0.55	3.48	0.55	3.07	0.49
C_3 - 400 EP	7.06	1.25	5.67	1.02	5.47	1.01	5.34	0.96	6.02	1.10	5.92	1.06	5.74	1.05
400+	2.85	0.41	1.89	0.27	1.38	0.20	1.48	0.21	1.67	0.24	1.45	0.21	1.39	0.20
WS Chem	0.66	0.08	0.68	0.08	0.66	0.08	0.71	0.09	0.73	0.09	0.75	0.09	0.76	0.09
Total C_3+	10.57	1.74	8.24	1.37	7.51	1.29	7.53	1.26	8.42	1.43	8.12	1.36	7.89	1.34
C_1	1.23		0.88		1.00		0.82		0.89		0.87		0.85	
C_2	0.78		0.61		0.68		0.63		0.61		0.68		0.67	
C_1 + C_2	2.01		1.49		1.68		1.45		1.50		1.55		1.52	
Total C_1+	12.58		9.72		9.19		8.98		9.91		9.67		9.40	
CO_2	7.20		7.87		7.55		8.89		8.49		8.87		9.02	
Net Water	11.78		6.70		6.72		6.97		7.44		7.26		7.27	
Shift $\frac{(H_2)(CO_2)}{(H_2O)(CO)}$ Ratio	18.55		7.90		7.00		7.73		8.87		8.80		9.04	
Conv.Basis F.F.														
CO %	98.2		79.0		75.8		79.6		83.5		82.8		82.9	
H_2 %	90.6		63.9		58.1		66.4		67.6		67.2		67.7	
H_2 + CO %	93.7		69.7		65.0		71.6		73.8		73.3		73.6	
Selectivity % $\frac{C_3+}{C_1+}$	84.0		84.7		81.7		83.8		84.9		84.0		83.9	
Weight Bal. %	92.7		94.4		92.5		95.2		95.8		96.6		90.4	