RUN NO. 66-U
HOURS 416-440
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	YIELD BASIS H_2+CO FED: CONDENSATE #/MCF	#/gal	gal/hr	gal/MCF
CO 28.010	36.690	14.885	416.94	11.017	1.957	54.82	4.575	19.460	6.532	-12.928	-362.12				
H_2 2.016	60.413	24.509	49.41	45.680	8.113	16.35	18.971	43.480	27.084	-16.396	33.06				
CO_2 44.010	2.170	0.880	38.73	25.787	4.579	201.51	10.709	11.589	15.288	3.699	162.78	10.888			
N_2 28.016	0.647	0.262	7.34	1.893	0.336	9.41	0.786	1.048	1.122						
CH_4 16.042	0.080	0.033	0.53	7.320	1.300	20.85	3.040	3.073	4.340	1.267	20.32	1.359			
C_2H_4 28.052				1.840	0.327	9.17	0.764	0.764	1.091	0.327	9.17	0.613			
C_2H_6 30.068				1.390	0.247	7.43	0.577	0.577	0.824	0.247	7.43	0.497			
C_1+C_2											36.92	2.469			
C_3H_6 42.078				2.233	0.397	16.70	0.927	0.927	1.324	0.397	16.70	1.117	4.32	3.866	0.259
C_3H_8 44.094				0.260	0.046	2.03	0.108	0.108	0.154	0.046	2.03	0.136	4.24	0.479	0.032
C_4H_8 56.104				1.317	0.234	13.13	0.547	0.547	0.781	0.234	13.13	0.878	5.00	2.626	0.176
C_4H_{10} 58.120				0.370	0.066	3.84	0.154	0.154	0.220	0.066	3.84	0.257	4.86	0.790	0.053
C_5H_{10} 70.130				0.573	0.102	7.15	0.238	0.238	0.340	0.102	7.15	0.478	5.45	1.312	0.088
C_5H_{12} 72.146				0.130	0.023	1.66	0.054	0.054	0.077	0.023	1.66	0.111	5.25	0.316	0.021
C_6H_{12} 84.156				0.190	0.034	2.86	0.079	0.079	0.113	0.034	2.86	0.191	5.54	0.516	0.035
C_3-C_6											47.37	3.168		9.905	0.664
TOTAL		40.569	512.95		17.761	366.91	41.529	82.098	65.018						
H_2+CO	97.103	39.394	14950 SCFH		10.070		23.546	62.940	33.616	-29.324					
H_2/CO		1.65	Factor 668896		4.15		4.15	2.23	4.15	1.27					
RECOVERED OIL **										0.270	37.83	2.530		5.892	0.394
TOTAL OIL											85.20	5.698		15.797	1.058
WATER SOLUBLE CHEMICALS **										0.282	14.96	1.001		1.899	0.127
TOTAL LIQUID PRODUCTS C_3+											100.16	6.699		17.696	1.185
NET WATER **										5.176	93.25	6.237		11.195	0.749
GROSS WATER											108.21	7.238		13.094	0.876
HYDROCARBON TOTAL—C_1+											137.08	9.168			

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	80.2	4.726	98.0	4.631
400-550	7.9	0.465	91.4	0.425
550 +	11.9	0.701	114.6	0.803

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	32.2	5.38		
C_3 POLY GASO.	87.5	4.71	0.788	
C_3 POLY TAR	12.5	0.67	0.089	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.18	0.036	68.0
C_4 POLY GASO.	5.98	11.33	1.895	1.5
C_4H_{10}	4.86	3.84	0.790	68.0
C_4-FREE GASO.			7.563	5.8
C_4 POLY TAR	7.53	1.62	0.215	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	10.284	0.6879	3730
GAS OIL	0.425	0.0284	154
FUEL OIL	0.803	0.0537	291
POLY TAR	0.304	0.0203	110
TOTAL	11.816	0.7903	4285
W. S. CHEM.	1.899	0.1270	689
TOTAL	13.715	0.9173	4974

Weight Recovery, %	93.24
Pressure, psig	395
Temperature, °F	664
Recycle Ratio	1.02
Catalyst Age, hrs.	
Inlet Velocity, Ft/sec	1.02
Bed Depth, Ft	17.75
Bed Density, #/CF	132
Space Velocity, vhv	1276
Catalyst Vol CF	11.72
Weight, #	1547
Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =	

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
56.22	86.85	66.90	74.44	66.43	37.71	46.59	73.07

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-U
HOURS 416-440

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	423	Fresh Feed	15396
Natural Gas	434	Recycle	15760
Generator Outlet	400	Combined Feed	31156
Reactor Inlet	395	Wet Gas—Measured	6104
Condenser Inlet		Adjusted	6741
Product Accumulator	370	Loss	637
TEMPERATURES—°F.		Recycle/Fresh Feed	1.02
Oxygen	494	Inlet Velocity—ft./sec.	1.02
Natural Gas	800	Fresh Feed Rate—S.C.F.H.	14950
Generator	2473	per Cu. Ft. Dense Bed	1276
Quench Accumulator	145	per Lb. Catalyst	9.66
Reactor Inlet	272	per sq ft	22652
Condenser Inlet	589		
Product Accumulator	70		
Catalyst No. Height			
1 See Per. A	--		
2	661		
3	654		
4	664		
5	666		
6	670		
7	666		
8	649		
9	656		
10	668		
11	652		

PRODUCT TESTS	OIL	WATER
°API	52.0	11.1
Neut. No.	48.4	38.5
Sap. No.	66.7	41.3
Hydrox. No.		
Bromine No.	99	
Pour °F.		
Chemicals, % by K_2CO_3		14.5
HEMPEL. DIST. %		°API
205 °F.		
400	79.2	53.9
400-550	7.9	36.6
550+	12.9	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	108	
10%	140	
50%	225	
90%	345	
EP	401	
Rec	96.5	

CATALYST DATA: INVENTORY DATA	
In Reactor at Start of Period	
Fresh Catalyst Added	
Total	
Catalyst Recovered	42
In Reactor at End of Period	
REACTOR d-p, Inches H_2O	
No. Height	
0 See Per. A	
1	63
2	70
3	67
4	225
Total	425
CALCULATED FROM dp	
Density, Lbs./Cu.Ft.	132
Inventory, Lbs.	1547
Bed Depth, Ft.	17.75
Vol cu ft	11.72

PARTICLE SIZE: Screen Analysis Mesh	Microns	%	Sedimentation Microns	%
On 40	419+		80+	
100	150		40—80	
150	105		20—40	
200	74		10—20	
250	62		0—20	
325	44			
<325				

CATALYST	
Bulk Density, Lbs./Cu.Ft.	
Aerated	
Settled	
Compacted	
Particle Density, gm./cc.	
NH_3 Value, ml./gm.	
N_2 Surface, m^2/gm.	
CHEMICAL ANALYSIS	
Fe	
C	
O	
H	
K_2O, W+, % basis Fe	
X-Ray Analysis—	
$Fe_{20}C_9$	
Fe_3O_4	
Fe	

RUN NO. 66-V
HOURS 440-464
CATALYST Brownsville Treated MS Red. @ 660F

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	35.910	14.598	408.87	11.270	1.990	55.74	4.708	19.306	6.698	-12.608	-353.13				
H_2 2.016	60.763	24.700	49.80	46.127	8.145	16.42	19.271	43.971	27.416	-16.555	-33.38				
CO_2 44.010	2.253	0.916	40.31	25.437	4.490	197.57	10.627	11.543	15.117	3.574	157.26	10.544			
N_2 28.016	0.957	0.389	10.90	2.020	0.357	10.00	0.844	1.233	1.201						
CH_4 16.042	0.117	0.048	0.77	7.080	1.250	20.05	2.958	3.006	4.208	1.202	19.28	1.293			
C_2H_4 28.052				1.717	0.303	8.50	0.717	0.717	1.020	0.303	8.50	0.570			
C_2H_6 30.068				1.283	0.227	6.83	0.536	0.536	0.763	0.227	6.83	0.458			
C_1+C_2											34.61	2.321			
C_3H_6 42.078				2.167	0.383	16.12	0.905	0.905	1.288	0.383	16.12	1.081	4.32	3.731	0.250
C_3H_8 44.094				0.233	0.041	1.81	0.097	0.097	0.138	0.041	1.81	0.121	4.24	0.427	0.029
C_4H_8 56.104				1.177	0.208	11.67	0.492	0.492	0.700	0.208	11.67	0.782	5.00	2.334	0.156
C_4H_{10} 58.120				0.473	0.084	4.88	0.198	0.198	0.282	0.084	4.88	0.327	4.86	1.004	0.067
C_5H_{10} 70.130				0.573	0.101	7.08	0.239	0.239	0.340	0.101	7.08	0.475	5.45	1.299	0.087
C_5H_{12} 72.146				0.253	0.045	3.25	0.106	0.106	0.151	0.045	3.25	0.218	5.25	0.619	0.042
C_6H_{12} 84.156				0.190	0.034	2.86	0.079	0.079	0.113	0.034	2.86	0.192	5.54	0.516	0.035
C_3-C_6											47.67	3.196		9.930	0.666
TOTAL		40.651	510.65		17.658	362.78	41.779	82.430	65.162						
H_2+CO	96.673	39.298	14914 SCFH		10.135		23.979	63.277	34.114	-29.163					
H_2/CO		1.69	Factor 670510		4.09		4.09	2.28	4.09	1.31					
RECOVERED OIL **										0.282	39.56	2.653		6.149	0.412
TOTAL OIL											87.23	5.949		16.079	1.078
WATER SOLUBLE CHEMICALS **										0.292	15.51	1.040		1.966	0.132
TOTAL LIQUID PRODUCTS C_3+											102.74	6.889		18.045	1.210
NET WATER **										5.151	92.80	6.222		11.140	0.747
GROSS WATER											108.31	7.262		13.106	0.879
HYDROCARBON TOTAL—C_1+											137.35	9.210			

YIELD BASIS H_2+CO FED				
YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	82.4	5.067	98.0	4.966
400-550	7.0	0.430	91.4	0.393
550 +	10.6	0.652	114.6	0.747
	RECOVERY %	#/hr	gal/hr	
PROPYLENE	32.4	5.22		
C_3 POLY GASO.	87.5	4.57	0.764	
C_3 POLY TAR	12.5	0.65	0.086	
	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	--	--	68.0
C_4 POLY GASO.	5.98	10.21	1.708	1.5
C_4H_{10}	4.86	(4.88) 4.09	(1.004) 0.841	68.0
C_4-FREE GASO.			8.164	5.8
C_4 POLY TAR	7.53	1.46	0.194	
	gal/hr	gal/MCF	Bbl/Day	
10 # RVP 400 EP GASOLINE	10.713	0.7183	3894	
GAS OIL	0.393	0.0264	143	
FUEL OIL	0.747	0.0501	272	
POLY TAR	0.280	0.0188	102	
TOTAL	12.133	0.8136	4411	
W. S. CHEM.	1.966	0.1318	715	
TOTAL	14.099	0.9454	5126	

Weight Recovery, %	95.05	Catalyst Age, hrs.	
Pressure, psig	396	Inlet Velocity, Ft/sec	1.02
Temperature, °F	662	Bed Depth, Ft	16.76
Recycle Ratio	1.03	Bed Density, #/CF	132

Space Velocity, vhv	1348	Catalyst	VolCF 11.06
Weight, #	1460	Effluent Shift Ratio	$(H_2)(CO_2)$ / $(H_2O)(CO)$ =

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3 + /C_1 +
56.56	86.31	67.02	74.21	65.31	37.65	46.09	74.80

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-V
HOURS 440-464

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	424	Fresh Feed	15427
Natural Gas	435	Recycle	15855
Generator Outlet	400	Combined Feed	31282
Reactor Inlet	396	Wet Gas—Measured	6234
Condenser Inlet		Adjusted	6701
Product Accumulator	371	Loss	467
TEMPERATURES—°F.		Recycle/Fresh Feed	1.03
Oxygen	486	Inlet Velocity—ft./sec.	1.02
Natural Gas	799	Fresh Feed Rate—S.C.F.H.	14914
Generator	2491	per Cu. Ft. Dense Bed	1348
Quench Accumulator	150	per Lb. Catalyst	10.22
Reactor Inlet	259	per sq ft	22597
Condenser Inlet	590		
Product Accumulator	73		
Catalyst No. Height			
1 See Per. A	--		
2	659		
3	652		
4	662		
5	664		
6	669		
7	663		
8	645		
9	654		
10	664		
11	648		

PRODUCT TESTS	OIL	WATER
° API	51.6	11.1
Neut. No.	48.4	38.7
Sap. No.	66.9	42.2
Hydrox. No.		
Bromine No.	94	
Pour °F.	Below -30	
Chemicals, % by K_2CO_3		15.0
HEMPEL. DIST. %		°API
205 °F.		
400	81.4	50.8
400-550	7.0	36.5
550+	11.6	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	103	
10%	138	
50%	220	
90%	358	
EP	400	
Rec	97.5	

CATALYST DATA					
INVENTORY DATA		PARTICLE SIZE			
In Reactor at Start of Period		Screen Analysis		Sedimentation	
Fresh Catalyst Added		Mesh	Microns	%	Microns	%
Total		On 40	419+		80+	
Catalyst Recovered	65	100	150		40—80	
In Reactor at End of Period		150	105		20—40	
		200	74		10—20	
REACTOR d-p, Inches H_2O		250	62		0—20	
No. Height		325	44			
0 See Per. A		<325				
1	63	CATALYST				
2	70	Bulk Density, Lbs./Cu. Ft.				
3	67	Aerated				
4	200	Settled				
Total	400	Compacted				
		Particle Density, gm. cc.				
CALCULATED FROM dp		NH_3 Value, ml./gm.				
Density, Lbs./Cu. Ft.	132	N_2 Surface, m^2/gm.				
Inventory, Lbs.	1460					
Bed Depth, Ft.	16.76	CHEMICAL ANALYSIS				
Vol cu ft	11.06	Fe				
		C				
		O				
		H				
		K_2O, W+, % basis Fe				
		X-Ray Analysis—				
		$Fe_{20}C_9$				
		Fe_3O_4				
		Fe				

RUN NO. 66-W
HOURS 464-477
CATALYST Brownsville
Treated MB Red. @ 660F

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	36.260	14.807	414.75	11.640	2.178	61.01	4.911	19.718	7.089	-12.629	-353.74				
H_2 2.016	60.485	24.699	49.79	46.950	8.786	17.71	19.808	44.507	28.594	-15.913	-32.08				
CO_2 44.010	2.320	0.947	41.68	24.850	4.650	204.65	10.484	11.431	15.134	3.703	162.97	10.870			
N_2 28.016	0.795	0.325	9.11	1.900	0.356	9.97	0.802	1.127	1.158						
CH_4 16.042	0.140	0.057	0.91	6.955	1.301	20.87	2.934	2.991	4.235	1.244	19.96	1.331			
C_2H_4 28.052				1.785	0.334	9.37	0.753	0.753	1.087	0.334	9.37	0.625			
C_2H_6 30.068				1.250	0.234	7.04	0.527	0.527	0.761	0.234	7.04	0.470			
C_1+C_2											36.37	2.426			
C_3H_6 42.078				2.100	0.393	16.54	0.886	0.886	1.279	0.393	16.54	1.103	4.32	3.829	0.255
C_3H_8 44.094				0.235	0.044	1.94	0.099	0.099	0.143	0.044	1.94	0.129	4.24	0.458	0.031
C_4H_8 56.104				1.205	0.225	12.62	0.508	0.508	0.733	0.225	12.62	0.842	5.00	2.524	0.168
C_4H_{10} 58.120				0.330	0.062	3.60	0.139	0.139	0.201	0.062	3.60	0.240	4.86	0.741	0.049
C_5H_{10} 70.130				0.530	0.099	6.94	0.224	0.224	0.323	0.099	6.94	0.463	5.45	1.273	0.085
C_5H_{12} 72.146				0.115	0.022	1.59	0.049	0.049	0.071	0.022	1.59	0.106	5.25	0.303	0.020
C_6H_{12} 84.156				0.155	0.029	2.44	0.065	0.065	0.094	0.029	2.44	0.163	5.54	0.440	0.029
C_3-C_4											45.67	3.046		9.568	0.637
TOTAL		40.835	516.24		18.713	376.29	42.190	83.025	66.292						
H_2+CO	96.745	39.506	14993 SCFH		10.964		24.719	64.225	35.683	-28.542					
H_2/CO		1.67	Factor 666977		4.03		4.03	2.26	4.03	1.26					

YIELD BASIS H_2+CO FED

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	81.4	4.835	98.0	4.738
400-550	8.8	0.523	91.4	0.478
550 +	9.8	0.582	114.6	0.667

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	31.0	5.13		
C_3 POLY GASO.	87.5	4.49	0.751	
C_3 POLY TAR	12.5	0.64	0.085	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.33	0.066	68.0
C_4 POLY GASO.	5.98	10.75	1.798	1.5
C_4H_{10}	4.86	3.60	0.741	68.0
C_4-FREE GASO.			7.505	5.8
C_4 POLY TAR	7.53	1.54	0.205	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	10.110	0.6743	3656
GAS OIL	0.478	0.0319	173
FUEL OIL	0.667	0.0445	241
POLY TAR	0.290	0.0193	105
TOTAL	11.545	0.7700	4175
W. S. CHEM.	1.806	0.1205	653
TOTAL	13.351	0.8905	4828

Weight Recovery, %	92.25	Catalyst Age, hrs.		Space Velocity, vhv	1388	RECOVERED OIL **	0.274	38.41	2.562		5.940	0.396
Pressure, psig	399	Inlet Velocity, Ft/sec	1.02	Catalyst	Vol CF 10.80	TOTAL OIL		84.08	5.608		15.508	1.033
Temperature, °F	663	Bed Depth, Ft	16.36	Weight, #	1426	WATER SOLUBLE CHEMICALS **	0.268	14.23	0.949		1.806	0.121
Recycle Ratio	1.03	Bed Density, #/CF	132	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =		TOTAL LIQUID PRODUCTS C_3+		98.31	6.557		17.314	1.154
						NET WATER **	4.847	87.32	5.824		10.482	0.699
						GROSS WATER		101.55	6.773		12.288	0.820
						HYDROCARBON TOTAL—C_1+		134.68	8.983			

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
54.17	85.29	64.43	72.25	64.05	35.75	44.44	73.00

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-W
HOURS 464-477

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	426	Fresh Feed	15497
Natural Gas	438	Recycle	16011
Generator Outlet	403	Combined Feed	31508
Reactor Inlet	399	Wet Gas—Measured	6346
Condenser Inlet		Adjusted	7101
Product Accumulator	373	Loss	755
TEMPERATURES—°F.		Recycle/Fresh Feed	1.03
Oxygen	503	Inlet Velocity—ft./sec.	1.02
Natural Gas	793	Fresh Feed Rate—S.C.F.H.	14993
Generator	2481	per Cu. Ft. Dense Bed	1388
Quench Accumulator	148	per Lb. Catalyst	10.51
Reactor Inlet	254	per sq ft	22717
Condenser Inlet	593		
Product Accumulator	72		
Catalyst No. Height			
1 See Per. A	--		
2	660		
3	654		
4	664		
5	666		
6	671		
7	661		
8	643		
9	655		
10	662		
11	649		

PRODUCT TESTS	OIL	WATER
°API	50.7	11.1
Neut. No.	48.2	38.4
Sap. No.	66.4	41.7
Hydrox. No.		
Bromine No.	94	
Pour °F.		
Chemicals, % by K_2CO_3		14.7
HEMPEL, DIST. %		°API
205 °F.		
400	80.4	52.7
400-550	8.8	33.3
550+	10.8	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	102	
10%	141	
50%	221	
90%	351	
EP	399	
Rec	96.0	

CATALYST DATA					
INVENTORY DATA		PARTICLE SIZE			
In Reactor at Start of Period		Screen Analysis		Sedimentation	
Fresh Catalyst Added		Mesh	Microns	%	Microns	%
Total		On 40	419+		80+	
Catalyst Recovered	39	100	150		40—80	
In Reactor at End of Period		150	105		20—40	
		200	74		10—20	
REACTOR d-p, Inches H_2O		250	62		0—20	
No. Height		325	44			
0 See Per. A		<325				
1	63	CATALYST				
2	70	Bulk Density, Lbs./Cu.Ft.				
3	67	Aerated				
4	190	Settled				
Total	390	Compacted				
		Particle Density, gm./cc.				
CALCULATED FROM dp		NH_3 Value, ml./gm.				
Density, Lbs./Cu.Ft.	132	N_2 Surface, m^2/gm.				
Inventory, Lbs.	1426					
Bed Depth, Ft.	16.36	CHEMICAL ANALYSIS				
Vol cu ft	10.80	Fe				
		C				
		O				
		H				
		K_2O, W+, % basis Fe				
		X-Ray Analysis—				
		$Fe_{20}C_9$				
		Fe_3O_4				
		Fe				

RUN NO. 66-X
HOURS 477-500
CATALYST Brownsville
Treated MS Red. @ 660F

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

	FRESH FEED			WET GAS			RECYCLE	COMBINED FEED	EFFLUENT	NET CHANGE		YIELD BASIS H_2+CO FED								
					At Wt. Balance							CONDENSATE								
	%	m/hr	#/hr	%	m/hr	#/hr	m/hr	m/hr	m/hr	m/hr	#/hr	#/MCF	#/gal	gal/hr	gal/MCF	YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*				
CO 28.010	36.423	14.022	392.74	13.207	2.371	66.41	5.688	19.710	8.059	-11.651	-326.33						CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY,%	gal/hr
H_2 2.016	60.137	23.151	46.67	48.233	8.659	17.46	20.772	43.923	29.431	-14.492	-29.21					400 EP	81.4	5.039	98.0	4938
CO_2 44.010	2.277	0.877	38.60	23.270	4.179	183.93	10.022	10.899	14.201	3.302	145.33	10.302				400-550	7.6	0.470	91.4	0.430
N_2 28.016	0.940	0.362	10.14	1.833	0.329	9.22	0.789	1.151	1.118							550 +	11.0	0.681	114.6	0.780
CH_4 16.042	0.223	0.086	1.38	6.460	1.160	18.61	2.782	2.868	3.942	1.074	17.23	1.221								
C_2H_4 28.052				1.633	0.293	8.22	0.703	0.703	0.996	0.293	8.22	0.583					RECOVERY %	#/hr	gal/hr	
C_2H_6 30.068				1.120	0.201	6.04	0.482	0.482	0.683	0.201	6.04	0.428				PROPYLENE	30.4	4.32		
C_1+C_2											31.49	2.232				C_3 POLY GASO.	87.5	3.78	0.632	
C_3H_6 42.078				1.883	0.338	14.22	0.811	0.811	1.149	0.338	14.22	1.008	4.32	3.292	0.233	C_3 POLY TAR	12.5	0.54	0.071	
C_3H_8 44.094				0.180	0.032	1.41	0.078	0.078	0.110	0.032	1.41	0.100	4.24	0.333	0.024					
C_4H_8 56.104				1.107	0.199	11.16	0.477	0.477	0.676	0.199	11.16	0.791	5.00	2.232	0.158		#/gal	#/hr	gal/hr	RVP
C_4H_{10} 58.120				0.340	0.061	3.55	0.146	0.146	0.207	0.061	3.55	0.252	4.86	0.730	0.052	C_4H_8	5.00	0.18	0.036	68.0
C_5H_{10} 70.130				0.487	0.087	6.10	0.210	0.210	0.297	0.087	6.10	0.432	5.45	1.119	0.079	C_4 POLY GASO.	5.98	9.61	1.607	1.5
C_5H_{12} 72.146				0.097	0.017	1.23	0.042	0.042	0.059	0.017	1.23	0.087	5.25	0.234	0.017	C_4H_{10}	4.86	3.55	0.730	68.0
C_6H_{12} 84.156				0.150	0.027	2.27	0.065	0.065	0.092	0.027	2.27	0.161	5.54	0.410	0.029	C_4-FREE GASO.			7.333	5.8
C_3-C_6											39.94	2.831		8.350	0.592	C_4 POLY TAR	7.53	1.37	0.182	
TOTAL		38.498	489.53		17.953	349.83	43.067	81.565	66.327											
H_2+CO	96.560	37.173	14107 SCFH		11.030		26.460	63.633	37.490	-26.143							gal/hr	gal/MCF	Bbl/Day	
H_2/CO		1.65	Factor 708867		3.65		3.65	2.23	3.65	1.24						10 # RVP 400 EP GASOLINE	9.706	0.6880	3730	
Weight Recovery, % 93.07			Catalyst Age, hrs.			Space Velocity, vhv 1488			RECOVERED OIL **	0.283	39.74	2.817		6.190	0.439	GAS OIL	0.430	0.0305	165	
Pressure, psig 402			Inlet Velocity, Ft/sec 0.99			Catalyst Vol CF 9.48			TOTAL OIL		79.68	5.648		14.540	1.031	FUEL OIL	0.780	0.0553	300	
Temperature, °F 660			Bed Depth, Ft 14.36			Weight, # 1299			WATER SOLUBLE CHEMICALS **	0.270	14.32	1.015		1.814	0.129	POLY TAR	0.253	0.0179	97	
Recycle Ratio 1.12			Bed Density, #/CF 137			Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =			TOTAL LIQUID PRODUCTS C_3+		94.00	6.663		16.354	1.160	TOTAL	11.169	0.7917	4292	
FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY		NET WATER **	4.754	85.64	6.071		10.281	0.729	W. S. CHEM.	1.814	0.1286	697	
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+		GROSS WATER		99.96	7.086		12.095	0.858	TOTAL	12.983	0.9203	4989	
53.37	83.09	62.60	70.33	59.11	32.99	41.08	74.91		HYDROCARBON TOTAL—C_1+		125.49	8.896								

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-X
HOURS 477-500

OPERATING CONDITIONS				PRODUCT TESTS			CATALYST DATA						
PRESSURES PSIG		RATES S.C.F.H.			OIL	WATER	INVENTORY DATA		PARTICLE SIZE				
Oxygen	424	Fresh Feed	14610	°API	52.0	11.1	In Reactor at Start of Period		Screen Analysis			Sedimentation	
Natural Gas	416	Recycle	16344	Neut. No.	48.6	40.5	Fresh Catalyst Added		Mesh	Microns	%	Microns	%
Generator Outlet	405	Combined Feed	30954	Sap. No.	66.4	42.7	Total		On 40	419+		80+	
Reactor Inlet	402	Wet Gas—Measured	6153	Hydrox. No.			Catalyst Recovered	57	100	150		40—80	
Condenser Inlet		Adjusted	6813	Bromine No.	96.5		In Reactor at End of Period		150	105		20—40	
Product Accumulator	377	Loss	660	Pour °F.					200	74		10—20	
				Chemicals, % by K_2CO_3		15.0	REACTOR d-p, Inches H_2O		250	62		0—20	
							No. Height		325	44			
TEMPERATURES—°F.		Recycle/Fresh Feed	1.12				0 See Per. A		<325				
Oxygen	486	Inlet Velocity—ft./sec.	0.99				1	68	CATALYST				
Natural Gas	806	Fresh Feed Rate—S.C.F.H.	14107	HEMPEL, DIST. %		°API	2	70	Bulk Density, Lbs./Cu.Ft.				
Generator	2459	per Cu. Ft. Dense Bed	1488	205 °F.			3	69	Aerated				
Quench Accumulator	141	per Lb. Catalyst	10.86	400	80.4	53.6	4	145	Settled				
Reactor Inlet	307	per sq ft	21378	400-550	7.6	37.1	Total	352	Compacted				
Condenser Inlet	568			550+	12.0				Particle Density, gm./cc.				
Product Accumulator	67						CALCULATED FROM dp		NH_3 Value, ml./gm.				
Catalyst No. Height				A. S. T. M. DIST. ON			Density, Lbs./Cu.Ft.	137	N_2 Surface, m^2/gm.				
1 See Per. A	--			Naphtha °F.			Inventory, Lbs.	1299					
2	663			IBP	108		Bed Depth, Ft.	14.36	CHEMICAL ANALYSIS				
3	655			10%	131		Vol cu ft	9.48	Fe				
4	664			50%	218				C				
5	664			90%	344				O				
6	668			EP	400				H				
7	647			Rec	97.4				K_2O, W+, % basis Fe				
8	633								X-Ray Analysis—				
9	645								$Fe_{20}C_9$				
10	643								Fe_3O_4				
11	623								Fe				

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

RUN NO. 66-Y
HOURS 500-523
CATALYST Brownsville Treated MS Red. @ 660F

	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
CO 28.010	36.074	14.108	395.17	12.743	1.943	54.42	10.350	24.458	12.293	-12.165	-340.75
H_2 2.016	60.467	23.648	47.67	44.733	6.821	13.75	36.332	59.980	43.153	-16.827	-33.92
CO_2 44.010	2.153	0.842	37.06	24.047	3.667	161.34	19.531	20.373	23.198	2.825	124.28
N_2 28.016	0.893	0.349	9.78	1.987	0.303	8.49	1.614	1.963	1.917		
CH_4 16.042	0.413	0.162	2.60	7;720	1.177	18.88	6.270	6.432	7.447	1.015	16.28
C_2H_4 28.052				2.057	0.314	8.81	1.671	1.671	1.985	0.314	8.81
C_2H_6 30.068				1.190	0.181	5.44	0.967	0.967	1.148	0.181	5.44
C_1+C_2											30.53
C_3H_6 42.078				2.367	0.361	15.19	1.923	1.923	2.284	0.361	15.19
C_3H_8 44.094				0.250	0.038	1.68	0.203	0.203	0.241	0.038	1.68
C_4H_8 56.104				1.483	0.226	12.68	1.205	1.205	1.431	0.226	12.68
C_4H_{10} 58.120				0.423	0.065	3.78	0.344	0.344	0.409	0.065	3.78
C_5H_{10} 70.130				0.653	0.100	7.01	0.530	0.530	0.630	0.100	7.01
C_5H_{12} 72.146				0.140	0.021	1.52	0.114	0.114	0.135	0.021	1.52
C_6H_{12} 84.156				0.207	0.032	2.69	0.168	0.168	0.200	0.032	2.69
C_3-C_4											44.55
TOTAL		39.109	492.28		15.249	315.68	81.222	120.331	103.115		
H_2+CO	96.541	37.756	14329 SCFH		8.764		46.682	84.438	55.446	-28.992	
H_2/CO		1.68	Factor 697885		3.51		3.51	2.45	3.51	1.38	

Weight Recovery, % 93.15	Catalyst Age, hrs.	Space Velocity, vhv 2174
Pressure, psig 403	Inlet Velocity, Ft/sec 1.46	Catalyst Vol CF 6.59
Temperature, °F 664	Bed Depth, Ft 9.99	Weight, # 751
Recycle Ratio 2.08	Bed Density, #/CF 114	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
61.09	86.23	71.16	76.79	49.74	28.05	34.34	78.81

YIELD BASIS H_2+CO FED

	CONDENSATE #/MCF	CONDENSATE #/gal	CONDENSATE gal/hr	CONDENSATE gal/MCF
RECOVERED OIL **	0.382	53.57	3.739	8.282	0.578
TOTAL OIL		98.12	6.848	17.570	1.226
WATER SOLUBLE CHEMICALS **	0.291	15.46	1.079	1.929	0.135
TOTAL LIQUID PRODUCTS C_3+		113.58	7.927	19.499	1.361
NET WATER **	5.971	107.57	7.507	12.913	0.901
GROSS WATER		12303	8.586	14.842	1.036
HYDROCARBON TOTAL—C_1+		144.11	10.058		

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*

	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	77.8	6.444	98.0	6.315
400-550	12.5	1.035	91.4	0.946
550 +	9.7	0.803	114.6	0.920

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	36.2	5.50		
C_3 POLY GASO.	87.5	4.81	0.804	
C_3 POLY TAR	12.5	0.69	0.092	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.72	0.144	68.0
C_4 POLY GASO.	5.98	10.47	1.750	1.5
C_4H_{10}	4.86	3.78	0.778	68.0
C_4-FREE GASO.			9.181	5.8
C_4 POLY TAR	7.53	1.49	0.198	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	11.853	0.8272	4485
GAS OIL	0.946	0.0660	358
FUEL OIL	0.920	0.0642	348
POLY TAR	0.290	0.0202	110
TOTAL	14.009	0.9776	5301
W. S. CHEM.	1.929	0.1346	730
TOTAL	15.938	1.1122	6031

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-Y
HOURS 500-523

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	427	Fresh Feed	14842
Natural Gas	419	Recycle	30824
Generator Outlet	407	Combined Feed	45666
Reactor Inlet	403	Wet Gas—Measured	5169
Condenser Inlet		Adjusted	5787
Product Accumulator	375	Loss	618
TEMPERATURES—°F.		Recycle/Fresh Feed	2.08
Oxygen	513	Inlet Velocity—ft./sec.	1.46
Natural Gas	804	Fresh Feed Rate—S.C.F.H.	14329
Generator	2446	per Cu. Ft. Dense Bed	2174
Quench Accumulator	141	per Lb. Catalyst	19.08
Reactor Inlet	339	per sq ft	21711
Condenser Inlet	579		
Product Accumulator	73		
Catalyst No. Height			
1 See Per. A	--		
2	662		
3	654		
4	665		
5	669		
6	671		
7	648		
8	634		
9	635		
10	632		
11	618		

PRODUCT TESTS	OIL	WATER
°API	50.6	10.7
Neut. No.	51.5	42.8
Sap. No.	66.4	45.0
Hydrox. No.		
Bromine No.	96.5	
Pour °F.		
Chemicals, % by K_2CO_3		13.0
HEMPEL, DIST. %		°API
205 °F.		
400	76.8	53.7
400-550	12.5	37.1
550+	10.7	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	108	
10%	132	
50%	224	
90%	362	
EP	404	
Rec.	96.5	

CATALYST DATA	
INVENTORY DATA	
In Reactor at Start of Period	
Fresh Catalyst Added	
Total	
Catalyst Recovered	379½
In Reactor at End of Period	
REACTOR d-p, Inches H_2O	
No. Height	
0 See Per. A	
1	52
2	62
3 (est.)	58
4 (est.)	25
Total	197
CALCULATED FROM dp	
Density, Lbs./Cu.Ft.	114
Inventory, Lbs.	751
Bed Depth, Ft.	9.99
Vol cu ft	6.59

PARTICLE SIZE				
Screen Analysis			Sedimentation	
Mesh	Microns	%	Microns	%
On 40	419+		80+	
100	150		40—80	
150	105		20—40	
200	74		10—20	
250	62		0—20	
325	44			
<325				

CATALYST	
Bulk Density, Lbs./Cu.Ft.	
Aerated	
Settled	
Compacted	
Particle Density, gm./cc.	
NH_3 Value, ml./gm.	
N_2 Surface, m^2/gm.	
CHEMICAL ANALYSIS	
Fe	
C	
O	
H	
K_2O, W+, % basis Fe	
X-Ray Analysis—	
$Fe_{20}C_9$	
Fe_3O_4	
Fe	

RUN NO. 66-Z
HOURS 523-547
CATALYST Brownsville Treated MS Red. @ 660F

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	36.686	14.311	400.82	13.927	2.164	60.61	11.266	25.577	13.430	-12.147	-340.21				
H_2 2.016	59.650	23.268	46.91	43.940	6.828	13.77	35.545	58.813	42.373	-16.440	33.14				
CO_2 44.010	2.237	0.873	38.42	24.344	3.784	166.55	19.693	20.566	23.477	2.911	128.13	8.984			
N_2 28.016	0.830	0.324	9.08	1.987	0.309	8.66	1.607	1.931	1.916						
CH_4 16.042	0.597	0.233	3.74	7.170	1.114	17.87	5.800	6.033	6.914	0.881	14.13	0.991			
C_2H_4 28.052				1.853	0.288	8.08	1.499	1.499	1.787	0.288	8.08	0.567			
C_2H_6 30.068				1.073	0.167	5.02	0.868	0.868	1.035	0.167	5.02	0.352			
C_1+C_2											27.23	1.910			
C_3H_6 42.078				2.400	0.373	15.70	1.941	1.941	2.314	0.373	15.70	1.101	4.32	3.634	0.255
C_3H_8 44.094				0.207	0.032	1.41	0.167	0.167	0.199	0.032	1.41	0.099	4.24	0.333	0.023
C_4H_8 56.104				1.613	0.251	14.08	1.305	1.305	1.556	0.251	14.08	0.987	5.00	2.816	0.197
C_4H_{10} 58.120				0.480	0.075	4.36	0.388	0.388	0.463	0.075	4.36	0.306	4.86	0.897	0.063
C_5H_{10} 70.130				0.640	0.099	6.94	0.518	0.518	0.617	0.099	6.94	0.487	5.45	1.273	0.089
C_5H_{12} 72.146				0.183	0.028	2.02	0.148	0.148	0.176	0.028	2.02	0.142	5.25	0.385	0.027
C_6H_{12} 84.156				0.183	0.028	2.36	0.148	0.148	0.176	0.028	2.36	0.165	5.54	0.426	0.030
C_3-C_6											46.87	3.287		9.764	0.684
TOTAL		39.009	498.97		15.540	327.43	80.893	119.902	102.916						
H_2+CO	96.336	37.579	14262 SCFH		8.992		46.811	84.390	55.803	-28.587					
H_2/CO		1.63	Factor 701163		3.16		3.16	2.30	3.16	1.35					
RECOVERED OIL **										0.369	51.80	3.632		8.134	0.570
TOTAL OIL											98.67	6.919		17.898	1.254
WATER SOLUBLE CHEMICALS **										0.273	14.50	1.017		1.805	0.127
TOTAL LIQUID PRODUCTS C_3+											113.17	7.936		19.703	1.381
NET WATER **										5.841	105.24	7.379		12.634	0.886
GROSS WATER											119.74	8.396		14.439	1.013
HYDROCARBON TOTAL—C_1+											140.40	9.844			

Weight Recovery, % 93.14 | Catalyst Age, hrs. | Space Velocity, vhv 2271
Pressure, psig 402 | Inlet Velocity, Ft/sec 1.46 | Catalyst Vol CF 6.28
Temperature, °F 664 | Bed Depth, Ft 9.51 | Weight, # 710
Recycle Ratio 2.07 | Bed Density, #/CF 113 | Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
60.16	84.88	70.65	76.07	47.49	27.95	33.87	80.61

YIELD BASIS H_2+CO FED

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	76.1	6.190	98.0	6.066
400-550	12.4	1.009	91.4	0.922
550 +	11.5	0.935	114.6	1.072

	RECOVERY %	#/hr	gal/hr
PROPYLENE	35.2	5.53	
C_3 POLY GASO.	87.5	4.84	0.809
C_3 POLY TAR	12.5	0.69	0.092

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.24	0.048	68.0
C_4 POLY GASO.	5.98	12.11	2.025	1.5
C_4H_{10}	4.86	4.36	0.897	68.0
C_4-FREE GASO.			8.959	5.8
C_4 POLY TAR	7.53	1.73	0.230	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	11.929	0.8364	4535
GAS OIL	0.922	0.0646	350
FUEL OIL	1.072	0.0752	408
POLY TAR	0.322	0.0226	123
TOTAL	14.245	0.9988	5416
W. S. CHEM.	1.805	0.1266	686
TOTAL	16.050	1.1254	6102

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-Z
HOURS 523-547

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	423	Fresh Feed	14804
Natural Gas	416	Recycle	30699
Generator Outlet	406	Combined Feed	45503
Reactor Inlet	402	Wet Gas—Measured	5281
Condenser Inlet		Adjusted	5897
Product Accumulator	375	Loss	616
TEMPERATURES—°F.		Recycle/Fresh Feed	2.07
Oxygen	505	Inlet Velocity—ft./sec.	1.46
Natural Gas	799	Fresh Feed Rate—S.C.F.H.	14262
Generator	2428	per Cu. Ft. Dense Bed	2271
Quench Accumulator	140	per Lb. Catalyst	20.09
Reactor Inlet	321	per sq ft	21609
Condenser Inlet	584		
Product Accumulator	73		
Catalyst No. Height			
1 See Per. A	—		
2	663		
3	655		
4	665		
5	670		
6	666		
7	643		
8	630		
9	640		
10	638		
11	634		

PRODUCT TESTS	OIL	WATER
°API	53.5	10.6
Neut. No.	50.7	43.2
Sap. No.	65.7	44.8
Hydrox. No.		
Bromine No.	95	
Pour °F.		
Chemicals, % by K_2CO_3		12.5
HEMPEL, DIST. %		°API
205 °F.		
400	75.1	55.2
400-550	12.4	37.1
550+	12.5	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	107	
10%	134	
50%	224	
90%	354	
EP	406	
Rec.	96.5	

CATALYST DATA	
INVENTORY DATA	
In Reactor at Start of Period	
Fresh Catalyst Added	
Total	
Catalyst Recovered	118.5
In Reactor at End of Period	
REACTOR d-p, Inches H_2O	
No. Height	
0 See Per. A	
1	51
2	62
3 (est.)	52
4 (est.)	20
Total	185
CALCULATED FROM dp	
Density, Lbs./Cu.Ft.	113
Inventory, Lbs.	710
Bed Depth, Ft.	9.51
Vol cu ft	6.28

PARTICLE SIZE				
Screen Analysis			Sedimentation	
Mesh	Microns	%	Microns	%
On 40	419+		80+	
100	150		40—80	
150	105		20—40	
200	74		10—20	
250	62		0—20	
325	44			
<325				

CATALYST	
Bulk Density, Lbs./Cu.Ft.	
Aerated	
Settled	
Compacted	
Particle Density, gm./cc.	
NH_3 Value, ml./gm.	
N_2 Surface, m^2/gm.	
CHEMICAL ANALYSIS	
Fe	
C	
O	
H	
K_2O, W+, % basis Fe	
X-Ray Analysis—	
$Fe_{20}C_9$	
Fe_3O_4	
Fe	

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

RUN NO. 66-AA
HOURS 547-571
CATALYST Brownsville Treated MS Red. @ 660F

	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	36.200	14.522	406.76	13.720	2.370	66.38	11.307	25.829	13.677	-12.152	-340.38				
H_2 2.016	60.590	24.306	49.00	46.896	8.099	16.33	38.650	62.956	46.749	-16.207	-32.67				
CO_2 44.010	2.214	0.888	39.08	23.970	4.142	182.30	19.755	20.643	23.897	3.254	143.22	9.720			
N_2 28.016	0.683	0.274	7.68	1.560	0.269	7.54	1.286	1.560	1.829						
CH_4 16.042	0.313	0.126	2.02	6.227	1.075	17.25	5.132	5.258	6.333	0.949	15.23	1.034			
C_2H_4 28.052				1.810	0.313	8.78	1.492	1.492	1.805	0.313	8.78	0.596			
C_2H_6 30.068				1.033	0.178	5.35	0.851	0.851	1.029	0.178	5.35	0.363			
C_1+C_2											29.36	1.993			
C_3H_6 42.078				1.993	0.344	14.47	1.643	1.643	1.987	0.344	14.47	0.982	4.32	3.350	0.227
C_3H_8 44.094				0.227	0.039	1.72	0.187	0.187	0.226	0.039	1.72	0.117	4.24	0.406	0.028
C_4H_8 56.104				1.330	0.230	12.90	1.096	1.096	1.326	0.230	12.90	0.875	5.00	2.580	0.175
C_4H_{10} 58.120				0.337	0.058	3.37	0.278	0.278	0.336	0.058	3.37	0.229	4.86	0.693	0.047
C_5H_{10} 70.130				0.597	0.103	7.22	0.492	0.492	0.595	0.103	7.22	0.490	5.45	1.325	0.090
C_5H_{12} 72.146				0.130	0.022	1.59	0.107	0.107	0.129	0.022	1.59	0.108	5.25	0.303	0.021
C_6H_{12} 84.156				0.170	0.029	2.44	0.140	0.140	0.169	0.029	2.44	0.166	5.54	0.440	0.030
C_3-C_6											43.71	2.967		9.097	0.618
TOTAL		40.116	504.54		17.271	347.64	82.416	122.532	145.689						
H_2+CO	96.790	38.828	14735 SCFH		10.469	49	49.957	88.785	60.426	-28.359					
H_2/CO		1.67	Factor 678656		3.42		3.42	2.44	3.42	1.33					
RECOVERED OIL **										0.336	47.09	3.196		7.246	0.492
TOTAL OIL											90.80	6.163		16.343	1.110
WATER SOLUBLE CHEMICALS **										0.281	14.89	1.011		1.855	0.126
TOTAL LIQUID PRODUCTS C_3+											105.69	7.174		18.198	1.236
NET WATER **										5.269	94.92	6.442		11.395	0.773
GROSS WATER											109.81	7.453		13.250	0.899
HYDROCARBON TOTAL—C_1+											135.05	9.165			

Weight Recovery, % 91.87	Catalyst Age, hrs.	Space Velocity, vhv 2775
Pressure, psig 403	Inlet Velocity, Ft/sec 1.49	Catalyst Vol CF 5.31
Temperature, °F 663	Bed Depth, Ft 8.04	Weight, # 584
Recycle Ratio 2.05	Bed Density, #/CF 110	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
56.95	83.68	66.68	73.04	47.05	25.74	31.94	78.26

YIELD BASIS H_2+CO FED

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	74.7	5.413	98.0	5.305
400-550	12.6	0.913	91.4	0.834
550 +	12.7	0.920	114.6	1.054

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	32.7	4.73		
C_3 POLY GASO.	87.5	4.14	0.692	
C_3 POLY TAR	12.5	0.59	0.078	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.76	0.152	68.0
C_4 POLY GASO.	5.98	10.62	1.776	1.5
C_4H_{10}	4.86	3.37	0.693	68.0
C_4-FREE GASO.			8.065	5.8
C_4 POLY TAR	7.53	1.52	0.202	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	10.686	0.7252	3932
GAS OIL	0.834	0.0566	307
FUEL OIL	1.054	0.0715	388
POLY TAR	0.280	0.0190	103
TOTAL	12.854	0.8723	4730
W. S. CHEM.	1.855	0.1259	683
TOTAL	14.709	0.9982	5413

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-AA
HOURS 547-571

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	425	Fresh Feed	15224
Natural Gas	418	Recycle	31277
Generator Outlet	407	Combined Feed	46501
Reactor Inlet	403	Wet Gas—Measured	5781
Condenser Inlet		Adjusted	6555
Product Accumulator	374	Loss	774
TEMPERATURES—°F.		Recycle/Fresh Feed	2.05
Oxygen	514	Inlet Velocity—ft./sec.	1.49
Natural Gas	794	Fresh Feed Rate—S.C.F.H.	14735
Generator	2443	per Cu. Ft. Dense Bed	2775
Quench Accumulator	142	per Lb. Catalyst	25.23
Reactor Inlet	311	per sq ft	22326
Condenser Inlet	603		
Product Accumulator	75		
Catalyst No. Height			
1 See Per. A	--		
2	663		
3	655		
4	665		
5	671		
6	660		
7	643		
8	635		
9	650		
10	648		
11	658		

PRODUCT TESTS	OIL	WATER
° API	49.8	10.7
Neut. No.	53.2	46.7
Sap. No.	66.6	49.2
Hydrox. No.		
Bromine No.	95	
Pour °F.		
Chemicals, % by K_2CO_3		14.0
HEMPEL DIST. %		°API
205 °F.		
400	73.7	54.2
400-550	12.6	36.4
550+	13.7	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	108	
10%	139	
50%	228	
90%	354	
EP	401	
Rec	97.4	

CATALYST DATA						
INVENTORY DATA		PARTICLE SIZE				
In Reactor at Start of Period		Screen Analysis			Sedimentation	
Fresh Catalyst Added		Mesh	Microns	%	Microns	%
Total		On 40	419+		80+	
Catalyst Recovered	81	100	150		40—80	
In Reactor at End of Period		150	105		20—40	
		200	74		10—20	
REACTOR d-p, Inches H_2O		250	62		0—20	
No. Height		325	44			
0 See Per. A		<325				
1	52	CATALYST				
2	58	Bulk Density, Lbs./Cu.Ft.				
3	39	Aerated				
4	145	Settled				
Total	149	Compacted				
		Particle Density, gm./cc.				
CALCULATED FROM dp		NH_3 Value, ml./gm.				
Density, Lbs./Cu.Ft.	110	N_2 Surface, m^2/gm.				
Inventory, Lbs.	584					
Bed Depth, Ft.	8.04	CHEMICAL ANALYSIS				
Volcu fu	5.31	Fe				
		C				
		O				
		H				
		K_2O, W+, % basis Fe				
		X-Ray Analysis—				
		$Fe_{20}C_9$				
		Fe_3O_4				
		Fe				

RUN NO. 66-BB
HOURS 571-595
CATALYST Brownsville Treated MS Red. @ 660F

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

	FRESH FEED			WET GAS			RECYCLE	COMBINED FEED	EFFLUENT	NET CHANGE		YIELD BASIS H_2+CO FED			
					At Wt. Balance							CONDENSATE			
	%	m/hr	#/hr	%	m/hr	#/hr	m/hr	m/hr	m/hr	m/hr	#/hr	#/MCF	#/gal	gal/hr	gal/MCF
CO 28.010	36.280	14.444	404.56	16.607	3.044	85.26	13.984	28.428	17.028	-11.400	-319.30				
H_2 2.016	60.596	24.125	48.64	48.210	8.837	17.82	40.595	64.720	49.432	-15.288	30.82				
CO_2 44.010	2.167	0.863	37.98	21.343	3.912	172.16	17.972	18.835	21.884	3.049	134.18	9.167			
N_2 28.016	0.657	0.262	7.34	1.623	0.297	8.32	1.367	1.629	1.664						
CH_4 16.042	0.300	0.119	1.91	5.423	0.994	15.95	4.566	4.685	5.560	0.875	14.04	0.959			
C_2H_4 28.052				1.587	0.291	8.16	1.336	1.336	1.627	0.291	8.16	0.557			
C_2H_6 30.069				0.877	0.161	4.84	0.738	0.738	0.899	0.161	4.84	0.331			
C_1+C_2											27.04	1.847			
C_3H_6 42.078				1.667	0.306	12.88	1.404	1.404	1.710	0.306	12.88	0.880	4.32	2.981	0.204
C_3H_8 44.094				0.153	0.028	1.23	0.129	0.129	0.157	0.028	1.23	0.084	4.24	0.290	0.020
C_4H_8 56.104				1.170	0.214	12.01	0.985	0.985	1.199	0.214	12.01	0.821	5.00	2.402	0.164
C_4H_{10} 58.120				0.440	0.081	4.71	0.370	0.370	0.451	0.081	4.71	0.322	4.86	0.969	0.066
C_5H_{10} 70.130				0.563	0.103	7.22	0.474	0.474	0.577	0.103	7.22	0.493	5.45	1.325	0.091
C_5H_{12} 72.146				0.130	0.024	1.73	0.109	0.109	0.133	0.024	1.73	0.118	5.25	0.330	0.023
C_6H_{12} 84.156				0.207	0.038	3.20	0.174	0.174	0.212	0.038	3.20	0.219	5.54	0.578	0.039
C_3-C_6											42.98	2.937		8.875	0.607
TOTAL		39.813	500.43		18.330	355.49	84.203	124.016	107.936						
H_2+CO	96.876	38.569	14637 SCFH		11.881	54.579	34.579	95.148	66.460	-26.688					
H_2/CO		1.67	Factor 683200		2.90		2.90	2.28	2.90	1.34					

Weight Recovery, %	92.02	Catalyst Age, hrs.		Space Velocity, vhv	3049	RECOVERED OIL **	0.310	43.51
Pressure, psig	405	Inlet Velocity, Ft/sec	1.49	Catalyst Vol CF	4.80	TOTAL OIL		86.49
Temperature, °F	658	Bed Depth, Ft	7.27	Weight, #	514	WATER SOLUBLE CHEMICALS **	0.276	14.65
Recycle Ratio	2.11	Bed Density, #/CF	107	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$	=	TOTAL LIQUID PRODUCTS C_3+		101.14
						NET WATER **	4.815	86.78
						GROSS WATER		101.43
						HYDROCARBON TOTAL—C_1+		128.18

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
53.96	78.93	63.37	69.20	40.10	23.62	28.65	78.90

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	76.2	5.083	98.0	4.981
400-550	12.9	0.860	91.4	0.786
550 +	10.9	0.727	114.6	0.833

	RECOVERY %	#/hr	gal/hr	
PROPYLENE	30.8	3.97		
C_3 POLY GASO.	87.5	3.47	0.580	
C_3 POLY TAR	12.5	0.50	0.066	

	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	--	--	68.0
C_4 POLY GASO.	5.98	10.51	1.757	1.5
C_4H_{10}	4.86	(4.71) 3.99	(0.969) 0.822	68.0
C_4-FREE GASO.			7.794	5.8
C_4 POLY TAR	7.53	1.50	0.199	

	gal/hr	gal/MCF	Bbl/Day
10 # RVP 400 EP GASOLINE	10.373	0.7087	3843
GAS OIL	0.786	0.0537	291
FUEL OIL	0.833	0.0569	308
POLY TAR	0.265	0.0181	98
TOTAL	12.257	0.8374	4540
W. S. CHEM.	1.838	0.1256	681
TOTAL	14.095	0.9630	5221

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-BB
HOURS 571-595

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	427	Fresh Feed	15109
Natural Gas	421	Recycle	31955
Generator Outlet	409	Combined Feed	47064
Reactor Inlet	405	Wet Gas—Measured	6175
Condenser Inlet		Adjusted	6956
Product Accumulator	375	Loss	781
TEMPERATURES—°F.		Recycle/Fresh Feed	2.11
Oxygen	497	Inlet Velocity—ft./sec.	1.49
Natural Gas	788	Fresh Feed Rate—S.C.F.H.	14637
Generator	2441	per Cu. Ft. Dense Bed	3049
Quench Accumulator	142	per Lb. Catalyst	28.48
Reactor Inlet	313	per sq ft	22177
Condenser Inlet	611		
Product Accumulator	75		
Catalyst No. Height			
1 See Per. A	--		
2	659		
3	652		
4	662		
5	666		
6	652		
7	645		
8	646		
9	653		
10	648		
11	658		

PRODUCT TESTS	OIL	WATER
°API	49.1	10.9
Neut. No.	55.4	49.8
Sap. No.	66.6	51.3
Hydrox. No.		
Bromine No.	92	
Pour °F.	Below -20	
Chemicals, % by K_2CO_3		15.0
HEMPEL, DIST. %		°API
205 °F.		
400	75.2	53.7
400-550	12.9	35.6
550+	11.9	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	106	
10%	136	
50%	228	
90%	360	
EP	407	
Rec.	96.0	

CATALYST DATA						
INVENTORY DATA		PARTICLE SIZE				
		Screen Analysis			Sedimentation	
In Reactor at Start of Period		Mesh	Microns	%	Microns	%
Fresh Catalyst Added		On 40	419+		80+	
Total		100	150		40—80	
Catalyst Recovered	75	150	105		20—40	
In Reactor at End of Period		200	74		10—20	
		250	62		0—20	
REACTOR d-p, Inches H_2O		325	44			
No. Height		<325				
0 See Per. A						
1	51	CATALYST				
2 See Per. A	56	Bulk Density, Lbs./Cu.Ft.				
3	22	Aerated				
4	121	Settled				
Total	129	Compacted				
		Particle Density, gm./cc.				
CALCULATED FROM dp		NH_3 Value, ml./gm.				
Density, Lbs./Cu.Ft.	107	N_2 Surface, m^2/gm.				
Inventory, Lbs.	514					
Bed Depth, Ft.	7.27	CHEMICAL ANALYSIS				
Vol cu ft	4.80	Fe				
		C				
		O				
		H				
		K_2O, W+, % basis Fe				
		X-Ray Analysis—				
		$Fe_{20}C_9$				
		Fe_3O_4				
		Fe				

RUN NO. 66-CC
HOURS 595-619
CATALYST Brownsville Treated MS Red. @ 660F

THE TEXAS COMPANY — MONTEBELLO LABORATORY
YIELD CALCULATIONS

	FRESH FEED			WET GAS			RECYCLE	COMBINED FEED	EFFLUENT	NET CHANGE		YIELD BASIS H_2+CO FED			
					At Wt. Balance							CONDENSATE			
	%	m/hr	#/hr	%	m/hr	#/hr	m/hr	m/hr	m/hr	m/hr	#/hr	#/MCF	#/gal	gal/hr	gal/MCF
CO 28.010	36.360	14.461	405.08	17.007	3.371	94.42	14.497	28.958	17.868	-11.090	-310.66				
H_2 2.016	60.313	23.989	48.36	49.576	9.826	19.81	42.261	66.250	52.087	-14.163	-28.55				
CO_2 44.010	2.377	0.945	41.59	20.417	4.047	178.07	17.404	18.349	21.451	3.102	136.48	9.353			
N_2 28.016	0.627	0.247	6.98	1.553	0.308	8.63	1.324	1.573	1.632						
CH_4 16.042	0.323	0.129	2.07	5.240	1.039	16.67	4.467	4.596	5.506	0.910	14.60	1.001			
C_2H_4 28.052				1.523	0.302	8.47	1.298	1.298	1.600	0.302	8.47	0.580			
C_2H_6 30.068				0.773	0.153	4.60	0.659	0.659	0.812	0.153	4.60	0.315			
C_1+C_2											27.67	1.896			
C_3H_6 42.078				1.637	0.324	13.63	1.395	1.395	1.719	0.324	13.63	0.934	4.32	3.155	0.216
C_3H_8 44.094				0.180	0.036	1.59	0.153	0.153	0.189	0.036	1.59	0.109	4.24	0.375	0.026
C_4H_8 56.104				1.033	0.205	11.50	0.881	0.881	1.086	0.205	11.50	0.788	5.00	2.300	0.158
C_4H_{10} 58.120				0.327	0.065	3.78	0.279	0.279	0.344	0.065	3.78	0.259	4.86	0.778	0.053
C_5H_{10} 70.130				0.477	0.095	6.66	0.407	0.407	0.502	0.095	6.66	0.456	5.45	1.222	0.084
C_5H_{12} 72.146				0.100	0.020	1.44	0.085	0.085	0.105	0.020	1.44	0.099	5.25	0.274	0.019
C_6H_{12} 84.156				0.157	0.031	2.61	0.134	0.134	0.165	0.031	2.61	0.179	5.54	0.471	0.032
C_3-C_6											41.21	2.824		8.575	0.588
TOTAL		39.773	504.08		19.822	371.88	85.244	125.017	110.049						
H_2+CO	96.673	38.450	14592 SCFH		13.197		56.758	95.208	69.955	-25.253					
H_2/CO		1.66	Factor 685307		2.92		2.92	2.29	2.92	1.28					

YIELDS BASIS BROWNSVILLE DESIGN FEED RATE*	CORRECTED HEMPEL, %	gal/hr	TREATING RECOVERY, %	gal/hr
400 EP	77.4	4.557	98.0	4.466
400-550	9.9	0.583	91.4	0.533
550 +	12.7	0.748	114.6	0.859
	RECOVERY %	#/hr	gal/hr	
PROPYLENE	28.8	3.93		
C_3 POLY GASO.	87.5	3.44	0.575	
C_3 POLY TAR	12.5	0.49	0.065	
	#/gal	#/hr	gal/hr	RVP
C_4H_8	5.00	0.10	0.020	68.0
C_4 POLY GASO.	5.98	11.84	1.980	1.5
C_4H_{10}	4.86	3.78	0.778	68.0
C_4-FREE GASO.			7.008	5.8
C_4 POLY TAR	7.53	1.69	0.224	
	gal/hr	gal/MCF	Bbl/Day	
10 # RVP 400 EP GASOLINE	9.786	0.6706	3636	
GAS OIL	0.533	0.0365	198	
FUEL OIL	0.859	0.0589	319	
POLY TAR	0.289	0.0198	107	
TOTAL	11.467	0.7858	4260	
W. S. CHEM.	1.700	0.1165	632	
TOTAL	13.167	0.9023	4892	

Weight Recovery, %	92.50	Catalyst Age, hrs.		Space Velocity, vhv	3450	RECOVERED OIL **	0.274	38.41	2.632		5.888	0.404	GAS OIL	0.533	0.0365	198
Pressure, psig	405	Inlet Velocity, Ft/sec	1.51	Catalyst	Vol CF 4.23	TOTAL OIL		79.62	5.456		14.463	0.992	FUEL OIL	0.859	0.0589	319
Temperature, °F	664	Bed Depth, Ft	6.41	Weight, #	423	WATER SOLUBLE CHEMICALS **	0.255	13.55	0.929		1.700	0.117	POLY TAR	0.289	0.0198	107
Recycle Ratio	2.14	Bed Density, #/CF	100	Effluent $(H_2)(CO_2)$ / Shift Ratio $(H_2O)(CO)$ =		TOTAL LIQUID PRODUCTS C_3+		93.17	6.385		16.163	1.109	TOTAL	11.467	0.7858	4260
						NET WATER **	4.454	80.24	5.499		9.633	0.660	W. S. CHEM.	1.700	0.1165	632
						GROSS WATER		93.79	6.428		11.333	0.777	TOTAL	13.167	0.9023	4892
						HYDROCARBON TOTAL—C_1+		120.84	8.281							

FRESH FEED CONVERSION — %				TOTAL FEED CONVERSION — %			SELECTIVITY
Contraction	CO	H_2	H_2+CO	CO	H_2	CO+H_2	C_3+/C_1+
50.16	76.69	59.03	65.68	38.30	21.38	26.52	77.10

Form ML—11

** Included in Reactor Effluent Total

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

THE TEXAS COMPANY — MONTEBELLO LABORATORY
DATA SUMMARY

RUN NO. 66-CC
HOURS 595-619

OPERATING CONDITIONS			
PRESSURES PSIG		RATES S.C.F.H.	
Oxygen	428	Fresh Feed	15094
Natural Gas	422	Recycle	32350
Generator Outlet	410	Combined Feed	47444
Reactor Inlet	405	Wet Gas—Measured	6758
Condenser Inlet		Adjusted	7522
Product Accumulator	374	Loss	764
TEMPERATURES—°F.		Recycle/Fresh Feed	2.14
Oxygen	483	Inlet Velocity—ft./sec.	1.51
Natural Gas	779	Fresh Feed Rate—S.C.F.H.	14592
Generator	2437	per Cu. Ft. Dense Bed	3450
Quench Accumulator	141	per Lb. Catalyst	34.50
Reactor Inlet	318	per sq ft	22109
Condenser Inlet	595		
Product Accumulator	75		
Catalyst No. Height			
1 See Per. A	--		
2	665		
3	658		
4	668		
5	671		
6	654		
7	643		
8	640		
9	644		
10	641		
11	629		

PRODUCT TESTS	OIL	WATER
° API	49.1	10.9
Neut. No.	59.4	53.8
Sap. No.	66.4	54.7
Hydrox. No.		
Bromine No.	91.5	
Pour °F.		
Chemicals, % by K_2CO_3		15.0
HEMPEL. DIST. %		°API
205 °F.		
400	76.4	52.6
400-550	9.9	36.8
550+	13.7	
A. S. T. M. DIST. ON		
Naphtha °F.		
IBP	112	
10%	140	
50%	240	
90%	376	
EP	408	
Rec	97.5	

CATALYST DATA						
INVENTORY DATA		PARTICLE SIZE				
		Screen Analysis			Sedimentation	
In Reactor at Start of Period		Mesh	Microns	%	Microns	%
Fresh Catalyst Added		On 40	419+		80+	
Total		100	150		40—80	
Catalyst Recovered	89	150	105		20—40	
In Reactor at End of Period		200	74		10—20	
		250	62		0—20	
REACTOR d-p, Inches H_2O		325	44			
No. Height		<325				
0 See Per. A						
1	50	CATALYST				
2	50	Bulk Density, Lbs./Cu.Ft.				
3	4	Aerated				
4	100	Settled				
Total	104	Compacted				
		Particle Density, gm./cc.				
CALCULATED FROM dp		NH_3 Value, ml./gm.				
Density, Lbs./Cu.Ft.	100	N_2 Surface, m^2/gm.				
Inventory, Lbs.	423					
Bed Depth, Ft.	6.41	CHEMICAL ANALYSIS				
Vol cu ft	4.23	Fe				
		C				
		O				
		H				
		K_2O, W+, % basis Fe				
		X-Ray Analysis—				
		$Fe_{20}C_9$				
		Fe_3O_4				
		Fe				

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-A
HOURS 0-9

HOUR	GAS ANALYSES 0200	0600		AVERAGE
FRESH FEED				
CO 28.010	35.99	36.25		36.120
H_2 2.016	60.95	60.76		60.855
CO_2 44.010	2.42	2.40		2.410
N_2 28.016	0.56	0.51		0.535
CH_4 16.042	0.08	0.08		0.080
			M. W	12.567409
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	7.24	7.65		7.445
H_2 2.016	41.23	40.48		40.855
CO_2 44.010	31.24	31.51		31.375
N_2 28.016	1.94	1.74		1.840
CH_4 16.042	8.83	8.71		8.770
C_2H_4 28.052	2.29	2.23		2.260
C_2H_6 30.068	1.18	1.18		1.180
C_3H_6 42.078	2.78	2.86		2.820
C_3H_8 44.094	0.28	0.30		0.290
C_4H_8 56.104	1.51	1.58		1.545
C_4H_{10} 58.120	0.60	0.59		0.595
C_5H_{10} 70.130	0.56	0.71		0.635
C_5H_{12} 72.146	0.15	0.21		0.180
C_6H_{12} 84.156	0.17	0.25		0.210
			M. W.	22.907283

GENERATOR BALANCE	M/HR	C	H	O
	14.989	14.989		14.989
	25.255		50.510	
	1.000	1.000		2.000
	0.222			
	0.033	0.033	0.132	
			9.252	4.626
		16.022	59.894	21.615
		97.17	100.66	99.10
GAS FLOW RATES				
FRESH FEED	79.31	6.310	20.416	1.0156
WET GAS	158.44	5.967	4.016	1.0255
RECYCLE	79.31	7.867	20.460	1.0088
BLEED	5.02	7.680	20.460	1.0000
NATURAL GAS	28.43	7.700	21.645	0.8986
OXYGEN	27.07	6.978	21.100	1.0198
STEAM	215.7	6.450		

	Mol %	M/Hr	C	H	O
O_2 32.000	0.26	10.711 0.035			21.492
CO_2 44.010	1.18	0.160			0.320
N_2 28.016	0.71	0.096			
CH_4 16.042	84.92	11.509	11.509	46.036	
C_2H_6 30.068	5.39	0.730	1.460	4.380	
C_3H_8 44.094	5.00	0.678	2.034	5.424	
C_4H_{10} 58.120	1.73	0.234	0.936	2.340	
C_5H_{12} 72.146	0.81	0.110	0.550	1.320	
MW	19.83952				
TOTAL			16.489	59.500	21.812

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	264.21	301.00
OIL	78.97	78.97
WATER	141.56	141.56
TOTAL	484.74	521.53
FRESH FEED	521.53	
WEIGHT BALANCE	92.95	
WET GAS FACTOR	1139245	
INDICATED LOSS—S C F H	609	
	4986	

	√h	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED		402.1	44.3	2303577		
79.31	6.310	20.416	1.0156	1.5178	15749	41.499
WET GAS		1.43	34.4	1263790		
158.44	5.967	4.016	1.0255	1.1242	4377	11.534
RECYCLE		403.9	51			
79.31	7.867	20.460	1.0088	1.1242	14477	38.148
BLEED						
5.02	7.680	20.460	1.0000	1.1242	887	2.337
NATURAL GAS		453.8	184	1459208		
28.43	7.700	21.645	0.8986	1.2080	5143	13.552
OXYGEN		430.5	40			
27.07	6.978	21.100	1.0198		4065	10.711
STEAM		25.6				
215.7	6.450					

HOUR	GAGE	GAL.
OIL	3'3"	174.73
	1'3"	65.01
WATER	3'10½"	207.46
	1'0½"	54.14

LIQUID PRODUCT RATES Basis 9 hours	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	#/HR GAL HR
OIL	30	1.0149	177.33	54.4		
	40	1.0099	65.65	6.337		
			+0.47		+3.00	78.97
			112.15		710.69	12.461
WATER	40	1.00130	207.73	10.5		
	40	1.00130	54.21	8.299		141.56
			153.52		1274.06	17.058

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-B
HOURS 9-22

HOUR	GAS ANALYSES 2200	0200		AVERAGE
FRESH FEED				
CO 28.010	36.33	33.84		35.085
H_2 2.016	60.95	63.01		61.980
CO_2 44.010	2.03	2.09		2.060
N_2 28.016	0.61	0.83		0.720
CH_4 16.042	0.08	0.23		0.155
			M. W	12.210012
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	8.85	8.45		8.650
H_2 2.016	43.13	43.02		43.075
CO_2 44.010	28.07	29.18		28.625
N_2 28.016	2.03	1.54		1.785
CH_4 16.042	8.61	9.00		8.805
C_2H_4 28.052	2.13	2.17		2.150
C_2H_6 30.068	1.22	1.24		1.230
C_3H_6 42.078	2.56	2.67		2.615
C_3H_8 44.094	0.28	0.30		0.290
C_4H_8 56.104	1.59	1.43		1.510
C_4H_{10} 58.120	0.56	0.31		0.435
C_5H_{10} 70.130	0.61	0.49		0.550
C_5H_{12} 72.146	0.20	0.11		0.155
C_6H_{12} 84.156	0.16	0.09		0.125
			M. W.	21.705599

GENERATOR BALANCE	M/HR	C	H	O
	15.689	15.689		15.689
	27.716		55.432	
	0.921	0.921		1.842
	0.322			
	0.069	0.069	0.276	
			5.931	2.966
		16.679	61.639	20.497
		104.31	107.48	90.53
GAS FLOW RATES				
FRESH FEED	79.31	6.700	20.494	1.0120
WET GAS	158.44	6.708	4.025	1.0220
RECYCLE	79.31	7.917	20.513	1.0050
BLEED	5.02	7.792	20.513	1.0000
NATURAL GAS	28.43	7.725	21.088	0.8951
OXYGEN	27.07	7.200	21.216	1.0180
STEAM	215.7	6.225	26.1	

	Mol %	M/Hr	C	H	O
O_2 32.000	0.29	11.094 0.038			22.264
CO_2 44.010	1.43	0.189	0.189		0.378
N_2 28.016	1.04	0.138			
CH_4 16.042	84.29	11.158	11.158	44.632	
C_2H_6 30.068	6.12	0.810	1.620	4.860	
C_3H_8 44.094	4.96	0.657	1.971	5.256	
C_4H_{10} 58.120	1.42	0.188	0.752	1.880	
C_5H_{12} 72.146	0.45	0.060	0.300	0.720	
MW	19.712496				
TOTAL			15.990	57.348	22.642

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	288.77	318.10
OIL	78.79	78.79
WATER	149.11	149.11
TOTAL	516.67	546.00
FRESH FEED	546.00	
WEIGHT BALANCE	94.63	
WET GAS FACTOR	1101568	
INDICATED LOSS—S C F H	513	
	5562	

	√h	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED		405.3	47.7	2371005		
79.31	6.700	20.494	1.0120	1.5398	16970	44.717
WET GAS		1.50	37.8	1333757		
158.44	6.708	4.025	1.0220	1.1549	5049	13.304
RECYCLE		406.1	54.8			
79.31	7.917	20.513	1.0050	1.1549	14950	39.394
BLEED						
5.02	7.792	20.513	1.0000	1.1549	927	2.443
NATURAL GAS		430.0	189	1468611		
28.43	7.725	21.088	0.8951	1.2119	5024	13.238
OXYGEN		435.4	41.8			
27.07	7.200	21.216	1.0180		4210	11.094
STEAM		26.1				
215.7	6.225					

HOUR	GAGE	GAL.
OIL	6'10"	362.41
	4'3½"	229.28
WATER	7'4"	388.59
	5'7¼"	298.03
	2'8-¾	146.17
	0'9"	39.17

LIQUID PRODUCT RATES Basis 11 hours	°F	FACTOR	GAL. AT 60	API° # GAL.	#	#/HR GAL HR
OIL	34	1.0129	367.09	53.8		78.79
	47	1.0064	230.75	6.357		12.395
			136.34		866.71	
WATER	48	1.0008	388.90	10.6		
	51	1.0006	298.21	8.293		
	44	1.0009	146.30			
	38	1.0010	39.21			149.11
			197.78		1640.19	17.980

THE TEXAS COMPANY — MONTEBELLO LABORATORY
RATE CALCULATIONS

RUN NO. 66-C
HOURS 22-46

	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	0.33	11.036 0.043			22.158	WET GAS	299.51	324.92
CO 28.010	36.54	36.88	36.40	36.607	15.923	15.923		15.923	CO_2 44.010	1.32	0.174	0.174		0.348	OIL	73.46	73.46
H_2 2.016	60.61	60.19	60.75	60.516	26.323		52.646		N_2 28.016	1.62	0.213				WATER	149.44	149.44
CO_2 44.010	2.13	1.94	2.14	2.070	0.900	0.900		1.800	CH_4 16.042	83.21	10.948	10.948	43.792		TOTAL	522.41	547.82
N_2 28.016	0.58	0.81	0.62	0.670	0.291				C_2H_4 30.068	6.42	0.845	1.690	5.070		FRESH FEED	547.82	
CH_4 16.042	0.14	0.18	0.09	0.137	0.060	0.060	0.240		C_2H_6 44.094	5.11	0.672	2.016	5.376		WEIGHT BALANCE	95.36	
			M. W	12.59432					C_4H_{10} 58.120	1.49	0.196	0.784	1.960				
			H_2O 18.016				6.835	3.418	C_5H_{12} 72.146	0.50	0.066	0.330	0.792		WET GAS FACTOR	1084838	
						16.883	59.721	21.141	MW	19.899226					INDICATED LOSS—S C F H	425	
			BALANCE			105.90	104.79	93.93	TOTAL			15.942	56.990	22.506		5438	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	8.97	9.45	9.33	9.250		$\sqrt{h}$	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	40.06	40.76	40.31	40.377	FRESH FEED		405	56	2298655			OIL	7'7"	401.69	36	1.0119	406.47	54.6		
CO_2 44.010	29.95	29.17	29.42	29.514	79.31	6.675	20.487	1.0039	1.5161	16507	43.497		6'10"	362.41	34	1.0129	367.09	6.330		
N_2 28.016	1.72	1.60	1.60	1.640	WET GAS		1.51	48	1276769				5'7¼"	298103	42	1.0089	300.68			
CH_4 16.042	9.06	9.29	9.11	9.153	158.44	6.875	4.026	1.0117	1.1299	5013	13.209		1'2½"	62.73	38	1.0109	63.41			
C_2H_4 28.052	2.20	2.15	2.39	2.247	RECYCLE		406	66									+1.86		+11.75	73.46
C_2H_6 33.068	1.41	1.44	1.47	1.440	79.31	7.942	20.511	0.9943	1.1299	14515	38.248						278.51		1762.97	11.605
C_3H_6 42.078	3.09	2.85	2.98	2.973	BLEED															
C_3H_8 44.094	0.32	0.32	0.32	0.320	5.02	8.163	20.511	1.0000	1.2299	950	2.503	WATER	7'2-¾	383.14	53	1.0005	383.33	10.8		
C_4H_8 56.104	1.78	1.54	1.73	1.683	NATURAL GAS		430	188	1454830				2'8-¾	146.17	44	1.0009	146.30	8.282		
C_4H_{10} 58.120	0.52	0.52	0.37	0.470	28.43	7.708	21.088	0.8958	1.2062	4993	13.157		4'9-¾	256.56	52	1.0006	256.71			
C_5H_{10} 70.130	0.67	0.62	0.70	0.663	OXYGEN		438	54					1'2"	60.66	50	1.0007	60.70			149.44
C_5H_{12} 72.146	0.10	0.10	0.11	0.103	27.07	7.229	21.277	1.0058		4188	11.036						433.04		3586.44	18.043
C_6H_{12} 84.156	0.15	0.19	0.16	0.167	STEAM		26.5													
			M. W.	22.674418	215.7	6.292	0.2773		376 #/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY
RATE CALCULATIONS

RUN NO. 66-D
HOURS 46-70

	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	0.27	11.133 0.036			22.338	WET GAS	303.66	328.73
CO 28.010	36.21	36.67	36.22	36.367	15.810	15.810		15.810	CO_2 44.010	1.36	0.180	0.180		0.360	OIL	67.78	67.78
H_2 2.016	60.78	60.53	60.71	60.673	26.376		52.752		N_2 28.016	0.47	0.062				WATER	150.02	150.02
CO_2 44.010	2.12	2.17	2.20	2.163	0.940	0.940		1.880	CH_4 16.042	84.56	11.204	11.204	44.816		TOTAL	521.46	546.53
N_2 28.016	0.71	0.57	0.78	0.687	0.299				C_2H_4 30.068	6.19	0.820	1.640	4.920		FRESH FEED	546.53	
CH_4 16.042	0.18	0.06	0.09	0.110	0.048	0.048	0.192		C_2H_6 44.094	5.20	0.689	2.067	5.512		WEIGHT BALANCE	95.41	
			M. W	12.571617			5.014	5.008	C_4H_{10} 58.120	1.46	0.193	0.772	1.930				
			H_2O 18.016				7.515	3.758	C_5H_{12} 72.146	0.49	0.065	0.325	0.780		WET GAS FACTOR	1082559	
						16.798	60.459	21.448	MW	19.73789					INDICATED LOSS—S C F H	428	
			BALANCE			103.77	104.32	94.49	TOTAL			16.188	57.958	22.698		5614	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	8.70	9.34	9.17	9.070		$\sqrt{h}$	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	41.33	41.53	40.81	41.224	FRESH FEED		405.2	55	2302806			OIL	7'3½"	386.41	51	1.0044	388.11	55.0		
CO_2 44.010	27.90	28.24	29.27	28.470	79.31	6.658	20.491	1.0048	1.5175	16498	43.473		5'7½"	298.03	42	1.0089	300.68	6.316		
N_2 28.016	1.44	1.65	1.53	1.540	WET GAS		1.61	46	1302791				4'2"	222.74	35	1.0124	225.50			
CH_4 16.042	9.85	9.50	9.36	9.570	158.44	7.004	4.039	1.0137	1.1414	5186	13.665		1'1"	56.30	59	1.0005	56.33			
C_2H_4 28.052	2.37	2.27	2.27	2.303	RECYCLE		406	64									+0.95		+6.0	67.78
C_2H_6 33.068	1.57	1.53	1.54	1.547	79.31	7.938	20.511	0.9962	1.1414	14683	38.690						257.55		1626.69	10.731
C_3H_6 42.078	3.03	2.75	3.02	2.934	BLEED															
C_3H_8 44.094	0.35	0.27	0.29	0.303	5.02	8.213	20.511	1.0000	1.1414	965	2.543	WATER	7'3"	384.23	58	1.0002	384.31	10.7		
C_4H_8 56.104	1.82	1.41	1.49	1.573	NATURAL GAS		431.9	187	1466722				4'9-¾	256.56	52	1.0006	256.71	8.287		
C_4H_{10} 58.120	0.53	0.60	0.49	0.540	28.43	7.708	21.132	0.8965	1.2111	5028	13.249		5'11-¾	317.67	47	1.0008	317.92			
C_5H_{10} 70.130	0.74	0.56	0.51	0.603	OXYGEN		438.6	51					0'2½"	11.06	68	0.9992	11.05			150.02
C_5H_{12} 72.146	0.17	0.14	0.11	0.140	27.07	7.267	21.291	1.0088	4.[illegible]	4225	11.133						434.47		3600.45	18.103
C_6H_{12} 84.156	0.20	0.21	0.14	0.183	STEAM		26.3													
			M. W.	22.221516	215.7	6.471	0.2764		386 #/hr											

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-E
HOURS 70-94

	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	0.31	10.730 0.040			21.540	WET GAS	296.38	326.86
CO 28.010	36.58	36.37	35.80	36.250	15.452	15.452		15.452	CO_2 44.010	1.52	0.194	0.194		0.388	OIL	63.51	63.51
H_2 2.016	60.55	60.75	61.20	60.833	25.929		51.858		N_2 28.016	1.78	0.227				WATER	143.84	143.84
CO_2 44.010	1.99	2.19	2.23	2.137	0.911	0.911		1.822	CH_4 16.042	83.73	10.669	10.669	42.676		TOTAL	503.73	534.21
N_2 28.016	0.82	0.65	0.71	0.727	0.310				C_2H_6 30.068	6.21	0.791	1.582	4.746		FRESH FEED	534.21	
CH_4 16.042	0.06	0.04	0.06	0.053	0.023	0.023	0.092		C_3H_8 44.094	4.77	0.608	1.824	4.864		WEIGHT BALANCE	94.29	
			M. W	12.53269				4654	C_4H_{10} 58.120	1.28	0.163	0.652	1.630				
			H_2O 18.016				5.943	2.972	C_5H_{12} 72.146	0.40	0.051	0.255	0.612		WET GAS FACTOR	1102840	
						16.386	57.893	20.246	MW	19.70183					INDICATED LOSS—S C F H	506	
			BALANCE			107.97	106.17	92.33	TOTAL			15.176	54.528	21.928		5423	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	9.47	9.86	9.50	9.610		$\sqrt{h}$	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	40.00	38.97	39.93	39.633	FRESH FEED		404.1	53	2309958			OIL	7'4½"	390.78	41	1.0094	394.45	55.6		
CO_2 44.010	29.35	29.76	29.49	29.533	79.31	6.513	20.465	1.0068	1.5199	16176	42.625		4'2"	222.74	35	1.0124	225.50	6.296		
N_2 28.016	1.67	1.82	1.81	1.767	WET GAS		1.54	44	1265615				2'7½"	140.41	32	1.0139	142.36			
CH_4 16.042	9.21	8.96	9.18	9.117	158.44	6.738	4.030	1.0158	1.1250	4917	12.957		1'4"	69.39	42	1.0089	70.01			
C_2H_4 28.052	2.21	2.10	2.35	2.220	RECYCLE		405	62									+0.79 242.09		+5.00 1524.20	63.51
C_2H_6 33.068	1.51	1.61	1.67	1.597	79.31	7.900	20.487	0.9981	1.1250	14413	37.979									10.087
C_3H_6 42.078	3.04	3.26	3.25	3.183	BLEED															
C_3H_8 44.094	0.35	0.37	0.37	0.363	5.02	8.021	20.487	1.0000	1.1250	928	2.445	WATER	7'4"	388.59	50	1.00070	388.86	10.7		
C_4H_8 56.104	1.70	1.81	1.53	1.680	NATURAL GAS		434.5	186	1469406				5'11-3/4	317.67	47	1.00080	317.92	8.287		
C_4H_{10} 58.120	0.52	0.51	0.26	0.430	28.43	7.379	21.194	0.8972	1.2122	4836	12.743		7'5"	392.96	46	1.00090	393.31			
C_5H_{10} 70.130	0.65	0.63	0.50	0.593	OXYGEN		436.3	51					0'11"	47.65	55	1.00039	47.67			143.84
C_5H_{12} 72.146	0.13	0.13	0.06	0.107	27.07	7.021	21.237	1.0088		4072	10.730						416.58		3452.20	17.358
C_6H_{12} 84.156	0.19	0.21	0.10	0.167	STEAM		26.9													
			M. W.	22.87424	215.7	6.175														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-F
HOURS 94-115

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1000	2200		AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.33	10.559 0.041			21.200	WET GAS	295.10	330.49
CO 28.010	36.82	36.73		36.775	15.332	15.332		15.332	CO_2 44.010	1.48	0.182	0.182		0.364	OIL	58.08	58.08
H_2 2.016	60.37	60.40		60.385	25.176		50.352		N_2 28.016	2.08	0.256				WATER	138.59	138.59
CO_2 44.010	2.12	2.14		2.130	0.888	0.888		1.776	CH_4 16.042	82.46	10.133	10.133	40.532		TOTAL	491.77	527.16
N_2 28.016	0.58	0.67		0.625	0.261				C_2H_6 30.068	6.15	0.756	1.512	4.536		FRESH FEED	527.16	
CH_4 16.042	0.11	0.06		0.085	0.035	0.035	0.140		C_3H_8 44.094	5.38	0.661	1.983	5.288		WEIGHT BALANCE	93.29	
			M. W	12.64419					C_4H_{10} 58.120	1.52	0.187	0.748	1.870				
			H_2O 18.016				5.767	2.884	C_5H_{12} 72.146	0.60	0.074	0.370	0.888		WET GAS FACTOR	1119925	
						16.255	56.259	19.992	MW	20.10565					INDICATED LOSS—S C F H	582	
			BALANCE			108.89	105.92	92.71	TOTAL			14.928	53.114	21.564		5431	

WET GAS	1400	2200			GAS FLOW RATES										LIQUID PRODUCT RATES						Basis 21 hours
CO 28.010	8.97	9.45		9.210		$\sqrt{h}$	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	38.62	40.13		39.375	FRESH FEED		404.1	57	2289589			OIL	6'3"	331.85	40	1.0099	335.14	55.7			
CO_2 44.010	30.00	29.45		29.725	79.31	6.424	20.465	1.0029	1.5131	15822	41.692		2'7½"	140.41	32	1.0139	142.36	6.293			
N_2 28.016	2.20	1.85		2.025	WET GAS		1.56	47	1253468								+1.03		+6.50	58.08	
CH_4 16.042	8.92	9.15		9.035	158.44	6.695	4.032	1.0227	1.1196	4849	12.777						193.81		1219.65	9.229	
C_2H_4 28.052	2.26	2.13		2.195	RECYCLE		405	65													
C_2H_6 33.068	1.65	1.63		1.640	79.31	7.908	20.487	0.9952	1.1196	14317	37.726										
C_3H_6 42.078	3.41	2.84		3.125	BLEED																
C_3H_8 44.094	0.38	0.31		0.345	5.02	8.014	20.487	1.0000	1.1196	923	2.432	WATER	7'0½"	373.32	50	1.00070	373.58	10.8			
C_4H_8 56.104	2.01	1.52		1.765	NATURAL GAS		435.2	188	1439893				0'5"	22.13	32	1.00170	22.17	8.282		138.59	
C_4H_{10} 58.120	0.51	0.60		0.555	28.43	7.195	21.211	0.8958	1.2000	4664	12.290						351.41		2910.38	16.734	
C_5H_{10} 70.130	0.74	0.60		0.670	OXYGEN		435.6	58													
C_5H_{12} 72.146	0.14	0.14		0.140	27.07	6.962	21.220	1.0019		4007	10.559										
C_6H_{12} 84.156	0.19	0.20		0.195	STEAM		25.5														
			M. W.	23.09591	215.7	5.904															

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-G
HOURS 115-135

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	1800	0600	AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.35	10.711 0.043			21.508	WET GAS	300.39	330.22
CO 28.010	36.93	37.10	36.91	36.980	15.231	15.231		15.231	CO_2 44.010	1.41	0.173	0.173		0.346	OIL	56.61	56.61
H_2 2.016	60.60	59.96	60.15	60.237	24.811		49.622		N_2 28.016	2.07	0.254				WATER	136.46	136.46
CO_2 44.010	2.02	2.42	2.36	2.267	0.934	0.934		1.868	CH_4 16.042	82.88	10.169	10.169	40.676		TOTAL	493.46	523.29
N_2 28.016	0.32	0.46	0.52	0.433	0.178				C_2H_4 30.068	6.26	0.768	1.536	4.608		FRESH FEED	523.29	
CH_4 16.042	0.13	0.06	0.06	0.083	0.034	0.034	0.136		C_2H_6 44.094	5.07	0.622	1.866	4.976		WEIGHT BALANCE	94.30	
			M. W	12.704807					C_3H_{10} 58.120	1.47	0.180	0.720	1.800				
			H_2O 18.016				6.266	3.133	C_5H_{12} 72.146	0.49	0.060	0.300	0.720		WET GAS FACTOR	1099304	
						16.199	56.024	20.232	MW	19.933784					INDICATED LOSS—S C F H	490	
			BALANCE			109.72	106.15	92.58	TOTAL			14.764	52.780	21.854		5422	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES						Basis 18 hours
CO 28.010	9.56	9.65	8.40	9.203		$\sqrt{h}$	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	39.76	39.18	39.78	39.574	FRESH FEED		401.3	57	2278665			OIL	7'4"	388.59	56	1.0020	389.37	55.6		
CO_2 44.010	29.12	30.53	30.72	30.123	79.31	6.383	20.396	1.0029	1.5095	15631	41.188		6'5¼"	341.67	40	1.0099	345.05	6.296		
N_2 28.016	1.58	1.80	1.96	1.780	WET GAS		1.53	47	1252474				1'11½"	102.89	45	1.0074	103.65			
CH_4 16.042	8.71	8.61	8.93	8.750	158.44	6.817	4.029	1.0127	1.1191	4932	12.996		1'0¼"	53.06	67	0.9965	52.87			
C_2H_4 28.052	2.34	2.18	2.30	2.273	RECYCLE		402.2	67					3'4½"	180.18	34	1.0129	182.50			
C_2H_6 30.068	1.66	1.58	1.64	1.627	79.31	7.889	20.418	0.9933	1.1191	14201	37.420		2'2"	114.67	41	1.0094	115.75			56.61
C_3H_6 42.078	3.21	2.85	3.23	3.097	BLEED												161.85		1019.01	8.992
C_3H_8 44.094	0.33	0.30	0.34	0.323	5.02	8.328	20.418	1.0000	1.1191	955	2.516	WATER	4'3½"	229.28	59	1.0009	229.30	10.7		
C_4H_8 56.104	2.01	1.62	1.56	1.730	NATURAL GAS		429.2	190	1452308				0'11"	47.65	50	1.00070	47.68	8.287		
C_4H_{10} 58.120	0.47	0.64	0.39	0.500	28.43	7.211	21.069	0.8944	1.2051	4656	12.269		6'11¼"	367.86	48	1.00081	368.16			
C_5H_{10} 70.130	0.87	0.68	0.53	0.693			430.2	55					4'9"	253.29	56	1.00033	253.37			136.46
C_5H_{12} 72.146	0.14	0.14	0.11	0.130	OXYGEN 27.07	7.085	21.093	1.0048		4065	10.711						296.41		2456.35	16.467
C_6H_{12} 84.156	0.24	0.24	0.11	0.197			26.4													
			M. W.	23.114235	STEAM 215.7															

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-H
HOURS 135-159

	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	0.30	10.661 0.036			21.394	WET GAS	305.20	336.96
CO 28.010	37.24	37.41	37.63	37.427	15.519	15.519		15.519	CO_2 44.010	1.71	0.207	0.207		0.414	OIL	56.89	56.89
H_2 2.016	60.08	60.02	59.53	59.876	24.827		49.654		N_2 28.016	0.86	0.104				WATER	135.82	135.82
CO_2 44.010	1.90	2.06	2.33	2.097	0.870	0.870		1.740	CH_4 16.042	81.43	9.878	9.878	39.512		TOTAL	497.91	
N_2 28.016	0.71	0.45	0.45	0.537	0.223				C_2H_4 30.068	7.20	0.873	1.746	5.238		FRESH FEED	529.67	
CH_4 16.042	0.07	0.06	0.06	0.063	0.026	0.026	0.104		C_2H_6 44.094	6.11	0.741	2.223	5.928		WEIGHT BALANCE	94.00	
			M. W	12.773845					C_4H_{10} 58.120	1.76	0.213	0.852	2.130				
			H_2O 18.016				6.536	3.268	C_5H_{12} 72.146	0.63	0.077	0.385	0.924		WET GAS FACTOR	1104062	
						16.415	56.294	20.527	MW	20.48898					INDICATED LOSS—S C F H	524	
			BALANCE			107.35	104.77	94.13	TOTAL			15.291	53.732	21.808		5561	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	8.87	9.46	8.67	9.000		$\sqrt{h}$	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	40.38	40.63	40.85	40.620	FRESH FEED		404	58	2266349			OIL	7'5½"	395.14	44	1.0079	398.26	55.6		
CO_2 44.010	30.62	29.86	30.48	30.320	79.31	6.429	20.462	1.0019	1.5054	15736	41465		3'4½"	180.18	34	1.0129	182.50	6.296		
N_2 28.016	1.66	1.65	1.66	1.657	WET GAS		1.50	48	1259033								41.11		47.00	56.89
CH_4 16.042	7.87	7.63	7.81	7.770	158.44	6.958	4.025	1.0117	1.1221	5037	13.273						216.87		1365.41	9.036
C_2H_4 28.052	2.44	2.23	2.36	2.343	RECYCLE		405	69												
C_2H_6 30.068	1.66	1.65	1.68	1.663	79.31	7.908	20.487	0.9915	1.1221	14295	37.668									
C_3H_6 42.078	2.74	2.95	3.24	2.977	BLEED															
C_3H_8 44.094	0.33	0.30	0.34	0.323	5.02	7.975	20.487	1.0000	1.1221	920	2.424	WATER	7'3½"	386.41	48	1.00081	386.72	10.7		
C_4H_8 56.104	1.75	1.80	1.68	1.743	NATURAL GAS		431.0	189	1412954				6'11¼"	367.86	48	1.00081	368.16	8.287		
C_4H_{10} 58.120	0.61	0.72	0.42	0.583	28.43	7.208	21.112	0.8951	1.1887	4603	12.129		7'2½"	382.05	53	1.00052	382.25			
C_5H_{10} 70.130	0.65	0.71	0.58	0.647	OXYGEN		434.0	56					1'1"	56.30	38	1.00136	56.38			
C_5H_{12} 72.146	0.24	0.19	0.10	0.177	27.07	7.029	21.183	1.0039	--	4046	10.661		2'0"	105.19	52	1.00059	105.25			
C_6H_{12} 84.156	0.18	0.22	0.13	0.177			24.5						1'1"	56.30	49	1.00076	56.34			135.82
			M. W.	22.993823	STEAM 215.7	5.863											393.34		3269.61	16.389

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-I
HOURS 159-183

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	37.58	37.93	37.68	37.730
H_2 2.016	59.75	59.05	59.65	59.484
CO_2 44.010	2.01	2.30	2.17	2.160
N_2 28.016	0.57	0.60	0.46	0.543
CH_4 16.042	0.09	0.12	0.04	0.083
			M. W	12.88343
			H_2O 18.016	
			BALANCE	

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.28	10.648 0.035			21.366
15.706	15.706		15.706	CO_2 44.010	1.35	0.168	0.168		0.336
24.762		49.524		N_2 28.016	1.67	0.208			
0.899	0.899		1.798	CH_4 16.042	83.39	10.373	10.373	41.492	
0.226				C_2H_6 30.068	6.11	0.760	1.520	4.560	
0.035	0.035	0.140		C_3H_8 44.094	5.12	0.637	1.911	5.096	
				C_4H_{10} 58.120	1.55	0.193	0.772	1.930	
		6.301	3.151	C_5H_{12} 72.146	0.53	0.066	0.330	0.792	
	16.640	55.965	20.655	MW	19.907027				
	110.39	103.89	95.18	TOTAL			15.074	53.870	21.702

WEIGHT BALANCE		
	#/hr Measured	At Wt. Balance
WET GAS	313.65	348.32
OIL	54.03	54.03
WATER	133.96	133.96
TOTAL	501.64	536.31
FRESH FEED	536.31	
WEIGHT BALANCE	93.54	
WET GAS FACTOR	1110537	
INDICATED LOSS—S C F H	585	
	5875	

WET GAS				
CO 28.010	8.02	8.28	8.66	8.320
H_2 2.016	40.89	41.60	41.49	41.326
CO_2 44.010	29.57	29.11	29.59	29.423
N_2 28.016	2.05	1.88	1.64	1.857
CH_4 16.042	8.52	9.01	8.50	8.677
C_2H_6 28.052	2.08	2.19	2.14	2.137
C_2H_4 30.068	1.67	1.66	1.66	1.663
C_3H_6 42.078	3.33	3.04	3.02	3.130
C_3H_8 44.094	0.35	0.36	0.34	0.350
C_4H_8 56.104	1.93	1.62	1.66	1.737
C_4H_{10} 58.120	0.62	0.43	0.40	0.483
C_5H_{10} 70.130	0.68	0.59	0.65	0.640
C_5H_{12} 72.146	0.16	0.10	0.10	0.120
C_6H_{12} 84.156	0.13	0.13	0.15	0.137
			M. W.	22.50166

GAS FLOW RATES									
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.
FRESH FEED 79.31	6.467	403.5	55	2247072	15798	41.628	OIL	5'3-3/4	282.75
		20.450	1.0048	1.4990				1'6¼"	79.27
WET GAS 158.44	7.217	1.61	50	1286571	5290	13.939			
		4.039	1.0098	1.1343					
RECYCLE 79.31	7.892	404.5	72		14372	37.871			
		20.474	0.9887	1.1343					
BLEED 5.02	8.071	20.474	1.0000	1.1343	941	2.480	WATER	7'2"	379.86
NATURAL GAS 28.43	7.217	430.5	176	1454260	4721	12.440		2'0"	105.19
		21.100	0.9048	1.2059				2'11½"	158.84
OXYGEN 27.07	7.000	434.8	54		4041	10.648		0'10½"	45.50
		21.201	1.0058						
STEAM 215.7	6.196	24.3							

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° #/GAL	#	# HR GAL HR
44	1.0079	284.98	55.4		
46	1.0069	79.82	6.303		
		+0.56		+3.50	54.03
		205.72		1296.65	8.572
53	1.00052	380.06	10.8		
52	1.00059	105.25	8.282		
54	1.00047	158.91			
49	1.00076	45.53			133.96
		388.19		3214.99	16.175

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-J
HOURS 183-207

GAS ANALYSES				
HOUR	1400	2200		AVERAGE
FRESH FEED				
CO 28.010	36.88	36.95		36.915
H_2 2.016	60.14	59.85		59.995
CO_2 44.010	2.16	2.44		2.300
N_2 28.016	0.72	0.72		0.720
CH_4 16.042	0.10	0.04		0.070
			M. W	12.77457
			H_2O 18.016	
			BALANCE	

GENERATOR BALANCE									
M HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.41	10.659 0.051			21.420
15.212	15.212		15.212	CO_2 44.010	1.32	0.163	0.163		0.326
24.721		49.442		N_2 28.016	0.97	0.120			
0.948	0.948		1.896	CH_4 16.042	83.87	10.332	10.332	41.328	
0.297				C_2H_6 30.068	6.36	0.784	1.568	4.704	
0.029	0.029	0.116		C_3H_8 44.094	5.52	0.680	2.040	5.440	
				C_4H_{10} 58.120	1.14	0.140	0.560	1.400	
		6.601	3.301	C_5H_{12} 72.146	0.41	0.051	0.255	0.612	
	16.189	56.159	20.409	MW	19.742993				
				TOTAL			14.918	53.484	21.746

WEIGHT BALANCE		
	# hr Measured	At Wt Balance
WET GAS	308.69	349.17
OIL	50.45	50.45
WATER	126.78	126.78
TOTAL	485.92	526.40
FRESH FEED	526.40	
WEIGHT BALANCE	92.31	
WET GAS FACTOR	1131134	
INDICATED LOSS—S C F H	688	
	5934	

WET GAS				
CO 28.010	8.87	9.76	9.55	9.393
H_2 2.016	41.60	41.33	41.05	41.326
CO_2 44.010	28.97	28.39	29.36	28.907
N_2 28.016	1.75	2.05	2.12	1.973
CH_4 16.042	8.97	8.03	8.34	8.447
C_2H_6 28.052	2.25	2.18	2.10	2.177
C_2H_4 30.068	1.64	1.60	1.60	1.613
C_3H_6 42.078	2.96	3.24	2.94	3.047
C_3H_8 44.094	0.34	0.38	0.30	0.340
C_4H_8 56.104	1.51	1.71	1.43	1.550
C_4H_{10} 58.120	0.36	0.34	0.46	0.387
C_5H_{10} 70.130	0.55	0.54	0.43	0.507
C_5H_{12} 72.146	0.10	0.28	0.13	0.170
C_6H_{12} 84.156	0.13	0.17	0.19	0.163
			M. W.	22.33155

GAS FLOW RATES									
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.
FRESH FEED 79.31	6.371	403.9	55	2266221	15638	41.207	OIL	7'3-3/4	387.50
		20.460	1.0048	1.5054				5'3-3/4	282.75
WET GAS 158.44	7.117	1.61	48	1296372	5246	13.823		2'8¼"	143.87
		4.039	1.0117	1.1386				1'1¼"	57.39
RECYCLE 79.31	7.879	404	66		14476	38.145			
		20.463	0.9943	1.1386					
BLEED 5.02	8.108	20.463	1.0000	1.1386	948	2.498	WATER	7'1¼"	376.59
NATURAL GAS 28.43	7.200	430.2	190	1466343				2'11⅛"	158.84
		21.093	0.8944	1.2109	4676	12.321		3'9⅛"	203.10
OXYGEN 27.07	7.000	434.8	53					1'0¼"	53.06
		21.201	1.0068		4045	10.659			
STEAM 215.7	6.079	23.8							

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° #/GAL	#	# HR GAL HR
50	1.0049	389.40	55.0		
44	1.0079	284.98	6.316		
47	1.0064	144.79			
47	1.0064	57.76			
		+0.24		+1.50	50.45
		191.69		1210.71	7.987
57	1.00025	376.68	11.0		
54	1.00047	158.91	8.270		
49	1.00076	203.25			
48	1.00081	53.10			126.78
		367.92		3042.70	15.330

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-K
HOURS 207-231

	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	0.28	10.614 0.035			21.298	WET GAS	312.17	352.36
CO 28.010	37.31	36.79	37.32	37.140	15.277	15.277		15.277	CO_2 44.010	1.35	0.167	0.167		0.334	OIL	49.73	49.73
H_2 2.016	59.43	60.07	59.67	59.723	24.565		49.130		N_2 28.016	1.14	0.141				WATER	126.57	126.57
CO_2 44.010	2.38	2.42	2.25	2.350	0.967	0.967		1.934	CH_4 16.042	84.33	10.419	10.419	41.676		TOTAL	488.47	528.66
N_2 28.016	0.79	0.64	0.70	0.710	0.292				C_2H_6 30.068	5.99	0.740	1.480	4.440		FRESH FEED	528.66	
CH_4 16.042	0.09	0.08	0.06	0.077	0.032	0.032	0.128		C_3H_8 44.094	4.88	0.603	1.809	4.824		WEIGHT BALANCE	92.40	
			M. W	12.85243					C_4H_{10} 58.120	1.45	0.179	0.716	1.790				
			H_2O 18.016				6.589	3.295	C_5H_{12} 72.146	0.58	0.072	0.360	0.864		WET GAS FACTOR	1128743	
						16.276	55.847	20.506	MW	19.74538					INDICATED LOSS—S C F H	687	
			BALANCE			108.86	104.20	94.79	TOTAL			14.951	53.594	21.632		6024	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	9.07	9.08	9.17	9.107		$\sqrt{h}$	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	40.87	41.71	42.80	41.793	FRESH FEED		403.3	57	2252492			OIL	6'2½"	329.67	45	1.0074	332.11	54.8		
CO_2 44.010	29.43	28.96	27.57	28.653	79.31	6.396	20.445	1.0029	1.5008	15610	41.133		2'8¼"	143.87	47	1.0064	144.79	6.323		
N_2 28.016	2.45	1.63	1.62	1.900	WET GAS		1.55	50	1304165								81.42		49.00	49.73
CH_4 16.042	8.61	8.48	8.57	8.553	158.44	7.246	4.031	1.0098	1.1420	5337	14.063						188.74		1193.40	7.864
C_2H_4 28.052	2.48	2.09	2.38	2.317	RECYCLE		403.2	70												
C_2H_6 30.068	1.62	1.69	1.79	1.700	79.31	7.904	20.443	0.9905	1.1420	14496	38.198									
C_3H_6 42.078	2.21	2.84	2.89	2.647	BLEED															
C_3H_8 44.094	0.25	0.16	0.31	0.240	5.02	8.058	20.443	1.0000	1.1420	944	2.487	WATER	7'3½"	386.41	54	1.00047	386.59	11.0		
C_4H_8 56.104	1.53	1.63	1.56	1.573	NATURAL GAS		430.8	186	1466165				3'9½"	203.10	49	1.00076	203.25	8.270		
C_4H_{10} 58.120	0.48	0.79	0.40	0.557	28.43	7.192	21.107	0.8972	1.2109	4689	12.356		4'8¼"	250.02	53	1.00052	250.15			
C_5H_{10} 70.130	0.65	0.56	0.62	0.610	OXYGEN		434.7	56					1'3¼"	66.11	44	1.00103	66.18			126.57
C_5H_{12} 72.146	0.16	0.19	0.13	0.160	27.07	6.992	21.199	1.0039		4028	10.614						367.31		3037.65	15.305
C_6H_{12} 84.156	0.19	0.19	0.19	0.190	STEAM		23.7													
			M. W.	22.198098	215.7	6.036														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-L
HOURS 231-238

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1000	1400		AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		# hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.28	10.677 0.035			21.424	WET GAS	316.99	359.33
CO 28.010	37.08	37.44		37.260	15.242	15.242		15.242	CO_2 44.010	1.35	0.169	0.169		0.338	OIL	49.84	49.84
H_2 2.016	59.73	58.59		59.210	24.219	[illegible]	48.438		N_2 28.016	1.14	0.143				WATER	125.05	125.05
CO_2 44.010	2.48	3.15		2.815	1.152	1.152		2.304	CH_4 16.042	84.33	10.550	10.550	42.200		TOTAL	491.88	534.22
N_2 28.016	0.64	0.63		0.635	0.260				C_2H_6 30.068	5.99	0.749	1.498	4.494		FRESH FEED	534.22	
CH_4 16.042	0.07	0.09		0.080	0.033	0.033	0.132		C_3H_8 44.094	4.88	0.611	1.833	4.888		WEIGHT BALANCE	92.07	
			M. W	13.059816					C_4H_{10} 58.120	1.45	0.181	0.724	1.810				
			H_2O 18.016				7.065	3.533	C_5H_{12} 72.146	0.58	0.073	0.365	0.876		WET GAS FACTOR	1133568	
						16.427	55.635	21.079	MW	19.74538					INDICATED LOSS—S C F H	723	
			BALANCE			108.51	102.52	96.86	TOTAL			15.139	54.268	21.762		6136	

WET GAS	1000	1400			GAS FLOW RATES										LIQUID PRODUCT RATES					Basis 7 hours
CO 28.010	9.45	9.16		9.305		$\sqrt{h}$	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	41.41	42.22		41.915	FRESH FEED		400.9	50	2216723			OIL	7'3"	384.23	45	1.0074	387.07	54.6		
CO_2 44.010	29.16	28.43		28.795	79.35	6.386	20.386	1.0098	1.4889	15524	40.906		6'2"	329.67	45	1.0074	332.11	6.330		
N_2 28.016	1.72	1.56		1.640	WET GAS		1.50	49	1302687								40.16		41.00	49.34
CH_4 16.042	8.31	8.54		8.425	158.44	7.357	4.025	1.0108	1.1414	5413	14.264						55.12		348.91	7.874
C_2H_4 28.052	2.21	2.31		2.260	RECYCLE		402.6	65												
C_2H_6 30.068	1.78	1.81		1.795	79.31	7.914	20.428	0.9952	1.1414	14565	38.379									
C_3H_6 42.078	2.59	2.70		2.645	BLEED															
C_3H_8 44.094	0.28	0.32		0.300	5.02	8.114	20.428	1.0000	1.1414	950	2.503	WATER	6'8½"	355.86	52	1.00059	356.07	11.1		
C_4H_8 56.104	1.56	1.53		1.545	NATURAL GAS		431.3	172	1466165				4'8¼"	250.02	53	1.00052	250.15	8.264		125.05
C_4H_{10} 58.120	0.52	0.47		0.495	28.43	7.200	21.119	0.9071	1.2109	4748	12.511						105.92		875.32	15.131
C_5H_{10} 70.130	0.66	0.63		0.645	OXYGEN		434.6	51												
C_5H_{12} 72.146	0.16	0.13		0.145	27.07	7.000	21.197	1.0088	--	4052	10.677									
C_6H_{12} 84.156	0.19	0.19		0.190	STEAM		23.6													
			M. W.	22.22329	215.7	5.900														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-M
HOURS 238-248

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	0200	0600		AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.30	9.773 0.037			19.620	WET GAS	280.73	304.12
CO 28.010	36.09	35.96		36.025	13.788	13.788		13.788	CO_2 44.010	1.56	0.190	0.190		0.380	OIL	50.54	50.54
H_2 2.016	61.03	61.34		61.185	25.419		46.838		N_2 28.016	1.20	0.146				WATER	121.31	121.31
CO_2 44.010	2.27	2.00		2.135	0.817	0.817		1.634	CH_4 16.042	84.44	10.302	10.302	41.208		TOTAL	452.58	475.97
N_2 28.016	0.55	0.57		0.560	0.214				C_2H_4 30.068	5.86	0.715	1.430	4.290		FRESH FEED	475.97	
CH_4 16.042	0.06	0.13		0.095	0.036	0.036	0.144		C_2H_6 44.094	4.80	0.586	1.758	4.688		WEIGHT BALANCE	95.09	
			M. W	12.435835					C_4H_{10} 58.120	1.34	0.163	0.652	1.630				
			H_2O 18.016				7.361	3.681	C_5H_{12} 72.146	0.50	0.061	0.305	0.732		WET GAS FACTOR	1083318	
						14.641	54.343	19.103	MW	19.682648					INDICATED LOSS—S C F H	401	
			BALANCE			100.03	103.42	95.52	TOTAL			14.637	52.548	20.000		5212	

WET GAS	0200	0600			GAS FLOW RATES											LIQUID PRODUCT RATES				Basis 9 hours	
CO 28.010	9.27	8.90		9.085		$\sqrt{H}$	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	41.73	41.84		41.785	FRESH FEED 79.31	5.850	403.0	56	2327949			OIL	3'1"	165.75	46	1.0069	166.89	54.0		
CO_2 44.010	28.75	28.26		28.505			20.438	1.0039	1.5258	14525	38.274		1'10"	96.02	53	1.0035	96.36	6.350		
N_2 28.016	1.34	1.33		1.335	WET GAS 158.44	6.540	1.50	51	1307309								+1.10		+7.00	50.54
CH_4 16.042	8.88	9.10		8.990			4.025	1.0088	1.1434	4811	12.677						71.63		454.85	7.959
C_2H_4 28.052	2.27	2.38		2.325	RECYCLE 79.31	7.930	402.2	66												
C_2H_6 33.068	1.71	1.75		1.730			20.418	0.9943	1.1434	14599	38.469									
C_3H_6 42.078	2.88	2.93		2.905	BLEED 5.02	8.030														
C_3H_8 44.094	0.37	0.35		0.360			20.418	1.0000	1.1434	941	2.480	WATER	4'3"	227.10	54	1.00047	227.21	11.1		
C_4H_8 56.104	1.51	1.68		1.595	NATURAL GAS 28.43	7.190	420.0	188	1470838				1'10"	96.02	53	1.00052	96.07	8.264		
C_4H_{10} 58.120	0.43	0.42		0.425			20.849	0.8958	1.2128	4630	12.200						+0.97		+8.00	121.31
C_5H_{10} 70.130	0.56	0.69		0.625	OXYGEN 27.07	6.510	424.9	56									132.11		1091.76	14.679
C_5H_{12} 72.146	0.16	0.16		0.160			20.967	1.0039	--	3709	9.773									
C_6H_{12} 84.156	0.14	0.21		0.175	STEAM 215.7	5.680	22.9													
			M. W.	22.14471																

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-N
HOURS 248-272

	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	0.30	9.802 0.038			19.680	WET GAS	290.12	319.24
CO 28.010	36.46	37.15	36.85	36.820	14.459	14.459		14.459	CO_2 44.010	1.44	0.182	0.182		0.364	OIL	49.96	49.96
H_2 2.016	61.00	60.21	60.28	60.497	23.757		47.514		N_2 28.016	0.82	0.104				WATER	126.56	126.56
CO_2 44.010	1.99	2.17	2.48	2.213	0.869	0.869		1.738	CH_4 16.042	84.72	10.711	10.711	42.844		TOTAL	466.64	495.76
N_2 28.016	0.41	0.31	0.34	0.353	0.139				C_2H_4 30.068	5.97	0.755	1.510	4.530		FRESH FEED	495.76	
CH_4 16.042	0.14	0.16	0.05	0.117	0.046	0.046	0.184		C_2H_6 44.094	4.88	0.617	1.851	4.936		WEIGHT BALANCE	94.13	
			M. W	12.624508				3847	C_4H_{10} 58.120	1.34	0.169	0.676	1.690				
			H_2O 18.016				7.400	3.700	C_5H_{12} 72.146	0.53	0.067	0.335	0.804		WET GAS FACTOR	1100372	
						15.374	55.098	19.897	MW	19.658286					INDICATED LOSS—S C F H	491	
			BALANCE			100.71	100.54	99.27	TOTAL			15.265	54.804	20.044		5382	

WET GAS					GAS FLOW RATES											LIQUID PRODUCT RATES					
CO 28.010	8.78	8.20	8.57	8.517		$\sqrt{H}$	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	41.07	41.10	40.11	40.760	FRESH FEED 79.31	6.033	403.5	54	2293158			OIL	6'7-3/4	352.59	46	1.0069	355.02	55.1		
CO_2 44.010	28.61	29.23	30.16	29.333			20.450	1.0058	1.5143	14903	39.270		3'1"	165.75	46	1.0069	166.89	6.313		
N_2 28.016	1.53	1.30	1.11	1.313	WET GAS 158.44	6.688	1.52	49	1286054								+1.82		+11.50	49.96
CH_4 16.042	9.45	9.64	9.13	9.406			4.027	1.0108	1.1340	4891	12.88						189.95		1199.15	7.915
C_2H_4 28.052	2.34	2.39	2.46	2.397	RECYCLE 79.31	7.900	404.3	73												
C_2H_6 33.068	1.88	1.95	1.96	1.930			20.469	0.9877	1.1340	14364	37.850									
C_3H_6 42.078	2.97	2.93	3.09	2.997	BLEED 5.02	8.008														
C_3H_8 44.094	0.37	0.40	0.41	0.393			20.469	1.0000	1.1340	933	2.458	WATER	7'2½"	382.05	54	1.00047	382.23	11.0		
C_4H_8 56.104	1.57	1.53	1.66	1.587	NATURAL GAS 28.43	7.204	425.4	154	1472661				4'3"	227.10	54	1.00047	227.21	8.270		
C_4H_{10} 58.120	0.49	0.41	0.36	0.420			20.979	0.9203	1.2135	4798	12.643		5'6½"	294.75	54	1.00047	294.89			
C_5H_{10} 70.130	0.63	0.61	0.67	0.637	OXYGEN 27.07	6.508	427.8	56					1'7"	82.59	52	1.00059	82.64			126.56
C_5H_{12} 72.146	0.10	0.10	0.10	0.100			21.036	1.0039	--	3720	9.802						367.27		3037.32	15.303
C_6H_{12} 84.156	0.21	0.21	0.21	0.210	STEAM 215.7	6.317	24.1													
			M. W.	22.510709																

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-0
HOURS 272-296

	GAS ANALYSES			
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	37.35	36.27	36.32	36.647
H_2 2.016	59.90	60.68	60.52	60.367
CO_2 44.010	2.02	2.11	2.21	2.113
N_2 28.016	0.57	0.81	0.87	0.750
CH_4 16.042	0.16	0.13	0.08	0.123
			M. W	12.641606
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	7.98	8.11	8.21	8.100
H_2 2.016	41.06	41.99	40.43	41.160
CO_2 44.010	28.99	28.24	28.93	28.720
N_2 28.016	1.62	1.89	2.38	1.963
CH_4 16.042	9.55	9.19	9.37	9.370
C_2H_4 28.052	2.36	2.26	2.41	2.343
C_2H_6 30.068	2.05	1.94	2.02	2.003
C_3H_6 42.078	2.85	2.75	2.89	2.830
C_3H_8 44.094	0.31	0.29	0.32	0.307
C_4H_8 56.104	1.67	1.69	1.55	1.637
C_4H_{10} 58.120	0.54	0.57	0.57	0.560
C_5H_{10} 70.130	0.69	0.69	0.59	0.657
C_5H_{12} 72.146	0.16	0.19	0.16	0.170
C_6H_{12} 84.156	0.17	0.20	0.17	0.180
			M. W.	22.35583

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.35	9.784 0.043			19.654
14.131	14.131		14.131	CO_2 44.010	1.29	0.157	0.157		0.314
23.279		46.558		N_2 28.016	1.92	0.234			
0.815	0.815		1.630	CH_4 16.042	83.39	10.176	10.176	40.704	
0.289				C_2H_4 30.068	6.16	0.752	1.504	4.512	
0.047	0.047	0.188		C_2H_6 44.094	4.89	0.597	1.791	4.776	
		5.810	4.207	C_4H_{10} 58.120	1.49	0.182	0.728	1.820	
		7.112	3.556	C_5H_{12} 72.146	0.51	0.062	0.310	0.744	
	14.993	53.858	19.317	MW	19.837378				
	102.23	102.48	96.74	TOTAL			14.666	52.556	19.968

GAS FLOW RATES											
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR
FRESH FEED 79.31	5.958	403.3	59	2290057			OIL	7'2½"	382.05	47	1.0064
		20.445	1.0010	1.5133	14634	38.561		6'7-3/4	352.59	46	1.0069
WET GAS 158.44	6.617	1.52	52	1294964				4'3"	227.10	42	1.0089
		4.027	1.0078	1.1380	4842	12.759		1'6½"	80.37	50	1.0049
RECYCLE 79.31	7.913	403.4	71								
		20.447	0.9896	1.1380	14451	38.079					
BLEED 5.02	8.050	20.447	1.0000	1.1380	940	2.477	WATER	7'3"	384.23	56	1.00033
NATURAL GAS 28.43	7.200	427.1	195	1459366				5'6½"	294.75	54	1.00047
		21.019	0.8910	1.2080	4631	12.203		5'6"	292.57	54	1.00047
OXYGEN 27.07	6.392	428.2	56					0'6"	26.55	58	1.00018
		21.045	1.0039		3713	9.784					
STEAM 215.7	5.850	23.3									

LIQUID PRODUCT RATES					
GAL. AT 60	API° #/GAL.	#	# HR GAL HR
384.50	54.8		
355.02	6.323		
229.12			
80.76			
+1.27		+8.00	47.19
179.11		1132.51	7.463
384.36	11.1		
294.89	8.264		
292.71			
26.55			122.46
355.63		2938.93	14.818

WEIGHT BALANCE	# hr Measured	At Wt. Balance
WET GAS	285.24	317.82
OIL	47.19	47.19
WATER	122.46	122.46
TOTAL	454.89	487.47
FRESH FEED	487.47	
WEIGHT BALANCE	93.32	
WET GAS FACTOR	1114219	
INDICATED LOSS—S C F H	553	
	5395	

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-P
HOURS 296-320

	GAS ANALYSES			
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	35.13	36.39	36.26	35.927
H_2 2.016	61.78	60.41	60.47	60.887
CO_2 44.010	2.04	2.25	2.38	2.223
N_2 28.016	0.88	0.85	0.82	0.850
CH_4 16.042	0.17	0.10	0.07	0.113
			M. W	12.52524
			H_2O 18.016	
			BALANCE	
WET GAS	1400	2200		
CO 28.010	8.22	8.57		8.395
H_2 2.016	41.22	40.51		40.865
CO_2 44.010	28.48	29.18		28.830
N_2 28.016	1.97	2.22		2.095
CH_4 16.042	9.23	8.92		9.075
C_2H_4 28.052	2.34	2.39		2.365
C_2H_6 30.068	1.77	1.79		1.780
C_3H_6 42.078	2.95	2.79		2.870
C_3H_8 44.094	0.30	0.28		0.290
C_4H_8 56.104	1.87	1.68		1.775
C_4H_{10} 58.120	0.48	0.54		0.510
C_5H_{10} 70.130	0.78	0.73		0.755
C_5H_{12} 72.146	0.18	0.19		0.185
C_6H_{12} 84.156	0.21	0.21		0.210
			M. W.	22.572196

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.50	9.715 0.061			19.552
13.690	13.690		13.690	CO_2 44.010	1.17	0.143	0.143		0.286
23.201		46.402		N_2 28.016	2.07	0.253			
0.847	0.847		1.694	CH_4 16.042	82.70	10.102	10.102	40.408	
0.324				C_2H_4 30.068	6.53	0.798	1.596	4.788	
0.043	0.043	0.172		C_3H_8 44.094	5.19	0.634	1.902	5.072	
				C_4H_{10} 58.120	1.36	0.166	0.664	1.660	
		7.485	3.743	C_5H_{12} 72.146	0.48	0.059	0.295	0.708	
	14.580	54.059	19.127	MW	19.910234				
	99.17	102.70	96.42	TOTAL			14.702	52.636	19.838

GAS FLOW RATES											
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR
FRESH FEED 79.31	5.863	402.9	59	2311332			OIL	7'3"	384.23	44	1.0079
		20.435	1.0010	1.5203	14461	38.105		4'3"	227.10	42	1.0089
WET GAS 158.44	6.567	1.50	51	1282551				2'4½"	126.59	43	1.0084
		4.025	1.0088	1.1325	4785	12.609		2'1"	109.84	46	1.0069
RECYCLE 79.31	7.933	403.2	70								
		20.443	0.9905	1.1325	14428	38.018					
BLEED 5.02	7.983	20.443	1.0000	1.1325	928	2.445	WATER	7'2"	379.86	56	1.00033
NATURAL GAS 28.43	7.200	427.5	192	1454026				5'6"	292.57	54	1.00047
		21.029	0.8931	1.2058	4636	12.216		5'10¼"	311.12	54	1.00047
OXYGEN 27.07	6.458	427.5	57					0'11½"	49.82	64	0.99963
		21.029	1.0029		3687	9.715					
STEAM 215.7	5.808	22.9									

LIQUID PRODUCT RATES					
GAL. AT 60	API° #/GAL.	#	# HR GAL HR
387.27	53.4		
229.12	6.371		
127.65			
110.60			
+0.39		+2.50	46.61
175.59		1118.68	7.316
379.99	11.1		
292.71	8.264		
311.27			
49.80			120.09
348.75		2882.07	14.531

WEIGHT BALANCE	# hr Measured	At Wt. Balance
WET GAS	284.61	310.57
OIL	46.61	46.61
WATER	120.09	120.09
TOTAL	451.31	477.27
FRESH FEED	477.27	
WEIGHT BALANCE	94.56	
WET GAS FACTOR	1091212	
INDICATED LOSS—S C F H	436	
	5221	

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-Q
HOURS 320-344

	GAS ANALYSES				GENERATOR BALANCE										WEIGHT BALANCE		
HOUR	1400	2200		AVERAGE	M/HR	C	H	O		Mol %	M/Hr	C	H	O		#/hr Measured	At Wt. Balance
FRESH FEED									O_2 32.000	0.54	9.776 0.066			19.684	WET GAS	292.10	323.02
CO 28.010	37.65	36.55	37.26	37.153	13.914	13.914		13.914	CO_2 44.010	1.51	0.186	0.186		0.372	OIL	44.63	
H_2 2.016	58.47	60.08	59.31	59.287	22.204		44.408		N_2 28.016	2.28	0.280				WATER	118.58	
CO_2 44.010	2.77	2.32	2.44	2.510	0.940	0.940		1.880	CH_4 16.042	82.92	10.186	10.186	40.744		TOTAL	455.41	486.33
N_2 28.016	0.93	0.92	0.92	0.923	0.346				C_2H_4 30.068	6.11	0.751	1.502	4.506		FRESH FEED	486.33	
CH_4 16.042	0.18	0.13	0.07	0.127	0.048	0.048	0.192		C_2H_6 44.094	4.81	0.591	1.773	4.728		WEIGHT BALANCE	93.64	
			M. W	12.985383					C_4H_{10} 58.120	1.39	0.171	0.684	1.710				
			H_2O 18.016				8.130	4.065	C_5H_{12} 72.146	0.44	0.054	0.270	0.648		WET GAS FACTOR	1105854	
					37.452	14.902		19.859	MW	19.8615					INDICATED LOSS—S C F H	521	
			BALANCE			102.06	100.75	99.27	TOTAL			14.601	52.336	20.056			

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	9.01	9.10	9.22	9.110		$\sqrt{h}$	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	40.21	41.14	40.48	40.610	FRESH FEED		402.7	60	2.22943			OIL	5'6½"	293.66	43	1.0084	296.13	54.8		
CO_2 44.010	30.14	28.59	29.12	29.283	79.31	5.875	20.430	1.0000	1.4931	14213	37.452		2'4½"	126.59	43	1.0084	127.65	6.323		
N_2 28.016	2.07	2.28	2.31	2.220	WET GAS		1.562	51									+0.91		+5.75	44.63
CH_4 16.042	8.87	8.85	8.43	8.716	158.44	6.738	4.0326	1.0088	1.1342	4926	12.980						169.39		1071.05	7.058
C_2H_4 28.052	2.26	2.31	2.24	2.270	RECYCLE		402.6	73												
C_2H_6 33.068	1.80	1.84	1.87	1.837	79.31	7.917	20.428	0.9877	1.1342	14369										
C_3H_6 42.078	3.09	2.86	2.74	2;897	BLEED						40.269									
C_3H_8 44.094	0.32	0.30	0.28	0.300	5.02	7.946	20.428	0.9877	1.1342	913		WATER	7'5-3/4	396.23	55	1.00039	396.38	11.0		
C_4H_8 56.104	1.37	1.45	1.64	1.487	NATURAL GAS		428.9	189					5'10¼"	311.12	54	1.00047	311.27	8.270		
C_4H_{10} 58.120	0.42	0.46	0.61	0.497	28.43	7.204	21.062	0.8951	1.2073	4662	12.285		5'10"	310.03	52	1.00059	310.21			
C_5H_{10} 70.130	0.30	0.55	0.68	0.510	OXYGEN		427.8	57					0'11-3/4	50.90	57	1.00025	50.91			118.68
C_5H_{12} 72.146	0.10	0.13	0.19	0.140	27.07	6.496	21.036	1.0029	--	3710	9.776						344.41		2848.27	14.350
C_6H_{12} 84.156	0.04	0.14	0.19	0.123	STEAM		22.4													
			M. W.	22.503746	215.7	5.733														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-R
HOURS 344-368

	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	0.36	9.639 0.044			19.366	WET GAS	291.88	321.66
CO 28.010	36.60	36.11	36.57	36.427	13.634	13.634		13.634	CO_2 44.010	1.39	0.171	0.171		0.342	OIL	42.93	42.93
H_2 2.016	60.19	60.21	59.86	60.086	22.489		44.978		N_2 28.016	2.25	0.277				WATER	112.22	112.22
CO_2 44.010	2.09	2.34	2.32	2.250	0.842	0.842		1.684	CH_4 16.042	83.24	10.241	10.241	40.964		TOTAL	447.03	476.81
N_2 28.016	1.02	1.21	1.18	1.137	0.426				C_2H_4 30.068	6.07	0.747	1.494	4.482		FRESH FEED	476.81	
CH_4 16.042	0.10	0.13	0.07	0.100	0.037	0.037	0.148		C_2H_6 44.094	4.82	0.593	1.779	4.744		WEIGHT BALANCE	93.75	
			M. W	12.73935					C_4H_{10} 58.120	1.36	0.167	0.668	1.670				
			H_2O 18.016				8.135	4.068	C_5H_{12} 72.146	0.51	0.063	0.315	0.756		WET GAS FACTOR	1102028	
						14.513	53.261	19.386	MW	19.819495					INDICATED LOSS—S C F H	511	
			BALANCE			98.94	101.23	98.37	TOTAL			14.668	52.616	19.708		5522	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	8.90	9.14	8.97	9.003		$\sqrt{h}$	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	41.34	42.14	41.88	41.787	FRESH FEED		401.3	57	2272486			OIL	7'2½"	382.05	51	1.0044	383.73	55.3		
CO_2 44.010	28.79	27.09	28.01	27.963	79.31	5.808	20.396	1.0029	1.5075	14204	37.428		5'6½"	293.66	43	1.0084	296.13	6.306		
N_2 28.016	2.63	2.84	2.91	2.793	WET GAS		1.55	49	1309611				3'10¼"	206.37	40	1.0099	208.41			
CH_4 16.042	8.17	8.68	8.40	8.417	158.44	6.783	4.031	1.0108	1.1444	5011	13.204		2'6"	133.50	54	1.0030	133.90			
C_2H_4 28.052	2.20	2.26	2.21	2.223	RECYCLE		401.9	69									+1.27		+8.00	42.93
C_2H_6 33.068	1.66	1.78	1.77	1.737	79.31	7.933	20.411	0.9915	1.1444	14571	38.395						163.38		1030.27	6.808
C_3H_6 42.078	2.76	2.94	2.60	2.767	BLEED															
C_3H_8 44.094	0.27	0.33	0.30	0.300	5.02	8.025	20.411	1.0000	1.1444	941	2.480	WATER	7'4-3/4	391.87	56	1.00033	392.00	11.0		
C_4H_8 56.104	1.68	1.57	1.46	1.570	NATURAL GAS		429.6	190	1460683				5'10"	310.03	52	1.00059	310.21	8.270		
C_4H_{10} 58.120	0.52	0.38	0.57	0.490	28.43	7.209	21.078	0.8944	1.2086	4669	12.303		6'2¼"	328.58	51	1.00064	328.79			
C_5H_{10} 70.130	0.70	0.55	0.59	0.613	OXYGEN		427.1	56					1'7-3/4	85.91	54	1.00047	85.95			
C_5H_{12} 72.146	0.16	0.16	0.16	0.160	27.07	6.404	21.019	1.0039		3658	9.639						+1.03		+8.50	112.22
C_6H_{12} 84.156	0.22	0.14	0.17	0.177	STEAM		21.9										325.66		2693.21	13.569
			M. W.	22.105789	215.7	5.629														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-S
HOURS 368-392

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	38.57	38.89	37.60	38.387
H_2 2.016	57.74	57.32	58.47	57.843
CO_2 44.010	2.23	2.51	2.52	2.420
N_2 28.016	1.15	1.18	1.27	1.200
CH_4 16.042	0.21	0.10	0.14	0.150
			M. W	13.3436
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	10.34	10.27	10.62	10.410
H_2 2.016	38.90	39.01	40.26	39.390
CO_2 44.010	28.90	29.09	28.68	28.890
N_2 28.016	2.72	2.77	2.61	2.700
CH_4 16.042	8.32	8.41	8.37	8.367
C_2H_4 28.052	2.41	2.36	2.21	2.327
C_2H_6 30.068	1.88	1.79	1.79	1.820
C_3H_6 42.078	3.04	2.96	2.66	2.887
C_3H_8 44.094	0.33	0.34	0.30	0.323
C_4H_8 56.104	1.77	1.62	1.30	1.563
C_4H_{10} 58.120	0.43	0.46	0.49	0.460
C_5H_{10} 70.130	0.66	0.59	0.47	0.573
C_5H_{12} 72.146	0.16	0.16	0.10	0.140
C_6H_{12} 84.156	0.14	0.17	0.14	0.150
			M. W.	22.8537

GENERATOR BALANCE										
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.31	9.584 0.038			19.244
13.988	13.988		13.988	CO_2 44.010	1.54	0.189	0.189		0.378
21.078		42.156		N_2 28.016	1.32	0.162			
0.882	0.882		1.764	CH_4 16.042	83.98	10.280	10.280	41.120	
0.437				C_2H_6 30.068	6.10	0.747	1.494	4.482	
0.055	0.055	0.220		C_3H_8 44.094	4.92	0.602	1.806	4.816	
				C_4H_{10} 58.120	1.34	0.164	0.656	1.640	
		9.072	4.536	C_5H_{12} 72.146	0.49	0.060	0.300	0.720	
	14.925	51.448	20.288	MW	19.7547				
	101.36	97.48	103.39	TOTAL			14.725	52.778	19.622

WEIGHT BALANCE	#/hr Measured	At Wt. Balance
WET GAS	301.39	336.68
OIL	39.94	
WATER	109.62	
TOTAL	450.95	486.24
FRESH FEED	486.24	
WEIGHT BALANCE	92.74	
WET GAS FACTOR	111709	
INDICATED LOSS—S C F H	586	
	5591	

GAS FLOW RATES							
	$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED 79.31	5.804	401.3 20.396	60 1.000	2.16957 1.4730	13829	36.440
WET GAS 158.44	6.904	1.57 4.034	52 1.0078	1.26675 1.12550	5005	13.188
RECYCLE 79.31	7.900	401.3 20.396	71 0.9896	1.12550	14229	
BLEED 5.02	8.000	401.3 20.396	71 0.9896	1.12550	912	39.897
NATURAL GAS 28.43	7.200	426.0 20.993	192 0.8931	1.46547 1.2106	4646	12.242
OXYGEN 27.07	6.396	426.5 21.005	60 1.000		3637	9.584
STEAM 215.7	5.533					

HOUR	GAGE	GAL.
OIL	6'8-3/4	356.95
	3'10¼"	206.37
WATER	7'6¼"	398.41
	6'2¼"	328.58
	5'10¼"	311.12
	1'2⅛"	62.73

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
46	1.0069	359.41	54.1		
40	1.0099	208.41	6.347		39.94
		151.00			6.292
52	1.00059	398.65	11.1		
51	1.00064	328.79	8.264		
54	1.00047	311.27			
52	1.00059	62.77			109.62
		318.36			13.265

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-T
HOURS 392-416

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	36.88	36.75	36.51	36.713
H_2 2.016	60.47	60.15	60.75	60.457
CO_2 44.010	1.96	2.41	2.15	2.173
N_2 28.016	0.60	0.56	0.48	0.547
CH_4 16.042	0.09	0.13	0.11	0.110
			M. W	12.62936
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	10.10	9.58		9.840
H_2 2.016	44.58	41.45		43.015
CO_2 44.010	26.74	28.98		27.860
N_2 28.016	1.60	1.24		1.420
CH_4 16.042	8.05	7.57		7.810
C_2H_4 28.052	2.02	2.16		2.090
C_2H_6 30.068	1.50	1.54		1.520
C_3H_6 42.078	2.40	3.13		2.765
C_3H_8 44.094	0.26	0.33		0.295
C_4H_8 56.104	1.41	2.18		1.795
C_4H_{10} 58.120	0.42	0.51		0.465
C_5H_{10} 70.130	0.59	0.94		0.765
C_5H_{12} 72.146	0.16	0.13		0.145
C_6H_{12} 84.156	0.17	0.26		0.215
			M. W.	21.97148

GENERATOR BALANCE										
M HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.36	9.895 0.043			19.876
14.280	14.280		14.280	CO_2 44.010	0.67	0.081	0.081		0.162
23.515		47.030		N_2 28.016	2.03	0.245			
0.845	0.845		1.690	CH_4 16.042	81.92	9.877	9.877	39.508	
0.213				C_2H_6 30.068	6.93	0.836	1.672	5.016	
0.043	0.043	0.172		C_3H_8 44.094	5.88	0.709	2.127	5.672	
				C_4H_{10} 58.120	1.64	0.198	0.792	1.980	
		6.969	3.485	C_5H_{12} 72.146	0.57	0.069	0.345	0.828	
	15.168	54.171	19.455	MW	20.161238				
	101.84	102.20	97.09	TOTAL			14.894	53.004	20.038

WEIGHT BALANCE	# hr Measured	At Wt. Balance
WET GAS	318.30	340.63
OIL	41.40	41.40
WATER	109.20	109.20
TOTAL	468.90	491.23
FRESH FEED	491.23	
WEIGHT BALANCE	95.45	
WET GAS FACTOR	1070153	
INDICATED LOSS—S C F H	386	
	5884	

GAS FLOW RATES							
	$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR
FRESH FEED 79.31	6.092	395.6 20.256	64 0.9962	2292277 1.5140	14761	38.896
WET GAS 158.44	7.429	1.73 4.053	56 1.0039	1317617 1.1479	5498	14.487
RECYCLE 79.31	7.875	396.1 20.268	77 0.9840	1.1479	14298	37.676
BLEED 5.02	8.088	20.268	1.0000	1.1479	945	2.490
NATURAL GAS 28.43	7.200	425.0 20.969	197 0.8897	1435923 1.1983	4576	12.058
OXYGEN 27.07	6.658	422.7 20.914	64 0.9962	--	3755	9.895
STEAM 215.7	5.479	22.0				

HOUR	GAGE	GAL.
OIL	7'3½"	386.41
	6'8-3/4	356.95
	3'11-3/4	212.92
	1'8½"	88.12
WATER	7'4-3/4	391.87
	5'10¼"	311.12
	5'7½"	299.12
	1'2⅛"	62.73

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
50	1.0049	388.30	53.0		
46	1.0069	359.41	6.385		
48	1.0059	214.18			
50	1.0049	88.55			
		+1.10		+7.00	41.40
		155.62		993.63	6.484
57	1.00025	391.97	11.1		
54	1.00047	311.27	8.264		
57	1.00025	299.19			
56	1.00033	62.75			109.20
		317.14		2620.84	13.214

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-U
HOURS 416-440

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	0.30	10.308 0.039			20.690	WET GAS	332.26	366.91
CO 28.010	36.87	36.63	36.57	36.690	14.885	14.885		14.885	CO_2 44.010	1.27	0.163	0.163		0.326	OIL	37.83	37.83
H_2 2.016	60.39	60.27	60.58	60.413	24.509		49.018		N_2 28.016	2.31	0.297				WATER	108.21	108.21
CO_2 44.010	2.04	2.31	2.16	2.170	0.880	0.880		1.760	CH_4 16.042	82.76	10.646	10.646	42.584		TOTAL	478.30	512.95
N_2 28.016	0.62	0.72	0.60	0.647	0.262				C_2H_4 30.068	6.14	0.790	1.580	4.740		FRESH FEED	512.95	
CH_4 16.042	0.08	0.07	0.09	0.080	0.033	0.033	0.132		C_2H_6 44.094	5.07	0.652	1.956	5.216		WEIGHT BALANCE	93.24	
			M. W	12.64391				4371	C_4H_{10} 58.120	1.52	0.196	0.784	1.960				
			H_2O 18.016				7.532	3.766	C_5H_{12} 72.146	0.63	0.081	0.405	0.972		WET GAS FACTOR	1104285	
						15.798	56.682	20.411	MW	19.99814					INDICATED LOSS—S C F H	637	
			BALANCE			101.70	102.18	97.12	TOTAL			15.534	55.472	21.016		6741	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	10.48	11.28	11.29	11.017		$\sqrt{H}$	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	45.48	45.69	45.87	45.680	FRESH FEED		394.8	61	2289639			OIL	6'8"	353.68	49	1.0054	355.59	52.0		
CO_2 44.010	26.34	25.24	25.78	25.787	79.31	6.346	20.236	0.9990	1.5132	15396	40.569		3'11-3/4	212.92	48	1.0059	214.18	6.420		
N_2 28.016	1.66	2.07	1.95	1.893	WET GAS		1.755	56	1401390								141.41		907.85	37.83
CH_4 16.042	7.66	7.22	7.08	7.320	158.44	7.992	4.056	1.0039	1.1838	6104	16.084									5.892
C_2H_4 28.052	1.89	1.84	1.79	1.840	RECYCLE		395.0	76												
C_2H_6 33.068	1.36	1.39	1.42	1.390	79.31	7.904	20.241	0.9850	1.1838	14795	38.986									
C_3H_6 42.078	2.31	2.27	2.12	2.233	BLEED															
C_3H_8 44.094	0.26	0.26	0.26	0.260	5.02	8.025	20.241	1.0000	1.1838	965	2.543	WATER	7'5-1/8	393.50	57	1.00025	393.60	11.1		
C_4H_8 56.104	1.37	1.35	1.23	1.317	NATURAL GAS		433.8	187	1447616				5'7 1/8"	299.12	57	1.00025	299.19	8.264		
C_4H_{10} 58.120	0.36	0.42	0.33	0.370	28.43	7.517	21.178	0.8965	1.2032	4882	12.864		5'9"	305.66	55	1.00039	305.78			
C_5H_{10} 70.130	0.56	0.62	0.54	0.573	OXYGEN		422.8	62					1'7-3/4	85.91	57	1.00025	85.93			108.21
C_5H_{12} 72.146	0.13	0.13	0.13	0.130	27.07	6.921	20.916	0.9981		3911	10.306						314.26		2597.04	13.094
C_6H_{12} 84.156	0.14	0.22	0.21	0.190	STEAM		21.8													
			M. W.	20.65806	215.7	5.438														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-V
HOURS 440-464

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	0.34	10.332 0.044			20.752	WET GAS	337.49	362.78
CO 28.010	35.94	35.85	35.94	35.910	14.598	14.598		14.598	CO_2 44.010	1.30	0.169	0.169		0.338	OIL	39.56	39.56
H_2 2.016	60.88	60.71	60.70	60.763	24.700		49.400		N_2 28.016	1.83	0.238				WATER	108.31	108.31
CO_2 44.010	2.17	2.24	2.35	2.253	0.916	0.916		1.832	CH_4 16.042	83.40	10.836	10.836	43.344		TOTAL	485.36	510.65
N_2 28.016	0.84	1.13	0.90	0.957	0.389				C_2H_4 30.068	6.24	0.811	1.622	4.866		FRESH FEED	510.65	
CH_4 16.042	0.17	0.07	0.11	0.117	0.048	0.048	0.192		C_2H_6 44.094	4.93	0.641	1.923	5.128		WEIGHT BALANCE	95.05	
			M. W	12.56180			6.428	4660	C_4H_{10} 58.120	1.41	0.183	0.732	1.830				
			H_2O 18.016				7.874	3.937	C_5H_{12} 72.146	0.55	0.071	0.355	0.852		WET GAS FACTOR	1074935	
						15.562	57.466	20.367	MW	19.83902					INDICATED LOSS—S C F H	467	
			BALANCE			99.52	102.58	96.57	TOTAL			15.637	56.020	21.090		6701	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					
CO 28.010	10.86	11.61	11.34	11.270		$\sqrt{H}$	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	46.93	46.42	45.03	46.127	FRESH FEED		396.2	62	2304606			OIL	7'4-5/8	391.32	50	1.0049	393.24	51.6		
CO_2 44.010	25.00	25.41	25.90	25.437	79.31	6.333	20.271	0.9981	1.5181	15427	40.651		6'8"	353.68	49	1.0054	355.59	6.434		
N_2 28.016	1.68	1.97	2.41	2.020	WET GAS		1.74	58	1409123				3'11 1/8"	211.83	52	1.0039	212.66			
CH_4 16.042	7.45	6.92	6.87	7.080	158.44	8.158	4.055	1.0019	1.1871	6234	16.427		1'11-3/4	104.04	52	1.0039	104.45			
C_2H_4 28.052	1.78	1.81	1.56	1.717	RECYCLE		396.0	75									+1.71		+11.00	39.56
C_2H_6 33.068	1.34	1.27	1.24	1.283	79.31	7.913	20.266	0.9859	1.1871	14885	39.223						147.57		949.47	6.149
C_3H_6 42.078	2.06	2.19	2.25	2.167	BLEED															
C_3H_8 44.094	0.23	0.26	0.21	0.233	5.02	8.029	20.266	1.0000	1.1871	970	2.556	WATER	7'8"	406.05	56	1.00033	406.18	11.1		
C_4H_8 56.104	1.33	1.03	1.17	1.177	NATURAL GAS		434.9	195	1459245				5'9"	305.66	55	1.00039	305.78	8.264		
C_4H_{10} 58.120	0.43	0.30	0.69	0.473	28.43	7.600	21.204	0.8910	1.2080	4931	12.993		5'9"	305.66	59	1.00009	305.69			
C_5H_{10} 70.130	0.58	0.54	0.60	0.573	OXYGEN		423.5	59					1'9"	91.50	55	1.00039	91.54			108.31
C_5H_{12} 72.146	0.19	0.10	0.47	0.253	27.07	6.913	20.933	1.0010		3921	10.332						314.55		2599.44	13.106
C_6H_{12} 84.156	0.14	0.17	0.26	0.190	STEAM		21.0													
			M. W.	20.544665	215.7	5.288														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-W
HOURS 464-477

	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	0.32	10.377 0.042			20.838	WET GAS	336.25	376.28
CO 28.010	35.99	36.53		36.260	14.807	14.807		14.807	CO_2 44.010	1.30	0.169	0.169		0.338	OIL	38.41	38.41
H_2 2.016	60.69	60.28		60.485	24.699		49.398		N_2 28.016	3.08	0.400				WATER	101.55	101.55
CO_2 44.010	2.25	2.39		2.320	0.947	0.947		1.894	CH_4 16.042	82.28	10.685	10.685	42.740		TOTAL	476.21	516.24
N_2 28.016	0.89	0.70		0.795	0.325				C_2H_6 30.068	6.07	0.788	1.576	4.728		FRESH FEED	516.24	
CH_4 16.042	0.18	0.10		0.140	0.057	0.057	0.228		C_3H_8 44.094	4.91	0.638	1.914	5.104		WEIGHT BALANCE	92.25	
			M. W	12.64202				4475	C_4H_{10} 58.120	1.49	0.193	0.772	1.930				
			H_2O 18.016				7.339	3.670	C_5H_{12} 72.146	0.55	0.071	0.355	0.852		WET GAS FACTOR	1119048	
						15.811	56.965	20.371	MW	19.989714					INDICATED LOSS—S C F H	755	
			BALANCE			102.20	102.91	96.20	TOTAL			15.471	55.354	21.176		7101	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					Basis 13 hours
CO 28.010	11.46	11.82		11.640		$\sqrt{h}$	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	47.10	46.80		46.950	FRESH FEED		398.9	67	2289982			OIL	5'5¼"	289.30	56	1.0020	289.88	50.7		
CO_2 44.010	24.40	25.30		24.850	79.31	6.392	20.337	0.9933	1.5133	15497	40.835		3'1½"	211.83	52	1.0039	212.66	6.466		38.41
N_2 28.016	1.99	1.81		1.900	WET GAS		1.75	61	1439713								77.22		499.30	5.940
CH_4 16.042	7.15	6.76		6.955	158.44	8.238	4.056	0.9990	1.1999	6346	16.722									
C_2H_6 28.052	1.79	1.78		1.785	RECYCLE		398.0	78												
C_2H_6 30.068	1.26	1.24		1.250	79.31	7.908	20.315	0.9831	1.1999	15030	39.605									
C_3H_6 42.078	2.15	2.05		2.100	BLEED															
C_3H_8 44.094	0.25	0.22		0.235	5.02	8.015	20.315	1.0000	1.1999	981	2.585	WATER	7'6"	397.32	62	0.99982	397.25	11.1		
C_4H_8 56.104	1.27	1.14		1.205	NATURAL GAS		437.8	195	1448244				5'9"	305.66	59	1.00009	305.69	8.264		
C_4H_{10} 58.120	0.36	0.30		0.330	28.43	7.600	21.272	0.8910	1.2034	4928	12.986		1'6¼"	79.27	64	0.99963	79.24			
C_5H_{10} 70.130	0.55	0.51		0.530	OXYGEN		426.0	66					0'2½"	11.06	70	0.99896	11.05			101.55
C_5H_{12} 72.146	0.13	0.10		0.115	27.07	6.969	20.993	0.9943		3938	10.377						159.75		1320.17	12.288
C_6H_{12} 84.156	0.14	0.17		0.155	STEAM		21.3													
			M. W.	20.108171	215.7	5.462														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-X
HOURS 477-500

	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	0.29	9.855 0.037			19.784	WET GAS	315.92	349.83
CO 28.010	36.39	36.41	36.47	36.423	14.022	14.022		14.022	CO_2 44.010	1.40	0.177	0.177		0.354	OIL	39.74	39.74
H_2 2.016	60.17	60.13	60.11	60.137	23.151		46.302		N_2 28.016	2.06	0.261				WATER	99.96	99.96
CO_2 44.010	2.18	2.27	2.38	2.277	0.877	0.877		1.754	CH_4 16.042	82.57	10.453	10.453	41.812		TOTAL	455.62	489.53
N_2 28.016	0.99	0.99	0.84	0.940	0.362				C_2H_6 30.068	6.37	0.807	1.614	4.842		FRESH FEED	489.53	
CH_4 16.042	0.27	0.20	0.20	0.223	0.086	0.086	0.344		C_3H_8 44.094	5.23	0.662	1.986	5.296		WEIGHT BALANCE	93.07	
			M. W	12.71568			8.084	4.362	C_4H_{10} 58.120	1.53	0.194	0.776	1.940				
			H_2O 18.016				8.404	4.202	C_5H_{12} 72.146	0.55	0.070	0.350	0.840		WET GAS FACTOR	1107337	
						14.985	55.050	19.978	MW	20.039436					INDICATED LOSS—S C F H	660	
			BALANCE			97.58	100.58	99.21	TOTAL			15.356	54.730	20.138		6813	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES					Basis 22 hours
CO 28.010	13.06	12.99	13.57	13.207		$\sqrt{h}$	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	47.78	48.15	48.77	48.233	FRESH FEED		401.6	69	2276716			OIL	7'1½"	377.68	57	1.0015	378.25	52.0		
CO_2 44.010	23.70	23.58	22.53	23.270	79.31	6.035	20.403	0.9915	1.5089	14610	38.498		5'7¼"	298.03	54	1.0030	298.92	6.420		
N_2 28.016	1.76	1.78	1.96	1.833	WET GAS		1.72	55	1485711				2'8½"	143.87	42	1.0089	145.15			
CH_4 16.042	6.64	6.37	6.37	6.460	158.44	7.825	4.052	1.0048	1.2189	6153	16.213		1'8¼"	88.12	56	1.0020	88.30			39.74
C_2H_6 28.052	1.62	1.64	1.64	1.633	RECYCLE		402.3	77									136.18		874.28	6.190
C_2H_6 30.068	1.12	1.13	1.11	1.120	79.31	7.892	20.421	0.9840	1.2189	15330	40.395									
C_3H_6 42.078	1.93	1.75	1.97	1.883	BLEED															
C_3H_8 44.094	0.20	0.20	0.14	0.180	5.02	8.117	20.421	1.0000	1.2189	1014	2.672	WATER	7'0"	371.14	53	1.00052	371.33	11.1		
C_4H_8 56.104	1.13	1.13	1.06	1.107	NATURAL GAS		415.6	195	1444651				2'0"	105.19	55	1.00039	105.23	8.264		99.96
C_4H_{10} 58.120	0.34	0.42	0.26	0.340	28.43	7.608	20.744	0.8910	1.2019	4805	12.661						266.10		2199.05	12.095
C_5H_{10} 70.130	0.49	0.54	0.43	0.487	OXYGEN		423.6	60												
C_5H_{12} 72.146	0.10	0.13	0.06	0.097	27.07	6.600	20.936	1.0000		3740	9.855									
C_6H_{12} 84.156	0.13	0.19	0.13	0.150	STEAM		22.8													
			M. W.	19.485608	215.7	5.071														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-Y
HOURS 500-523

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
$CO_{28.010}$	35.94	36.03	36.25	36.074
$H_{2.016}$	60.40	60.61	60.39	60.467
$CO_{2.44.010}$	2.03	2.14	2.29	2.153
$N_{2.28.016}$	0.83	1.04	0.81	0.893
$CH_{4.16.042}$	0.80	0.18	0.26	0.413
			M. W	12.58731
			H_2O 18.016	
			BALANCE	
WET GAS				
$CO_{28.010}$	11.98	12.52	13.73	12.743
$H_{2.016}$	44.43	43.14	46.63	44.733
$CO_{2.44.010}$	23.80	25.79	22.55	24.047
$N_{2.28.016}$	1.88	2.05	2.03	1.987
$CH_{4.16.042}$	9.02	7.08	7.06	7.720
$C_2H_{4.28.052}$	2.14	2.03	2.00	2.057
$C_2H_{6.30.068}$	1.28	1.17	1.12	1.190
$C_3H_{6.42.078}$	2.44	2.33	2.33	2.367
$C_3H_{8.44.094}$	0.28	0.24	0.23	0.250
$C_4H_{8.56.104}$	1.42	1.68	1.35	1.483
$C_4H_{10.58.120}$	0.38	0.61	0.28	0.423
$C_5H_{10.70.130}$	0.61	0.82	0.53	0.653
$C_5H_{12.72.146}$	0.13	0.23	0.06	0.140
$C_6H_{12.84.156}$	0.21	0.31	0.10	0.207
			M. W.	20.70142

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				$O_{2.32.000}$	0.32	9.794 0.041			19.670
14.108	14.108		14.108	$CO_{2.44.010}$	1.55	0.197	0.197		0.394
23.648		47.296		$N_{2.28.016}$	1.22	0.155			
0.842	0.842		1.684	$CH_{4.16.042}$	82.88	10.537	10.537	42.148	
0.349				$C_2H_{6.30.068}$	6.46	0.821	1.642	4.926	
0.162	0.162	0.648		$C_2H_{8.44.094}$	5.40	0.687	2.061	5.496	
			4.272	$C_4H_{10.58.120}$	1.55	0.197	0.788	1.970	
		8.044	4.022	$C_5H_{12.72.146}$	0.62	0.079	0.395	0.948	
	15.112	55.988	19.814	MW	20.09359				
	96.75	100.90	98.75	TOTAL			15.620	55.488	20.064

WEIGHT BALANCE	# /hr Measured	At Wt Balance
WET GAS	281.97	315.68
OIL	53.57	53.57
WATER	123.03	123.03
TOTAL	458.57	492.28
FRESH FEED	492.28	
WEIGHT BALANCE	93.15	
WET GAS FACTOR	1119551	
INDICATED LOSS—S C F H	618	
	5787	

GAS FLOW RATES							
	$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	
FRESH FEED		402.6	71	2299935			
79.31	6.104	20.428	0.9896	1.5166	14842	39.109	
WET GAS		1.625	59	1398454			
158.44	6.821	4.040	1.0010	1.1826	5169	13.621	
RECYCLE		402.8	73				
158.44	7.896	20.433	0.9877	1.1826	29858	78.677	
BLEED							
5.02	7.964	20.433	1.0000	1.1826	966	2.545	
NATURAL GAS		418.8	192	1440757			
28.43	7.604	20.821	0.8931	1.2003	4825	12.714	
OXYGEN		426.8	60				
27.07	6.535	21.012	1.0000		3717	9.794	
STEAM		21.6					
215.7	4.591						

HOUR	GAGE	GAL.
OIL	6'4"	336.22
	2'9½"	149.62
WATER	6'11"	366.77
	0'5-¾	25.45

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° # GAL	#	# HR GAL HR
46	1.0079	338.88	50.6		
42	1.0089	150.95	6.469		
		+2.55		+16.50	53.57
		190.48		1232.22	8.282
58	1.00018	366.84	10.7		
44	1.00104	25.48	8.287		123.03
		341.46		2829.68	14.842

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-Z
HOURS 523-547

GAS ANALYSES				
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
$CO_{28.010}$	36.40	36.62	37.04	36.686
$H_{2.016}$	59.69	60.00	59.26	59.650
$CO_{2.44.010}$	2.11	2.24	2.36	2.237
$N_{2.28.016}$	0.79	0.83	0.87	0.830
$CH_{4.16.042}$	1.01	0.31	0.47	0.597
			M. W	12.7911
			H_2O 18.016	
			BALANCE	
WET GAS				
$CO_{28.010}$	14.21	13.74	13.83	13.927
$H_{2.016}$	43.05	43.71	45.06	43.940
$CO_{2.44.010}$	24.26	24.39	24.38	24.344
$N_{2.28.016}$	1.87	2.09	2.00	1.987
$CH_{4.16.042}$	7.93	6.82	6.76	7.170
$C_2H_{4.28.052}$	1.80	1.89	1.87	1.853
$C_2H_{6.30.068}$	1.07	1.11	1.04	1.073
$C_3H_{6.42.078}$	2.35	2.67	2.18	2.400
$C_3H_{8.44.094}$	0.19	0.23	0.20	0.207
$C_4H_{8.56.104}$	1.67	1.75	1.42	1.613
$C_4H_{10.58.120}$	0.54	0.55	0.35	0.480
$C_5H_{10.70.130}$	0.70	0.61	0.61	0.640
$C_5H_{12.72.146}$	0.19	0.23	0.13	0.183
$C_6H_{12.84.156}$	0.17	0.21	0.17	0.183
			M. W.	21.069845

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				$O_{2.32.000}$	0.41	9.597 0.052			19.298
14.311	14.311		14.311	$CO_{2.44.010}$	1.47	0.187	0.187		0.374
23.268		46.536		$N_{2.28.016}$	2.19	0.279			
0.873	0.873		1.746	$CH_{4.16.042}$	82.43	10.488	10.488	41.952	
0.324				$C_2H_{6.30.068}$	6.48	0.825	1.650	4.950	
0.233	0.233	0.932		$C_3H_{8.44.094}$	4.73	0.602	1.806	4.816	
			3.615	$C_4H_{10.58.120}$	1.71	0.218	0.872	2.180	
		7.274	3.637	$C_5H_{12.72.146}$	0.58	0.074	0.370	0.888	
	15.417	54.742	19.694	MW	20.06147				
	100.29	99.92	100.11	TOTAL			15.373	54.786	19.672

WEIGHT BALANCE	# hr Measured	At Wt Balance
WET GAS	293.21	327.43
OIL	51.80	51.80
WATER	119.74	119.74
TOTAL	464.75	498.97
FRESH FEED	498.97	
WEIGHT BALANCE	93.14	
WET GAS FACTOR	1116708	
INDICATED LOSS—S C F H	616	
	5897	

GAS FLOW RATES							
	$\sqrt{H}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	
FRESH FEED		402	63	2263292			
79.31	6.096	20.413	0.9971	1.5044	14804	39.009	
WET GAS		1.70	58	1374001			
158.44	7.008	4.050	1.0019	1.1722	5281	13.916	
RECYCLE		402					
158.44	7.929	20.413	0.9896	1.1722	29748	78.387	
BLEED							
5.02	7.913	20.413	1.0000	1.1722	951	2.506	
NATURAL GAS		416	187	1443064			
28.43	7.600	20.753	0.8965	1.2013	4829	12.725	
OXYGEN		423	57				
27.07	6.413	20.921	1.0029		3642	9.597	
STEAM		17.3					
215.7	4.558						

HOUR	GAGE	GAL.
OIL	7'2½"	382.05
	6'4"	336.22
	3'7½"	194.37
	0'11¼"	48.74
WATER	7'3"	384.23
	6'11"	366.77
	7'3"	384.23
	1'0-¾	55.23

LIQUID PRODUCT RATES					
°F	FACTOR	GAL. AT 60	API° # GAL	#	# HR GAL HR
46	1.0069	384.69	53.5		
46	1.0069	338.54	6.368		
50	1.0049	195.32			
52	1.0039	48.93			
		+2.67		+17.00	51.80
		195.21		1243.10	8.134
57	1.00025	384.33	10.6		
58	1.00018	366.84	8.293		
57	1.00025	384.33			
44	1.00104	55.29			119.74
		346.53		2873.77	14.439

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-AA
HOURS 547-571

	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	0.36	9.866 0.046			19.824	WET GAS	306.61	347.64
CO 28.010	36.24	36.23	36.13	36.200	14.522	14.522		14.522	CO_2 44.010	1.29	0.164	0.164		0.328	OIL	47.09	47.09
H_2 2.016	60.43	60.68	60.66	60.590	24.306		48.612		N_2 28.016	1.72	0.219				WATER	109.81	109.81
CO_2 44.010	2.24	2.15	2.25	2.214	0.888	0.888		1.776	CH_4 16.042	82.39	10.491	10.491	41.964		TOTAL	463.51	504.54
N_2 28.016	0.74	0.60	0.71	0.683	0.274				C_2H_4 30.068	6.73	0.857	1.714	5.142		FRESH FEED	504.54	
CH_4 16.042	0.35	0.34	0.25	0.313	0.126	0.126	0.504		C_2H_6 44.094	5.35	0.681	2.043	5.448		WEIGHT BALANCE	91.87	
			M. W	12.57706				3.854	C_4H_{10} 58.120	1.56	0.199	0.796	1.990				
			H_2O 18.016				7.024	3.512	C_5H_{12} 72.146	0.60	0.076	0.380	0.912		WET GAS FACTOR	1133818	
						15.536	56.140	19.810	MW	20.10396					INDICATED LOSS—S C F H	774	
			BALANCE			99.67	101.23	98.30	TOTAL			15.588	55.456	20.152		6555	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES						
CO 28.010	13.71	13.79	13.66	13.720		$\sqrt{h}$	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	45.21	47.62	47.86	46.896	FRESH FEED		402.5	59	2301809			OIL	6'11"	366.77	55	1.0025	367.69	49.8		
CO_2 44.010	24.48	23.83	23.60	23.970	79.31	6.188	20.425	1.0010	1.5172	15224	40.116		3'7½"	194.37	50	1.0049	195.32	6.498		
N_2 28.016	1.68	1.67	1.33	1.560	WET GAS		1.74	63	1438280								+1.54		+10.00	47.09
CH_4 16.042	6.36	6.14	6.18	6.227	158.44	7.525	4.055	0.9971	1.1993	5781	15.233						173.91		1130.07	7.246
C_2H_4 28.052	1.90	1.77	1.76	1.810	RECYCLE		402.8	75												
C_2H_6 33.068	1.13	0.97	1.00	1.033	158.44	7.917	20.433	0.9859	1.1993	30305	79.855									
C_3H_6 42.078	2.30	1.74	1.94	1.993	BLEED															
C_3H_8 44.094	0.25	0.20	0.23	0.227	5.02	7.904	20.433	1.0000	1.1993	972	2.561	WATER	7'6¼"	398.41	57	1.00025	398.51	10.7		
C_4H_8 56.104	1.58	1.14	1.27	1.330	NATURAL GAS		417.5	187	1440014				7'3"	384.23	57	1.00025	384.33	8.287		
C_4H_{10} 58.120	0.41	0.30	0.30	0.337	28.43	7.600	20.789	0.8965	1.2000	4832	12.733		6'10-3/4	365.68	62	0.99982	365.61			
C_5H_{10} 70.130	0.62	0.53	0.57	0.597	OXYGEN		425.0	62					1'2½"	61.74	52	1.00059	61.78			109.81
C_5H_{12} 72.146	0.13	0.13	0.13	0.130	27.07	6.608	20.969	0.9981		3744	9.866						318.01		2635.35	13.250
C_6H_{12} 84.156	0.17	0.17	0.17	0.170	STEAM		16.2													
			M. W.	20.1282	08 215.7	4.133														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-BB
HOURS 571-595

	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	0.35	9.887 0.045			19.864	WET GAS	315.56	355.49
CO 28.010	36.86	36.87	35.11	36.280	14.444	14.444		14.444	CO_2 44.010	1.44	0.184	0.184		0.368	OIL	43.51	43.51
H_2 2.016	59.88	60.01	61.90	60.596	24.125		48.250		N_2 28.016	1.18	0.151				WATER	101.43	101.43
CO_2 44.010	1.97	2.30	2.23	2.167	0.863	0.863		1.726	CH_4 16.042	83.46	10.688	10.688	42.752		TOTAL	460.50	500.43
N_2 28.016	0.62	0.68	0.67	0.657	0.262				C_2H_4 30.068	6.66	0.853	1.706	5.118		FRESH FEED	500.43	
CH_4 16.042	0.67	0.14	0.09	0.300	0.119	0.119	0.476		C_2H_6 44.094	4.98	0.638	1.914	5.104		WEIGHT BALANCE	92.02	
			M. W	12.56953			6.848		C_4H_{10} 58.120	1.42	0.182	0.728	1.820				
			H_2O 18.016				7.486	3.743	C_5H_{12} 72.146	0.51	0.065	0.325	0.780		WET GAS FACTOR	1126536	
						15.426	56.212	19.913	MW	19.85664					INDICATED LOSS—S C F H	781	
			BALANCE			99.23	101.15	98.42	TOTAL			15.545	55.574	20.232		6956	

WET GAS					GAS FLOW RATES										LIQUID PRODUCT RATES						
CO 28.010	16.06	16.83	10.93	16.607		$\sqrt{h}$	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	48.07	47.55	49.01	48.210	FRESH FEED		404.9	63	2303188			OIL	7'1"	375.50	56	1.0020	376.25	49.1		
CO_2 44.010	21.18	21.79	21.06	21.343	79.31	6.146	20.484	0.9971	1.5176	15109	39.813		6'11"	366.77	55	1.0025	367.69	6.523		
N_2 28.016	1.41	1.62	1.84	1.623	WET GAS		1.77	63	1492729				4'2½"	224.92	48	1.0059	226.25			
CH_4 16.042	6.46	4.86	4.95	5.423	158.44	7.883	4.058	0.9971	1.2218	6175	16.271		1'5½"	75.97	52	1.0039	76.27			
C_2H_4 28.052	1.72	1.62	1.42	1.587	RECYCLE		405.4	73									+1.53		+10.00	43.51
C_2H_6 33.068	1.01	0.82	0.80	0.877	158.44	7.904	20.496	0.9877	1.2218	30,975	81.621						160.07		1044.14	6.670
C_3H_6 42.078	1.81	1.58	1.61	1.667	BLEED															
C_3H_8 44.094	0.17	0.16	0.13	0.153	5.02	7.796	20.496	1.0000	1.2218	980	2.582	WATER	7'2¼"	380.96	61	0.99992	380.93	10.9		
C_4H_8 56.104	1.10	1.35	1.06	1.170	NATURAL GAS		420.6	193	1457950				6'10-¾	365.68	62	0.99982	365.61	8.276		
C_4H_{10} 58.120	0.26	0.52	0.54	0.440	28.43	7.604	20.864	0.8924	1.2075	4860	12.806		6'4"	336.22	59	1.00009	336.25			
C_5H_{10} 70.130	0.48	0.75	0.46	0.563	OXYGEN		427.2	61					1'1¼"	57.39	54	1.00047	57.42			101.43
C_5H_{12} 72.146	0.10	0.23	0.06	0.130	27.07	6.600	21.021	0.9990		3752	9.887						294.15		2434.39	12.256
C_6H_{12} 84.156	0.17	0.32	0.13	0.207	STEAM		14.8													
			M. W.	19.3940	01 215.7	3.950														

THE TEXAS COMPANY — MONTEBELLO LABORATORY

RATE CALCULATIONS

RUN NO. 66-CC
HOURS 595-619

	GAS ANALYSES			
HOUR	1400	2200	0600	AVERAGE
FRESH FEED				
CO 28.010	36.08	36.48	36.52	36.360
H_2 2.016	60.29	60.17	60.48	60.313
CO_2 44.010	2.22	2.48	2.43	2.377
N_2 28.016	0.71	0.74	0.43	0.627
CH_4 16.042	0.70	0.13	0.14	0.323
			M. W	12.67394
			H_2O 18.016	
			BALANCE	
WET GAS				
CO 28.010	15.65	17.23	18.14	17.007
H_2 2.016	49.42	48.78	50.53	49.576
CO_2 44.010	20.71	20.92	19.62	20.417
N_2 28.016	1.56	1.61	1.49	1.553
CH_4 16.042	6.35	5.07	4.30	5.240
C_2H_4 28.052	1.57	1.57	1.43	1.523
C_2H_6 30.068	0.80	0.81	0.71	0.773
C_3H_6 42.078	1.65	1.71	1.55	1.637
C_3H_8 44.094	0.20	0.20	0.14	0.180
C_4H_8 56.104	0.99	1.07	1.04	1.033
C_4H_{10} 58.120	0.36	0.32	0.30	0.327
C_5H_{10} 70.130	0.47	0.48	0.48	0.477
C_5H_{12} 72.146	0.10	0.10	0.10	0.100
C_6H_{12} 84.156	0.17	0.13	0.17	0.157
			M. W.	18.760565

GENERATOR BALANCE									
M/HR	C	H	O		Mol %	M/Hr	C	H	O
				O_2 32.000	0.36	9.887 0.047			19.868
14.461	14.461		14.461	CO_2 44.010	1.52	0.198	0.198		0.396
23.989		47;978		N_2 28.016	2.55	0.331			
0.945	0.945		1.890	CH_4 16.042	82.84	10.766	10.766	43.064	
0.249				C_2H_6 30.068	6.10	0.793	1.586	4.758	
0.129	0.129	0.516		C_3H_8 44.094	4.75	0.617	1.851	4.936	
				C_4H_{10} 58.120	1.45	0.188	0.752	1.880	
		7.321	3.661	C_5H_{12} 72.146	0.43	0.056	0.280	0.672	
	15.535	55.815	20.012	MW	19.869334				
	100.66	100.91	98.76	TOTAL			15.433	55.310	20.264

WEIGHT BALANCE		
	#/hr Measured	At Wt. Balance
WET GAS	334.09	371.88
OIL	38.41	38.41
WATER	93.79	93.79
TOTAL	466.29	504.08
FRESH FEED	504.08	
WEIGHT BALANCE	92.50	
WET GAS FACTOR	1113113	
INDICATED LOSS—S C F H	764	
	7522	

GAS FLOW RATES																		
	$\sqrt{h}$	PRESSURE	TEMP.	M. W.	S. C. F. H.	M/HR	HOUR	GAGE	GAL.	°F	FACTOR	GAL. AT 60	API° #/GAL.	#	# HR GAL HR
FRESH FEED 79.31	6.167	405.4 20.496	64 0.9962	2284214 1.5114	15094	39.773	OIL	6'10½"	364.59	51	1.0044	366.19	49.1		
								4'2½"	224.92	48	1.0059	226.25	6.523		
WET GAS 158.44	8.463	1.92 4.077	65 0.9952	1543130 1.2422	6758	17.808						41.38 141.32		49.00 921.83	38.41 5.888
RECYCLE 158.44	7.888	405.4 20.496	76 0.9850	1.2422	31342	82.588									
BLEED 5.02	7.883	20.496	1.0000	1.2422	1008	2.656	WATER	7'3½"	386.41	60	1.00000	386.41	10.9		
NATURAL GAS 28.43	7.708	421.8 20.893	193 0.8924	1457019 1.2071	4932	12.996		6'4"	336.22	59	1.00009	336.25	8.276		
								4'10-¾	260.93	58	1.00018	260.98			
OXYGEN 27.07	6.614	427.9 21.038	64 0.9962		3752	9.887		0'9".	39.17	65	0.99953	39.15 271.99	2250.99	2250.99	93.79 11.333
STEAM 215.7	3.742	14.7													