

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 24A From 9/12/47 Hr. 2200 to 9/13/47 Hr. 0700

FLOWS		RUN CONDITIONS			DISTILLATIONS			CATALYST DATA		CATALYST ANALYSIS					
	SCFH	%	Generator Press.		A S T M		Hempel Dist.		In Reactor at Start of Period	Particle Size					
Oxygen	750		O <sub>2</sub> Preheat, °F	112	Prod.	6430	°F	%	A.P.I.	Fresh Catalyst Charged	Screen				
Nat. Gas	1015		Gas Preheat, °F	745	A.P.I.		to 400			Catalyst Recharged	Frac.	M	%	Sedimentation	
Total	1765	42.5	Reactor Press.	101	I.B.P.		400-550			Total	On 40	420+		80+	
Fresh Feed	2390		Steam Back Press.	369			550+			Catalyst Taken Out	100	419-150		80-40	
F.F. by C	3050		Temperatures, °F		10%					In Reactor at End of Period	300	150	149-105	40-20	
Avg. F.F.			Heater Outlet	921	20						200	104-74		20-10	
Wet Gas	1760		Catalyst #1	512	30						250	73-62		10-0	
Contraction		42.7	#2	481	40						325	61-44			
Recycle	2980		#3	459	50					Temp.	%	Reactor d-P, H <sub>2</sub> O	20		
Bleed	150		#4	438	60					200		Pounds in Reactor	247	<325	43-0
Total	3130		#5	445	70					203		Density, lbs./cu. ft	126		Chem. Anal.
Total Feed	6180		Average	461	80					208		Bed Height, Feet	3.5		% Fe
Recycle/F.F.	.98		Product Separator		90										% C
Inlet Vel.	.76 ft/sec				95							Space Vel. SCFH/lb. cat.			% Oil
Steam Flow					E.P.							Inventory Figures	10.2		Specific Surface
					Rec.							From d-P Meters	12.3		m <sup>2</sup> /gm
					Res.										
					Loss.										

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE								
	%	Oil	Water	Product	Pour °F	SUS @ °F	IN			OUT						
							Mol %	SCFH m/hr	C	H	O	Mol %	SCFH m/hr	C	H	O
CO <sub>2</sub>												CO <sub>2</sub>				
CH <sub>4</sub>												CO				
C <sub>2</sub> H <sub>6</sub>												CH <sub>4</sub>				
C <sub>3</sub> H <sub>8</sub>												C <sub>2</sub> H <sub>6</sub>				
C <sub>4</sub> H <sub>10</sub>												C <sub>3</sub> H <sub>8</sub>				
N <sub>2</sub>												C <sub>4</sub> H <sub>10</sub>				
O <sub>2</sub>												N <sub>2</sub>				
												H <sub>2</sub> O				
												Total				

FRESH FEED			WET GAS				RECYCLE	COMB. FEED	EFFLUENT	NET CHANGE ON REACTION										
%	m/hr	#/hr	Measured		At Wt. Balance		m/hr	m/hr	%	m/hr	%	Carbon			Hydrogen		Oxygen	Ultimate Oil		Unsat.
			m/hr	#/hr	m/hr	#/hr						m/hr	a/hr	%	a/hr	%	a/hr	#/hr	#/gal	gal/hr
CO	29.7	2.39	66.92	19.23	.89	24.86														
H <sub>2</sub>	56.9	4.58	9.16	53.67	2.48	4.96														
CO <sub>2</sub>	3.2	.26	11.35	10.81	.50	21.96														
N <sub>2</sub>	.5	.04	1.12	.62	.03	.81														
CH <sub>4</sub>	9.4	.76	12.10	13.73	.63	10.14														
C <sub>2</sub> H <sub>4</sub>				.56	.03	.73														
C <sub>2</sub> H <sub>6</sub>	.3	.02	.72	.39	.02	.54														
C <sub>3</sub> H <sub>6</sub>																				
C <sub>3</sub> H <sub>8</sub>				.33	.02	.66														
C <sub>4</sub> H <sub>8</sub>				.33	.02	.84														
C <sub>4</sub> H <sub>10</sub>																				
C <sub>5</sub> H <sub>10</sub>				.33	.02	1.05														
C <sub>6</sub> H <sub>12</sub>																				
OIL																				
WATER																				
TOTAL	8.05	101.37		4.62	66.55															
H <sub>2</sub> +CO	6.97																			
H <sub>2</sub> /CO																				

ULTIMATE YIELDS						WEIGHT BALANCE		EFFLUENT RATIOS		CONTRACTION:	
%	CO Fed	#/hr	H <sub>2</sub> / CO		H <sub>2</sub> / CO		Wet Gas	Oil	H <sub>2</sub> /H <sub>2</sub> O	CO <sub>2</sub> /CO	CO Conversion:
			#/MCF	g/M3	Gal/hr	Gal/MCF					
			NO YIELD				NO WEIGHT BALANCE				

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M3 = 16.91 × #/MCF. cc/M3 = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 248 From 9/13/47 Hr. 0700 to 9/14/47 Hr. 0700

FLOWS		RUN CONDITIONS			DISTILLATIONS			CATALYST DATA			CATALYST ANALYSIS				
	SCFH	%	Generator Press.		A S T M	Hempel Dist.	In Reactor at Start of Period			Particle Size					
Oxygen	1260		O <sub>2</sub> Preheat, °F	201	Prod. 6450	°F % A.P.I.	Fresh Catalyst Charged			Screen					
Nat. Gas	1657		Gas Preheat, °F	761	A.P.I.	to 400	Catalyst Recharged			Frac.	M	%	M	%	
Total	2917		Reactor Press.	171	I.B.P.	400-550	Total			On 40	420+	8.4	80+	60.0	
Fresh Feed	4160		Steam Back Press.	970	5%	550+	Catalyst Taken Out			10	100	419-150	19.0	80-40	19.0
F. F. by C	4730		Temperatures, °F	10%			In Reactor at End of Period			290	150	149-105	23.0	40-20	21.0
Avg. F. F.			Heater Outlet	705	20						200	104-74	19.2	20-10	—
Wet Gas	2640		Catalyst #1	654	30	WATER				250	73-62	3.4	10-0	—	
Contraction		44.3	#2	658	40	Temp.	%	Reactor d-P, H <sub>2</sub> O	17	325	61-44	9.6			
Recycle	4980		#3	585	50	200		Pounds in Reactor	203	<325	43-0	23.4			
Bleed	228		#4	560	60	203		Density, lbs./cu. ft.	94				Density, lbs./cu. ft.	Chem. Anal.	
Total	5208		#5	533	70	208		Bed Height, Feet	3.3				Aerated	% Fe	
Total Feed	9938		Average	594	80								Settled	% C	
Recycle/F.F.	1.10		Product Separator		90								Compacted	% Oil	
Inlet Vel.	1.10 ft/sec				95			Space Vel. SCFH/lb. cat.			Sp. Grav.	4.4		Specific Surface	
Steam Flow					E.P.			Inventory Figures	16.3					m <sup>2</sup> /gm	
					Rec.			From d-P Meters	23.3						
					Res.										
					Loss										

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE									
%		Oil	Water	Product	Pour °F	SUS @ °F	IN			OUT							
							#/hr	Mol-%	SCFH	C	H	O	Mol %	SCFH	C	H	O
CO <sub>2</sub>	1.25						O <sub>2</sub>	106.40	3.325			6650	CO <sub>2</sub>	3.0	.974	.974	.748
CH <sub>4</sub>	83.57	Neut. No.					CO <sub>2</sub>	2.42	.055	.055		.110	CO	32.2	4.019	4.019	4.019
C <sub>2</sub> H <sub>6</sub>	9.10	Sap. No.					CH <sub>4</sub>	58.46	3.654	3.654	14.616		CH <sub>4</sub>	8.7	1.086	1.086	4.344
C <sub>3</sub> H <sub>8</sub>	6.08	Hydrox. No.					C <sub>2</sub> H <sub>6</sub>	11.94	.398	.796	2.388		H <sub>2</sub>	55.4	6.914		13.828
C <sub>4</sub> H <sub>10</sub>		Bromine No.					C <sub>3</sub> H <sub>8</sub>	11.70	.266	.798	2.128		N <sub>2</sub>	0.7	.087		
N <sub>2</sub>		% Fe					C <sub>4</sub> H <sub>10</sub>						H <sub>2</sub> O				.960
O <sub>2</sub>		% Alc					N <sub>2</sub>						Total				12.480
							Total	190.92	7.698	5.303	19.132	6.760					5.479
																	19.132
																	6.760

10% H<sub>2</sub>O 158.05

FRESH FEED				WET GAS				RECYCLE	COMB. FEED	EFFLUENT	NET CHANGE ON REACTION												
%	m/hr	#/hr	%	Measured	At Wt. Balance						Carbon			Hydrogen		Oxygen	Ultimate Oil		Unsat.				
				m/hr	#/hr	m/hr	#/hr	m/hr	m/hr	%	m/hr	%	m/hr	a/hr	%	a/hr	%	a/hr	#/hr	#/gal	gal/hr	%	
CO	32.2	4.02	112.53	8.67	.60	16.91																	
H <sub>2</sub>	55.4	6.91	13.83	51.78	3.61	7.21																	
CO <sub>2</sub>	3.0	.37	16.46	22.41	1.56	68.68																	
N <sub>2</sub>	.7	.09	2.44	1.25	.09	2.44																	
CH <sub>4</sub>	8.7	1.09	17.38	11.41	.80	12.72																	
C <sub>2</sub> H <sub>6</sub>				1.09	.08	2.13																	
C <sub>2</sub> H <sub>4</sub>					.53	1.11																	
C <sub>3</sub> H <sub>6</sub>					1.28	3.74																	
C <sub>3</sub> H <sub>8</sub>					.44	1.36																	
C <sub>4</sub> H <sub>8</sub>					.84	3.30																	
C <sub>4</sub> H <sub>10</sub>																							
C <sub>5</sub> H <sub>10</sub>					.31	1.54																	
C <sub>6</sub> H <sub>12</sub>																							
OIL																							
WATER																							
TOTAL		12.48	162.64		6.97	121.11																	
H <sub>2</sub> +CO		10.93																					
H <sub>2</sub> /CO																							

ULTIMATE YIELDS						WEIGHT BALANCE		#/hr		EFFLUENT RATIOS		CONTRACTION:	
% CO Fed		#/hr		H <sub>2</sub> /CO		H <sub>2</sub> /CO		#/hr		#/hr		#/hr	
		#/MCF	g/M3	Gal/hr	Gal/MCF	cc/M3					H <sub>2</sub> /H <sub>2</sub> O	C <sub>0</sub> Conversion:	
C1+C2		NO YIELD					Wet Gas					H <sub>2</sub> Conversion:	
C3+							Oil	NO WEIGHT BALANCE			CO <sub>2</sub> /CO		
C4+							Water				(H <sub>2</sub> )/CO <sub>2</sub>		
Ult. Oil							Total				(H <sub>2</sub> O)/CO		
CO <sub>2</sub>													
H <sub>2</sub> O													

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M3 = 16.91 × #/MCF. cc/M3 = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 24C From 9/14/47 Hr. 0700 to 9/15/47 Hr. 0700

FLOWS		RUN CONDITIONS				DISTILLATIONS				CATALYST DATA				CATALYST ANALYSIS						
SCFH	%	Generator Press.				A S T M		Hempel Dist.		In Reactor at Start of Period		Particle Size								
Oxygen	2100	O <sub>2</sub> Preheat, °F	309	489	Prod.	640		°F	%	A.P.I.	Fresh Catalyst Charged	290	Screen		Sedimentation					
Nat. Gas	2710	Gas Preheat, °F	758	758	A.P.I.	43.4		to 400	65.0		Catalyst Recharged	199.5	Frac.	M	%	M	%			
Total	4810	Reactor Press.	304	304	I.B.P.	132		400-550	18.6		Total	489.5	On 40	420+	1.6	80+	55.0			
Fresh Feed	8450	Steam Back Press.	1000	1000	5%			550+			Catalyst Taken Out	53.5	100	419-150	18.8	80-40	16.0			
F.F. by C	8000	Temperatures, °F			10%	170					In Reactor at End of Period	436.0	150	149-105	20.2	40-20	29.0			
Avg. F.F.	8225	Heater Outlet	465	20	200								200	104-74	17.4	20-10	-			
Wet Gas	4600	Catalyst #1	700	30	218			WATER												
Contraction	43.5	#2	679	40	240			Temp.	%	Reactor d-P, H <sub>2</sub> O	75.6		250	73-62	3.0	10-0	-			
Recycle	8050	#3	608	50	260			200		Pounds in Reactor	261.0		325	61-44	7.8					
Bleed	328	#4	585	60	280			203		Density, lbs./cu. ft.	96.0		<325	43-0	31.2			Chem. Anal.		
Total	8408	#5	560	70	304			208		Bed Height, Feet	4.2							Aerated	% Fe	
Total Feed	16633	Average	626	80	330													Settled	% C	
Recycle/F.F.	1.02	Product Separator		90	362													Compacted	% Oil	
Inlet Vel.	1.08 ft/sec			95	394					Space Vel. SCFH/lb. cat.								Sp. Grav.	4.4	Specific Surface
Steam Flow	97 #/hr			E.P.	418					Inventory Figures	18.8									m <sup>2</sup> gm
				Rec.	98.0					From d-P Meters	31.4									
				Res.	0.7															
				Loss	1.3															

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE									
%		Oil	Water	Product	Pour °F	SUS @ °F	IN			OUT							
							#/hr	Mol-%	SCFH	C	H	O	Mol %	SCFH	C	H	O
CO <sub>2</sub>	2.04	Neut. No. 45.5	34.7				O <sub>2</sub>	177.31	5.541			11.082	CO <sub>2</sub>	2.2	.491	.491	.982
CH <sub>4</sub>	82.70	Sap No. 59.2	128.51				CO <sub>2</sub>	6.42	.446	.146		.292	CO	34.2	7.627	7.627	7.627
C <sub>2</sub> H <sub>6</sub>	9.36	Hydrox. No.					CH <sub>4</sub>	94.61	5.913	5.913	23.652		CH <sub>4</sub>	2.0	.446	.446	1.754
C <sub>3</sub> H <sub>8</sub>	5.89	Bromine No. 60.2					C <sub>2</sub> H <sub>6</sub>	20.07	.669	1.338	4.014		H <sub>2</sub>	60.9	13.581		27.162
C <sub>4</sub> H <sub>10</sub>		% Fe					C <sub>3</sub> H <sub>8</sub>	15.52	.421	1.263	3.368		N <sub>2</sub>	0.7	.156		
N <sub>2</sub>		% Alc	6.7				C <sub>4</sub> H <sub>10</sub>						H <sub>2</sub> O				2.088
O <sub>2</sub>							N <sub>2</sub>						Total				22.300
							Total	31693	12.690	8.660	31.034	11.374					8.564
																	31.034
																	11.374

Loss No 267.16

FRESH FEED		WET GAS				RECYCLE	COMB. FEED	EFFLUENT		NET CHANGE ON REACTION											
%	m/hr	#/hr	%	m/hr	#/hr	m/hr	m/hr	%	m/hr	%	Carbon		Hydrogen		Oxygen	Ultimate Oil		Unsat.			
				Measured	At Wt. Balance						m/hr	a/hr	%	a/hr	%	a/hr	#/hr	#/gal	gal/hr	%	
CO	34.2	7.63	213.64	11.58	1.41	39.48	1.37	38.25	2.57	10.20	22.93	3.93	10.37	-6.26	-6.26	17.90					
H <sub>2</sub>	60.9	13.58	27.16	60.12	7.30	14.60	7.07	14.15	13.34	26.92	60.52	20.41	53.84	-6.51		-13.02					
CO <sub>2</sub>	2.2	.49	21.56	15.34	1.86	81.84	1.80	79.29	3.40	3.89	8.75	5.20	13.72	1.31	1.31	17.17					
N <sub>2</sub>	.7	.15	4.20	1.97	.24	66.72	.23	65.52	.44	.59	1.33	.67	1.77	- .08			2.62				
CH <sub>4</sub>	2.0	.45	7.20	6.81	.83	13.28	.80	12.86	1.51	1.96	4.41	2.31	6.09	.35	.35	4.59	1.40				
C <sub>2</sub> H <sub>6</sub>				1.05	.13	3.64	.13	3.53	.23	.23	.52	.36	.95	.13	.26	3.41	.52			66.04	
C <sub>3</sub> H <sub>8</sub>				.54	.07	2.10	.07	2.04	.12	.12	.27	.19	.50	.07	.14	1.83	.42				
C <sub>4</sub> H <sub>10</sub>				.98	.12	5.04	.12	4.87	.22	.22	.29	.34	.90	.12	.36	4.72	.72	4.38	6.25	.70	72.26
C <sub>5</sub> H <sub>12</sub>				.36	.05	2.20	.05	2.11	.08	.08	.18	.13	.34	.05	.15	1.97	.40				
C <sub>6</sub> H <sub>14</sub>				.76	.09	5.04	.09	4.87	.17	.17	.38	.26	.69	.09	.36	4.72	.72	4.63	6.1	.76	85.39
C <sub>7</sub> H <sub>16</sub>				.13	.02	1.16	.02	1.10	.03	.03	.07	.05	.13	.02	.08	1.05	.20	1.10	4.86	.23	
C <sub>8</sub> H <sub>18</sub>				.32	.04	2.80	.04	2.73	.07	.07	.16	.11	.29	.04	.20	2.62	.40	2.73	5.4	.51	
C <sub>9</sub> H <sub>20</sub>																					
OIL								42.70				.31	.82		3.05	39.97	6.10				
WATER												3.64	9.60		2.14		3.64	42.70	6.5	6.57	
TOTAL	22.30	273.76		12.14	177.90				44.48		37.91		10.67				1.07	55.54		8.77	
H <sub>2</sub> +CO	21.21																				
H <sub>2</sub> /CO	1.78					5.16			2.64		5.19										

ULTIMATE YIELDS				WEIGHT BALANCE				EFFLUENT RATIOS		CONTRACTION:	
%	#/hr	#/MCF	g/M3	#/hr	%	#/hr	%	H <sub>2</sub> /H <sub>2</sub> O	5.61	CO Conversion:	82.10
C1+C2	9.83	11.23	1.40	23.67	Wet Gas	177.9	172.3	CO <sub>2</sub> /CO	1.32	H <sub>2</sub> Conversion:	47.9
C3+	55.05	58.38	7.26	122.77	Oil	18.3	18.3	(H <sub>2</sub> )(CO <sub>2</sub> )	7.42		
C4+	48.36	51.40	6.39	108.05	Water	83.2	85.2	(H <sub>2</sub> )(CO)			
Ult. Oil	55.54	55.54	6.91	116.85	Total	279.4	97.9	273.8			
CO <sub>2</sub>	17.17	57.73	7.18	121.41							
H <sub>2</sub> O	65.52	8.15	137.82								

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M3 = 16.91 × #/MCF. cc/M3 = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 24D From 9/15/47 Hr. 0700 to 9/16/47 Hr. 0700

FLOWS		RUN CONDITIONS		DISTILLATIONS				CATALYST DATA		CATALYST ANALYSIS						
	SCFH	%	Generator Press.	311	A S T M		Hempel Dist.		In Reactor at Start of Period		Particle Size					
Oxygen	2120		O <sub>2</sub> Preheat, °F	440	Prod.	6850	"F	%	A.P.I.	Fresh Catalyst Charged	Screen					
Nat. Gas	2640		Gas Preheat, °F	756	A.P.I.	433	to 400	700		Catalyst Recharged	73.0	Frac.	M	%	M	%
Total	4760	49.6	Reactor Press.	303	I.B.P.	138	400-550	193		Total	509.0	On 40	420+	1.2	80+	42.0
Fresh Feed	8480		Steam Back Press.	1000	5%		550+	10.7		Catalyst Taken Out	70.5	100	419-150	14.5	80-40	26.0
F.F. by C	8450		Temperatures, °F		10%	168				In Reactor at End of Period	438.5	150	149-105	13.6	40-20	31.0
Avg. F.F.	8430		Heater Outlet	858	20	196						200	104-74	16.3	20-10	1.0
Wet Gas	4300		Catalyst #1	686	30	218	WATER					250	73-62	2.2	10-0	-
Contraction		491	#2	653	40	238	Temp.	%	Reactor d-P, H <sub>2</sub> O	10.9	325	61-44	18.1			
Recycle	7600		#3	627	50	258	200		Pounds in Reactor	275.0	<325	43-0	34.1			
Bleed	322		#4	593	60	272	203		Density, lbs./cu. ft.	72.8				Density, lbs./cu. ft.		Chem. Anal.
Total	7922		#5	563	70	296	208		Bed Height, Feet	33				Aerated		% Fe
Total Feed	16370		Average	654	80	321								Settled		% C
Recycle/F.F.	1.07		Product Separator		90	352								Compacted		% Oil
Inlet Vel.	1.05 ft/sec				95	380			Space Vel. SCFH/lb. cat.					Sp. Grav.	4.3	Specific Surface
Steam Flow	122 #/hr				E.P.	403			Inventory Figures	193						m <sup>2</sup> gm
					Rec.	98.0			From d-P Meters	32.8						
					Res.	0.7										
					Loss	1.3										

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE									
	%	Oil	Water	Product	Pour °F	SUS @ °F	IN					OUT					
							#/hr	Mol-%	SCFH	C	H	O	Mol %	SEFH	C	H	O
CO <sub>2</sub>	1.31	Neut. No.	54.4	39.2			O <sub>2</sub>	179.01	5594			11188	CO <sub>2</sub>	2.1	468	468	936
CH <sub>4</sub>	83.28	Sap. No.	57.0	126.83			CO <sub>2</sub>	4.00	.091	.091		.182	CO	35.3	7872	7872	7872
C <sub>2</sub> H <sub>6</sub>	10.07	Hydrox. No.					CH <sub>4</sub>	92.83	5.801	5.801	23.204		CH <sub>4</sub>	1.2	268	268	1072
C <sub>3</sub> H <sub>8</sub>	5.34	Bromine No.	20.0				C <sub>2</sub> H <sub>6</sub>	21.03	.701	1.402	4.206		H <sub>2</sub>	61.2	13,648		27,296
C <sub>4</sub> H <sub>10</sub>		% Fe					C <sub>3</sub> H <sub>8</sub>	16.37	.372	1.116	2.976		N <sub>2</sub>	0.2	.045		
N <sub>2</sub>		% Alc	10.9				C <sub>4</sub> H <sub>10</sub>						H <sub>2</sub> O				2,018
O <sub>2</sub>							N <sub>2</sub>						Total				2,018
							Total	313.23	12,559	8,410	30,386	11,370		22,300	8,608	30,386	11,370

Loss No 267.11

	FRESH FEED		WET GAS				RECYCLE	COMB. FEED	EFFLUENT		NET CHANGE ON REACTION									
	%	m/hr	#/hr	%	Measured	At Wt. Balance			m/hr	%	m/hr	%	Carbon			Hydrogen		Oxygen	Ultimate Oil	Unsat.
CO	35.3	7.87	220.86	7.45	.846	23.69	.806	22.57	1.557	9.43	21.82	2.363	6.67	-7.06	-7.06	10.24			-7.06	
H <sub>2</sub>	61.2	13.65	27.30	57.88	6.569	13.14	6.260	12.52	12.097	25.75	59.59	18.357	51.80	-7.39					-14.78	
CO <sub>2</sub>	2.1	.47	20.68	21.51	2.441	107.40	2.326	102.34	4.496	4.97	11.50	6.922	19.53	1.86	1.86	23.63			3.72	
N <sub>2</sub>	.2	.04	1.12	.54	.061	1.71	.058	1.62	.113	.15	.35	.171	.48	.02						
CH <sub>4</sub>	1.2	.27	4.32	7.04	.799	12.78	.761	12.18	1.741	1.74	4.03	2.232	6.30	.49	.49	6.23	1.96			
C <sub>2</sub> H <sub>6</sub>				1.69	.192	5.38	.183	5.12	.353	.35	.91	.536	1.51	.18	.36	4.57	.72			68.98
C <sub>3</sub> H <sub>8</sub>				.76	.086	2.58	.082	2.46	.159	.16	.37	.241	.68	.08	.16	2.03	.48			
C <sub>4</sub> H <sub>10</sub>				1.41	.180	6.72	.152	6.38	.295	.30	.69	.447	1.26	.15	.45	5.72	.90			5.74
C <sub>5</sub> H <sub>12</sub>				.38	.043	1.89	.041	1.80	.079	.08	.19	.120	.34	.04	.12	1.52	.32			
C <sub>6</sub> H <sub>14</sub>				.84	.095	5.32	.091	5.10	.176	.18	.42	.267	.75	.09	.36	4.57	.72			4.85
C <sub>7</sub> H <sub>16</sub>				.16	.018	1.04	.017	.99	.033	.03	.07	.050	.14	.02	.08	1.02	.20			.99
C <sub>8</sub> H <sub>18</sub>				.33	.037	2.59	.035	2.45	.069	.07	.16	.104	.28	.04	.40	5.08	.40			2.45
OIL								38.92				.278	.78		2.78	35.32	5.56			3.34
WATER												3.340	9.43			3.52				1.76
TOTAL		22.30	273.78		11.35	184.24				43.21		35.428		11.52						52.95
H <sub>2</sub> +CO		21.52																		8.36
H <sub>2</sub> /CO		1.73						7.73		2.73		7.78								

	ULTIMATE YIELDS				WEIGHT BALANCE			EFFLUENT RATIOS		CONTRACTION: 51.7	
	% CO Fed	#/hr	H <sub>2</sub> /CO #/MCF	g/M <sup>3</sup>	Gal/hr	H <sub>2</sub> /CO Gal/MCF	cc/M <sup>3</sup>	Wet Gas	Oil	Water	Total
C1+C2	12.83	15.44	1.89	31.96				184.2	12.7	85.5	282.4
C3+	17.91	55.64	6.82	115.33							
C4+	10.67	47.46	5.82	98.42							
Ult. Oil		52.95	6.49	109.75	8.36	1.02	144.13				
CO <sub>2</sub>	23.63	81.66	10.00	169.10							
H <sub>2</sub> O		60.12	7.37	124.63							

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M<sup>3</sup> = 16.91 × #/MCF. cc/M<sup>3</sup> = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 24E From 9/16/47 Hr. 0700 to 9/17/47 Hr. 0200

FLOWS		RUN CONDITIONS			DISTILLATIONS			CATALYST DATA		CATALYST ANALYSIS				
SCFH	%	Generator Press.			A S T M		Hempel Dist.		In Reactor at Start of Period	Particle Size				
Oxygen	2140	O <sub>2</sub> Preheat, °F	310	441	Prod.	6850	°F	%	A.P.I.	Fresh Catalyst Charged	Screen			
Nat. Gas	2570	Gas Preheat, °F	762	762	A.P.I.	43.5	to 400	75.7		Catalyst Recharged	Frac.	M	%	Sedimentation
Total	4650	Reactor Press.	303	303	I.B.P.	126	400-550	15.7		Total	On 40	420+	1.0	80+
Fresh Feed	7450	Steam Back Press.	1050	1050	5%		550+			Catalyst Taken Out	100	419-150	9.1	80-40
F. F. by C	7800	Temperatures, °F			10%	163				In Reactor at End of Period	150	149-105	11.9	40-20
Avg. F. F.		Heater Outlet	585	585	20	186					200	104-74	16.1	20-10
Wet Gas	4050	Catalyst #1	716	716	30	210	WATER				250	73-62	4.8	10-0
Contraction		#2	715	715	40	228	Temp.	%	Reactor d-P, H <sub>2</sub> O	10.9	325	61-44	14.1	
Recycle	7500	#3	642	642	50	248	200		Pounds in Reactor	272.6	<325	43-0	48.0	
Bleed	374	#4	606	606	60	268	203		Density, lbs./cu. ft.	67.2				Chem. Anal.
Total	7834	#5	580	580	70	292	208		Bed Height, Feet	8.0				Aerated
Total Feed	15634	Average	652	652	80	312								Settled
Recycle/F.F.	1.0	Product Separator			90	348								Compacted
Inlet Vel.	1.03 ft/sec				95	378			Space Vel. SCFH/lb. cat.		Sp. Grav.	4.2		Specific Surface
Steam Flow	119 #/hr				E.P.	406			Inventory Figures	18.4				m <sup>2</sup> gm
					Rec.	96.0			From d-P Meters	286				
					Res.	0.7								
					Loss.	1.3								

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE									
%		Oil	Water	Product	Pour °F	SUS @ °F	IN			OUT							
							#/hr	Mol %	SEFH m/hr	C	H	O	Mol %	SEFH m/hr	C	H	O
CO <sub>2</sub>	8.67	Neut. No. 55.0	99.67				O <sub>2</sub>	180.67	5.646			11.282	CO <sub>2</sub>				
CH <sub>4</sub>	78.83	Sap. No. 55.8	131.32				CO <sub>2</sub>	7.79	.177	.177		.354	CO				
C <sub>2</sub> H <sub>6</sub>	9.51	Hydrox. No.					CH <sub>4</sub>	97.54	5.221	5.221	20.884		CH <sub>4</sub>				
C <sub>3</sub> H <sub>8</sub>	4.61	Bromine No.	37.14				C <sub>2</sub> H <sub>6</sub>	18.90	.630	1.260	3.780		H <sub>2</sub>				
C <sub>4</sub> H <sub>10</sub>		% Fe					C <sub>3</sub> H <sub>8</sub>	13.42	.305	.915	2.440		N <sub>2</sub>				
N <sub>2</sub>		% Alc	9.1				C <sub>4</sub> H <sub>10</sub>						H <sub>2</sub> O				
O <sub>2</sub>							N <sub>2</sub>						Total				
							Total	304.32	11.979	7.573	27.104	11.646					

FRESH FEED		WET GAS				RECYCLE	COMB. FEED	EFFLUENT	NET CHANGE ON REACTION											
%	m/hr	#/hr	%	Measured	At Wt. Balance	m/hr	m/hr	%	m/hr	%	Carbon		Hydrogen		Oxygen	Ultimate Oil		Unsat.		
				m/hr	#/hr	m/hr	m/hr	%	m/hr	%	m/hr	a/hr	%	a/hr	%	a/hr	#/hr	#/gal	gal/hr	%
CO																				
H <sub>2</sub>																				
CO <sub>2</sub>																				
N <sub>2</sub>																				
CH <sub>4</sub>																				
C <sub>2</sub> H <sub>6</sub>																				
C <sub>3</sub> H <sub>8</sub>																				
C <sub>4</sub> H <sub>10</sub>																				
C <sub>5</sub> H <sub>12</sub>																				
C <sub>6</sub> H <sub>14</sub>																				
OIL																				
WATER																				
TOTAL																				
H <sub>2</sub> +CO																				
H <sub>2</sub> /CO																				

ULTIMATE YIELDS				WEIGHT BALANCE		#/hr		EFFLUENT RATIOS		CONTRACTION:	
%	CO Fed	#/hr	H <sub>2</sub> /CO	Gal/hr	cc/M <sup>3</sup>	Gal/hr	cc/M <sup>3</sup>	H <sub>2</sub> /H <sub>2</sub> O	CO <sub>2</sub> /CO	C <sub>0</sub> Conversion:	
			#/MCF	g/M <sup>3</sup>				(H <sub>2</sub> )/(CO <sub>2</sub> )	(H <sub>2</sub> O)/(CO)	H <sub>2</sub> Conversion:	
C <sub>1</sub> +C <sub>2</sub>											
C <sub>3</sub> +											
C <sub>4</sub> +											
Un. Oil											
CO <sub>2</sub>											
H <sub>2</sub> O											

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M<sup>3</sup> = 16.91 × #/MCF. cc/M<sup>3</sup> = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 24F From 9/17/47 Hr. 0700 to 9/18/47 Hr. 0700

FLOWS		RUN CONDITIONS		DISTILLATIONS			CATALYST DATA		CATALYST ANALYSIS								
SCFH	%	Generator Press.	307	A S T M			Hempel Dist.		In Reactor at Start of Period		Particle Size						
Oxygen	2090	O <sub>2</sub> Preheat, °F	490	Prod.	6450		°F	%	A.P.I.	Fresh Catalyst Charged	Screen						
Nat. Gas	2510	Gas Preheat, °F	773	A.P.I.	45.9		to 400	810		Catalyst Recharged	Frac.	M	%	M	%		
Total	4600	Reactor Press.	301	I.B.P.	184		400-550	147		Total	424.5	On 40	420+	0.4	80+	33.0	
Fresh Feed	7000	Steam Back Press.	1030	5%			550+			Catalyst Taken Out	16.5	100	419-150	3.6	80-40	25.0	
F.F. by C	7800	Temperatures, °F		10%	154					In Reactor at End of Period	408.0	150	149-105	8.4	40-20	38.0	
Avg. F.F.		Heater Outlet	841	20	174							200	104-74	18.8	20-10	3.0	
Wet Gas	3560	Catalyst #1	707	30	196		WATER					250	73-62	4.4	10-0	1.0	
Contraction		#2	703	40	218		Temp.	%		Reactor d-P, H <sub>2</sub> O	10.9	325	61-44	18.4			
Recycle	9500	#3	645	50	238		200			Pounds in Reactor	297.8	<325	43-0	46.0			
Bleed	318	#4	605	60	258		203			Density, lbs./cu. ft.	58.8					Chem. Anal.	
Total	9818	#5	576	70	280		208			Bed Height, Feet	9.5					Aerated	% Fe
Total Feed	17418	Average	655	80	308											Settled	% C
Recycle/F.F.	1.26	Product Separator		90	348											Compacted	% Oil
Inlet Vel.	1.17 ft/sec			95	384					Space Vel. SCFH/lb. cat.		Sp. Grav.	4.2			Specific Surface	
Steam Flow	103 #/HR			E.P.	408					Inventory Figures	19.1						m <sup>2</sup> gm
				Rec.	97.0					From d-P Meters	26.2						
				Res.	0.8												
				Loss	3.2												

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE									
%		Oil	Water	Product	Pour °F	SUS @ °F	IN			OUT							
							#/hr	Mol-%	SCFH	C	H	O	Mol %	SCFH	C	H	O
CO <sub>2</sub>	1.68	Neut. No.	57.0	38.64			O <sub>2</sub>	176.48	5.515			11.070	CO <sub>2</sub>	4.1	84.4	84.4	1.688
CH <sub>4</sub>	84.63	Sap. No.	38.9	132.44			CO <sub>2</sub>	4.88	1.111	1.111		.222	CO	35.6	732.6	732.6	7.326
C <sub>2</sub> H <sub>6</sub>	9.48	Hydrox. No.					CH <sub>4</sub>	89.68	5.605	5.605	22.420		CH <sub>4</sub>	0.8	1.65	1.65	.660
C <sub>3</sub> H <sub>8</sub>	4.21	Bromine No.	43.4				C <sub>2</sub> H <sub>6</sub>	18.84	.628	1.256	3.768		H <sub>2</sub>	59.1	12.163		24.326
C <sub>4</sub> H <sub>10</sub>		% Fe					C <sub>3</sub> H <sub>8</sub>	12.28	.279	.837	2.232		N <sub>2</sub>	0.4	1.082		
N <sub>2</sub>		% Alc	12.5				C <sub>4</sub> H <sub>10</sub>						H <sub>2</sub> O				3.434
O <sub>2</sub>							N <sub>2</sub>						Total				20.580
							Total	302.08	12.138	78.09	28.420	11.252					8.335

Loss to 261.80

FRESH FEED		WET GAS				RECYCLE		COMB. FEED		EFFLUENT		NET CHANGE ON REACTION											
%	m/hr	#/hr	%	Measured	At Wt. Balance	m/hr	m/hr	%	m/hr	%	Carbon		Hydrogen		Oxygen		Ultimate Oil		Unsat.				
				m/hr	#/hr	m/hr	#/hr				m/hr	a/hr	%	a/hr	%	a/hr	%	#/hr	#/gal	gal/hr	%		
CO	35.6	7.33	205.24	9.28	.871	24.39	.993	27.80	2.404	9.73	20.94	3.39	8.47	-6.34	-6.34	13.55		-6.34					
H <sub>2</sub>	59.1	12.16	24.32	49.96	4.691	9.38	5.348	10.70	12.945	25.11	54.03	18.30	45.74	-6.81			-13.62						
CO <sub>2</sub>	4.1	.84	36.96	21.89	2.055	90.42	2.343	103.09	5.672	6.51	14.01	8.01	20.02	1.50	1.50	20.45		3.00					
N <sub>2</sub>	.4	.08	2.24	.94	.088	2.46	1.100	2.80	.244	.32	.69	.34	.85	-.02									
CH <sub>4</sub>	.5	.10	1.60	9.97	.936	14.98	1.067	17.07	2.583	2.68	5.77	3.65	9.12	.97	.97	13.2	3.98					39.02	
C <sub>2</sub> H <sub>6</sub>	.3	.06	1.68	2.17	.204	5.71	.233	6.52	.562	.62	1.33	.79	1.97	.17	.34	4.63	.68						
C <sub>3</sub> H <sub>8</sub>				1.28	.120	3.60	.137	4.11	.332	.33	.71	.47	1.17	.14	.28	3.82	.84						
C <sub>4</sub> H <sub>10</sub>				2.00	.188	7.90	.214	8.99	.518	.52	1.12	.73	1.82	.21	.63	8.59	1.26			8.09	6.25	1.29	27.85
C <sub>5</sub> H <sub>12</sub>				.44	.041	1.80	1.047	2.07	.114	.11	.24	.16	.40	.05	.15	2.04	.40						
C <sub>6</sub> H <sub>14</sub>				1.14	.107	5.99	.122	6.83	.295	.30	.65	.42	1.05	.12	.48	6.54	.96			6.49	6.1	1.06	34.57
C <sub>7</sub> H <sub>16</sub>				.28	.026	1.51	.030	1.74	.073	.07	.15	.10	.25	.03	.12	1.64	.30			1.74	4.86	.36	
C <sub>8</sub> H <sub>18</sub>				.53	.050	3.50	.057	3.99	.137	.14	.30	.20	.50	.06	.30	4.09	.60			3.99	5.4	.74	
C <sub>9</sub> H <sub>20</sub>				.11	.010	.86	.011	.95	.029	.03	.06	.04	.10	.01	.06	.82	.12			.95			
OIL								21.14							.51	20.58	1.02			21.14	6.5	3.25	
WATER											3.34	8.35				3.56				3.34			
TOTAL		20.58	272.04			9.39	172.50				46.47	40.09				9.91				1.78	42.40	6.70	
H <sub>2</sub> +CO		19.49																					
H <sub>2</sub> /CO		1.66					8.40				2.58	5.40											

ULTIMATE YIELDS				WEIGHT BALANCE				EFFLUENT RATIOS		CONTRACTION: 48.2	
%	#/hr	H <sub>2</sub> /CO	g/M <sup>3</sup>	Wet Gas	#/hr	%	#/hr	H <sub>2</sub> /H <sub>2</sub> O	5.48	CO Conversion:	86.45
CO Fed	#/hr	#/MCF	g/M <sup>3</sup>	Oil				CO <sub>2</sub> /CO	2.36	H <sub>2</sub> Conversion:	56.0
C1+C2	21.67	24.42	3.30	55.80				(H <sub>2</sub> )/CO <sub>2</sub>	12.95		
C3+	44.30	45.71	6.19	104.67				(H <sub>2</sub> )/(CO)			
C4+	33.67	34.65	4.69	79.31							
Ult. Oil		42.40	5.74	97.06	6.70	.907	128.16				
CO <sub>2</sub>	20.45	66.13	8.95	151.34							
H <sub>2</sub> O		60.12	8.14	137.65							

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M<sup>3</sup> = 16.91 × #/MCF. cc/M<sup>3</sup> = 141.3 × #/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 246 From 9/19/47 Hr. 0700 to 9/19/47 Hr. 0700

FLOWS		RUN CONDITIONS				DISTILLATIONS				CATALYST DATA				CATALYST ANALYSIS					
	SCFH	%	Generator Press.		A S T M	Hempel Dist.		In Reactor at Start of Period		Particle Size									
Oxygen	2040		O <sub>2</sub> Preheat, °F	307	Prod.	6420	°F	%	A.P.I.	Fresh Catalyst Charged				Screen		Sedimentation			
Nat. Gas	2390		Gas Preheat, °F	796	A.P.I.	470	to 400	82.3		Catalyst Recharged				Frac.	M	%	M	%	
Total	4430	46.1	Reactor Press.	309	I.B.P.	129	400-550	130		Total				On 40	420+	2.3	80+	32.0	
Fresh Feed	7550		Steam Back Press.	1063	5%		550+			Catalyst Taken Out				100	419-150	3.2	80-40	26.0	
F F by C	7750		Temperatures, °F		10%	154				In Reactor at End of Period				150	149-105	7.9	40-20	37.0	
Avg. F. F.			Heater Outlet	912	20	178								200	104-74	21.7	20-10	4.0	
Wet Gas	3700		Catalyst #1	705	30	198	WATER								250	73-62	5.1	10-0	1.0
Contraction		52.4	#2	702	40	218	Temp.	%	Reactor d-P, H <sub>2</sub> O				325	61-44	12.7				
Recycle	4900		#3	644	50	238	200		Pounds in Reactor				<325	43-0	48.1				
Bleed	248		#4	600	60	258	203		Density, lbs./cu. ft.				53.2	Density, lbs./cu. ft.		Chem. Anal.			
Total	10198		#5	568	70	281	208		Bed Height, Feet				8.5	Aerated		% Fe			
Total Feed	17848		Average	643	80	312					Settled				% C				
Recycle/F.F.	1.30		Product Separator		90	348					Compacted				% Oil				
Inlet Vel.	119 ft/sec				95	379	Space Vel. SCFH/lb. cat.				Sp. Grav.				4.2	Specific Surface			
Steam Flow	108 #/hr				E.P.	405	Inventory-Figures				18.3				m <sup>2</sup> gm				
					Rec.	98.5	From d-P Meters				714								
					Res.	0.8													
					Loss	0.7													

NATURAL GAS				PRODUCT INSPECTION				GENERATOR ELEMENTAL BALANCE											
	%			Oil	Water	Product	Pour °F	SUS @ °F	IN				OUT						
		Neut No							#/hr	Mol-%	SCFH	C	H	O	Mol %	SCFH	C	H	O
CO <sub>2</sub>	1.51		54.6	37.98					O <sub>2</sub>	172.26	5.383			10.766	CO <sub>2</sub>	2.2	.450	.450	.900
CH <sub>4</sub>	84.26	Sap No	62.9	128.51					CO <sub>2</sub>	4.18	.095	.095		.190	CO	35.6	7.280	7.280	7.280
C <sub>2</sub> H <sub>6</sub>	10.27	Hydrox No							CH <sub>4</sub>	85.01	5.313	5.313	21.252		CH <sub>4</sub>	0.7	.143	.143	.572
C <sub>3</sub> H <sub>8</sub>	3.96	Bromine No	47.8						C <sub>2</sub> H <sub>6</sub>	19.44	.648	1.246	3.888		H <sub>2</sub>	60.8	12.434		24.868
C <sub>4</sub> H <sub>10</sub>		% Fe							C <sub>3</sub> H <sub>8</sub>	11.00	.250	.750	2.000		N <sub>2</sub>	0.7	.143		
N <sub>2</sub>		% Alc	13.8						C <sub>4</sub> H <sub>10</sub>						H <sub>2</sub> O				1.700
O <sub>2</sub>									N <sub>2</sub>						Total				
									Total	291.89	11.689	7454	27.140	10.956		20450	7.873	27.140	10.956

Less H<sub>2</sub>O 241.92

	FRESH FEED				WET GAS				RECYCLE	COMB. FEED	EFFLUENT				NET CHANGE ON REACTION					Unsat.	
	%	m/hr	#/hr		Measured	At Wt. Balance							Carbon			Hydrogen		Oxygen	Ultimate Oil		
CO	35.6	7.28	203.84		10.17	.99	27.72	1.12	31.36	2.74	10.02	21.16	3.86	9.34	-6.16	-6.16	15.38			-6.16	
H <sub>2</sub>	60.8	12.43	24.86		54.76	5.34	10.68	6.03	12.06	14.74	27.17	57.38	20.77	50.26	-6.40			-12.80			
CO <sub>2</sub>	2.2	.45	19.80		20.46	2.00	88.00	2.26	99.44	5.51	5.96	12.59	7.76	18.78	1.81	1.81	24.86			3.62	
N <sub>2</sub>	0.7	.14	3.92		.68	.07	1.96	.08	2.24	.18	.32	.68	.26	.63	-.06						
CH <sub>4</sub>	0.7	.14	2.24		7.80	.76	12.16	.86	13.76	2.10	2.24	4.73	2.96	7.16	.72	.72	9.99	2.88			
C <sub>2</sub> H <sub>6</sub>					1.76	.17	4.76	.19	5.32	.47	.47	.99	.66	1.60	.19	.38	5.22	.76			63.31
C <sub>3</sub> H <sub>8</sub>					1.02	.10	3.00	.11	3.30	.27	.27	.57	.38	.92	.11	.22	3.02	.66			
C <sub>4</sub> H <sub>10</sub>					1.76	.17	7.14	.19	7.98	.47	.47	.99	.66	1.60	.19	.57	7.83	1.14			7.18
C <sub>5</sub> H <sub>12</sub>					.40	.04	1.76	.05	2.20	.11	.11	.23	.16	.39	.05	.15	2.06	.40			6.25
C <sub>6</sub> H <sub>14</sub>					.80	.08	4.48	.09	5.04	.22	.22	.46	.31	.75	.09	.36	4.95	.72			6.10
C <sub>7</sub> H <sub>16</sub>					.09	.01	.58	.01	.58	.02	.02	.04	.03	.07	.01	.04	.55	.10			.58
C <sub>8</sub> H <sub>18</sub>					.31	.03	2.58	.03	2.58	.08	.08	.17	.11	.27	.03	.15	2.06	.30			5.4
C <sub>9</sub> H <sub>20</sub>																					
OIL								24.64				.18	.44		1.76	24.18	3.52			24.64	6.5
WATER												2.54	6.15			2.32		2.54			
TOTAL		20.45	254.66		9.76	164.82				47.35		40.64		9.42				1.16	39.77		6.33
H <sub>2</sub> +CO		19.71								2.71		5.38									
H <sub>2</sub> /CO		1.71																			

	ULTIMATE YIELDS				WEIGHT BALANCE				EFFLUENT RATIOS		CONTRACTION: 46.1	
	% CO Fed	#/hr	H <sub>2</sub> /CO		Wet Gas	#/hr	%	#/hr	H <sub>2</sub> /H <sub>2</sub> O	8.18	CO Conversion:	84.62
C <sub>1</sub> +C <sub>2</sub>	18.13	20.14	2.70	45.66	Oil	7.9		7.9	CO <sub>2</sub> /CO	2.01	H <sub>2</sub> Conversion:	51.5
C <sub>3</sub> +	41.63	43.02	5.76	97.40	Water	61.5		61.5	(H <sub>2</sub> )/CO <sub>2</sub>	16.44		
C <sub>4</sub> +	31.74	32.84	4.40	74.40	Total	234.2	92.1	254.7	(H <sub>2</sub> )/(CO)			
Ult. Oil		39.77	5.32	89.96								
CO <sub>2</sub>	24.86	79.64	10.66	180.26								
H <sub>2</sub> O		45.72	6.12	103.49								

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M<sup>3</sup> = 16.91 × #/MCF. cc/M<sup>3</sup> = 141.3 × gal/MCF.



THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 244 From 9/19/47 Hr. 0700 to 9/20/47 Hr. 0200

FLOWS		RUN CONDITIONS			DISTILLATIONS			CATALYST DATA			CATALYST ANALYSIS							
	SCFH	%	Generator Press.	320	A S T M			Hempel Dist.			In Reactor at Start of Period			Particle Size				
Oxygen	2065		O <sub>2</sub> Preheat, °F	544	Prod.	6450	°F	%	A.P.I.	Fresh Catalyst Charged			424.4					
Nat. Gas	2570		Gas Preheat, °F	822	A.P.I.	44.0	to 400	783		Catalyst Recharged			153					
Total	4595	45.0	Reactor Press.	301	I.B.P.	128	400-550	186		Total			622.74					
Fresh Feed	7400		Steam Back Press.	1135	5%		550+			Catalyst Taken Out			147					
F. F. by C	8180		Temperatures, °F		10%	158				In Reactor at End of Period			475.74					
Avg. F. F.			Heater Outlet	938	20	160												
Wet Gas	3620		Catalyst #1	697	30	208	WATER											
Contraction		55.8	#2	698	40	222	Temp.	%	Reactor d-P, H <sub>2</sub> O			25						
Recycle	10300		#3	649	50	238	200		Pounds in Reactor			255						
Bleed	327		#4	603	60	258	203		Density, lbs./cu. ft.			49						
Total	10627		#5	574	70	278	208		Bed Height, Feet			11.0						
Total Feed	18807		Average	644	80	302												
Recycle/F.F.	130		Product Separator		90	338												
Inlet Vel.	130 ft/sec				95	368			Space Vel. SCFH/lb. cat.			Sp. Grav. 4.2						
Steam Flow					E.P.	385			Inventory Figures			17.2						
					Rec.	985			From d-P Meters			32.0						
					Res.	0.5												
					Loss.	1.0												

NATURAL GAS		PRODUCT INSPECTION						GENERATOR ELEMENTAL BALANCE								
	%	Oil	Water	Product	Pour °F	SUS @ °F	IN			OUT						
							mol. %	SCFH	C	H	O	Mol %	SCFH	C	H	O
CO <sub>2</sub>	180	Neut. No. 653	39.67				O <sub>2</sub>	174.37	5.449		10.888	CO <sub>2</sub>	4.4	850	850	15.00
CH <sub>4</sub>	82.23	Sap. No. 73.9	129.64				CO	5.28	.120	.120	.240	CO	36.5	7.877	7.877	7.877
C <sub>2</sub> H <sub>6</sub>	10.43	Hydrox. No.					CH <sub>4</sub>	88.88	5.555	5.555	22.220	CH <sub>4</sub>	1.8	388	388	1.552
C <sub>3</sub> H <sub>8</sub>	4.36	Bromine No. 243					C <sub>2</sub> H <sub>6</sub>	20.88	6.96	1.392	4.176	H <sub>2</sub>	57.0	12.301		24.602
C <sub>4</sub> H <sub>10</sub>		% Fe					C <sub>3</sub> H <sub>8</sub>	13.38	3.04	.912	2.432	N <sub>2</sub>	0.3	.065		
N <sub>2</sub>		% Alc	12.5				C <sub>4</sub> H <sub>10</sub>					H <sub>2</sub> O				2.674
O <sub>2</sub>							N <sub>2</sub>					Total				21.580
							Total	302.79	12.124	7.979	28.828					11.138

less H<sub>2</sub>O 278.29

FRESH FEED		WET GAS				RECYCLE	COMB. FEED	EFFLUENT	NET CHANGE ON REACTION												
%	m/hr	#/hr	%	Measured	At Wt. Balance	m/hr	m/hr	%	m/hr	%	Carbon			Hydrogen		Oxygen	Ultimate Oil		Unsat.		
				m/hr	#/hr	m/hr	m/hr	%	m/hr	%	m/hr	a/hr	%	a/hr	%	a/hr	#/hr	#/gal	gal/hr	%	
CO	36.5	7.88	220.64	9.54	.91	25.48	1.26	35.28	2.68	10.56	21.28	3.94	8.86	-6.62	-6.62	15.99					
H <sub>2</sub>	57.0	12.30	24.60	50.58	4.83	9.66	6.67	13.34	14.18	26.48	53.37	20.85	46.90	-5.63		-11.26					
CO <sub>2</sub>	4.4	.95	41.80	20.26	1.93	84.92	2.66	117.04	5.68	6.63	13.36	8.34	18.76	1.71	1.71	21.63				3.42	
N <sub>2</sub>	0.3	.06	1.68	2.75	.26	7.28	.36	10.08	.77	.83	1.67	1.13	2.54	.30							
CH <sub>4</sub>	1.8	.39	6.24	10.49	1.00	16.00	1.38	22.08	2.94	3.33	6.71	4.32	9.72	.99	.99	12.52	3.96				
C <sub>2</sub> H <sub>6</sub>				1.64	.16	4.48	.22	6.16	.46	.46	.93	.68	1.53	.22	.44	5.57	.88			58.78	
C <sub>3</sub> H <sub>8</sub>				1.15	.11	3.30	.15	4.50	.32	.32	.64	.47	1.06	.15	.30	3.80	.90				
C <sub>4</sub> H <sub>10</sub>				1.58	.15	6.30	.21	8.82	.44	.44	.89	.65	1.46	.21	.63	7.97	1.26	7.94	6.25	1.27	75.24
C <sub>2</sub> H <sub>4</sub>				.52	.05	2.20	.07	3.08	.15	.15	.30	.22	.49	.07	.21	2.66	.56				
C <sub>4</sub> H <sub>8</sub>				.74	.07	3.92	.10	5.60	.21	.21	.42	.31	.70	.10	.40	5.06	.80	5.32	6.1	.87	81.32
C <sub>5</sub> H <sub>10</sub>				.17	.02	1.16	.03	7.54	.05	.05	.10	.08	.18	.03	.12	1.52	.30	7.54	4.86	1.55	
C <sub>6</sub> H <sub>12</sub>				.43	.04	2.80	.06	4.20	.12	.12	.24	.18	.40	.06	.30	3.80	.60	4.20	5.4	.78	
C <sub>6</sub> H <sub>12</sub>				.15	.01	.86	.01	.86	.04	.04	.08	.05	.11	.01	.06	.76	.12	.86			
OIL							20.44					.15	.34	1.46	18.47	2.92		20.44	6.5	3.14	
WATER												3.20	7.20			-8.96					
TOTAL		21.58	294.96		9.55	168.36			49.62		44.57			9.00			-4.48	46.30		7.61	
H <sub>2</sub> +CO		20.18																			
H <sub>2</sub> /CO		1.56					5.29				2.51		5.29								

ULTIMATE YIELDS				WEIGHT BALANCE		#/hr		EFFLUENT RATIOS		CONTRACTION: 41.7	
% CO Fed	#/hr	#/MCF	g/M3	Gal/hr	Gal/MCF	cc/M3	Wet Gas	Oil	Water	H <sub>2</sub> /H <sub>2</sub> O	CO Conversion: 84.01
C1+C2	21.89	26.50	3.46	58.51			168.4	12.0	51.5	6.52	H <sub>2</sub> Conversion: 45.8
C3+	40.24	50.54	6.61	111.78						2.12	
C4+	29.61	38.64	5.05	85.40						13.79	
Ult. Oil	46.30	6.05	102.31	7.61	0.995	140.59	231.9	78.6	294.9		
CO <sub>2</sub>	21.65	75.24	9.84	166.39							
H <sub>2</sub> O	57.60	7.53	127.33								

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M3 = 16.91 x #/MCF. cc/M3 = 141.3 x gal/MCF.



THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 24E From 9/20/47 Hr. 0700 to 9/21/47 Hr. 0700

FLOWS		RUN CONDITIONS			DISTILLATIONS			CATALYST DATA			CATALYST ANALYSIS					
	SCFH	%	Generator Press		A S T M			Hempel Dist.			Particle Size					
Oxygen	1698		O <sub>2</sub> Preheat, °F	331	Prod.	6250	"F	%	A.P.I.	Fresh Catalyst Charged	475.76					
Nat. Gas	2270		Gas Preheat, °F	859	A.P.I.	45.7	to 400	74.0		Catalyst Recharged	64	Frac.	420+	Screen	Sedimentation	
Total	3968	42.8	Reactor Press	301	I.B.P.	122	400-550	15.3		Total	539.76	On 40	M	%	M	%
Fresh Feed	4080		Steam Back Press	1000			550+			Catalyst Taken Out	70.14	100	419-150	3.0	80-40	29.0
F.F. by C	6920		Temperatures, °F		10%	152				In Reactor at End of Period	469.14	150	149-105	4.4	40-20	32.0
Avg F.F.			Heater Outlet	858	20	178						200	104-74	22.0	20-10	4.0
Wet Gas	3490		Catalyst #1	621	30	205	WATER					250	73-62	6.4	10-0	6.0
Contraction		49.6	#2	627	40	220	Temp	%	Reactor d-P, H <sub>2</sub> O	30	325	61-44	8.4			
Recycle	9630		#3	604	50	241	200		Pounds in Reactor	294	<325	43-0	55.6			
Bleed	331		#4	584	60	260	203		Density, lbs./cu. ft.	37				Density, lbs./cu. ft.		Chem. Anal.
Total	9961		#5	548	70	280	208		Bed Height, Feet	190				Aerated		% Fe
Total Feed	16881		Average	596	80	320								Settled		% C
Recycle/F.F.	1.44		Product Separator		90	344								Compacted		% Oil
Inlet Vel.	1.07 ft/sec				95	374			Space Vel. SCFH/lb. cat.			Sp. Grav.	4.0			Specific Surface
Steam Flow					E.P.	396			Inventory Figures	14.75						m <sup>2</sup> gm
					Rec	980			From d-P Meters	22.75						
					Res.											
					Loss											

NATURAL GAS		PRODUCT INSPECTION						IN						OUT					
	%	Oil	Water	Product	Pour °F	SUS @ °F		#/lb. Mat %	SEFH m/hr	C	H	O		Mol %	SEFH m/hr	C	H	O	
CO <sub>2</sub>	6.24	Neut No	6197	50.08				O <sub>2</sub>	143.36	4.480		8.960	CO <sub>2</sub>	1.9	347	347		694	
CH <sub>4</sub>	78.86	Sap No	5780	170.7				CO <sub>2</sub>	16.46	374	374	748	CO	36.8	6720	6720		6720	
C <sub>2</sub> H <sub>6</sub>	9.95	Hydrox No						CH <sub>4</sub>	75.57	4723	4723	18.892	CH <sub>4</sub>	4.2	767	767		3068	
C <sub>3</sub> H <sub>8</sub>	4.95	Bromine No	27.1					C <sub>2</sub> H <sub>6</sub>	17.88	596	1.192	3.576	H <sub>2</sub>	57.1	10,426			20,852	
C <sub>4</sub> H <sub>10</sub>		% Fe						C <sub>3</sub> H <sub>8</sub>	13.02	296	868	2.368	N <sub>2</sub>						
N <sub>2</sub>		% Alc	18.2					C <sub>4</sub> H <sub>10</sub>					H <sub>2</sub> O					916	
O <sub>2</sub>								N <sub>2</sub>					Total					18,260	
								Total	266.29	10,469	7,177	24,836	9,708					27,844	

Loss H<sub>2</sub>O 225.00

	FRESH FEED			WET GAS				RECYCLE	COMB. FEED	EFFLUENT			NET CHANGE ON REACTION										
	%	m/hr	#/hr	%	Measured	At Wt. Balance	m/hr			m/hr	%	m/hr	%	Carbon	Hydrogen	Oxygen	Ultimate Oil	Unsat.					
CO	36.8	6.72	188.16	13.82	1.27	35.56	1.64	45.92	3.63	10.35	23.24	5.27	12.75	-5.08	-5.08	24.40							
H <sub>2</sub>	57.1	10.42	20.86	52.33	4.82	9.64	6.22	12.44	13.75	24.18	54.30	19.97	48.33	-4.21									
CO <sub>2</sub>	1.9	.35	15.40	16.32	1.50	66.00	1.94	85.36	4.29	4.64	10.42	6.23	15.08	1.59	1.59	23.37				3.18			
N <sub>2</sub>				2.33	.21	5.88	.27	7.56	.61	.61	1.37	.88	2.13	-.27									
CH <sub>4</sub>	3.7	.68	10.88	9.90	.91	14.56	1.17	18.72	2.60	3.28	7.37	3.77	9.12	.39	.39	5.73	1.56						
C <sub>2</sub> H <sub>4</sub>				1.64	.15	4.20	.19	5.32	.43	.43	.97	.62	1.50	.19	.38	5.58	.76			66.94			
C <sub>2</sub> H <sub>6</sub>	0.5	.09	2.70	.81	.07	2.10	.09	2.70	.21	.30	.67	.30	.73										
C <sub>3</sub> H <sub>8</sub>				1.18	.11	4.62	.14	5.88	.31	.31	.70	.45	1.09	.14	.42	6.17	.84			5.29	6.25	.85	69.82
C <sub>3</sub> H <sub>6</sub>				.51	.05	2.20	.06	2.64	.13	.13	.29	.19	.46	.06	.18	2.65	.48						
C <sub>4</sub> H <sub>8</sub>				.32	.03	1.68	.04	2.24	.08	.08	.18	.12	.29	.04	.16	2.35	.32			2.13	6.1	.35	66.67
C <sub>4</sub> H <sub>10</sub>				.18	.01	.58	.01	.58	.04	.04	.09	.05	.12	.01	.04	.58	.10			.58	4.86	.12	
C <sub>5</sub> H <sub>10</sub>				.48	.04	2.80	.05	3.50	.13	.13	.29	.18	.44	.05	.25	3.68	.50			3.50	5.4	.65	
C <sub>6</sub> H <sub>12</sub>				.19	.02	1.72	.03	2.58	.05	.05	.11	.08	.19	.03	.18	2.65	.36			2.58			
OIL								20.86				.15	.36		1.49	21.90	2.98			20.86	6.5	3.21	
WATER												1.90	4.60			.52				1.90			
TOTAL		18.26	238.00		9.21	151.34				44.53		40.16		7.06						.26	34.94		5.18
H <sub>2</sub> +CO		17.35																					
H <sub>2</sub> /CO		1.55				3.79				2.34		3.79											

	ULTIMATE YIELDS				WEIGHT BALANCE				EFFLUENT RATIOS		CONTRACTION: 38.7			
	% CO Fed	#/hr	H <sub>2</sub> /CO #/MCF	g/M <sup>3</sup>	Gal/hr	H <sub>2</sub> /CO Gal/MCF	cc/M <sup>3</sup>	Wet Gas	#/hr	%	#/hr	H <sub>2</sub> /H <sub>2</sub> O	10.51	C <sub>0</sub> Conversion: 75.60
C1+C2	11.32	13.16	2.02	34.16				Oil	8.8			CO <sub>2</sub> /CO	1.18	H <sub>2</sub> Conversion: 40.4
C3+	39.99	38.28	5.89	99.60				Water	35.6			(H <sub>2</sub> ) (CO <sub>2</sub> )	12.44	
C4+	31.17	29.76	4.58	77.45				Total	195.7	81.9	238.0			
Ult. Oil		34.94	5.38	90.88	5.18	0.796	112.47							
CO <sub>2</sub>	23.37	69.96	10.76	181.95										
H <sub>2</sub> O		34.20	5.26	88.95										

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C. and 14.7 psig. g/M<sup>3</sup> = 16.91 × #/MCF. cc/M<sup>3</sup> = 141.3 × gal/MCF.

THE TEXAS COMPANY — MONTEBELLO LABORATORY

DATA SUMMARY SHEET

Synthesis Run Number 247 From 9/21/47 Hr. 0700 to 9/22/47 Hr. 0700

FLOWS		RUN CONDITIONS			DISTILLATIONS			CATALYST DATA			CATALYST ANALYSIS			
SCFH	%	Generator Press.		A S T M	Hempel Dist.		In Reactor at Start of Period		Particle Size					
Oxygen	2060	O <sub>2</sub> Preheat, °F	324	Prod. 6050	°F	%	A.P.I.	Fresh Catalyst Charged	4694					
Nat. Gas	2650	Gas Preheat, °F	536	A.P.I. 47.1	to 400	660		Catalyst Recharged	113					
Total	4710	Reactor Press.	295	I.B.P. 124	400-550	203		Total	5824					
Fresh Feed	6900	Steam Back Press	1094	5%	550+			Catalyst Taken Out	11334					
F. F. by C	8800	Temperatures, °F		10%				In Reactor at End of Period	4685					
Avg. F. F.		Heater Outlet	932	20										
Wet Gas	3320	Catalyst #1	634	30										
Contraction		#2	642	40										
Recycle	7100	#3	622	50										
Bleed	505	#4	608	60										
Total	1405	#5	574	70										
Total Feed	1405	Average	616	80										
Recycle/F.F.	.86	Product Separator		90										
Inlet Vel.	103 ft/sec			95										
Steam Flow	121 MHP			E.P. 395										
				Rec. 970										
				Res. 1.0										
				Loss 2.0										

NATURAL GAS										PRODUCT INSPECTION										GENERATOR ELEMENTAL BALANCE									
		Oil		Water		Product		Pour °F		SUS @ °F		IN		OUT		Mol %		SCFH		C		H		O					
CO <sub>2</sub>	1.55	Neut. No.	60.8	49.2								O <sub>2</sub>	173.82	5.435											CO <sub>2</sub>	2.8	650	650	1300
CH <sub>4</sub>	81.95	Sap. No.	65.4	127.64								CO	4.75	108	108										CO	37.2	8638	8638	8638
C <sub>2</sub> H <sub>6</sub>	11.06	Hydrox. No.										CH <sub>4</sub>	91.68	5.730	5.730	22.920									CH <sub>4</sub>	2.7	627	627	2508
C <sub>3</sub> H <sub>8</sub>	5.44	Bromine No.	35.65									C <sub>2</sub> H <sub>6</sub>	23.19	.773	1.546	4.638									H <sub>2</sub>	56.5	13,119		26,238
C <sub>4</sub> H <sub>10</sub>		% Fe										C <sub>3</sub> H <sub>8</sub>	16.72	.380	1.140	3.040									N <sub>2</sub>	2.8	186		
N <sub>2</sub>		% Alc	10.2									C <sub>4</sub> H <sub>10</sub>												H <sub>2</sub> O				1,952	
O <sub>2</sub>												N <sub>2</sub>												Total				33,220	
												Total	310.26	12.426	8.524	30.588	11.086												9,915

1254.0 289.60

	FRESH FEED		WET GAS				RECYCLE	COMB. FEED	EFFLUENT		NET CHANGE ON REACTION																				
	%	m/hr	Measured	At Wt. Balance	m/hr	m/hr			m/hr	%	m/hr	%	Carbon			Hydrogen		Oxygen	Ultimate Oil		Unsat.										
CO	37.2	0.64	241.92	6.85	.60	16.80	.02	22.96	1.34	9.98	23.34	2.16	6.07	-7.82	-7.82	9.49			-7.82												
H <sub>2</sub>	56.5	13.12	28.24	48.13	4.22	8.44	5.78	11.56	9.40	22.52	52.67	15.18	42.66	-7.34																	
CO <sub>2</sub>	2.8	.65	28.60	21.92	1.92	84.48	2.63	115.72	4.28	4.93	11.53	6.91	19.42	1.98	1.98	22.81															
N <sub>2</sub>	0.8	.19	5.32	4.16	.36	10.08	.49	13.72	.81	1.00	2.34	1.30	3.65	-.30																	
CH <sub>4</sub>	2.7	.63	10.08	11.74	1.03	16.48	1.41	22.56	2.29	2.92	6.83	3.70	10.40	.78	.78	8.99	3.12														
C <sub>2</sub> H <sub>6</sub>				1.92	.17	4.76	.23	6.44	.38	.38	.89	.61	1.71	.23	.46	5.30	.92														65.31
C <sub>2</sub> H <sub>4</sub>				1.02	.09	2.70	.12	3.60	.20	.20	.47	.32	.90	.12	.24	2.76	.72														
C <sub>3</sub> H <sub>8</sub>				1.75	.15	6.30	.21	8.82	.34	.34	.80	.55	1.55	.21	.63	7.26	1.26														7.94
C <sub>3</sub> H <sub>6</sub>				.53	.05	2.20	.07	3.08	.10	.10	.23	.17	.48	.07	.21	2.42	.56														
C <sub>4</sub> H <sub>8</sub>				1.06	.09	5.04	.12	6.72	.21	.21	.49	.33	.93	.12	.48	5.53	.96														6.38
C <sub>4</sub> H <sub>10</sub>				.12	.01	.58	.01	.58	.02	.02	.05	.03	.08	.01	.04	.46	.10														.58
C <sub>5</sub> H <sub>10</sub>				.57	.05	3.50	.07	4.90	.11	.11	.26	.18	.51	.07	.35	4.03	.70														4.90
C <sub>6</sub> H <sub>12</sub>				.24	.02	1.72	.03	2.58	.05	.05	.12	.08	.22	.03	.18	2.07	.36														2.58
OIL								34.58				.25	.70		2.47	28.45	5.98														34.58
WATER												3.86	10.85																		3.86
TOTAL			23.22	312.16		8.76	163.08					42.76	55.65																		0.00
H <sub>2</sub> +CO			21.76																												
H <sub>2</sub> /CO			1.52					7.05				2.26	7.03																		

ULTIMATE YIELDS						WEIGHT BALANCE		EFFLUENT RATIOS		CONTRACTION: 51.0	
% CO Fed	#/hr	H <sub>2</sub> /CO #/MCF	g/M3	Gal/hr	H <sub>2</sub> /CO Gal/MCF	cc/M3	#/hr	%	#/hr	H <sub>2</sub> /H <sub>2</sub> O	C <sub>2</sub> /C <sub>1</sub>
C1+C2	17.5	22.52	2.73	46.16			Wet Gas	163.1	224.0	3.93	3.20
C3+	50.22	61.26	7.43	125.64			Oil	27.6	27.6		
C4+	40.54	49.36	5.98	101.12			Water	61.2	61.2		
Ult. Oil	56.96	6.90	116.67	8.67	1.05	148.37	Total	251.9	80.4	312.2	
CO <sub>2</sub>	22.81	87.12	10.56	178.57							
H <sub>2</sub> O	69.48	8.42	142.38								

Yield Calculations assume "oil" is CH<sub>2</sub>, and is found by difference on Carbon, and H<sub>2</sub>O by difference on Hydrogen. "Oil" figures therefore include hydrocarbon fraction of oxygenated compounds. Standard cubic feet measured at 60 F and 14.7 psig. Cubic Meters measured at 0 C and 14.7 psig. g/M3 = 16.91 x #/MCF. cc/M3 = 141.3 x gal/MCF.

