RUN NUMBER 3 B

MONTEBELLO SYNTHESIS UNIT
CALCULATION OF YIELDS

	FRESH FEED %	FRESH FEED m/hr	WET GAS %	WET GAS m/hr	CHANGE mols	C	H	O	POLY YIELD	MW	#/gal	#/gal	gal/hr
CO	34.0	6.010	7.3	0.645	-5.365	-5.365		-5.365					
H_2	58.4	10.325	52.1	4.600	-5.725		-11.450						
CO_2	2.0	0.354	25.3	2.240	1.886	1.886		3.772					
N_2	3.3	0.584	1.3	0.115									
CH_4	2.3	0.407	8.5	0.753	0.346	0.346	1.384						
C_2H_4			1.3	0.115	0.115	0.230	0.460						
C_2H_6			0.4	0.035	0.035	0.070	0.210						
C_3H_6			0.7	0.062	0.062	0.186	0.372		0.90 x	42	2.34	6.25	0.375
C_3H_8			0.2	0.018	0.018	0.054	0.144						
C_4H_8			1.4	0.124	0.124	0.496	0.992		0.95 x	56	6.60	6.1	1.082
C_4H_{10}			0.4	0.035	0.035	0.140	0.350			58	2.03	4.86	0.418
C_5H_{10}			0.8	0.071	0.071	0.355	0.710			70	4.96	5.4	0.920
C_5H_{12}			0.3	0.027	0.027	0.135	0.324			72	1.94	5.25	0.370
OIL						1.467*	2.934			14	20.52	6.5	3.16
WATER							3.570*	1.593*					
							vs	1.785 from H_2					
TOTAL		17.68		8.84							38.39	6.1	6.325

Contraction: 17.68 - 8.84 / 17.68 = 50.0 %
Conversion of CO: 5.365 / 6.01 = 89.3 %
Conversion of H_2: 5.725 /10.325 = 55.4 %

CO Converted to:

	mols/hr	%	%
CO_2	1.886	31.4	35.2
C_1 & C_2	0.646	10.8	12.1
C_3 & Heavier	2.833	47.1	52.7
Unconverted	0.645	10.7	
	6.010		

Oil Yields: 3.16 / 2.14 = 1.48 gal."recovered" oil per MCF natural gas fed to generator
6.325/ 2.14 = 2.96 gal. ultimate oil per MCF natural gas fed to generator
= 70.5 bbl. ultimate oil per MMCF natural gas fed to generator

RUN NUMBER 4 A

MONTEBELLO SYNTHESIS UNIT
CALCULATION OF YIELDS

	FRESH FEED %	FRESH FEED m/hr	WET GAS %	WET GAS m/hr	CHANGE mols	C	H	O	POLY YIELD	MW	#/hr	#/gal	gal/hr
CO	34.1	6.355	7.7	0.666	-5.689	-5.689		-5.689					
H_2	58.5	10.898	52.35	4.534	-6.364		-12.728						
CO_2	2.2	0.410	23.75	2.055	1.645	1.645		3.290					
N_2	1.6	0.298	1.75	0.152									
CH_4	3.6	0.671	9.3	0.806	0.135	0.135	0.540						
C_2H_4			1.3	0.113	0.113	0.266	0.452						
C_2H_6			0.45	0.039	0.039	0.078	0.234						
C_3H_6			1.15	0.100	0.100	0.300	0.600		0.90 x	42	3.78	6.25	0.605
C_3H_8			0.15	0.013	0.013	0.039	0.104						
C_4H_8			1.05	0.091	0.091	0.364	0.728		0.95 x	56	4.84	6.1	0.794
C_4H_{10}			0.35	0.030	0.030	0.120	0.300			58	1.74	4.86	0.358
C_5H_{10}			0.7	0.061	0.061	0.305	0.610			70	4.27	5.3	0.806
OIL						2.477*	4.954			14	34.62	6.5	5.33
WATER							4.206*	2.399*					
								vs 2.103 from H_2					
TOTAL		18.632		8.66							49.25		7.893

Contraction: 18.632 - 8.66 / 18.632 = 53.5 %
Conversion of CO: 5.689 / 6.355 = 89.5 %
Conversion of H_2: 6.364 / 10.898 = 58.5 %

CO Converted to:

	mols/hr	%	%
CO_2	1.645	25.9	29.0
C_1 & C_2	0.439	6.9	7.7
C_3 & Heavier	3.605	56.7	63.3
Unconverted	0.666	10.5	
	6.355		

Oil Yields: 5.33 / 2.35 = 2.26 gal."recovered"oil per MCF natural gas fed to reactor
7.893/2.35 = 3.36 gal. ultimate oil per MCF natural gas fed to reactor
= 80.0 bbl. ultimate oil per MMCF natural gas fed to reactor

RUNNNUMBER 4 B

MONTEBELLO SYNTHESIS UNIT
CALCUALTION OF YIELDS

	FRESH FEED %	FRESH FEED m/hr	WET GAS %	WET GAS m/hr	CHANGE mols	C	H	O	POLY YIELD	MW	#/hr	#/gal	gal/hr
CO	34.4	6.485	8.0	0.665	-5.820	-5.820		-5.820					
H_2	59.0	11.121	52.0	4.322	-6.799		-13.598						
CO_2	2.4	0.452	24.2	2.010	1.558	1.558		3.116					
N_2	1.5	0.283	1.4	0.116									
CH_4	2.7	0.509	9.7	0.805	0.296	0.296	1.184						
C_2H_4			1.2	0.100	0.100	0.200	0.400						
C_2H_6			0.4	0.033	0.033	0.066	0.198						
C_3H_6			1.2	0.100	0.100	0.300	0.600		0.90 x 42		3.78	6.25	0.605
C_3H_8			0.2	0.017	00017	0.051	0.136						
C_4H_8			0.9	0.075	0.075	0.300	0.600		0.95 x 56		3.99	6.1	0.654
C_4H_{10}			0.3	0.025	0.025	0.100	0.250			58	1.45	4.86	0.298
C_5H_{10}			0.5	0.042	0.042	0.200	0.420			70	2.94	5.3	0.555
OIL						2.749*	5.498			14	38.5	6.5	5.92
WATER							4.312*	2.704*					
							vs 2.156 from H_2						
TOTAL		18.85		8.31							50.66		8.032

Contraction: 18.85 - 8.31 / 18.85 = 56.0 %
Conversion of CO: 5.820 / 6.485 = 89.7 %
Conversion of H_2: 6.799 /11.121 = 61.0 %

CO Converted to:

	mols/hr	%	%
CO_2	1.558	24.0	26.8
C_1 & C_2	0.562	8.7	9.6
C_3 & Heavier	3.700	57.0	63.6
Unconverted	0.665	10.3	
	6.485		

Oil Yields: 5.92 / 2.35 = 2.52 gal."recovered" oil per MCF natural gas fed to reactor
8.03 / 2.35 = 3.42 gal. ultimate oil per MCF natural gas fed to reactor
= 81.4 bbl. ultimate oil per MMCF natural gas fed to reactor

RUN NUMBER 5 A

MONTEBELLO SYNTHESIS UNIT
CALCULATION OF YIELDS

	FRESH FEED %	FRESH FEED m/hr	WET GAS %	WET GAS m/hr	CHANCE mols	C	H	O	POLY YIELD	MW	#/hr	#/gal	gal/hr
CO	35.0	5.485	8.56	0.400	-5.085	-5.085		-5.085					
H_2	58.1	9.110	35.03	1.636	-7.474		-14.948						
CO_2	1.9	0.298	29.66	1.385	1.087	1.087		2.174					
N_2	0.7	0.110	0.0										
CH_4	4.3	0.674	16.86	0.787	0.113	0.113	0.452						
C_2H_4			2.67	0.125	0.125	0.250	0.500						
C_2H_6			1.07	0.050	0.050	0.100	0.300						
C_3H_6			2.94	0.137	0.137	0.411	0.822		0.90 x 42		5.19	6.23	0.830
C_3H_8			0.54	0.025	0.025	0.075	0.200						
C_4H_8			1.87	0.088	0.088	0.352	0.704		0.95 x 56		4.69	6.1	0.770
C_4H_{10}			0.0										
C_5H_{10}			0.80	0.037	0.037	0.185	0.370			70	2.59	5.3	0.488
OIL						2.512*	5.024			14	35.20	6.5	5.420
WATER							6.576*	2.911*					
							vs.	3.288					
TOTAL		15.68		4.67							47.67		7.508

Contraction: 15.68 - 4.67 / 15.68 = 70.2 %
Conversion of CO: 5.085 / 5.485 = 92.8 %
Conversion of H_2: 7.474 / 9.110 = 82.1 %

CO Converted to:

	mols/hr	%	%
CO_2	1.087	19.8	21.4
C_1 & C_2	0.463	8.4	9.1
C_3 & Heavier	3.535	64.5	69.5
Unconverted	0.400	7.3	
	5.485	100.0	100.0

Oil Yields: 5.42 / 2.04 = 2.66 gal. "recovered" oil per MCF natural gas fed to generator
7.51 / 2.04 = 3.67 gal. ultimate oil per MCF natural gas fed to generator
= 87.5 bbl. ultimate Oil per MMCF natural gas fed to generator

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RUN NUMBER 5 B

MONTEBELLO SYNTHESIS UNIT
CALCULATION OF YIELDS

	FRESH FEED %	FRESH FEED m/hr	WET GAS %	WET GAS m/hr	CHANGE mols	C	H	O	POLY YIELD	MW	#/hr	#/gal	gal/hr
CO	35.0	5.705	5.56	0.161	-5.544	-5.544		-5.544					
H_2	58.2	9.486	38.46	1.113	-8.373		-16.746						
CO_2	1.8	0.294	23.44	0.680	0.386	0.386		0.772					
N_2	2.2	0.359	1.88	0.055									
CH_4	2.8	0.456	19.62	0.570	0.114	0.114	0.456						
C_2H_4			2.62	0.076	0.076	0.152	0.304						
C_2H_6			1.40	0.041	0.041	0.082	0.246						
C_3H_6			3.30	0.096	0.096	0.288	0.576		0.90 x 42		3.63	6.25	0.581
C_3H_8			0.42	0.012	0.012	0.036	0.096						
C_4H_8			2.10	0.061	0.061	0.244	0.488		0.95 x 56		3.25	6.1	0.534
C_4H_{10}			0.26	0.008	0.008	0.032	0.080			58	0.46	4.86	0.095
C_5H_{10}			0.94	0.027	0.027	0.135	0.270			70	1.89	5.4	0.350
OIL						4.075*	8.150			14	57.05	6.5	8.77
WATER							6.080*	4.772*					
							vs.	3.040	from H_2				
TOTAL		16.30		2.90							66.28		10.33

Contraction: 16.30 - 2.90 / 16.30 = 82.1 %
Conversion of CO: 5.544 / 5.705 = 97.0 %
Conversion of H_2: 8.373 / 9.486 = 88.3 %

CO Converted to:

	mols/hr	%	%
CO_2	0.386	6.8	7.0
C_1 & C_2	0.348	6.1	6.3
C_3 & Heavier	4.810	84.3	86.7
Unconverted	0.161	2.8	
	5.705		

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OIL YIELDS: 8.77 / 2.04 = 4.30 gal."recovered" oil per MCF natural gas fed to generator
10.33 / 2.04 = 5.06 gal. ultimate oil per MCF natural gas fed to generator
=121 bbl. ultimate oil per MMCF natural gas fed to generator

RUN NUMBER 6

MONTEBELLO SYNTHESIS UNIT
CALCULATION OF YIELDS

	FRESH FEED %	FRESH FEED m/hr	WET GAS %	WET GAS m/hr	CHANGE mols	C	H	O	POLY YIELD	MW	#/hr	#/gal	gal/hr
CO	34.9	6.075	5.07	0.294	-5.781	-5.781		-5.781					
H_2	59.2	10.307	49.73	2.884	-7.423		-14.846						
CO_2	1.8	0.314	23.82	1.383	1.069	1.069		2.138					
N_2	1.9	0.331	0.88	0.051									
CH_4	2.2	0.383	12.43	0.721	0.338	0.338	1.352						
C_2H_4			2.19	0.127	0.127	0.254	0.508						
C_2H_6			0.88	0.051	0.051	0.102	0.306						
C_3H_6			2.28	0.132	0.132	0.396	0.792		0.90 x	42	5.03	6.25	0.804
C_3H_8			0.35	0.020	0.020	0.060	0.160						
C_4H_8			1.49	0.086	0.086	0.344	0.688		0.95 x	56	4.58	6.1	0.750
C_4H_{10}			0.18	0.010	0.010	0.040	0.100			58	0.58	4.86	0.119
C_5H_{10}			0.70	0.041	0.041	0.205	0.410			70	2.87	5.4	0.531
OIL						2.973*	5.946			14	41.58	6.5	6.40
WATER							4.584*	3.643*					
								vs.2.294 from H_2					
TOTAL		17.41		5.80							54.64		8.60

Contraction: 17.41 - 5.80 / 17.41 = 66.7 %
Conversion of CO: 5.781 / 6.075 = 95.3 %
Conversion of H_2: 7.423 /10.307 = 72.1 %

CO Converted to:

	mols / hr	%	%
CO_2	1.069	17.6	18.5
C_1 & C_2	0.694	11.4	12.0
C_3 & Heavier	4.018	66.2	69.5
Unconverted	0.294	4.8	
	6.075		

Oil Yields: 6.40 / 2.11 = 3.04 gal."recovered"oil per MCF natural gas fed to generator
8.60 / 2.11 = 4.07 gal. ultimate oil per MCF natural gas fed to generator
= 97.1 bbl. ultimate oil per MMCF natural gas fed to generator