

APPENDIX C
SUMMARY OF DATA FROM RUN CT-256-8

Table C-1
 First Stage Fischer-Tropsch Slurry Reactor
 Operating Conditions and Material Balances
 (Second Stage Not Operative)
 (Run CT-258-B)

(Nitrogen-Free Basis)	8-7	8-8	8-9	8-10	8-11	8-12	8-14	8-15	8-16	8-17	8-18
M.B. No.	19.1	20.1	21.1	22.1	23.1	24.1	26.2	27.2	28.1	29.1	30.1
Days On-stream											
First-Stage Conditions:											
Charge H ₂ /CO (Molar)	0.678	0.670	0.677	0.674	0.679	0.686	0.675	0.687	0.680	0.659	0.576
Temperature, °C	254	255	254	255	255	255	254	256	255	254	255
Pressure, MPa	2.170	2.163	2.163	1.832	1.839	1.846	1.818	1.818	1.818	1.818	1.818
Feed Sup. Vel., cm/s	3.000	3.055	3.053	3.000	3.574	3.559	3.598	3.630	3.640	3.630	3.602
Space Vel., ML/gFe-hr	2.823	2.820	2.838	2.808	2.834	2.838	2.848	2.879	2.890	2.892	1.929
N ₂ in Feed, Mol %	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Converters, Mol %:											
H ₂	63.54	62.37	62.05	58.05	57.40	56.65	52.66	51.97	45.48	43.85	48.87
CO	66.04	64.90	63.83	66.01	59.72	58.10	53.05	52.61	49.01	47.53	57.71
H ₂ +CO	65.39	63.88	63.11	59.23	58.78	57.51	53.25	52.35	47.58	46.07	54.14
Yields, Wt % of Products:											
Hydrocarbons (1)	15.07	16.00	14.94	14.73	14.27	15.62	13.79	13.63	12.11	12.72	13.38
CO ₂	49.20	47.74	46.34	43.23	44.12	41.28	38.09	37.49	34.97	33.22	42.01
H ₂ O (1)	2.11	1.35	1.22	1.26	0.89	2.63	1.19	1.25	1.51	1.39	1.33
H ₂	1.70	1.74	1.83	1.90	2.01	2.00	2.22	2.29	2.56	2.55	2.41
CO	31.91	33.17	35.08	30.81	38.72	38.07	44.70	45.35	48.85	50.12	40.86
Total	100	100	100	100	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	99.61	100.82	96.59	98.28	99.11	102.14	98.83	99.51	99.44	95.87	98.62
(CO ₂)/(H ₂)/(CO)(H ₂ O):	7.00	10.57	11.08	9.97	14.72	5.95	9.06	8.61	6.93	6.95	10.60
gHC/Nm ³ (H ₂ +CO) conv.:	179	197	178	190	187	215	200	201	190	217	190
(H/C) Atomic Ratio in HC:	2.11	2.11	2.11	2.11	2.12	2.11	2.11	2.11	2.12	2.11	2.11
Selectivities, Wt % of HC:											
Methane	2.15	2.00	2.20	2.21	2.38	1.99	2.07	2.11	2.38	2.04	2.16
Ethane	2.50	2.34	2.53	2.64	2.70	2.50	2.54	2.56	2.92	2.58	2.23
Ethene	0.40	0.45	0.50	0.50	0.53	0.44	0.47	0.48	0.56	0.47	0.42
Propane	3.20	3.02	3.30	3.33	3.52	3.01	3.24	3.25	3.58	3.18	2.83
Propene	0.57	0.58	0.58	0.55	0.59	0.48	0.54	0.44	0.61	0.55	0.50
Butenes	2.41	2.27	2.55	2.51	2.71	2.24	2.45	2.41	2.62	2.35	2.20
i-Butane	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.06	0.04	0.04
n-Butane	0.52	0.51	0.57	0.54	0.56	0.47	0.52	0.51	0.57	0.60	0.51
C ₅ - C ₁₁ (2)	6.90	6.46	5.57	6.70	7.40	6.31	5.69	5.69	6.12	5.45	5.88
Light Hydrocarbons (3)	14.91	14.50	14.99	13.90	10.54	19.51	13.15	14.92	23.77	15.99	16.23
Heavy Hydrocarbons (4)	0.01	15.39	0.00	10.31	10.44	11.84	12.11	11.48	0.25	10.20	12.59
Slurry Rx.-Wtr.	00.30	53.10	50.32	50.23	50.04	50.00	50.70	55.75	50.13	50.23	53.90
Total	100	100	100	100	100	100	100	100	100	100	100

(1) Including Oxygenates
 (2) In Gas Phase Only
 (3) Collected in Chilled and Ambient Condensers
 (4) Collected in Hot Condenser

Table C-1 (Cont'd)
 First Stage Fischer-Tropsch Slurry Reactor
 Operating Conditions and Material Balances
 (Second-Stage Not Operative)
 (Run CT-250-8)

	8-19	8-25	8-26	8-28	8-29	8-30	8-31	8-33	8-34	8-35	8-36
(Nitrogen-Free Basis)											
M.R. No.	31.1	37.1	38.1	40.1	41.1	42.1	43.1	45.1	46.1	47.1	50.1
Days On-stream											
First-Stage Conditions:											
Charge H ₂ /CO (Molar)	0.679	0.645	0.676	0.669	0.642	0.671	0.670	0.670	0.671	0.672	0.667
Temperature, °C	255	250	250	250	250	251	251	250	250	250	250
Pressure, MPa	1.825	1.480	1.480	1.487	1.487	1.467	1.494	1.494	1.494	1.494	1.494
Feed Sup. Vel., cm/s	3.083	2.234	2.246	2.221	2.106	2.219	2.212	2.215	2.208	2.208	2.218
Space Vel., NL/gFe-hr	1.948	1.026	0.943	0.984	0.951	0.967	0.973	0.983	0.982	0.985	1.001
N ₂ in Feed, Mol %	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.1
Conversions, Mol %:											
H ₂	44.96	65.28	73.87	71.56	66.86	67.23	68.14	67.99	66.30	65.57	64.53
CO	57.39	69.91	83.56	80.11	77.16	74.86	75.16	73.80	72.48	70.63	69.80
H ₂ +CO	62.36	88.69	79.64	76.69	73.11	71.60	72.34	71.47	70.00	68.60	67.69
Yields, Wt % of Products:											
Hydrocarbons (1)	13.98	14.52	16.22	15.50	15.72	16.17	15.79	16.15	15.17	16.02	17.92
CO ₂	41.36	54.80	66.12	63.56	60.43	57.75	58.20	55.84	54.90	52.37	51.84
H ₂ O (1)	1.39	0.78	0.90	0.84	0.89	0.92	0.79	1.06	0.86	0.95	0.73
H ₂	2.56	1.53	1.71	1.38	1.45	1.49	1.47	1.50	1.63	1.65	1.58
CO	40.71	20.40	15.55	18.78	21.51	22.67	23.75	25.44	27.44	29.00	28.03
Total	100	100	100	100	100	100	100	100	100	100	100
Balance Recovery, Wt % of Charge:	99.73	101.10	100.76	100.96	101.39	101.23	99.71	98.17	95.60	96.53	102.72
(CO ₂)/(H ₂)/(CO) (M ₂) :	10.73	21.99	32.45	29.63	26.05	22.68	25.96	17.69	21.64	17.86	22.87
gHC/Nm ³ (H ₂ +CO) conv.:	207	171	169	169	173	178	170	173	162	178	212
(H/C) Atomic Ratio in HC :	2.11	2.13	2.16	2.14	2.14	2.15	2.13	2.14	2.13	2.13	2.12
Selectivities, Wt % of HC :											
Methane	2.17	3.14	4.67	3.53	3.61	4.19	3.29	3.51	3.34	3.16	2.78
Ethane	2.34	2.49	3.54	2.88	2.92	3.40	2.77	2.99	2.90	2.71	2.44
Ethene	6.45	6.47	6.54	6.59	6.60	6.56	6.57	6.56	6.59	6.56	6.52
Propene	2.94	3.19	3.04	3.09	3.7	4.1	3.53	3.69	3.60	3.47	3.60
Propane	0.54	0.28	0.51	0.71	0.71	0.71	0.65	0.69	0.67	0.63	0.58
Butenes	2.78	2.55	3.65	3.02	2.7	3.3	2.78	2.93	2.86	2.68	2.43
i-Butane	0.04	0.04	0.03	0.06	0.04	0.04	0.03	0.03	0.05	0.05	0.05
n-Butane	0.53	0.59	0.63	0.71	0.68	0.29	0.65	0.66	0.67	0.62	0.57
C ₅ - C ₁₁ (2)	6.63	6.63	9.03	7.54	7.56	9.09	7.01	7.33	7.36	7.10	5.97
Light Hydrocarbons (3)	14.00	14.99	14.26	15.02	14.74	14.53	15.03	14.29	15.93	14.73	13.18
Heavy Hydrocarbons (4)	11.02	7.65	7.06	8.14	9.48	10.14	10.14	11.80	5.88	12.01	25.50
Slurry Rx.-Wax	50.00	57.20	51.68	53.40	52.25	50.54	52.13	50.89	55.50	51.71	42.47
Total	100	100	100	100	100	100	100	100	100	100	100

- (1) Including Oxygenates
- (2) In Gas Phase Only
- (3) Collected in Chilled and Ambient Condensers
- (4) Collected in Hot Condenser

Table C 1 (Cont'd)
 First Stage Fischer Tropsch Slurry Reactor
 Operating Conditions and Material Balances
 (Second Stage Not Operative)
 (Run CT 256 8)

(Nitrogen-Free Basis)			
M.B. No.	8 37	8 38	8 39
Days On-stream	51.1	52.1	53.1
First-Stage Conditions:			
Charge H ₂ /CO (Molar)	0.677	0.671	0.680
Temperature, °C	250	249	250
Pressure, MPa	1.494	1.494	1.501
Feed Sup. Vel., cm/s	2.225	2.214	2.247
Space Vel., NL/gFe-hr	1.009	1.007	1.028
N ₂ in Feed, Mol %	1.0	1.1	1.1
Conversions, Mol % :			
H ₂	63.10	59.32	57.41
CO	66.84	63.77	61.51
H ₂ +CO	65.33	61.98	59.85
Yields, Wt % of Products :			
Hydrocarbons (1)	15.65	15.03	14.25
CO ₂	48.47	47.00	45.23
H ₂ O (1)	0.76	1.36	0.96
H ₂	1.81	1.89	2.04
CO	33.31	34.72	37.52
Total	100	100	100
Bal Recovery, Wt % of Charge:			
(CO ₂)(H ₂)/(CO)(H ₂ O) :	19.63	10.69	14.60
gHC/Nm ³ (H ₂ +CO) conv.:	177	188	181
(H/C) Atomic Ratio in HC :	2.13	2.14	2.13
Selectivities, Wt % of HC :			
Methane	3.17	3.37	3.30
Ethene	2.79	3.01	2.99
Ethane	0.57	0.60	0.57
Propene	3.50	3.74	4.37
Propane	0.66	0.71	0.00
Butenes	2.76	3.17	2.70
i-Butane	0.06	0.07	0.06
n-Butane	0.63	0.77	0.64
C ₅ - C ₁₁ (2)	7.06	8.34	6.72
Light Hydrocarbons (3)	15.60	14.78	15.72
Heavy Hydrocarbons (4)	10.44	9.34	8.22
Slurry Rx. -Wax	52.11	51.44	54.12
Total	100	100	100

(1) Including Oxygenates

(2) In Gas Phase Only

(3) Collected in Chilled and Ambient Condensers

(4) Collected in Hot Condenser

Table C-2
Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
(Run CI-266-B)

M.B. No.	19.1	8- 8	8- 9	8-10	8-11	8-12	8-14	8-15	8-16	8-17	8-18
Days On-stream	20.1	21.1	22.1	23.1	24.1	25.2	27.2	28.1	29.1	30.1	
METHANE	2.15	2.00	2.20	2.21	2.30	1.90	2.07	2.11	2.30	2.04	2.16
ETHENE	2.50	2.34	2.53	2.64	2.70	2.50	2.54	2.50	2.59	2.59	2.23
ETHANE	0.48	0.45	0.50	0.50	0.53	0.44	0.47	0.48	0.50	0.47	0.42
PROPENE	3.20	3.02	3.30	3.33	3.52	3.01	3.24	3.25	3.50	3.18	2.63
PROPANE	0.57	0.50	0.58	0.56	0.59	0.48	0.54	0.44	0.55	0.55	0.50
1-BUTANE	0.05	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.00	0.04	0.04
1-BUTENE+2-METHYLPROPENE	2.30	2.22	2.52	2.40	2.07	2.21	2.40	2.35	2.55	2.32	2.17
N-BUTANE	0.52	0.51	0.57	0.54	0.50	0.47	0.52	0.51	0.57	0.00	0.51
TRANS-2-BUTENE	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CIS-2-BUTENE	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.03
3-METHYL-1-BUTENE	0.15	0.13	0.10	0.17	0.10	0.16	0.16	0.16	0.19	0.16	0.12
1-PENTANE	0.07	0.00	0.07	0.07	0.07	0.07	0.00	0.07	0.00	0.07	0.05
1-PENTENE	1.70	1.01	1.70	1.04	1.91	1.02	1.72	1.07	1.00	1.07	1.04
2-METHYL-1-BUTENE	0.07	0.00	0.07	0.07	0.00	0.00	0.07	0.07	0.00	0.07	0.06
N-PENTANE	0.41	0.37	0.42	0.41	0.43	0.30	0.38	0.39	0.42	0.37	0.41
TRANS-2-PENTENE	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CIS-2-PENTENE	0.00	0.02	0.00	0.00	0.00	0.02	0.19	0.00	0.00	0.00	0.02
CYCLOPENTANE	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00
HEXENES + ISO-HEXANES	0.14	0.14	0.15	0.20	0.22	0.10	0.00	0.10	0.19	0.18	0.15
2,3-DIMETHYLBUTANE	0.02	0.02	0.04	0.03	0.03	0.02	0.02	0.00	0.04	0.04	0.03
2-METHYLPENTANE	0.03	0.03	0.02	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.04
3-METHYLPENTANE	0.02	0.02	0.00	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.02
1-HEXENE	1.11	1.00	1.19	1.39	1.43	1.20	1.22	1.19	1.23	1.16	1.21
N-HEXANE	0.32	0.20	0.34	0.30	0.40	0.33	0.31	0.35	0.30	0.32	0.36
HEPTENES + ISO-HEPTANES	0.08	0.36	0.13	0.13	0.15	0.23	0.13	0.00	0.00	0.00	0.06
1-HEPTENE	0.19	0.51	0.54	0.00	0.00	0.72	0.63	0.63	0.63	0.62	0.97
N-HEPTANE	0.11	0.13	0.14	0.20	0.23	0.18	0.15	0.10	0.17	0.16	0.10
C8-OLEFINS + ISO-P	0.10	0.02	0.00	0.04	0.00	0.05	0.03	0.00	0.00	0.00	0.03
1-OCTENE	0.52	0.21	0.10	0.31	0.45	0.37	0.20	0.20	0.23	0.20	0.30
N-OCTANE	0.13	0.00	0.04	0.00	0.12	0.10	0.07	0.07	0.00	0.07	0.00
C9-OLEFINS + ISO-P	0.72	0.30	0.34	0.40	0.37	0.59	0.20	0.40	0.70	0.34	0.43
METHANOL	0.14	0.15	0.03	0.10	0.14	0.14	0.16	0.11	0.16	0.10	0.22
ACETONE	0.10	0.00	0.00	0.10	0.10	0.15	0.13	0.13	0.14	0.12	0.14
1-PROPANOL	0.11	0.11	0.12	0.13	0.14	0.12	0.19	0.12	0.13	0.12	0.15
UNKNOWN LITE HYDRO-CARB LIQ (1)	14.91	14.50	14.00	13.00	10.54	19.51	13.15	14.02	23.77	15.99	16.23
UNKNOWN Hvy HYDRO-CARB LIQ (2)	0.01	10.39	0.00	10.31	10.44	11.94	12.11	11.40	0.25	10.20	12.59
SLURRY REACTOR-MAX	00.30	53.10	50.32	55.23	50.04	50.00	50.70	55.75	50.13	50.23	53.90

(1) Collected in Ambient and Chilled Condensers
(2) Collected in Hot Condenser

Table C-2 (cont'd)
Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
(Run C1-266-8)

M.B. No.	0-19	0-25	0-26	0-28	0-29	0-30	0-31	0-33	0-34	0-35	0-36
Days On-stream	31.1	37.1	38.1	40.1	41.1	42.1	43.1	45.1	46.1	47.1	50.1
METHANE	2.17	3.14	4.67	3.53	3.61	4.19	3.29	3.51	3.34	3.16	2.78
ETHANE	2.34	2.49	3.54	2.88	2.92	3.49	2.77	2.99	2.90	2.71	2.44
ETHANE	0.45	0.47	0.54	0.59	0.60	0.60	0.57	0.58	0.59	0.56	0.52
PROPENE	2.94	3.19	3.84	3.69	3.76	4.41	3.53	3.69	3.60	3.47	3.00
PROPANE	0.54	0.28	0.81	0.71	0.71	0.53	0.65	0.69	0.67	0.63	0.58
1-BUTANE	0.64	0.64	0.83	0.66	0.64	0.57	0.63	0.63	0.65	0.68	0.65
1-BUTENE-2-METHYLPROPENE	2.15	2.55	3.58	2.96	2.98	3.44	2.75	2.9	2.81	2.62	2.39
N-BUTANE	0.53	0.59	0.83	0.71	0.68	0.29	0.65	0.6	0.67	0.62	0.57
TRANS-2-BUTENE	0.60	0.66	0.63	0.62	0.62	0.63	0.60	0.62	0.62	0.62	0.62
CIS-2-BUTENE	0.03	0.00	0.05	0.04	0.04	0.05	0.03	0.03	0.03	0.03	0.03
3-METHYL-1-BUTENE	0.13	0.04	0.19	0.17	0.17	0.21	0.17	0.18	0.18	0.18	0.16
1-PENTANE	0.60	0.21	0.68	0.60	0.60	0.60	0.67	0.68	0.68	0.68	0.66
1-PENTENE	1.59	1.90	2.63	2.20	2.16	2.53	1.98	2.07	2.06	1.94	1.71
2-METHYL-1-BUTENE	0.68	0.67	0.69	0.68	0.68	0.69	0.67	0.68	0.68	0.67	0.66
N-PENTANE	0.41	0.46	0.55	0.55	0.55	0.63	0.60	0.52	0.52	0.49	0.42
TRANS-2-PENTENE	0.60	0.60	0.63	0.62	0.62	0.63	0.60	0.60	0.62	0.62	0.62
CIS-2-PENTENE	0.00	0.02	0.04	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
CYCLOPENTANE	0.00	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
HEXENES + ISO-HEXANES	0.16	0.19	0.24	0.21	0.21	0.27	0.21	0.21	0.22	0.21	0.17
2,3-DIMETHYLBUTANE	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.02	0.03	0.03	0.02
2-METHYLPENTANE	0.04	0.06	0.05	0.04	0.04	0.08	0.05	0.04	0.05	0.04	0.03
3-METHYLPENTANE	0.60	0.62	0.63	0.62	0.62	0.63	0.62	0.62	0.63	0.63	0.62
1-HEXENE	1.17	1.37	1.77	1.51	1.56	1.76	1.35	1.44	1.45	1.36	1.17
N-HEXANE	0.37	0.39	0.54	0.42	0.44	0.53	0.41	0.42	0.43	0.42	0.31
HEPTENES + ISO-HEPTANES	0.03	0.13	0.22	0.21	0.17	0.25	0.14	0.16	0.23	0.14	0.15
1-HEPTENE	0.85	0.74	0.87	0.75	0.76	0.89	0.70	0.71	0.72	0.71	0.60
N-HEPTANE	0.17	0.19	0.26	0.26	0.21	0.26	0.20	0.20	0.21	0.20	0.17
C8-OLEFINS + ISO-P	0.60	0.60	0.14	0.09	0.09	0.14	0.07	0.06	0.08	0.07	0.05
1-OCTENE	0.29	0.33	0.43	0.32	0.33	0.40	0.33	0.32	0.30	0.32	0.26
N-OCTANE	0.68	0.69	0.16	0.10	0.10	0.14	0.10	0.10	0.10	0.10	0.07
C9-OLEFINS + ISO-P	0.40	0.52	0.60	0.58	0.60	0.79	0.57	0.64	0.54	0.68	0.48
METHANOL	0.21	0.21	0.36	0.24	0.22	0.32	0.25	0.27	0.24	0.20	0.15
ACETONE	0.12	0.15	0.28	0.23	0.23	0.31	0.21	0.19	0.22	0.22	0.15
1-PROPANOL	0.14	0.23	0.23	0.25	0.24	0.30	0.16	0.17	0.18	0.16	0.14
UNKNOWN LITE HYDRO-CARB LIQ (1)	14.80	14.99	14.28	15.02	14.74	14.53	15.83	14.29	15.93	14.73	13.18
UNKNOWN HWY HYDRO-CARB LIQ (2)	11.82	7.85	7.68	8.14	9.48	7.80	10.14	11.80	5.88	12.01	25.50
SLURRY REACTOR-WAX	56.90	57.20	51.68	53.40	52.25	50.54	52.13	50.89	55.50	51.71	42.47

(1) Collected in Ambient and Chilled Condensers
(2) Collected in Hot Condenser

Table C-2 (cont'd)
 Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
 (Run CT-256-8)

M.B. No.	8- 37	8- 38	8- 39
Days On-stream	51.1	52.1	53.1
METHANE	3.17	3.37	3.30
ETHENE	2.79	3.01	2.99
ETHANE	0.57	0.60	0.57
PROPENE	3.50	3.74	4.37
PROPANE	0.66	0.71	0.00
I-BUTANE	0.06	0.07	0.06
1-BUTENE+2-METHYLPROPENE	2.71	3.12	2.64
N-BUTANE	0.63	0.77	0.64
TRANS-2-BUTENE	0.02	0.00	0.02
CIS-2-BUTENE	0.03	0.04	0.03
3-METHYL-1-BUTENE	0.19	0.24	0.20
I-PENTANE	0.00	0.11	0.08
1-PENTENE	1.94	2.39	1.77
2-METHYL-1-BUTENE	0.08	0.10	0.07
N-PENTANE	0.49	0.59	0.44
CIS-2-PENTENE	0.02	0.00	0.00
CYCLOPENTANE	0.03	0.03	0.02
HEXENES + ISO-HEXANES	0.19	0.22	0.14
2,3-DIMETHYLBUTANE	0.02	0.03	0.04
2-METHYLPENTANE	0.04	0.05	0.06
3-METHYLPENTANE	0.03	0.03	0.02
1-HEXENE	1.44	1.55	1.28
N-HEXANE	0.42	0.48	0.42
HEPTENES + ISO-HEPTANES	0.16	0.17	0.12
1-HEPTENE	0.76	0.85	0.75
N-HEPTANE	0.21	0.23	0.20
C8-OLEFINS + ISO-P	0.06	0.07	0.05
1-OCTENE	0.36	0.42	0.34
N-OCTANE	0.11	0.12	0.11
C9-OLEFINS + ISO-P	0.53	0.65	0.60
METHANOL	0.22	0.27	0.21
ACETONE	0.18	0.19	0.23
I-PROPANOL	0.25	0.21	0.17
UNKNOWN LITE HYDRO-CARB LIQ (1)	15.60	14.78	15.72
UNKNOWN HVY HYDRO-CARB LIQ (2)	10.44	9.34	8.22
SLURRY REACTOR-WAX	52.11	51.44	54.12

- (1) Collected in Ambient and Chilled Condensers
 (2) Collected in Hot Condenser

Table C-3
 First Stage Fischer-Tropsch Slurry Reactor
 Operating Conditions and Material Balances
 (Based on Intra-Reacto Sample)

(Nitrogen-Free Basis)	8-41	8-42	8-43	8-44	8-45	8-46	8-47	8-48	8-49
M.B. No.	55.1	56.1	57.1	58.1	59.1	60.1	61.1	62.1	63.1
Days On-stream									
First-Stage Conditions:									
Charge H ₂ /CO (Molar)	0.674	0.668	0.665	0.663	0.663	0.668	0.667	0.663	0.672
Temperature, °C	249	250	251	251	250	250	250	250	251
Pressure, MPa	1.501	1.501	1.500	1.500	1.467	1.480	1.480	1.480	1.825
Feed Sup. Vel., cm/s	2.188	2.224	2.225	2.219	2.275	2.281	2.271	2.250	2.227
Space Vel., NL/gr-hr	1.008	1.027	1.031	1.036	1.038	1.046	1.049	1.050	1.283
N ₂ in Feed, Mol %	1.1	1.1	1.1	1.0	1.0	1.1	1.6	0.8	0.7
Conversions, Mol % :									
H ₂	53.48	50.54	46.61	47.27	45.78	50.16	50.79	44.10	44.73
CO	62.26	59.10	59.43	60.59	59.06	57.27	50.70	58.00	54.94
H ₂ +CO	58.69	55.67	54.31	55.27	53.77	54.42	54.37	52.98	50.83
Yields, Wt % of Products :									
Hydrocarbons (1)	15.13	14.23	14.67	14.67	14.50	13.35	13.72	10.12	12.96
CO ₂	45.73	44.81	44.52	44.34	42.73	43.16	43.14	40.87	40.75
H ₂ O (1)	1.11	1.08	0.94	0.96	0.86	0.92	0.82	0.84	0.90
H ₂	2.15	2.20	2.37	2.41	2.50	2.27	2.20	2.57	2.55
CO	35.58	37.69	37.50	37.62	39.41	40.31	40.12	39.00	42.85
Total	100	100	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge :	100.26	103.47	103.10	99.92	99.03	101.08	102.76	99.99	100.24
(CO ₂) (H ₂)/(CO) (H ₂ O) :	14.11	13.79	17.00	16.80	16.08	15.08	16.44	17.97	15.42
gHC/Nm ³ (H ₂ +CO) conv. :	202	207	218	208	209	194	203	237	199
(M/C) Atomic Ratio in HC :	2.13	2.14	2.13	2.13	2.14	2.15	2.15	2.14	2.15
Selectivities, Wt % of HC :									
Methane	3.33	3.50	3.29	3.25	3.11	2.17	3.70	3.80	4.66
Ethane	2.97	3.27	2.95	2.95	2.89	0.38	3.02	2.58	3.08
Ethene	0.82	0.53	0.09	0.63	0.56	0.49	0.81	0.54	0.68
Propene	3.69	3.83	3.64	3.67	3.51	1.15	3.82	3.10	3.67
Propane	0.62	0.71	0.70	0.70	0.68	1.84	0.83	0.63	0.81
Butenes	2.82	2.81	2.75	2.90	2.24	1.81	2.99	2.45	2.88
i-Butane	0.05	0.07	0.02	0.04	0.00	3.15	0.16	0.06	0.08
n-Butane	0.68	0.76	0.68	0.72	0.67	1.94	0.82	0.67	0.81
C ₅ - C ₁₁ (2)	0.49	0.49	0.11	0.58	0.37	7.68	7.44	7.54	9.39
Light Hydrocarbons (3)	12.68	12.48	15.10	13.70	13.18	12.58	11.72	18.57	15.49
Heavy Hydrocarbons (4)	13.18	11.52	12.63	12.30	12.77	13.63	13.42	15.08	13.04
Slurry R _n -Max	58.69	50.31	48.49	49.58	50.34	53.17	50.45	44.16	44.46
Total	100	100	100	100	100	100	100	100	100

- (1) Including Oxygenates
- (2) In Gas Phase Only
- (3) Collected in Chilled and Ambient Condensers
- (4) Collected in Hot Condenser

Table C-3 (Cont'd)
 First Stage Fischer-Tropsch Slurry Reactor
 Operating Conditions and Material Balances
 (Based on Inter Reactor Sample)
 (Run CT 256 8)

(Nitrogen-Free Basis)				
M.B. No.	8-50	8-51	8-52	8-53
Days On-stream	64.1	65.1	66.1	67.1
First Stage Conditions:				
Charge H ₂ /CO (Molar)	0.680	0.680	0.685	0.680
Temperature, °C	250	250	249	250
Pressure, MPa	1.825	1.825	1.825	1.825
Feed Sup. Vel., cm/s	2.227	2.226	2.222	2.231
Space Vel., NL/gFe-hr	1.288	1.292	1.296	1.301
N ₂ in Feed, Mol %	0.8	0.7	0.8	0.9
Conversions, Mol % :				
H ₂	42.67	45.51	45.49	47.05
CO	53.79	54.04	50.43	52.43
H ₂ +CO	49.29	50.59	48.42	50.25
Yields, Wt % of Products :				
Hydrocarbons (1)	13.09	13.65	12.49	12.38
CO ₂	39.57	39.27	37.32	38.62
H ₂ O (1)	0.92	0.86	0.97	0.94
H ₂	2.66	2.54	2.54	2.49
CO	43.76	43.68	46.68	45.56
Total	100	100	100	100
Bal Recovery, Wt % of Charge:				
(CO ₂)(H ₂)/(CO)(H ₂ O) :	14.91	15.07	11.87	12.75
gHC/Nm ³ (H ₂ +CO) conv.:	208	210	202	190
(H/C) Atomic Ratio in HC :	2.16	2.17	2.16	2.17
Selectivities, Wt % of HC :				
Methane	4.69	5.16	4.77	4.86
Ethene	3.09	3.37	3.11	3.12
Ethane	0.69	0.76	0.66	0.78
Propene	3.70	4.50	3.72	3.83
Propane	0.82	0.46	0.81	0.85
Butenes	2.89	3.23	2.91	3.01
i-Butane	0.18	0.09	0.05	0.07
n-Butane	0.81	0.91	0.82	0.83
C ₅ - C ₁₁ (2)	9.21	10.18	9.42	7.58
Light Hydrocarbons (3)	16.54	15.38	15.08	15.38
Heavy Hydrocarbons (4)	12.89	13.21	12.69	13.29
Slurry Rx.-Wax	43.69	41.69	44.91	45.61
Total	100	100	100	100

- (1) Including Oxygenates
- (2) In Gas Phase Only
- (3) Collected in Chilled and Ambient Condensers
- (4) Collected in Hot Condenser

Tab. C-4
Composition of Hydrocarbon Products from
First-Stage Slurry FTY Reactor
(Based on Inter-Reactor Sample)
(Run CT-256-8)

M.B. No	8- 41	8- 42	8- 43	8- 44	8- 45	8- 46	8- 47	8- 48	8- 49
Days On-stream	55.1	56.1	57.1	58.1	59.1	60.1	61.1	62.1	63.1
METHANE	3.33	3.59	3.29	3.25	3.11	2.17	3.79	3.80	4.06
ETHENE	2.97	3.27	2.95	2.95	2.99	0.30	3.02	2.58	3.09
ETHANE	0.02	0.53	0.60	0.03	0.56	0.49	0.01	0.54	0.66
PROPENE	3.89	3.83	3.84	3.87	3.51	1.15	3.82	3.10	3.67
PROPANE	0.02	0.71	0.70	0.70	0.80	1.04	0.03	0.53	0.81
I-BUTANE	0.05	0.07	0.02	0.04	0.06	3.15	0.16	0.06	0.08
1-BUTENE+2-METHYL PROPENE	2.70	2.01	2.72	2.05	2.19	1.13	2.70	2.40	2.87
N-BUTANE	0.00	0.70	0.00	0.72	0.07	1.94	0.02	0.57	0.01
TRANS-2-BUTENE	0.02	0.00	0.00	0.02	0.02	0.41	0.11	0.02	0.02
CIS-2-BUTENE	0.04	0.00	0.03	0.04	0.03	0.27	0.10	0.03	0.04
3-METHYL-1-BUTENE	0.20	0.21	0.20	0.20	0.20	0.23	0.22	0.19	0.22
I-PENTANE	0.10	0.09	0.09	0.08	0.30	2.22	0.10	0.08	0.12
1-PENTENE	1.98	2.13	2.02	2.08	1.98	0.03	1.88	1.74	2.08
2-METHYL-1-BUTENE	0.00	0.09	0.00	0.00	0.00	0.22	0.00	0.00	0.09
N-PENTANE	0.54	0.57	0.52	0.54	0.52	1.15	0.03	0.40	0.02
TRANS-2-PENTENE	0.00	0.00	0.00	0.01	0.01	0.14	0.11	0.01	0.02
CIS-2-PENTENE	0.00	0.00	0.02	0.02	0.02	0.07	0.07	0.02	0.02
2-METHYL-2-BUTENE	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.00	0.00
CYCLOPENTANE	0.03	0.03	0.03	0.00	0.03	0.04	0.00	0.03	0.04
HEXENES - ISO-HEXANES	0.34	0.36	0.31	0.32	0.33	0.07	0.20	0.31	0.35
2,3-DIMETHYLBUTANE	0.05	0.05	0.05	0.05	0.05	0.01	0.05	0.05	0.07
2-METHYLPENTANE	0.00	0.07	0.00	0.00	0.00	0.70	0.05	0.00	0.07
3-METHYLPENTANE	0.03	0.03	0.03	0.03	0.03	0.20	0.04	0.03	0.04
1-HEXANE	1.55	1.87	1.50	1.82	1.53	0.00	1.29	1.38	1.64
N-HEXANE	0.40	0.54	0.40	0.47	0.44	0.45	0.50	0.00	0.50
METHYLCYCLOPENTANE	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
HEPTENES - ISO-HEPTANES	0.30	0.31	0.20	0.32	0.31	0.22	0.30	0.31	0.37
1-HEPTENE	1.00	1.12	1.01	1.00	1.02	0.00	0.03	0.30	1.10
2-METHYLHEXANE	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
3-METHYLHEXANE	0.00	0.00	0.00	0.00	0.00	0.06	0.12	0.00	0.00
I-DIMETHYL-NS	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
N-HEPTANE	0.32	0.33	0.20	0.30	0.28	0.16	0.32	0.28	0.37
METHYLCYCLOHEXANE	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
CO-OLEFINS - ISO-P	0.00	0.10	0.00	0.10	0.12	0.10	0.10	0.05	0.12
1-OCTENE	0.02	0.04	0.02	0.05	0.04	0.00	0.10	0.01	0.01
T-2-OCTENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00
ISO-C8-P - O - NS - NS	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
N-OCTANE	0.20	0.19	0.15	0.15	0.15	0.00	0.10	0.10	0.20
CO-OLEFINS - ISO-P	0.40	0.02	0.30	0.42	0.30	0.10	0.20	0.42	0.07
BENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOLUENE	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00
ETHYLBENZENE	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
METHANOL	0.25	0.30	0.35	0.31	1.21	0.00	0.35	0.20	0.34
ACETONE	0.45	0.40	0.41	0.47	0.41	0.00	0.27	0.35	0.39
I-PROPANOL	0.20	0.23	0.21	0.21	0.00	0.00	0.21	0.20	0.25
UNKNOWN LITE HYDRO-CARB LIQ (1)	12.00	12.40	15.10	13.71	13.10	12.50	11.72	10.57	15.40
UNKNOWN Hvy HYDRO-CARB LIQ (2)	13.10	11.52	12.03	12.30	12.77	13.03	13.42	15.00	13.04
SLURRY REACTOR-WAX	50.00	50.31	48.40	49.50	50.34	53.17	50.45	44.10	44.40

(1) Collected in Ambient and Chilled Condensers
(2) Collected in Hot Condenser

Table C-4 (cont'd)
 Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
 (Based on Inter-Reactor Sample)
 (Run CT-256-8)

M.B. No.	8- 50	8- 51	8- 52	8- 53
Days On-stream	64.1	65.1	66.1	67.1
METHANE	4.69	5.16	4.77	4.86
ETHENE	3.09	3.37	3.11	3.12
ETHANE	0.69	0.76	0.66	0.78
PROPENE	3.70	4.50	3.72	3.83
PROPANE	0.82	0.46	0.81	0.85
I-BUTANE	0.18	0.09	0.05	0.07
1-BUTENE+2-METHYLPROPENE	2.85	3.15	2.85	2.86
N-BUTANE	0.81	0.91	0.82	0.83
TRANS-2-BUTENE	0.00	0.03	0.02	0.07
CIS-2-BUTENE	0.04	0.05	0.04	0.08
3-METHYL-1-BUTENE	0.22	0.25	0.22	0.23
I-PENTANE	0.11	0.13	0.12	0.11
1-PENTENE	2.08	2.31	2.07	1.99
2-METHYL-1-BUTENE	0.10	0.11	0.09	0.10
N-PENTANE	0.62	0.68	0.62	0.66
TRANS-2-PENTENE	0.00	0.00	0.00	0.08
CIS-2-PENTENE	0.02	0.03	0.02	0.06
2-METHYL-2-BUTENE	0.00	0.00	0.00	0.02
CYCLOPENTANE	0.04	0.04	0.04	0.04
HEXENES + ISO-HEXANES	0.34	0.40	0.35	0.23
2,3-DIMETHYLBUTANE	0.06	0.07	0.07	0.05
2-METHYLPENTANE	0.08	0.08	0.08	0.06
3-METHYLPENTANE	0.04	0.04	0.04	0.04
1-HEXENE	1.63	1.80	1.74	1.43
N-HEXANE	0.57	0.63	0.57	0.55
HEPTENES + ISO-HEPTANES	0.35	0.38	0.35	0.35
1-HEPTENE	1.08	1.18	1.12	0.78
N-HEPTANE	0.35	0.38	0.37	0.37
C8-OLEFINS + ISO-P	0.11	0.13	0.12	0.17
1-OCTENE	0.60	0.66	0.65	0.16
N-OCTANE	0.20	0.22	0.22	0.08
C9-OLEFINS + ISO-P	0.61	0.66	0.67	0.05
METHANOL	0.16	0.36	0.40	0.36
ACETONE	0.39	0.45	0.40	0.20
I-PROPANOL	0.25	0.26	0.25	0.23
UNKNOWN LITE HYDRO-CARB LIQ (1)	16.54	15.38	15.03	15.38
UNKNOWN HVY HYDRO-CARB LIQ (2)	12.89	13.21	12.69	13.29
SLURRY REACTOR-WAX	43.69	41.69	44.91	45.61

(1) Collected in Ambient and Chilled Condensers
 (2) Collected in Hot Condenser

Table (-5)
 Second-Stage Fixed-Bed ZSM-5 Reactor
 Operating Conditions and Material Balances
 (Run CT-256-B)

(Nitrogen-Free Basis)	8- 41	8- 42	8- 44	8- 45	8- 46	8- 47	8- 48
M.B. No.							
Days On-stream	55.1	56.1	58.1	59.1	60.1	61.1	62.1
First-Stage Conditions:							
Charge H ₂ /CO (Molar)	0.674	0.668	0.663	0.663	0.668	0.667	0.663
Temperature, °C	249	250	251	250	250	250	250
Pressure, MPa	1.501	1.501	1.508	1.467	1.480	1.480	1.480
Feed Sup. Vel., cm/s	2.186	2.224	2.220	2.274	2.261	2.276	2.250
Space Vel., NL/gFe-hr	1.008	1.027	1.036	1.038	1.046	1.049	1.050
N ₂ in Feed, Mol %	1.1	1.1	1.1	1.1	1.1	1.8	0.8
Second-Stage Conditions:							
Temp., Inlet, °C	290	304	306	305	312	312	316
Outlet, °C	313	316	327	327	332	337	343
Pressure, MPa	1.501	1.501	1.508	1.467	1.480	1.480	1.480
GHSV, 1/hr	2241	2320	2283	2324	2388	2390	2322
Days On-stream	1.4	2.4	4.4	5.4	6.4	7.4	8.4
Conversions, Mol % :							
H ₂	52.60	52.13	51.64	49.20	49.22	52.07	50.66
CO	61.02	59.93	60.79	58.09	57.23	57.63	58.27
H ₂ +CO	57.63	56.89	57.14	54.54	54.82	55.40	55.24
Yields, Wt % of Products :							
Hydrocarbons	13.22	16.62	14.62	12.61	12.85	14.12	14.88
CO ₂	46.62	44.64	44.30	43.28	43.32	43.02	41.53
H ₂ O	1.58	1.29	1.44	1.48	1.18	1.46	1.16
H ₂	2.19	2.13	2.21	2.34	2.31	2.14	2.27
CO	37.06	36.92	37.43	40.37	40.34	39.32	40.17
Total	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	100.25	103.47	99.92	99.63	101.00	102.76	99.69
(CO ₂)(H ₂)/(CO)(H ₂ O) :	10.33	11.20	10.36	10.23	12.03	9.51	11.57
gHC/Nm ³ (H ₂ +CO) conv. :	179	223	201	179	188	205	209
(H/C) Atomic Ratio in HC :	2.05	2.07	2.05	2.02	2.00	2.12	2.14
Selectivities, Wt % of HC :							
Methane	2.15	2.85	1.56	0.88	2.42	3.29	4.17
Ethene	0.51	0.31	1.14	0.25	0.62	0.59	0.77
Ethane	0.25	0.58	0.89	0.15	0.38	0.73	0.52
Propene	0.79	0.87	1.10	0.63	1.27	1.64	1.58
Propane	1.64	2.53	2.29	0.99	2.13	2.43	2.65
Butenes	1.64	1.54	1.77	1.23	2.05	2.82	2.73
i-Butane	2.44	4.11	3.78	1.80	3.59	4.87	4.47
n-Butane	1.79	2.63	2.29	1.21	2.16	2.55	2.67
C ₅ - C ₁₁	29.64	38.78	35.45	34.95	38.15	32.60	32.33
C ₁₂ + (Excl. Rx.-Wax)	1.88	0.60	0.60	0.60	0.60	0.26	0.17
Slurry Rx.-Wax	57.34	45.81	49.73	57.93	55.24	45.02	47.86
Total	100	100	100	100	100	100	100
i-C ₄ /(C ₃ + C ₄) Molar :	0.87	1.47	1.13	0.84	0.93	0.78	0.87
(C ₃ /C ₃) Molar Ratio :	1.98	2.76	1.99	1.61	1.60	1.41	1.52
Alkylate, Wt % of HC :	4.61	5.21	6.21	3.42	6.70	7.72	8.39
Cat-Poly, Wt % of HC :	0.26	0.60	0.60	0.24	0.21	0.81	0.47
C ₆ - C ₁₁ PDNA, Wt % :							
Paraffins	(1)	(1)	(1)	35.76	(1)	(1)	(1)
Olefins	(1)	(1)	(1)	16.85	(1)	(1)	(1)
Naphthenes	(1)	(1)	(1)	7.97	(1)	(1)	(1)
Aromatics	(1)	(1)	(1)	39.42	(1)	(1)	(1)

(1) Not Available

Table C-5 (Cont'd)
 Second-Stage Fixed-Bed ZSM-5 Reactor
 Operating Conditions and Material Balances
 (Run CT-256-B)

(Nitrogen-Free Basis)	8- 49	8- 50	8- 51	8- 52	8- 53
M.B. No.					
Days On-stream	63.1	64.1	65.1	66.1	67.1
First-Stage Conditions:					
Charge H ₂ /CO (Molar)	0.672	0.690	0.680	0.685	0.680
Temperature, °C	251	250	250	249	250
Pressure, MPa	1.825	1.825	1.825	1.825	1.825
Feed Sup. Vel., cm/s	2.227	2.227	2.227	2.227	2.226
Space Vel., NL/gFe-hr	1.283	1.288	1.292	1.296	1.301
N ₂ in Feed, Mol %	0.7	0.8	0.8	1.0	0.7
Second-Stage Conditions:					
Temp., Inlet, °C	319	321	324	328	338
Outlet, °C	342	342	346	349	357
Pressure, MPa	1.825	1.825	1.825	1.825	1.825
GHSV, 1/hr	2909	2957	2935	2999	2990
Days On-stream	9.4	10.4	11.4	12.4	13.4
Conversions, Mol % :					
H ₂	49.40	47.22	48.45	48.08	45.24
CO	55.42	54.70	54.05	51.49	53.20
H ₂ +CO	53.00	51.87	51.78	50.11	49.08
Yields, Wt % of Products :					
Hydrocarbons	13.55	13.53	13.10	12.24	12.00
CO ₂	40.32	39.58	39.31	38.13	36.23
H ₂ O	1.40	1.54	1.52	1.54	1.51
H ₂	2.33	2.45	2.40	2.42	2.57
CO	42.39	42.90	43.08	45.87	44.83
Total	100	100	100	100	100
Bal Recovery, Wt % of Charge:	100.24	100.81	100.25	101.14	99.46
(CO ₂)(H ₂)/(CO)(H ₂ O) :	9.01	8.37	8.14	7.47	8.29
gHC/Nm ³ (H ₂ +CO) conv.:	200	205	197	191	199
(H/C) Atomic Ratio in HC :	2.15	2.16	2.14	2.15	2.14
Selectivities, Wt % of HC :					
Methane	4.93	4.98	4.43	4.80	4.55
Ethene	0.68	0.74	0.69	0.69	0.70
Ethane	0.81	0.84	0.79	0.83	0.81
Propene	1.92	2.03	1.92	1.98	2.05
Propane	3.04	3.01	2.83	2.95	2.99
Butenes	3.39	3.55	3.31	3.14	3.29
i-Butane	5.00	4.93	4.63	4.76	4.85
n-Butane	3.14	3.08	2.80	2.82	2.89
C ₆ - C ₁₁	34.06	34.32	35.02	31.89	33.69
C ₁₂ + (Excl. Rx.-Wax)	0.52	0.26	0.07	0.30	0.18
Slurry Rx.-Wax	42.52	42.25	43.44	45.85	43.93
Total	100	100	100	100	100
i-C ₄ /(C ₃ = + C ₄ =) Molar :	0.81	0.76	0.76	0.80	0.78
(C ₃ /C ₄ =) Molar Ratio :	1.51	1.41	1.40	1.42	1.39
Alkylate, Wt % of HC :	9.46	9.39	8.82	9.00	9.19
Cat-Poly, Wt % of HC :	0.84	1.13	1.05	0.89	1.01
C ₅ - C ₁₁ PONA, Wt % :					
Paraffins	41.11	44.53	40.70	37.31	39.70
Olefins	17.59	19.23	20.02	23.72	18.95
Naphthenes	0.47	7.60	7.53	8.07	8.30
Aromatics	32.83	28.65	31.59	30.90	32.95

Table C-6
Composition of Hydrocarbon Products from
Two-Stage Slurry F-T/25W-5 Syngas Conversion
(Run C-256-B)

U B No	0- 41	0- 42	0- 44	0- 45	0- 46	0- 47	0- 48
Days On-stream	55.1	56.1	58.1	59.1	60.1	61.1	62.1
METHANE	2.16	2.85	1.56	0.86	2.42	3.29	4.17
ETHENE	0.51	0.31	1.14	0.26	0.62	0.59	0.77
ETHANE	0.25	0.58	0.89	0.16	0.38	0.73	0.52
PROPENE	0.79	0.87	1.18	0.63	1.27	1.64	1.66
PROPANE	1.64	2.53	2.29	0.99	2.13	2.43	2.66
1-BUTANE	2.44	4.11	3.78	1.88	3.59	4.87	4.47
1-BUTENE-2-METHYLPROPENE	1.03	0.96	1.11	0.76	1.27	1.75	1.88
N-BUTANE	1.79	2.63	2.29	1.21	2.16	2.56	2.67
TRANS-2-BUTENE	0.37	0.35	0.48	0.29	0.48	0.64	0.63
CIS-2-BUTENE	0.24	0.24	0.28	0.19	0.38	0.43	0.42
3-METHYL-1-BUTENE	0.93	0.82	0.83	0.82	0.83	0.86	0.85
1-PENTANE	1.97	3.87	2.68	1.88	2.48	3.16	3.27
1-PENTENE	0.83	0.83	0.83	0.83	0.84	0.10	0.88
2-METHYL-1-BUTENE	0.23	0.17	0.28	0.22	0.25	0.37	0.36
N-PENTANE	1.29	1.84	1.38	1.19	1.28	1.73	1.89
TRANS-2-PENTENE	0.14	0.11	0.13	0.15	0.15	0.24	0.23
CIS-2-PENTENE	0.08	0.06	0.08	0.07	0.07	0.11	0.11
2-METHYL-2-BUTENE	0.85	0.58	0.57	0.72	0.69	1.02	0.95
2,2-DIMETHYLBUTANE	0.00	0.00	0.00	0.00	0.01	0.02	0.02
CYCLOPENTANE	0.00	0.02	0.02	0.04	0.05	0.03	0.03
HEXENES + ISO-HEXANES	0.00	0.02	0.03	0.02	0.07	0.17	0.11
2,3-DIMETHYLBUTANE	0.04	0.07	0.07	0.05	0.01	0.09	0.08
2-METHYLPENTANE	0.82	1.05	0.89	1.17	0.86	1.19	1.38
3-METHYLPENTANE	0.88	0.38	0.31	0.53	0.29	0.51	0.48
HEXANES	0.00	0.00	0.00	0.42	0.00	0.00	0.00
1-HEXENE	0.38	0.00	0.00	0.00	0.00	0.00	0.00
N-HEXANE	0.55	0.51	0.58	1.18	0.58	0.88	0.85
2,2-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,4-DIMETHYLPENTANE	0.00	0.00	0.00	0.01	0.00	0.00	0.00
METHYLCYCLOPENTANE	0.07	0.14	0.13	0.27	0.11	0.23	0.08
CYCLOHEXANE	0.00	0.00	0.00	0.01	0.00	0.00	0.00
HEPTENES + ISO-HEPTANES	0.23	1.18	0.18	0.12	0.24	0.47	0.65
2-METHYLHEXANE	0.21	1.24	0.18	0.03	0.18	0.42	0.46
2,3-DIMETHYLPENTANE	0.00	0.00	0.00	0.18	0.02	0.04	0.04
3-METHYLHEXANE	0.14	1.17	0.14	0.74	0.13	0.31	0.35
1-CIS-3-DIMETHYL-N5	0.05	0.05	0.04	0.18	0.04	0.09	0.18
1-TRANS-3-DIMETHYL-N5	0.02	0.04	0.04	0.17	0.03	0.08	0.18
1-TRANS-2-DIMETHYL-N5	0.00	0.03	0.03	0.12	0.03	0.18	0.08
N-HEPTANE	0.18	0.18	0.14	0.81	0.18	0.43	0.52
C7-OLEFINS	0.00	0.00	0.00	0.89	0.00	0.00	0.00
METHYLCYCLOHEXANE	0.18	0.08	0.08	0.26	0.05	0.15	0.15
C8-OLEFINS + ISO-P	0.23	0.18	0.08	0.03	0.11	0.38	0.43
ISO-C8-P + O + N5 + N6	0.00	0.13	0.12	0.07	0.17	0.58	1.19
MONOMETHYL-ISO-C8-P	0.00	0.00	0.00	0.95	0.00	0.00	0.00
OTHER ISO-C8-P	0.00	0.00	0.00	0.12	0.00	0.00	0.00
C8-OLEFINS	0.00	0.00	0.00	1.81	0.00	0.00	0.00
C8-NAPHTHENES (N5+N6)	0.00	0.00	0.00	1.19	0.00	0.00	0.00
N-OCTANE	0.00	0.00	0.00	0.45	0.00	0.00	0.00
C9-OLEFINS + ISO-P	0.09	0.05	0.03	0.05	0.12	0.14	1.28
MONOMETHYL-ISO-C9-P	0.00	0.00	0.00	0.51	0.00	0.00	0.00
OTHER ISO-C9-P	0.00	0.00	0.00	0.19	0.00	0.00	0.00
C9-OLEFINS	0.00	0.00	0.00	1.54	0.00	0.00	0.00
C9-NAPHTHENES (N5+N6)	0.00	0.00	0.00	0.55	0.00	0.00	0.00
N-NONANE	0.00	0.00	0.00	0.18	0.00	0.00	0.00
ISO-C10-P + O + N5 + N6	0.00	0.00	0.00	0.98	0.00	0.00	0.00
N-DECANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C11-P + O + N5 + N6	0.00	0.00	0.00	0.38	0.00	0.00	0.00
BENZENE	0.07	0.09	0.09	0.26	0.09	0.18	0.22
TOLUENE	0.64	0.18	0.17	1.33	0.13	0.28	0.44
ETHYLBENZENE	0.69	0.23	0.22	0.74	0.12	0.13	0.89
M-XYLENE	0.00	0.00	0.00	2.54	0.00	0.00	0.00
P-XYLENE	0.19	0.00	0.00	0.49	0.00	0.00	0.00
N-PROPYLBENZENE	0.00	0.00	0.00	0.28	0.00	0.00	0.00
1-METHYL-3-ETHYL-BENZENE	0.00	0.00	0.00	1.94	0.00	0.00	0.00
1-METHYL-4-ETHYL-BENZENE	0.00	0.00	0.00	0.93	0.00	0.00	0.00
1,3,5-TRIMETHYL-BENZENE	0.00	0.00	0.00	0.84	0.00	0.00	0.00
1-METHYL-2-ETHYLBENZENE	0.00	0.00	0.00	0.88	0.00	0.00	0.00
1,2,4-TRIMETHYLBENZENE	0.00	0.00	0.00	1.43	0.00	0.00	0.00
1-METHYL-2-ISO-C3-BENZENE	0.00	0.00	0.00	0.82	0.00	0.00	0.00
1,3-DIETHYLBENZENE	0.00	0.00	0.00	0.77	0.00	0.00	0.00
N-C4-BENZENE	0.00	0.00	0.00	0.43	0.00	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.00	0.00	0.00	0.84	0.00	0.00	0.00
C18-ALKYLBENZENES	0.00	0.00	0.00	1.24	0.00	0.00	0.98
1,2,4,5-TETRAMETHYLBENZENE	0.00	0.00	0.00	0.13	0.00	0.00	0.00
1,2,3,5-TETRAMETHYLBENZENE	0.00	0.00	0.00	0.81	0.00	0.18	0.00
1,2,3,4-TETRAMETHYLBENZENE	0.00	0.00	0.00	0.87	0.00	0.00	0.00
UNKNOWN (MC AROMATICS)	0.00	0.00	0.00	1.18	0.00	0.00	0.00
UNKNOWN LITE HYDRO-CARB LIQ (1)	21.94	29.22	28.81	0.00	21.67	18.91	15.83
UNKNOWN HWY HYDRO-CARB LIQ (2)	1.08	0.00	0.00	0.00	0.00	0.26	0.17
SLURRY REACTOR WAX	57.34	46.81	49.73	57.93	55.24	49.82	47.86

(1) Collected in Chilled and Ambient Condensers
(2) Collected in Hot Condenser

Table C-8 (Cont'd)
Composition of Hydrocarbon Products from
Two-Stage Slurry F-7/250-5 Sludge Condensation
(Run C1-256-1)

M.B. No.	8-49	8-50	8-51	8-52	8-53
Days On-stream	63.1	64.1	65.1	66.1	67.1
METHANE	4.63	4.99	4.43	4.00	4.65
ETHENE	0.68	0.74	0.69	0.69	0.76
ETHANE	0.01	0.04	0.79	0.03	0.01
PROPENE	1.92	2.03	1.92	1.90	2.05
PROPANE	3.04	3.01	2.83	2.95	2.99
I-BUTANE	5.00	4.93	4.63	4.76	4.85
1-BUTENE-2-METHYLPROPENE	2.09	2.18	2.01	1.93	2.00
N-BUTANE	3.14	3.00	2.86	2.82	2.89
TRANS-2-BUTENE	0.70	0.82	0.70	0.73	0.77
CIS-2-BUTENE	0.53	0.55	0.52	0.49	0.52
3-METHYL-1-BUTENE	0.06	0.06	0.05	0.06	0.06
I-PENTANE	3.83	3.87	3.62	2.92	3.71
1-PENTENE	0.07	0.08	0.07	0.02	0.07
2-METHYL-1-BUTENE	0.45	0.50	0.47	0.31	0.44
N-PENTANE	2.04	2.13	1.97	1.48	1.89
TRANS-2-PENTENE	0.29	0.33	0.31	0.62	0.29
CIS-2-PENTENE	0.14	0.16	0.15	0.16	0.14
2-METHYL-2-BUTENE	1.23	1.39	1.29	0.81	1.20
UNKNOWN C5-MONODLEFINS	0.00	0.00	0.00	0.34	0.00
2,2-DIMETHYLBUTANE	0.02	0.02	0.02	0.00	0.03
CYCLOPENTANE	0.09	0.10	0.09	0.05	0.10
HEXENES - ISO-HEXANES	0.08	0.11	0.09	0.04	0.09
2,3-DIMETHYLBUTANE	0.06	0.07	0.07	0.14	0.06
2-METHYLPENTANE	1.00	1.78	1.60	1.51	1.52
3-METHYLPENTANE	0.67	0.72	0.70	0.67	0.60
HEXENES	0.30	0.43	0.50	0.08	0.43
N-HEXANE	1.20	1.27	1.20	0.56	1.09
2,2-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.03
2,4-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00
METHYLCYCLOPENTANE	0.38	0.38	0.40	0.41	0.38
3,3-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00
CYCLOHEXANE	0.01	0.01	0.01	0.01	0.01
HEPTENES - ISO-HEPTANES	0.30	0.38	0.31	0.24	0.29
2-METHYLHEXANE	0.67	0.68	0.66	0.60	0.57
2,3-DIMETHYLPENTANE	0.11	0.12	0.12	0.10	0.13
3-METHYLHEXANE	0.61	0.62	0.61	0.55	0.55
1-CIS-3-DIMETHYL-N6	0.10	0.20	0.20	0.21	0.22
1-TRANS-3-DIMETHYL-N6	0.10	0.10	0.10	0.10	0.20
1-TRANS-2-DIMETHYL-N6	0.13	0.13	0.13	0.13	0.14
N-HEPTANE	0.72	0.74	0.72	0.62	0.65
C7-DLEFINS	0.43	0.61	0.79	0.62	0.60
METHYLCYCLOHEXANE	0.25	0.26	0.26	0.18	0.27
C8-DLEFINS - ISO-P	0.14	0.15	0.13	0.07	0.14
ISO-C8-P + 0 - N6 - N6	0.10	0.23	0.17	0.00	0.14
MONOMETHYL-ISO-C8-P	0.64	0.62	0.62	0.55	0.52
OTHER ISO-C8-P	0.09	0.09	0.10	0.10	0.10
C8-DLEFINS	1.11	1.10	1.01	1.25	1.31
C8-NAPHTHENES (N6+N8)	0.94	0.93	0.90	0.80	0.98
N-OCTANE	0.33	0.33	0.33	0.30	0.29
C9-DLEFINS - ISO-P	0.24	0.18	0.17	0.16	0.17
MONOMETHYL-ISO-C9-P	0.00	0.29	0.30	0.27	0.25
OTHER ISO-C9-P	0.14	0.14	0.14	0.14	0.13
C9-DLEFINS	1.17	1.06	1.16	1.02	0.96
C9-NAPHTHENES (N5+N8)	0.75	0.41	0.43	0.41	0.40
N-NONANE	0.00	0.13	0.13	0.12	0.12
ISJ-C10-P + 0 - N6 - N6	0.72	0.67	0.73	0.64	0.61
N-DECANE	0.03	0.03	0.04	0.03	0.03
C11-P + 0 - N6 - N6	0.17	0.59	0.20	0.50	0.23
BENZENE	0.30	0.33	0.34	0.31	0.35
TOLUENE	1.23	1.19	1.30	1.20	1.50
ETHYLBENZENE	0.74	0.70	0.74	0.53	0.70
M-XYLENE	2.00	1.83	2.01	1.95	2.01
O-XYLENE	0.42	0.39	0.44	0.45	0.47
N-PROPYLBENZENE	0.15	0.19	0.16	0.14	0.14
1-METHYL-3-ETHYLBENZENE	1.63	1.35	1.47	1.30	1.41
1-METHYL-4-ETHYLBENZENE	0.72	0.65	0.70	0.65	0.67
1,3,5-TRIMETHYLBENZENE	0.03	0.03	0.03	0.03	0.03
1-METHYL-2-ETHYLBENZENE	0.05	0.05	0.05	0.05	0.05
1,2,4-TRIMETHYLBENZENE	1.17	1.05	1.14	1.10	1.16
1-METHYL-2-ISO-C3-BENZENE	0.01	0.00	0.02	0.02	0.02
1,3-DIETHYLBENZENE	0.54	0.48	0.53	0.46	0.46
1-METHYL-3-N-C3-BENZENE	0.00	0.00	0.00	0.00	0.02
N-C4-BENZENE	0.30	0.27	0.29	0.26	0.26
1,2,3-TRIMETHYLBENZENE	0.03	0.03	0.03	0.02	0.03
C10-ALKYLBENZENES	0.94	0.83	0.90	0.79	0.81
1,2,4,5-TETRAMETHYLBENZENE	0.10	0.09	0.10	0.09	0.09
1,2,3,5-TETRAMETHYLBENZENE	0.01	0.01	0.01	0.01	0.01
1,2,3,4-TETRAMETHYLBENZENE	0.05	0.04	0.05	0.04	0.00
C11-ALKYLBENZENES	0.00	0.00	0.00	0.00	0.00
NAPHTHALENE	0.00	0.00	0.00	0.00	0.00
UNKNOWN (HC AROMATICS)	0.09	0.33	0.70	0.30	0.77
UNKNOWN HVY HYDRO-CARB LIQ (2)	0.52	0.28	0.07	0.30	0.17
SLURRY REACTOR-WAX	42.52	42.25	43.44	45.05	43.93

(1) Collected in Chilled and Ambient Condensers
(2) Collected in Hot Condenser

APPENDIX D

SUMMARY OF DATA FROM RUN CT-256-9

Table C-1
First Stage Fischer-Tropsch Slurry Reactor
Operating Conditions and Material Balances
 (Based on Inter-reactor Sample)
 (Run CT-256-9)

(Nitrogen-Free Basis)	9- 1*	9- 3	9- 4	9- 5	9- 7	9- 9	9- 11
M.B. No							
Days On-stream	1.5	3.5	4.5	5.5	7.5	9.5	12.7
First-Stage Conditions:							
Charge H ₂ /CO (Molar)	0.668	0.681	0.673	0.669	0.663	0.675	0.670
Temperature, °C	257	256	255	256	255	255	252
Pressure, MPa	1.487	1.487	1.832	1.832	1.825	1.825	1.825
Feed Sup. Vel., cm/s	4.645	4.823	4.792	4.883	4.788	4.831	4.748
Space Vel., NL/gFe-hr	1.857	1.957	2.403	2.408	2.394	2.420	2.396
N ₂ in Feed, Mol %	0.7	0.6	0.6	0.6	0.6	0.7	0.6
Conversions, Mol % :							
H ₂	81.01	79.73	73.95	77.83	69.49	72.11	33.23
CO	93.81	95.99	92.12	90.87	87.39	86.50	42.88
H ₂ +CO	88.88	89.41	84.82	85.34	88.25	88.75	39.01
Yields, Wt % of Products :							
Hydrocarbons (1)	23.68	23.81	24.07	24.19	22.50	20.98	11.38
CO ₂	67.81	69.57	65.76	65.87	63.68	63.72	28.91
H ₂ O (1)	2.07	1.79	1.56	1.19	1.41	1.18	0.79
H ₂	0.83	0.98	1.19	1.63	1.38	1.31	3.15
CO	5.81	3.87	7.42	8.51	11.18	12.90	55.84
Total	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	105.66	98.58	101.01	102.11	107.32	99.01	97.43
(CO ₂)(H ₂)/(CO)(H ₂ O) :	27.83	55.88	38.68	37.77	29.82	33.32	11.76
gHC/Nm ³ (H ₂ +CO) conv.:	219	284	223	226	238	288	219
(H/L) Atomic Ratio in HC :	2.15	2.16	2.16	2.15	2.15	2.15	2.17
Selectivities, Wt % of HC :							
Methane	3.87	4.17	4.23	3.82	4.36	3.72	4.83
Ethane	2.17	2.00	2.12	1.94	1.99	2.24	2.43
Ethene	0.84	1.02	0.95	0.94	1.12	1.10	1.43
Propane	3.52	3.55	3.44	3.19	3.49	3.59	4.11
Propene	0.53	0.77	0.84	0.82	0.98	1.01	1.08
Butenes	2.75	2.88	2.77	2.59	2.81	2.89	3.17
i-Butane	0.84	0.85	0.86	0.86	0.88	0.88	0.89
n-Butane	0.83	0.82	0.92	0.86	0.90	1.06	1.06
C ₅ - C ₁₁ (2)	4.85	7.55	7.45	6.72	7.34	8.33	12.88
Light Hydrocarbons (3)	18.86	18.88	18.71	12.58	13.21	11.92	12.34
Heavy Hydrocarbons (4)	13.22	15.00	15.78	15.83	18.18	18.28	16.98
Slurry Rx.-Wax	58.28	58.88	58.88	58.88	45.88	45.88	48.88
Total	100	100	100	100	100	100	100

- * Not based on Inter-reactor sample; Second-Stage not in operation.
 (1) Including Oxygenates
 (2) In Gas Phase Only
 (3) Collected in Chilled and Ambient Condensers
 (4) Collected in Hot Condenser

Table D-2
Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
(Based on Inter-Reactor Sample)
(Run CT-255-9)

M.B. No.	9- 1*	9- 3	9- 4	9- 5	9- 7	9- 9	9- 11
Days On-stream	1.5	3.5	4.5	5.5	7.5	9.5	12.7
METHANE	3.87	4.17	4.23	3.82	4.36	3.72	4.03
ETHENE	2.17	2.00	2.12	1.94	1.99	2.24	2.43
ETHANE	0.84	1.02	0.95	0.94	1.12	1.10	1.43
PROPENE	3.52	3.55	3.44	3.19	3.49	3.59	4.11
PROPANE	0.63	0.77	0.84	0.82	0.90	1.01	1.08
I-BUTANE	0.04	0.05	0.06	0.06	0.05	0.08	0.09
1-BUTENE+2-METHYLPROPENE	2.66	2.79	2.71	2.52	2.73	2.82	3.09
N-BUTANE	0.63	0.82	0.92	0.88	0.94	1.06	1.06
TRANS-2-BUTENE	0.03	0.04	0.02	0.03	0.03	0.03	0.03
CIS-2-BUTENE	0.08	0.06	0.04	0.04	0.05	0.04	0.06
3-METHYL-1-BUTENE	0.15	0.15	0.14	0.14	0.15	0.16	0.20
1-PENTANE	0.05	0.06	0.06	0.06	0.06	0.10	0.11
1-PENTENE	1.84	2.14	2.04	1.89	2.05	2.16	2.33
2-METHYL-1-BUTENE	0.00	0.00	0.07	0.07	0.07	0.07	0.10
N-PENTANE	0.44	0.61	0.58	0.52	0.69	0.79	0.87
TRANS-2-PENTENE	0.03	0.03	0.02	0.02	0.02	0.02	0.02
CIS-2-PENTENE	0.03	0.03	0.02	0.02	0.02	0.02	0.03
UNKNOWN C5-MONDOLEFINS	0.00	0.00	0.00	0.00	0.03	0.06	0.06
CYCLOPENTANE	0.00	0.01	0.01	0.00	0.01	0.01	0.03
HEXENES + ISO-HEXANES	0.14	0.24	0.23	0.22	0.23	0.27	0.52
2,3-DIMETHYLBUTANE	0.02	0.02	0.02	0.02	0.02	0.03	0.05
2-METHYLPENTANE	0.03	0.00	0.07	0.06	0.07	0.09	0.12
3-METHYLPENTANE	0.02	0.02	0.03	0.02	0.02	0.03	0.04
1-HEXENE	1.83	1.54	1.47	1.32	1.45	1.57	1.85
N-HEXANE	0.20	0.40	0.50	0.46	0.50	0.50	0.66
HEPTENES + ISO-HEPTANES	0.13	0.20	0.23	0.21	0.22	0.26	0.47
1-HEPTENE	0.30	0.61	0.60	0.70	0.77	0.89	1.32
N-HEPTANE	0.10	0.26	0.28	0.25	0.27	0.34	0.50
C8-OLEFINS + ISO-P	0.03	0.00	0.06	0.05	0.06	0.08	0.20
1-OCTENE	0.07	0.32	0.34	0.29	0.31	0.39	0.81
N-OCTANE	0.02	0.11	0.13	0.10	0.12	0.16	0.32
C9-OLEFINS + ISO-P	0.01	0.20	0.28	0.25	0.27	0.33	1.56
METHANOL	0.06	0.00	0.07	0.07	0.07	0.09	0.23
ACETONE	0.12	0.30	0.39	0.34	0.30	0.48	0.77
1-PROPANOL	0.13	0.17	0.26	0.24	0.23	0.22	0.28
UNKNOWN LITE HYDRO-CARB LIQ (1)	10.90	10.60	10.71	12.58	13.21	11.92	12.34
UNKNOWN HYY HYDRO-CARB LIQ (2)	13.22	16.00	15.70	15.03	18.10	18.20	16.90
SLURRY REACTOR-WAX	50.20	50.00	50.00	50.00	45.00	45.00	40.00

* Not based on Inter-reactor sample; Second-Stage not in operation
(1) Collected in Ambient and Chilled Condensers
(2) Collected in Hot Condenser

Table D-3
 Second-Stage Fired-Bed ISM-S Reactor
 Operating Conditions and Material Balances
 (Run T-256-9)

(Nitrogen-Free Basis)	9- 3	9- 4	9- 5	9- 7	9- 8	9- 9	9- 11
M.B. No.							
Days On-stream	3.5	4.5	5.5	7.5	8.5	9.5	12.7
First-Stage Conditions:							
Charge H ₂ /CO (Molar)	0.681	0.673	0.669	0.663	0.669	0.675	0.670
Temperature, °C	256	255	256	255	255	255	262
Pressure, MPa	1.487	1.632	1.632	1.825	1.825	1.825	1.825
Feed Sup. Vel., cm/s	4.823	4.792	4.803	4.779	4.809	4.830	4.747
Space Vel., NL/gFe-hr	1.957	2.403	2.400	2.394	2.412	2.420	2.306
N ₂ in Feed, Mol %	0.6	0.6	0.6	0.6	0.5	0.7	0.6
Second-Stage Conditions:							
Temp., Inlet, °C	319	323	328	333	351	358	373
Outlet, °C	354	356	358	371	393	402	394
Pressure, MPa	1.407	1.825	1.825	1.825	1.825	1.818	1.825
GHSV, 1/hr	25.1	32.78	33.52	37.00	33.60	36.45	56.50
Days On-stream	17.5	18.5	19.5	21.5	22.5	23.5	28.8
Conversions, Mol % :							
H ₂	81.27	78.75	77.78	71.92	75.12	72.12	38.83
CO	95.99	92.28	91.15	88.44	87.77	88.87	43.89
H ₂ +CO	98.83	88.84	85.79	88.65	82.78	88.81	38.57
Yields, Wt % of Products :							
Hydrocarbons	24.72	23.27	24.13	22.82	22.38	20.57	12.16
CO ₂	68.93	66.89	65.82	62.48	62.48	63.83	28.88
H ₂ O	1.61	1.55	1.59	1.51	1.58	1.45	1.32
H ₂	0.88	0.98	1.00	1.19	1.22	1.31	3.27
CO	3.85	7.31	8.28	12.82	12.38	12.84	64.85
Total	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:							
(CO ₂)(H ₂)/(CO)(H ₂ O) :	55.87	32.83	28.27	23.35	22.38	25.52	7.38
gHC/Nm ³ (H ₂ +CO) conv.:	211	218	224	238	198	195	239
(H/C) Atomic Ratio in HC :	2.18	2.18	2.18	2.15	2.18	2.18	2.15
Selectivities, Wt % of HC :							
Methane	4.83	3.85	3.88	4.18	4.18	3.64	3.98
Ethane	0.44	0.48	0.54	0.62	0.69	0.79	1.38
Ethene	1.87	0.97	1.04	1.14	1.20	1.34	1.64
Propene	1.58	1.86	1.78	2.15	2.32	2.58	3.95
Propene	2.58	2.42	2.38	2.78	3.85	4.97	3.99
Butenes	2.92	3.28	3.14	3.91	3.34	3.34	4.64
i-Butane	4.88	3.64	3.21	4.85	5.38	6.29	4.88
n-Butane	2.88	2.88	2.29	2.88	3.54	4.88	3.12
C ₆ - C ₁₁	38.89	38.49	31.45	33.18	29.78	27.49	32.33
C ₁₂ + (Excl. Rx.-Wax)	8.44	8.54	8.37	8.28	8.78	8.49	8.25
Slurry Rx.-Wax	58.88	58.88	58.88	45.88	45.88	45.88	48.88
Total	100	100	100	100	100	100	100
i-C ₄ /(C ₃ +C ₄) Molar :							
(C ₃ /C ₃) Molar Ratio :	1.58	1.39	1.24	1.22	1.63	1.84	8.98
Alkyate, Wt % of HC :	7.73	7.18	6.31	7.98	18.11	11.88	9.42
Cat-Poly, Wt % of HC :	8.82	1.48	1.81	2.15	8.92	8.54	3.98
C ₆ - C ₁₁ PONA, Wt % :							
Paraffins	46.88	46.88	--	41.78	43.84	48.88	--
Diolefins	22.35	25.79	--	27.88	17.52	13.97	--
Naphthenes	8.84	5.18	--	5.91	8.89	8.52	--
Aromatics	24.92	22.43	--	24.71	38.54	28.88	--

Tab # D-4
Composition of Hydrocarbon Products from
Two-Stage Ethane FT/MS-E Syngas Conversion
MOL FRACTION

M/B No. Days On-stream	9- 3	9- 4	9- 5	9- 7	9- 8	9- 9	9- 11
	3 E	4 E	5 E	7 E	8 E	9 E	11 E
METHANE	4.05	3.85	3.80	4.10	4.10	3.64	3.90
ETHENE	0.44	0.40	0.54	0.02	0.09	0.29	1.36
ETHANE	1.07	0.97	1.04	1.14	1.20	1.34	1.64
PROPENE	1.56	1.06	1.78	2.15	2.32	1.58	3.95
PROPANE	1.56	1.47	1.30	2.76	3.95	4.97	3.99
1-BUTANE	4.06	3.64	3.21	4.05	5.38	6.29	4.80
1,2-BUTENE+2-METHYLPROPENE	1.76	1.97	1.92	2.34	1.99	2.01	2.75
1-BUTENE	2.80	2.88	2.29	2.90	3.64	4.06	3.12
TRANS-2-BUTENE	0.70	0.70	0.73	0.94	0.80	0.79	1.05
CIS-2-BUTENE	0.40	0.52	0.49	0.63	0.55	0.54	0.76
3-METHYL-1-BUTENE	0.05	0.07	0.06	0.08	0.05	0.05	0.07
1-PENTANE	3.20	2.97	2.02	3.27	3.06	3.05	2.92
1-PENTENE	0.07	0.09	0.06	0.10	0.09	0.07	0.09
2-METHYL-1-BUTENE	0.44	0.52	0.37	0.60	0.43	0.37	0.46
N-PENTANE	2.00	1.99	1.21	2.14	2.14	2.16	1.62
TRANS-2-PENTENE	0.30	0.35	0.23	0.42	0.30	0.26	0.31
CIS-2-PENTENE	0.14	0.17	0.11	0.20	0.15	0.13	0.15
2-METHYL-2-BUTENE	1.27	1.46	0.80	1.05	1.11	0.91	1.06
2,2-DIMETHYLBUTANE	0.02	0.02	0.02	0.02	0.02	0.02	0.04
CYCLOPENTANE	0.03	0.04	0.01	0.04	0.09	0.10	0.11
HEXENES + ISO-HEXANES	0.05	0.07	0.05	0.08	0.04	0.09	0.08
2,3-DIMETHYLBUTANE	0.00	0.05	0.05	0.10	0.11	0.07	0.10
2-METHYLPENTANE	1.01	1.11	0.53	1.57	1.43	1.34	0.69
3-METHYLPENTANE	0.59	0.50	0.17	0.51	0.54	0.53	0.39
HEXENES	0.50	0.73	0.00	0.05	0.01	0.43	0.00
N-HEXANE	1.24	1.29	0.34	1.39	1.18	1.07	0.56
2,2-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,4-DIMETHYLPENTANE	0.00	0.00	0.00	0.01	0.01	0.00	0.00
METHYLCYCLOPENTANE	0.27	0.24	0.05	0.34	0.50	0.51	0.39
3,3-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CYCLOHEXANE	0.01	0.01	0.00	0.01	0.02	0.02	0.00
HEPTENES + ISO-HEPTANES	0.21	0.23	0.25	0.24	0.14	0.13	0.35
2-METHYLHEXANE	0.00	0.70	0.00	0.04	0.50	0.42	0.13
2,3-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.11	0.12	0.04
3-METHYLHEXANE	0.50	0.57	0.05	0.50	0.48	0.42	0.12
1-CIS-3-DIMETHYLN5	0.13	0.11	0.01	0.15	0.20	0.20	0.09
1-TRANS-3-DIMETHYLN5	0.12	0.11	0.00	0.14	0.19	0.19	0.00
1-TRANS-2-DIMETHYLN5	0.09	0.00	0.02	0.10	0.14	0.14	0.00
N-HEPTANE	0.74	0.85	0.00	0.80	0.85	0.53	0.23
C7-OLEFINS	0.95	1.15	0.00	1.27	0.80	0.50	0.00
METHYLCYCLOHEXANE	0.10	0.10	0.00	0.00	0.13	0.12	0.10
C8-OLEFINS + ISO-P	0.02	0.01	0.01	0.02	0.04	0.04	0.20
ISO-C8-P + O + NS + NB	0.01	0.01	0.01	0.01	0.00	0.00	0.22
MONOMETHYL-ISO-C8-P	0.09	0.76	0.00	0.04	0.45	0.37	0.00
OTHER ISO-C8-P	0.07	0.07	0.00	0.02	0.09	0.00	0.00
C8-OLEFINS	1.40	1.41	0.00	2.24	0.86	0.52	0.00
C8-NAPHTHENES (NB+NS)	0.03	0.00	0.00	0.00	0.02	0.78	0.00
N-OCTANE	0.42	0.51	0.00	0.00	0.33	0.25	0.00
C9-OLEFINS + ISO-P	0.00	0.00	0.00	0.00	0.00	0.00	0.29
MONOMETHYL-ISO-C9-P	0.30	0.41	0.00	0.34	0.19	0.14	0.00
OTHER ISO-C9-P	0.10	0.10	0.00	0.10	0.09	0.00	0.00
C9-OLEFINS	1.20	1.07	0.00	1.48	0.70	0.44	0.00
C9-NAPHTHENES (NB+NS)	0.46	0.27	0.00	0.20	0.20	0.22	0.00
N-NONANE	0.01	0.20	0.00	0.00	0.13	0.00	0.00
ISO-C10-P + O + NS + NB	0.76	0.77	0.00	1.10	0.43	1.30	0.00
N-DECANE	0.05	0.07	0.00	0.00	0.03	0.13	0.00
C11-P + O + NS + NB	0.50	0.05	0.00	0.20	0.31	0.26	0.00
BENZENE	0.26	0.27	0.00	0.34	0.31	0.20	0.21
TOLUENE	0.79	0.64	0.00	0.92	1.47	1.82	0.34
ETHYLBENZENE	0.41	0.35	0.00	0.45	0.50	0.50	0.40
M-XYLENE	1.45	1.29	0.00	1.01	1.07	2.00	0.00
O-XYLENE	0.20	0.23	0.00	0.33	0.51	0.54	0.00
N-PROPYLBENZENE	0.14	0.10	0.00	0.10	0.11	0.00	0.00
1-METHYL-3-ETHYLBENZENE	1.05	0.93	0.00	1.09	1.14	0.49	0.00
1-METHYL-4-ETHYLBENZENE	0.52	0.47	0.00	0.54	0.54	0.01	0.00
1,3,5-TRIMETHYLBENZENE	0.03	0.00	0.00	0.04	0.03	0.01	0.00
1-METHYL-2-ETHYLBENZENE	0.04	0.00	0.00	0.05	0.00	0.00	0.00
1,2,4-TRIMETHYLBENZENE	0.76	0.60	0.00	0.83	0.97	0.97	0.00
1-METHYL-2-ISO-C3-BENZENE	0.02	0.02	0.00	0.01	0.01	0.01	0.00
1,3-DIETHYLBENZENE	0.42	0.40	0.00	0.30	0.30	0.24	0.00
1-METHYL-3-N-C3-BENZENE	0.00	0.00	0.00	0.00	0.02	0.02	0.00
N-C4-BENZENE	0.25	0.25	0.00	0.24	0.16	0.12	0.00
1,2,3-TRIMETHYLBENZENE	0.04	0.02	0.00	0.03	0.03	0.03	0.00
C10-ALKYLBENZENES	0.50	0.50	0.00	0.57	0.47	0.40	0.00
1,2,4,6-TETRAMETHYLBENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2,3,5-TETRAMETHYLBENZENE	0.01	0.01	0.00	0.01	0.01	0.01	0.00
1,2,3,4-TETRAMETHYLBENZENE	0.05	0.05	0.00	0.05	0.02	0.02	0.00
NAPHTHALENE	0.00	0.00	0.00	0.02	0.00	0.00	0.00
UNKNOWN (HC AROMATICS)	0.33	0.20	0.00	0.47	0.31	0.32	0.00
UNKNOWN LITE HYDRO-CARB LIQ (1)	0.00	0.00	0.00	0.00	0.00	0.00	20.57
UNKNOWN HVM HYDRO-CARB LIQ (2)	0.44	0.54	0.37	0.20	0.70	0.45	0.25
SLURRY REACTOR-WAX	50.00	50.00	50.00	45.00	45.00	45.00	40.00

(1) Collected in Chilled and Ambient Condensers
(2) Collected in Mol Condenser

APPENDIX E

SUMMARY OF DATA FROM RUN CT-256-11

Table E-1
First Stage Fischer-Tropsch Slurry Reactor
Operating Conditions and Material Balances
 (Second-Stage Not Operative)
 (Run CT-256-11)

(Nitrogen-Free Basis)	11- 2	11- 3	11- 4	11- 5	11- 6	11- 7
W.B. No.						
Days On-stream	2.3	3.3	4.3	5.3	6.3	7.3
First-Stage Conditions:						
Charge H ₂ /CO (Molar)	0.692	0.682	0.661	0.678	0.679	0.688
Temperature, °C	258	258	259	259	269	258
Pressure, MPa	1.480	1.480	1.480	1.480	1.487	1.487
Feed Sup. Vel., cm/s	5.270	5.331	5.254	5.406	5.995	6.013
Space Vel., NL/gFe-hr	2.300	2.300	2.300	2.300	2.300	2.300
N ₂ in Feed, Mol %	0.6	0.5	0.6	0.5	0.5	0.5
Conversions, Mol % :						
H ₂	78.80	78.11	81.25	78.77	76.73	73.70
CO	92.84	94.07	95.22	93.58	91.75	89.67
H ₂ +CO	86.16	87.60	89.66	87.82	85.68	83.17
Yields, Wt % of Products :						
Hydrocarbons (1)	21.44	22.26	20.98	24.32	21.95	21.42
CO ₂	67.50	68.14	70.39	66.63	68.26	65.23
H ₂ O (1)	2.21	2.30	2.76	1.92	1.89	1.72
H ₂	1.28	1.12	0.93	1.05	1.20	1.30
CO	7.65	6.17	4.94	6.09	6.71	10.32
Total	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	91.56	91.35	92.14	94.43	90.24	85.17
(CO ₂) (H ₂)/(CO) (H ₂ O) :	27.34	30.88	27.17	34.01	27.64	27.27
gHC/Nm ³ (H ₂ +CO) conv.:	176	188	169	203	179	189
(H/C) Atomic Ratio in HC :	2.14	2.14	2.14	2.13	2.14	2.14
Selectivities, Wt % of HC :						
Methane	3.15	3.18	3.24	2.87	3.15	3.06
Ethane	2.03	1.91	1.93	1.57	1.71	1.66
Ethane	0.78	0.86	0.91	0.80	0.86	0.82
Propene	3.27	3.24	3.03	2.88	3.15	3.02
Propane	0.62	0.64	0.74	0.60	0.67	0.65
Butenes	2.00	2.00	3.27	2.36	2.61	2.47
i-Butane	0.04	0.04	0.05	0.04	0.04	0.03
n-Butane	0.01	0.03	0.04	0.02	0.00	0.07
C ₅ - C ₁₁ (2)	5.24	5.11	6.98	4.62	5.21	5.21
Light Hydrocarbons (3)	14.87	14.96	16.82	19.77	17.33	16.73
Heavy Hydrocarbons (4)	16.47	16.55	11.04	13.60	14.23	15.33
Slurry Rx.-Wax	50.00	50.00	50.00	50.00	50.00	50.00
Total	100	100	100	100	100	100

- (1) Including Oxygenates
 (2) In Gas Phase Only
 (3) Collected in Chilled and Ambient Condensers
 (4) Collected in Hot Condenser

Table E-1 (Cont'd)
 First Stage Fischer-Tropsch Slurry Reactor
 Operating Conditions and Material Balances
 (Second-Stage Not Operative)
 (Run CT-256-11)

(Nitrogen-Free Basis)	11- 8	11- 9	11- 10	11- 11	11- 12
M.B. No.					
Days On-stream	8.3	9.3	10.3	12.3	14.3
First-Stage Conditions:					
Charge H ₂ /CO (Molar)	0.681	0.676	0.682	0.682	0.682
Temperature, °C	259	258	258	258	257
Pressure, MPa	1.480	1.480	1.480	1.480	1.480
Feed Sup. Vel., cm/s	5.789	5.736	5.748	5.180	8.070
Space Vel., NL/gFe-hr	2.300	2.300	2.300	2.300	2.300
N ₂ in Feed, Mol %	0.6	0.5	0.6	0.6	0.8
Conversions, Mol % :					
H ₂	73.11	69.12	70.72	71.19	36.75
CO	89.23	85.97	87.92	86.22	48.79
H ₂ -CO	82.76	79.17	80.95	80.12	43.91
Yields, Wt % of Products :					
Hydrocarbons (1)	21.89	21.61	22.62	22.91	12.11
CO ₂	65.85	61.75	62.98	61.26	30.24
H ₂ O (2)	1.49	1.49	1.46	1.49	1.67
H ₂	1.27	1.47	1.38	1.34	3.28
CO	10.32	13.68	11.66	13.00	52.77
Total	100	100	100	100	100
Bal Recovery, Wt % of Charge:	99.28	97.71	99.43	100.00	92.35
(CO ₂)(H ₂)/(CO)(H ₂ O) :	30.61	25.31	29.24	24.03	6.26
gC/Nm ³ (H ₂ -CO) conv.:	204	207	216	224	196
(H/C) Atomic Ratio in HC :	2.14	2.13	2.14	2.14	2.14
Selectivities, Wt % of HC :					
Methane	3.19	2.93	3.32	3.27	2.89
Ethane	1.60	1.60	1.70	1.73	2.38
Ethene	0.85	0.88	0.95	0.97	0.66
Propene	3.26	2.90	3.17	3.23	3.27
Propane	0.50	0.64	0.69	0.66	0.73
Butenes	2.55	2.42	2.59	2.57	2.59
i-Butane	0.04	0.04	0.04	0.05	0.05
n-Butane	0.70	0.68	0.72	0.74	0.75
C ₅ - C ₁₁ (2)	5.23	5.11	5.19	5.10	7.21
Light Hydrocarbons (3)	16.20	16.62	15.96	15.16	24.01
Heavy Hydrocarbons (4)	15.48	15.97	15.34	16.22	4.78
Slurry Rx.-Wax	50.00	50.00	50.00	50.00	50.00
Total	100	100	100	100	100

- (1) Including Oxygenates
- (2) In Gas Phase Only
- (3) Collected in Chilled and Ambient Condensers
- (4) Collected in Hot Condenser

Table E-2
Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
(Second-Stage Not Operative)
(Run CT-256-11)

M.B. No.	11- 2	11- 3	11- 4	11- 5	11-6	11- 7
Days On-stream	2.3	3.3	4.3	5.3	6.3	7.3
METHANOL	0.06	0.05	0.06	0.04	0.04	0.07
METHANE	3.15	3.18	3.24	2.87	3.15	3.06
ETHENE	2.03	1.91	1.93	1.57	1.71	1.66
ETHANE	0.78	0.85	0.91	0.80	0.86	0.82
PROPENE	3.27	3.24	3.63	2.88	3.15	3.02
PROPANE	0.62	0.64	0.74	0.60	0.67	0.65
I-BUTANE	0.04	0.04	0.05	0.04	0.04	0.03
1-BUTENE+2-METHYLPROPENE	2.51	2.51	3.15	2.27	2.52	2.43
N-BUTANE	0.61	0.63	0.84	0.62	0.68	0.67
TRANS-2-BUTENE	0.03	0.03	0.05	0.03	0.03	0.00
CIS-2-BUTENE	0.05	0.06	0.08	0.05	0.05	0.05
3-METHYL-1-BUTENE	0.14	0.13	0.17	0.11	0.12	0.11
I-PENTANE	0.05	0.05	0.07	0.04	0.00	0.04
1-PENTENE	1.83	1.83	2.80	1.71	1.91	1.80
2-METHYL-1-BUTENE	0.00	0.07	0.09	0.06	0.06	0.06
N-PENTANE	0.45	0.46	0.68	0.45	0.51	0.50
TRANS-2-PENTENE	0.02	0.03	0.04	0.03	0.03	0.02
CIS-2-PENTENE	0.03	0.03	0.05	0.03	0.03	0.03
CYCLOPENTANE	0.00	0.00	0.02	0.00	0.00	0.00
HEXENES + ISO-HEXANES	0.15	0.13	0.19	0.10	0.12	0.12
2,3-DIMETHYLBUTANE	0.02	0.02	0.00	0.01	0.02	0.01
2-METHYLPENTANE	0.04	0.04	0.00	0.04	0.04	0.04
3-METHYLPENTANE	0.02	0.02	0.02	0.01	0.02	0.02
1-HEXENE	1.20	1.14	1.68	1.04	1.20	1.20
N-HEXANE	0.31	0.30	0.44	0.29	0.33	0.33
HEPTENES + ISO-HEPTANES	0.14	0.12	0.15	0.10	0.10	0.11
1-HEPTENE	0.48	0.46	0.48	0.38	0.40	0.48
N-HEPTANE	0.12	0.12	0.12	0.11	0.13	0.13
C8-OLEFINS + ISO-P	0.01	0.02	0.02	0.02	0.00	0.02
1-OCTENE	0.11	0.10	0.09	0.08	0.10	0.10
N-OCTANE	0.03	0.03	0.03	0.02	0.03	0.03
C9-OLEFINS + ISO-P	0.01	0.01	0.01	0.01	0.01	0.01
ACETONE	0.15	0.13	0.20	0.11	0.14	0.14
I-PROPANOL	0.13	0.12	0.19	0.12	0.18	0.14
UNKNOWN LITE HYDRO-CARB LIQ (1)	14.87	14.96	16.82	19.77	17.33	16.73
UNKNOWN HVY HYDRO-CARB LIQ (2)	16.47	16.55	11.04	13.00	14.23	15.33
SLURRY REACTOR-WAX	50.00	50.00	50.00	50.00	50.00	50.00

- (1) Collected in Ambient and Chilled Condensers
(2) Collected in Hot Condenser

Table E-2 (Cont'd)
 Composition of Hydrocarbon Products from
First-Stage Slurry F-T Reactor
 (Second-Stage Not Operative)
 (Run CT-256-11)

M.B. No.	11- 8	11- 9	11-10	11-11	11-12
Dayr On-stream	8.3	9.3	10.3	12.3	14.3
METHANOL	0.05	0.04	0.04	0.04	0.19
METHANE	3.19	2.93	3.32	3.27	2.89
ETHENE	1.68	1.60	1.70	1.73	2.38
ETHANE	0.85	0.80	0.93	0.97	0.68
PROPENE	3.25	2.90	3.17	3.23	3.27
PROPANE	0.50	0.64	0.69	0.68	0.73
I-BUTANE	0.04	0.04	0.04	0.05	0.05
1-BUTENE+2-METHYLPROPENE	2.46	2.34	2.50	2.47	2.55
N-BUTANE	0.70	0.68	0.72	0.74	0.75
TRANS-2-BUTENE	0.03	0.03	0.03	0.04	0.00
CIS-2-BUTENE	0.05	0.05	0.05	0.06	0.04
3-METHYL-1-BUTENE	0.11	0.11	0.12	0.13	0.15
I-PENTANE	0.06	0.06	0.00	0.06	0.07
1-PENTENE	1.06	1.79	1.00	1.84	1.99
2-METHYL-1-BUTENE	0.00	0.05	0.05	0.00	0.07
N-PENTANE	0.51	0.50	0.53	0.53	0.50
TRANS-2-PENTENE	0.03	0.02	0.03	0.03	0.06
CIS-2-PENTENE	0.03	0.03	0.03	0.03	0.00
HEXENES + ISO-HEXANES	0.11	0.11	0.11	0.12	0.20
2,3-DIMETHYLBUTANE	0.01	0.01	0.02	0.02	0.03
2-METHYLPENTANE	0.04	0.38	0.04	0.04	0.00
3-METHYLPENTANE	0.02	0.02	0.02	0.02	0.00
1-HEXENE	1.10	1.14	1.10	1.11	1.54
N-HEXANE	0.34	0.00	0.34	0.33	0.45
HEPTENES + ISO-HEPTANES	0.12	0.11	0.10	0.11	0.13
1-HEPTENE	0.45	0.47	0.45	0.40	0.90
N-HEPTANE	0.13	0.14	0.13	0.13	0.28
C8-OLEFINS + ISO-P	0.02	0.02	0.02	0.02	0.03
1-OCTENE	0.10	0.10	0.10	0.08	0.41
N-OCTANE	0.03	0.03	0.03	0.03	0.11
C9-OLEFINS + ISO-P	0.01	0.01	0.01	0.01	0.12
ACETONE	0.13	0.13	0.12	0.13	0.20
I-PROPANOL	0.13	0.12	0.10	0.14	0.21
UNKNOWN LITE HYDRO-CARB LIQ (1)	15.20	16.62	15.90	15.16	24.01
UNKNOWN HVY HYDRO-CARB LIQ (2)	15.48	15.97	15.34	16.22	4.78
SLURRY REACTOR-WAX	50.00	50.00	50.00	50.00	50.00

(1) Collected in Ambient and Chilled Condensers
 (2) Collected in Hot Condenser