

APPENDIX F

SUMMARY OF DATA FROM RUN CT-256-12

Table F-1  
**First Stage Fischer-Tropsch Slurry Reactor**  
**Operating Conditions and Material Balances**  
 (Based on Inter-Reactor Sample)  
 (Run CT-256-12)

(Nitrogen-Free Basis)	12- 2	12- 4	12- 6	12- 7	12- 8	12- 9
M.B. No.						
Days On-stream	2.2	6.2	8.2	9.2	10.1	11.2
First-Stage Conditions:						
Charge H <sub>2</sub> /CO (Molar)	0.695	0.737	0.709	0.713	0.714	0.706
Temperature, °C	256	253	255	249	256	256
Pressure, MPa	1.473	1.473	1.473	1.473	1.473	1.473
Feed Sup. Vel., cm/s	4.277	4.199	5.130	4.231	4.295	4.269
Space Vel., NL/gFe-hr	2.424	2.380	2.441	2.440	2.436	2.415
N <sub>2</sub> in Feed, Mol %	1.4	1.9	17.3	0.9	1.4	1.5
Conversions, Mol % :						
H <sub>2</sub>	78.32	67.14	76.73	77.14	76.52	78.67
CO	93.38	97.48	92.64	92.07	93.23	93.60
H <sub>2</sub> +CO	87.20	84.61	86.98	86.32	86.27	87.42
Yields, Wt % of Products :						
Hydrocarbons (1)	21.54	25.22	23.10	21.21	22.13	22.65
CO <sub>2</sub>	68.85	68.52	66.07	69.01	68.40	68.37
H <sub>2</sub> O (1)	1.97	1.76	2.29	1.60	1.91	1.73
H <sub>2</sub>	1.00	1.84	1.18	1.15	1.16	1.05
CO	6.50	2.65	7.30	6.97	6.50	6.20
Total	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	95.93	89.97	96.23	97.10	98.82	98.05
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> ) :	32.71	154.23	26.22	39.10	38.59	38.31
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	182	202	190	182	193	195
(H/C) Atomic Ratio in HC :	2.12	2.15	2.11	2.13	2.13	2.13
Selectivities, Wt % of HC :						
Methane	2.50	3.32	1.84	2.62	2.70	2.71
Ethane	1.63	1.21	1.12	1.42	1.12	1.40
Ethane	0.78	1.36	0.65	0.91	0.92	0.92
Propene	3.51	3.04	2.20	2.92	2.92	2.99
Propane	0.00	1.22	0.52	0.70	0.71	0.89
Butenes	2.25	2.43	1.83	2.42	2.44	2.50
i-Butane	0.31	0.50	0.05	0.08	0.08	0.08
n-Butane	0.64	1.10	0.56	0.78	0.77	0.78
C <sub>5</sub> - C <sub>11</sub> (2)	5.46	6.00	4.38	6.24	6.40	6.40
Light Hydrocarbons (3)	12.17	9.34	5.00	10.94	11.41	11.44
Heavy Hydrocarbons (4)	15.50	16.66	28.52	17.51	16.77	16.63
Slurry Rx.-Wax	55.00	53.00	53.00	53.00	53.00	53.00
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 F-1 (Cont'd)  
 First Stage Fischer-Tropsch Slurry Reactor  
 Operating Conditions and Material Balances  
 (Based on Inter-Reactor Sample)  
 (Run CT-256-12)

(Nitrogen-Free Basis)	12- 10	12- 11	12- 12	12- 13	12- 14
M.B. No.					
Days On-stream	12.2	13.2	14.2	15.2	16.2
First-Stage Conditions:					
Charge H <sub>2</sub> /CO (Molar)	0.706	0.707	0.694	0.693	0.692
Temperature, °C	260	265	255	266	266
Pressure, MPa	1.473	1.473	1.473	1.480	1.480
Feed Sup. Vel., cm/s	4.266	4.248	4.276	4.271	4.264
Space Vel., NL/gFe-hr	2.413	2.414	2.427	2.476	2.476
N <sub>2</sub> in Feed, Mol %	1.6	1.2	1.5	1.4	1.2
Conversions, Mol % :					
H <sub>2</sub>	76.71	77.53	79.02	76.76	77.19
CO	92.77	91.60	91.13	90.20	91.69
H <sub>2</sub> +CO	86.12	86.77	86.17	84.76	86.76
Yields, Wt % of Products :					
Hydrocarbons (1)	21.15	22.56	21.00	20.36	21.30
CO <sub>2</sub>	68.94	66.21	66.63	67.61	67.60
H <sub>2</sub> O (1)	1.67	1.88	1.55	1.35	1.40
H <sub>2</sub>	1.18	1.12	1.04	1.14	1.16
CO	7.17	8.22	8.00	9.56	8.40
Total	100	100	100	100	100
Bal Recovery, Wt % of Charge:	95.80	97.01	95.87	96.66	93.30
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	41.16	27.37	28.98	34.67	37.60
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	100	100	100	179	179
(H/C) Atomic Ratio in HC :	2.14	2.13	2.16	2.14	2.15
Selectivities, Wt % of HC :					
Methane	2.93	2.42	3.89	2.84	2.71
Ethane	1.51	1.29	1.97	1.56	1.46
Ethane	1.00	0.85	1.21	0.94	0.91
Propene	3.18	2.66	3.98	3.11	0.82
Propene	0.78	0.71	0.99	0.78	2.93
Butenes	2.67	2.26	3.34	2.62	2.55
i-Butane	0.11	0.12	0.12	0.09	0.18
n-Butane	0.88	0.77	1.07	0.85	0.97
C <sub>5</sub> - C <sub>11</sub> (2)	7.03	5.07	8.93	6.80	7.09
Light Hydrocarbons (3)	11.34	12.00	9.60	12.11	12.69
Heavy Hydrocarbons (4)	18.09	16.85	14.24	17.65	17.58
Slurry Rx.-Wax	50.00	53.00	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 F-2  
Composition of Hydrocarbon Products from  
First-Stage Slurry F-T Reactor  
(Based on Inter-Reactor Sample)  
(Run CT-256-12)

M.B. No. Days On-stream	12-2 2.2	12-4 6.2	12-6 8.2	12-7 9.2	12-8 10.2	12-9 11.2
METHANE	2.50	3.32	1.84	2.62	2.70	2.71
ETHENE	1.83	1.21	1.12	1.42	1.42	1.40
ETHANE	0.78	1.36	0.65	0.91	0.92	0.92
PROPENE	3.51	3.04	2.20	2.92	2.92	2.99
PROPANE	0.00	1.22	0.52	0.70	0.71	0.69
I-BUTANE	0.31	0.56	0.05	0.08	0.08	0.08
1-BUTENE + 2-METHYLPROPENE	2.15	2.17	1.74	2.15	2.32	2.38
N-BUTANE	0.04	1.10	0.56	0.78	0.77	0.78
TRANS-2-BUTENE	0.05	0.13	0.03	0.14	0.05	0.05
CIS-2-BUTENE	0.06	0.13	0.05	0.13	0.07	0.07
3-METHYL-1-BUTENE	0.11	0.09	0.07	0.09	0.10	0.10
I-PENTANE	0.23	0.44	0.04	0.05	0.05	0.04
1-PENTENE	1.83	1.56	1.38	1.61	1.67	1.93
2-METHYL-1-BUTENE	0.00	0.07	0.04	0.05	0.05	0.06
N-PENTANE	0.47	0.75	0.42	0.62	0.60	0.61
TRANS-2-PENTENE	0.04	0.12	0.03	0.20	0.05	0.05
2-METHYL-2-BUTENE	0.03	0.09	0.03	0.15	0.04	0.04
2,2-DIMETHYLBUTANE	0.00	0.00	0.00	0.02	0.00	0.00
HEXENES + ISO-HEXANES	0.16	0.15	0.11	0.14	0.16	0.15
ISO-C6-P+O	0.00	0.03	0.00	0.00	0.00	0.00
2,3-DIMETHYLBUTANE	0.03	0.07	0.01	0.02	0.03	0.03
2-METHYLPENTANE	0.04	0.05	0.04	0.05	0.05	0.05
3-METHYLPENTANE	0.02	0.04	0.01	0.02	0.02	0.02
1-HEXENE	1.15	1.00	0.93	0.97	1.34	1.38
N-HEXANE	0.34	0.51	0.30	0.48	0.46	0.46
HEPTENES + ISO-HEPTANES	0.15	0.35	0.10	0.49	0.18	0.16
1-HEPTENE	0.54	0.46	0.44	0.37	0.50	0.67
N-HEPTANE	0.17	0.31	0.16	0.32	0.25	0.24
C8-OLEFINS + ISO-P	0.04	0.17	0.02	0.26	0.07	0.00
1-OCTENE	0.16	0.14	0.14	0.08	0.22	0.20
ISO-C8-P + O + N5 + N6	0.00	0.00	0.00	0.02	0.00	0.00
N-OCTANE	0.06	0.10	0.05	0.09	0.09	0.08
C9-OLEFINS + ISO-P	0.03	0.11	0.05	0.15	0.09	0.06
ACETONE	0.25	0.22	0.21	0.20	0.29	0.27
I-PROPANOL	0.00	0.00	0.11	0.17	0.18	0.18
UNKNOWN LITE HYDRO-CARB LIQ (1)	12.17	9.34	5.00	10.94	11.41	11.44
UNKNOWN HVY HYDRO-CARB LIQ (2)	15.50	16.00	20.52	17.51	16.77	16.63
SLURRY REACTOR-WAX	55.00	53.00	53.00	53.00	53.00	53.00

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

Table F-2 (Cont'd)  
 Composition of Hydrocarbon Products from  
First-Stage Slurry F-T Reactor  
 (Based on Inter-Reactor Sample)  
 (Run CT-256-12)

M.B. No.	12-10	12-11	12-12	12-13	12-14
Days On-stream	12.2	13.2	14.2	15.2	16.2
METHANE	2.93	2.42	3.89	4.84	2.71
ETHENE	1.51	1.29	1.97	1.56	1.46
ETHANE	1.00	0.85	1.21	0.94	0.91
PROPENE	3.18	2.66	3.98	3.11	0.82
PROPANE	0.78	0.71	0.99	0.78	2.93
I-BUTANE	0.11	0.12	0.12	0.09	0.18
1-BUTENE+2-METHYLPROPENE	2.16	2.09	3.09	2.47	2.37
N-BUTANE	0.71	0.77	1.07	0.86	0.97
TRANS-2-BUTENE	0.10	0.08	0.13	0.07	0.08
CIS-2-BUTENE	0.10	0.08	0.12	0.08	0.10
3-METHYL-1-BUTENE	0.10	0.09	0.13	0.10	0.31
I-PENTANE	0.05	0.08	0.08	0.05	0.20
1-PENTENE	1.97	1.66	2.49	2.01	1.93
2-METHYL-1-BUTENE	0.06	0.05	0.07	0.05	0.05
N-PENTANE	0.69	0.60	0.80	0.67	0.88
TRANS-2-PENTENE	0.12	0.09	0.14	0.08	0.07
CIS-2-PENTENE	0.00	0.00	0.00	0.00	0.05
2-METHYL-2-BUTENE	0.38	0.06	0.10	0.06	0.02
CYCLOPENTANE	0.00	0.00	0.00	0.00	0.04
HEXENES + ISO-HEXANES	0.16	0.16	0.25	0.18	0.16
ISO-C6-P+0	0.01	0.00	0.00	0.00	0.00
2,3-DIMETHYLBUTANE	0.02	0.02	0.02	0.02	0.02
2-METHYLPENTANE	0.07	0.06	0.09	0.07	0.07
3-METHYLPENTANE	0.02	0.02	0.02	0.02	0.03
1-HEXENE	1.38	1.14	1.72	1.43	1.36
N-HEXANE	0.53	0.48	0.67	0.53	0.51
METHYLCYCLOPENTANE	0.00	0.00	0.00	0.00	0.00
HEPTENES + ISO-HEPTANES	0.35	0.23	0.39	0.21	0.21
1-HEPTENE	0.01	0.53	0.03	0.00	0.05
N-HEPTANE	0.32	0.25	0.41	0.28	0.27
C8-OLEFINS + ISO-P	0.15	0.10	0.17	0.10	0.11
1-OCTENE	0.17	0.14	0.24	0.19	0.18
N-OCTANE	0.09	0.07	0.12	0.08	0.08
C9-OLEFINS + ISO-P	0.14	0.06	0.10	0.08	0.08
TOLUENE	0.00	0.00	0.04	0.00	0.00
ACETONE	0.29	0.25	0.41	0.33	0.11
I-PROPANOL	0.21	0.18	0.24	0.21	0.00
UNKNOWN LITE HYDRO-CARB LIQ (1)	11.34	12.00	9.00	12.11	12.00
UNKNOWN HVY HYDRO-CARB LIQ (2)	18.09	16.05	14.24	17.55	17.58
SLURRY REACTOR-WAX	50.00	53.00	50.00	50.00	50.00

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

Table F-3  
 Second-Stage Fixed-Bed ZSM-5 Reactor  
 Operating Conditions and Material Balances  
 (Run C1-266-12)

(Nitrogen-Free Basis)	12- 2	12- 3	12- 4	12- 6	12- 7	12- 8
M.B. No.						
Days On-stream	2.2	4.2	6.2	8.2	9.2	10.2
First-Stage Conditions:						
Charge H <sub>2</sub> /CO (Molar)	0.895	0.697	0.737	0.709	0.713	0.714
Temperature, °C	256	255	253	255	249	255
Pressure, MPa	1.473	1.473	1.473	1.473	1.473	1.473
Feed Sup. Vel., cm/s	4.274	4.277	4.175	4.275	4.237	4.269
Space Vel., NL/gFe-hr	2.424	2.436	2.380	2.441	2.440	2.430
N <sub>2</sub> in Feed, Mol %	1.3	1.0	1.3	0.8	1.0	0.8
Second-Stage Conditions:						
Temp., Inlet, °C	312	318	324	322	328	328
Outlet, °C	367	374	380	374	382	382
Pressure, MPa	1.473	1.473	1.473	1.473	1.473	1.473
GHSV, 1/hr	1838	1875	1850	1885	1884	1902
Days On-stream	2.2	4.2	6.2	8.2	9.2	10.2
Conversions, Mol % :						
H <sub>2</sub>	78.94	78.09	80.27	76.53	77.80	77.18
CO	93.63	94.12	97.91	92.68	93.27	93.49
H <sub>2</sub> +CO	87.60	87.64	84.48	85.96	86.63	86.78
Yields, Wt % of Products :						
Hydrocarbons	22.13	23.05	26.80	22.74	20.19	24.59
CO <sub>2</sub>	67.82	68.67	65.22	66.95	65.74	66.91
H <sub>2</sub> O	2.71	1.61	3.93	1.00	0.60	1.25
H <sub>2</sub>	1.84	1.87	1.87	1.19	1.88	1.11
CO	6.29	5.70	2.19	7.26	6.38	6.16
Total	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	96.29	98.01	90.84	96.02	100.07	100.28
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	23.85	45.49	81.81	33.81	165.34	64.94
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	187	198	217	194	230	217
(H/C) Atomic Ratio in HC :	2.13	2.14	2.18	2.14	2.12	2.14
Selectivities, Wt % of HC :						
Methane	2.55	1.95	3.54	2.44	2.28	2.58
Ethene	0.28	0.30	0.33	0.35	0.33	0.37
Ethane	0.92	0.97	1.62	0.99	0.94	1.03
Propene	0.65	0.79	0.79	0.95	0.85	0.99
Propane	4.38	4.48	5.91	4.64	4.58	4.73
Butenes	0.70	0.85	0.78	1.01	0.85	1.06
i-Butane	5.79	5.98	6.82	6.03	5.60	6.97
n-Butane	3.31	3.51	4.03	3.65	3.38	3.63
C <sub>5</sub> - C <sub>11</sub>	26.44	25.88	23.12	26.67	27.11	26.39
C <sub>12</sub> + (Excl. Rx.-Wax)	0.69	0.31	0.28	0.26	1.09	0.24
Slurry Rx.-Wax	55.00	55.00	53.00	53.00	53.00	53.00
Total	100	100	100	100	100	100
i-C <sub>4</sub> /(C <sub>3</sub> + C <sub>4</sub> ) Molar :	3.57	3.04	3.53	2.55	2.72	2.41
(C <sub>3</sub> /C <sub>3</sub> ) Molar Ratio :	6.32	5.39	7.13	4.04	5.16	4.54
Alkylate, Wt % of HC :	2.97	3.61	3.42	4.34	3.77	4.53
Cat-Poly, Wt % of HC :	0.00	0.00	0.00	0.00	0.00	0.00
C <sub>6</sub> - C <sub>11</sub> PDNA, Wt % :						
Paraffins	--	--	--	--	--	--
Olefins	--	--	--	--	--	--
Naphthenes	--	--	--	--	--	--
Aromatics	--	--	--	--	--	--

Table F-3 (Cont'd)  
 Second-Stage Fixed-Bed ZSM-5 Reactor  
 Operating Conditions and Material Balances  
 (Run CI-256-12)

(Nitrogen-Free Basis)	12- 9	12- 10	12- 11	12- 12	12- 13	12- 14
M.B. No.						
Days On-stream	11.2	10.2	13.2	14.2	15.2	16.2
<b>First-Stage Conditions:</b>						
Charge H <sub>2</sub> /CO (Molar)	0.706	0.706	0.707	0.694	0.693	0.692
Temperature, °C	256	256	256	255	256	256
Pressure, MPa	1.473	1.473	1.473	1.473	1.480	1.480
Feed Sup. Vel., cm/s	4.243	4.236	4.269	4.253	4.245	4.246
Space Vel., NL/gFe-hr	2.415	2.413	2.414	2.427	2.476	2.476
N <sub>2</sub> in Feed, Mol %	0.9	0.9	1.7	0.9	0.8	0.8
<b>Second-Stage Conditions:</b>						
Temp., Inlet, °C	330	324	319	314	305	305
Outlet, °C	384	377	371	363	349	347
Pressure, MPa	1.473	1.473	1.473	1.473	1.487	1.480
GHSV, 1/hr	1872	1872	1873	1873	1956	1998
Days On-stream	11.2	12.2	13.2	14.2	15.2	16.2
<b>Conversions, Mol % :</b>						
H <sub>2</sub>	77.92	76.89	78.82	78.26	75.80	75.18
CO	93.53	92.97	91.71	90.94	90.27	90.25
H <sub>2</sub> +CO	87.88	86.31	86.37	85.74	84.82	84.89
<b>Yields, Wt % of Products :</b>						
Hydrocarbons	21.57	26.23	22.32	24.97	24.39	22.33
CO <sub>2</sub>	68.32	65.56	68.17	64.76	64.89	64.24
H <sub>2</sub> O	2.71	6.30	2.32	0.43	0.96	2.30
H <sub>2</sub>	1.10	1.13	1.86	1.86	1.20	1.25
CO	6.31	6.77	9.13	8.84	9.35	9.88
Total	100	100	100	100	100	100
<b>Bal Recovery, Wt % of Charge:</b>						
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	24.99	268.31	21.17	183.48	49.16	28.26
gHC/M <sub>3</sub> (H <sub>2</sub> +CO) conv.:	185	230	191	219	221	192
(H/C) Atomic Ratio in HC :	2.18	2.12	2.12	2.10	2.10	2.13
<b>Selectivities, Wt % of HC :</b>						
Methane	2.99	2.46	2.31	2.37	2.46	2.77
Ethane	0.43	0.35	0.34	0.33	0.33	0.39
Ethene	1.24	0.99	0.95	0.99	0.98	1.00
Propene	1.11	0.94	0.96	0.99	1.08	1.38
Propane	5.98	4.51	4.27	3.91	3.58	3.83
Butenes	1.11	1.05	1.08	1.23	1.49	1.87
i-Butane	7.00	6.71	5.58	5.23	4.87	5.43
n-Butane	4.25	3.54	3.43	3.31	3.21	3.82
C <sub>5</sub> - C <sub>11</sub>	22.89	38.38	28.88	31.78	32.88	29.54
C <sub>12</sub> + (Excl. Rx.-Wax)	0.29	0.10	0.67	0.82	0.18	0.26
Slurry Rx.-Wax	53.88	58.88	53.88	58.88	58.88	58.88
Total	100	100	100	100	100	100
<b>i-C<sub>4</sub>/(C<sub>3</sub>+ C<sub>4</sub>) Molar :</b>	2.62	2.39	2.25	1.98	1.81	1.48
<b>(C<sub>3</sub>/C<sub>3</sub>) Molar Ratio :</b>	5.88	4.57	4.24	3.76	3.18	2.82
<b>Alkylate, Wt % of HC :</b>	4.89	4.38	4.49	4.88	5.58	6.88
<b>Cat-Poly, Wt % of HC :</b>	0.88	0.88	0.88	0.88	0.88	0.88
<b>C<sub>5</sub> - C<sub>11</sub> PDNA, Wt % :</b>						
Paraffins	--	--	--	--	--	--
Diolefins	--	--	--	--	--	--
Naphthenes	--	--	--	--	--	--
Aromatics	--	--	--	--	--	--

Table F-4  
Composition of Hydrocarbon Products from  
Two-Stage Slurry F-1/ZSM-5 Syngas Conversion  
(Run 17-258-12)

M.B. No.	12-2	12-3	12-4	12-6	12-7	12-8
Days On-stream	2.2	4.2	6.2	8.2	9.2	10.2
METHANE	2.55	1.95	3.54	2.44	2.28	2.58
ETHENE	0.26	0.30	0.33	0.35	0.33	0.37
ETHANE	0.92	0.97	1.02	0.99	0.94	1.03
PROPENE	0.65	0.79	0.79	0.95	0.85	0.99
PROPANE	4.30	4.46	5.91	4.64	4.58	4.73
I-BUTANE	5.79	5.98	6.82	6.03	6.80	6.97
1-BUTENE-2-METHYLPROPENE	0.42	0.52	0.45	0.61	0.52	0.64
N-BUTANE	3.31	3.51	4.03	3.65	3.36	3.63
TRANS-2-BUTENE	0.17	0.20	0.18	0.24	0.21	0.25
CIS-2-BUTENE	0.11	0.13	0.12	0.16	0.14	0.17
3-METHYL-1-BUTENE	0.00	0.01	0.01	0.01	0.01	0.01
I-PENTANE	3.29	3.31	3.38	3.36	2.99	3.26
1-PENTENE	1.43	0.01	0.01	0.02	0.01	0.02
2-METHYL-1-BUTENE	0.04	0.07	0.05	0.08	0.07	0.08
N-PENTANE	0.02	1.43	1.38	1.52	1.30	1.47
TRANS-2-PENTENE	0.14	0.05	0.04	0.05	0.04	0.05
CIS-2-PENTENE	0.00	0.00	0.02	0.03	0.02	0.03
3-ETHYL-2-BUTENE	0.00	0.02	0.12	0.20	0.16	0.20
2,2-DIMETHYLBUTANE	0.00	0.00	0.01	0.00	0.01	0.01
CYCLOPENTANE	0.06	0.05	0.08	0.07	0.07	0.07
HEXENES + ISO-HEXANES	0.00	0.16	0.00	0.00	0.00	0.00
2,3-DIMETHYLBUTANE	0.07	0.06	0.08	0.07	0.06	0.06
2-METHYLPENTANE	0.78	0.73	0.61	0.74	0.62	0.60
3-METHYLPENTANE	0.33	0.31	0.31	0.32	0.20	0.29
N-HEXANE	0.29	0.30	0.24	0.34	0.27	0.31
METHYLCYCLOPENTANE	0.19	0.19	0.18	0.20	0.18	0.19
HEPTENES + ISO-HEPTANES	0.01	0.02	0.01	0.03	0.03	0.04
2-METHYLHEXANE	0.10	0.10	0.08	0.10	0.08	0.09
2,3-DIMETHYLPENTANE	0.02	0.02	0.01	0.02	0.01	0.02
3-METHYLHEXANE	0.09	0.08	0.07	0.08	0.07	0.07
1-CIS-3-DIMETHYL-N6	0.03	0.03	0.02	0.04	0.03	0.03
1-TRANS-3-DIMETHYL-N6	0.03	0.03	0.02	0.03	0.03	0.03
1-TRANS-2-DIMETHYL-N6	0.03	0.03	0.02	0.03	0.02	0.03
N-HEPTANE	0.03	0.04	0.03	0.04	0.03	0.04
METHYLCYCLOHEXANE	0.03	0.04	0.03	0.04	0.03	0.03
C8-OLEFINS + ISO-P	0.03	0.02	0.01	0.02	0.03	0.03
ISO-C8-P + 0 + N6 + N8	0.03	0.02	0.00	0.02	0.02	0.04
C9-OLEFINS + ISO-P	0.00	0.00	0.00	0.03	0.02	0.03
BENZENE	0.13	0.12	0.13	0.13	0.14	0.12
TOLUENE	0.21	0.20	0.19	0.21	0.20	0.20
ETHYLBENZENE	0.05	0.07	0.07	0.10	0.07	0.08
UNKNOWN LITE HYDRO-CARB LIQ (1)	10.00	10.34	15.90	10.74	20.21	10.78
UNKNOWN HVY HYDRO-CARB LIQ (2)	0.09	0.31	0.20	0.26	1.00	0.24
SLURRY REACTOR-WAX	55.00	55.00	53.00	53.00	53.00	53.00

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



Table F-4 (Cont'd)  
 Composition of Hydrocarbon Products from  
 Two-Stage Slurry F-T/2SM-5 Syngas Conversion  
 (Run CT-266-12)

M.B. No. Days On-stream	12-9 11.2	12-10 12.2	12-11 13.2	12-12 14.2	12-13 15.2	12-14 16.2
METHANE	2.99	2.46	2.31	2.37	2.46	2.77
ETHENE	0.43	0.35	0.34	0.33	0.33	0.39
ETHANE	1.24	0.99	0.95	0.90	0.90	1.00
PROPENE	1.11	0.94	0.96	0.99	1.09	1.30
PROPANE	5.90	4.51	4.27	3.91	3.50	3.83
1-BUTANE	7.00	5.71	5.50	5.23	4.87	5.43
1-BUTENE+2-METHYLPROPENE	0.67	0.63	0.65	0.74	0.91	1.14
N-BUTANE	4.25	3.54	3.43	3.31	3.21	3.62
TRANS-2-BUTENE	0.20	0.25	0.26	0.29	0.35	0.44
CIS-2-BUTENE	0.18	0.17	0.17	0.19	0.23	0.29
3-METHYL-1-BUTENE	0.01	0.01	0.01	0.02	0.02	0.03
1-PENTANE	3.64	3.18	3.12	3.03	2.93	3.34
1-PENTENE	0.02	0.02	0.02	0.02	0.02	0.03
2-METHYL-1-BUTENE	0.06	0.09	0.09	0.11	0.14	0.18
N-PENTANE	1.60	1.48	1.47	1.53	1.61	1.86
TRANS-2-PENTENE	0.06	0.06	0.06	0.07	0.09	0.12
CIS-2-PENTENE	0.03	0.03	0.03	0.04	0.04	0.06
2-METHYL-2-BUTENE	0.20	0.20	0.21	0.27	0.35	0.46
2,2-DIMETHYLBUTANE	0.00	0.01	0.00	0.01	0.01	0.01
CYCLOPENTANE	0.09	0.07	0.00	0.05	0.04	0.04
HEXENES + ISO-HEXANES	0.00	0.00	0.02	0.01	0.02	0.03
2,3-DIMETHYLBUTANE	0.07	0.00	0.12	0.06	0.05	0.06
2-METHYLPENTANE	0.72	0.60	0.60	0.74	0.79	0.87
3-METHYLPENTANE	0.32	0.29	0.27	0.29	0.29	0.30
N-HEXANE	0.32	0.32	0.30	0.30	0.43	0.48
METHYLCYCLOPENTANE	0.21	0.18	0.16	0.17	0.14	0.14
HEPTENES + ISO-HEPTANES	0.03	0.04	0.03	0.07	0.05	0.11
2-METHYLHEXANE	0.09	0.09	0.00	0.10	0.11	0.12
2,3-DIMETHYLPENTANE	0.02	0.02	0.01	0.02	0.01	0.01
3-METHYLHEXANE	0.07	0.07	0.06	0.08	0.08	0.09
1-CIS-3-DIMETHYL-N6	0.03	0.03	0.03	0.03	0.03	0.03
1-TRANS-3-DIMETHYL-N6	0.03	0.03	0.02	0.03	0.03	0.03
1-TRANS-2-DIMETHYL-N6	0.03	0.02	0.03	0.02	0.02	0.02
N-HEPTANE	0.94	0.84	0.84	0.80	0.87	0.80
METHYLCYCLOHEXANE	0.04	0.04	0.00	0.03	0.03	0.03
C8-OLEFINS + ISO-P	0.01	0.02	0.03	0.02	0.03	0.02
ISO-C8-P + O + N6 + N6	0.00	0.02	0.00	0.03	0.03	0.04
C9-OLEFINS + ISO-P	0.03	0.04	0.00	0.03	0.01	0.17
BENZENE	0.15	0.12	0.00	0.09	0.00	0.00
TOLUENE	0.23	0.19	0.00	0.14	0.11	0.12
ETHYLBENZENE	0.11	0.09	0.00	0.07	0.05	0.07
UNKNOWN LITE HYDRO-CARB LIQ (1)	14.42	22.04	21.05	24.00	24.20	20.50
UNKNOWN HVY HYDRO-CARB LIQ (2)	0.29	0.10	0.07	0.02	0.10	0.26
SLURRY REACTOR-WAX	53.00	50.00	53.00	50.00	50.00	50.00

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

APPENDIX G

SUMMARY OF DATA FROM RUN CT-256-13

Table G-1  
 First Stage Fischer-Tropsch Slurry Reactor  
 Operating Conditions and Material Balances  
 (Based on Inter-Reactant Sample)  
 (Run CI-250-13)

	13-	1	13-	3	13-	4	13-	5	13-	6	13-	7	13-	8	13-	9	13-	10	
	2.8	4.0	5.6	6.8	7.9	8.8	9.8	10.8	11.8										
(Nitrogen-Free Basis)																			
M.B. No.																			
Days On-stream																			
First-Stage Conditions:																			
Charge H <sub>2</sub> /CO (Molar)	0.700	0.697	0.699	0.700	0.699	0.708	0.694	0.686	0.707										
Temperature, °C	258	257	257	256	256	257	256	256	257										
Pressure, MPa	1.473	1.473	1.473	1.480	1.480	1.480	1.480	1.480	1.473										
Feed Sup. Vel., cm/s	4.021	4.335	4.343	4.351	4.330	4.286	4.154	4.150	4.080										
Space Vel., NL/gFe-hr	2.506	2.481	2.488	2.490	2.484	2.458	2.359	2.389	2.338										
N <sub>2</sub> in Feed, Mol %	2.3	1.9	1.9	2.6	2.3	2.2	2.1	2.2	1.9										
Conversions, Mol % :																			
H <sub>2</sub>	69.64	70.97	70.45	72.28	71.75	73.21	73.08	72.30	73.23										
CO	83.23	85.00	85.00	87.39	87.28	89.86	89.39	88.81	86.76										
H <sub>2</sub> +CO	77.84	79.59	79.41	81.17	80.89	82.96	82.71	82.09	81.16										
Yields, Wt % of Products :																			
Hydrocarbons (1)	16.76	21.14	20.67	21.15	20.49	21.34	21.65	21.49	20.29										
CO <sub>2</sub>	63.28	61.62	61.36	62.00	63.00	65.00	64.98	64.37	64.60										
H <sub>2</sub> O (1)	2.26	2.31	3.01	2.67	2.39	2.37	2.09	2.21	1.92										
H <sub>2</sub>	1.49	1.37	1.41	1.33	1.36	1.27	1.25	1.30	1.24										
CO	16.27	13.58	13.58	11.98	12.15	9.42	9.82	10.62	11.96										
Total	100	100	100	100	100	100	100	100	100										
Bal Recovery, Wt % of Charge:	97.91	100.90	100.46	100.17	99.44	102.17	102.72	100.17	105.18										
((CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> )) :	15.01	15.44	12.97	14.92	16.99	21.33	22.44	20.31	19.84										
gHC/Mg <sub>3</sub> (H <sub>2</sub> +CO) conv.:	162	205	201	200	193	201	209	202	202										
(H/C) Atomic Ratio in HC :	2.12	2.11	2.10	2.12	2.11	2.12	2.12	2.12	2.10										
Selectivities, Wt % of HC :																			
Methane	2.26	1.93	1.49	2.27	1.73	2.37	2.26	2.31	1.78										
Ethane	2.08	1.70	1.46	1.88	1.57	1.89	1.77	1.85	1.52										
Ethane	0.55	0.49	0.41	0.60	0.51	0.69	0.65	0.66	0.53										
Propane	2.21	2.75	2.37	3.07	2.57	3.21	3.01	3.11	2.58										
Propene	0.46	0.45	0.28	0.51	0.48	0.49	0.47	0.50	0.40										
Butane	2.58	2.27	1.80	2.54	2.10	2.59	2.47	2.55	2.12										
i-Butane	0.11	0.15	0.03	0.09	0.04	0.07	0.07	0.07	0.03										
n-Butane	0.43	0.43	0.32	0.47	0.37	0.47	0.46	0.48	0.39										
C <sub>5</sub> - C <sub>11</sub> (2)	5.42	5.37	4.53	5.88	4.95	5.70	5.52	5.87	5.01										
Light Hydrocarbons (3)	7.94	6.93	6.50	6.83	6.37	7.56	6.59	5.74	6.00										
Heavy Hydrocarbons (4)	14.69	12.12	13.64	13.11	14.41	13.47	15.63	14.58	14.58										
Slurry R <sub>at</sub> Max	60.00	65.28	64.78	62.46	64.71	61.17	60.81	61.93	64.08										
Total	100	100	100	100	100	100	100	100	100										

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

Table G-1 (Cont'd)  
 First Stage Fischer-Tropsch Slurry Reactor  
 Operating Conditions and Material Balances  
 (Based on Inter-Reactant Sample)  
 (Run CT-256-13)

	13-11	13-15	13-16	13-17	13-18	13-21	13-22	13-23	13-24
(Nitrogen-Free Basis)									
M.B. No.	12.8	16.8	17.0	18.8	19.8	22.8	23.8	24.8	25.8
Days On-stream									
First-Stage Conditions:									
Charge H <sub>2</sub> /CO (Molar)	0.706	0.707	0.716	0.701	0.736	0.699	0.707	0.709	0.707
Temperature, °C	257	257	257	257	257	257	257	257	257
Pressure, MPa	1.480	1.480	1.480	1.480	1.480	1.487	1.487	1.549	1.553
Feed Sup. Vel., cm/s	4.107	4.064	4.060	4.063	3.968	4.062	4.036	4.045	4.073
Space Vel., ML/gFe-hr	2.485	2.389	2.379	2.399	2.337	2.396	2.396	2.501	2.602
N <sub>2</sub> in Feed, Mol %	2.2	2.4	2.4	2.5	2.0	2.4	2.0	1.9	2.8
Conversions, Mol %:									
H <sub>2</sub>	73.51	74.36	74.01	73.99	71.80	71.98	71.91	70.58	69.57
CO	86.57	88.38	88.11	88.70	89.83	85.00	86.10	84.98	82.35
H <sub>2</sub> +CO	81.18	82.57	82.25	82.64	82.19	79.99	80.22	79.00	77.05
Yields, Wt % of Products:									
Hydrocarbons (1)	20.77	21.05	21.08	21.00	21.51	20.06	20.31	19.55	18.79
CO <sub>2</sub>	63.42	66.19	66.22	65.31	66.30	62.21	63.37	63.55	61.58
H <sub>2</sub> O (1)	2.17	1.99	1.63	1.91	2.57	2.01	1.92	1.85	1.96
H <sub>2</sub>	1.24	1.19	1.21	1.22	1.36	1.33	1.35	1.37	1.43
CO	12.40	10.58	10.85	10.50	9.26	13.58	13.08	13.68	16.24
Total	100	100	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	103.04	104.46	104.23	102.42	104.18	100.89	101.20	104.42	103.36
(CO <sub>2</sub> )/H <sub>2</sub> /(CO) (H <sub>2</sub> O) :	16.71	21.00	25.78	22.74	21.37	17.35	19.42	19.61	15.77
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	202	205	205	201	200	203	197	198	193
(H/C) Atomic Ratio in HC :	2.11	2.11	2.11	2.11	2.12	2.12	2.12	2.12	2.12
Selectivities, Wt % of HC :									
Methane	2.16	2.37	2.09	2.43	2.69	2.43	2.37	2.44	2.32
Ethane	1.03	1.08	1.05	1.05	1.92	1.83	1.73	1.78	1.75
Ethane	0.63	0.78	0.71	0.84	1.00	0.84	0.88	0.90	0.85
Propane	3.06	3.40	2.99	3.47	3.75	3.43	3.35	3.45	3.32
Propene	0.52	0.52	0.49	0.55	0.63	0.58	0.58	0.60	0.66
Butenes	2.64	2.08	2.49	2.05	3.07	2.87	2.77	2.84	2.76
i-Butane	0.08	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.10
n-Butane	0.49	0.54	0.49	0.55	0.62	0.59	0.59	0.60	0.63
C <sub>5</sub> - C <sub>11</sub> (2)	6.13	6.75	6.02	6.78	7.19	6.28	6.48	6.88	7.15
Light Hydrocarbons (3)	8.11	9.71	10.52	7.59	9.00	9.22	9.18	10.04	10.38
Heavy Hydrocarbons (4)	14.05	14.89	10.53	17.40	14.76	14.90	15.99	16.38	16.60
Slurry Rx.-Wax	59.95	55.88	55.57	55.20	54.53	64.53	55.67	53.77	53.06
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 G-1 (Cont'd)  
 First Stage Fischer-Tropsch Slurry Reactor  
 Operating Conditions and Material Balances  
 (based on Inlet-Reactor Sample)  
 (Run CT-255-13)

	13-25	13-26	13-27	13-28	13-29	13-30	13-31	13-32
(Nitrogen-Free Basis)								
M.B. No.	26.8	27.8	28.0	29.8	30.8	31.9	32.6	33.6
Days On-stream								
First-Stage Conditions:								
Charge H <sub>2</sub> /CO (Molar)	0.705	0.726	0.714	0.712	0.712	0.705	0.709	0.711
Temperature, °C	257	257	258	257	258	258	258	257
Pressure, MPa	1.653	1.653	1.653	1.650	1.653	1.650	1.653	1.653
Feed Sup. Vel., cm/s	3.887	3.641	3.628	3.597	3.595	3.584	3.600	3.597
Space Vel., NL/gr-hr	2.485	2.423	2.403	2.400	2.398	2.390	2.397	2.389
N <sub>2</sub> in Feed, Mol %	5.0	1.6	1.0	1.8	1.6	1.8	1.7	1.9
Conversions, Mol %:								
H <sub>2</sub>	68.47	69.58	68.54	67.38	67.20	64.12	63.60	59.34
CO	84.20	85.88	85.53	83.06	83.02	80.34	78.22	74.01
H <sub>2</sub> +CO	77.08	77.73	78.45	76.86	76.44	73.63	72.10	67.91
Yields, Wt % of Products:								
Hydrocarbons (1)	20.19	21.25	20.58	20.18	20.18	20.35	19.65	19.22
CO <sub>2</sub>	61.43	62.31	62.33	61.09	60.94	57.93	57.05	53.84
H <sub>2</sub> O (1)	2.22	1.95	1.64	1.83	1.65	1.56	1.56	1.48
H <sub>2</sub>	1.49	1.47	1.49	1.54	1.55	1.71	1.71	1.89
CO	14.08	13.60	13.29	14.97	16.67	18.44	20.03	23.56
Total	100	100	100	100	100	100	100	100
Balance, Wt % of Charge:								
(CO <sub>2</sub> ) (H <sub>2</sub> )/(CO) (H <sub>2</sub> O)	16.07	20.52	24.28	19.51	20.88	19.63	17.80	16.65
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	204	211	213	211	206	214	214	225
(H/C) Atomic Ratio in HC:	2.12	2.13	2.14	2.14	2.15	2.15	2.14	2.15
Selectivities, Wt % of HC:								
Methane	2.43	2.91	3.01	3.00	3.17	3.17	2.71	3.18
Ethane	1.75	2.04	2.05	2.06	2.15	2.15	2.22	2.33
Ethane	0.91	1.11	1.13	1.17	1.22	1.26	1.17	1.10
Propene	3.34	4.04	4.06	4.07	4.27	4.27	4.20	4.18
Propene	0.01	0.74	0.76	0.77	0.80	0.81	0.77	0.78
Butenes	2.73	3.35	3.38	3.36	3.50	3.49	3.42	3.42
i-Butane	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06
n-Butane	0.61	0.75	0.77	0.77	0.80	0.81	0.80	0.81
C <sub>5</sub> - C <sub>11</sub> (2)	0.28	0.66	0.97	0.91	0.86	0.89	0.80	0.81
Light Hydrocarbons (3)	10.98	9.76	9.70	10.45	10.24	9.86	8.32	8.17
Heavy Hydrocarbons (4)	16.48	16.69	17.10	16.68	16.24	17.16	17.78	16.80
Slurry Rx.-Wax	53.27	49.98	48.48	47.86	47.30	47.42	48.18	48.77
Total	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 G-2  
Composition of Hydrocarbon Products from  
First-Stage Slurry F-I Reactor  
(Based on Inter-Reactor Sample)  
(Run CT-256-13)

N.B. No. Days On-stream	13-	1	13-	3	13-	4	13-	5	13-	6	13-	7	13-	8	13-	9	13-	10
	2.8	4.8	5.8	6.8	7.9	8.8	9.8	10.8	11.8									
METHANE	2.26	1.93	1.49	2.27	1.73	2.37	2.20	2.31	1.78									
ETHENE	2.08	1.70	1.40	1.88	1.67	1.89	1.77	1.85	1.52									
ETHANE	0.55	0.49	0.41	0.60	0.51	0.69	0.65	0.66	0.53									
PROPENE	3.21	2.70	2.37	3.07	2.57	3.21	3.01	3.11	2.58									
PROPANE	0.46	0.45	0.28	0.51	0.40	0.49	0.47	0.50	0.40									
1-BUTANE	0.11	0.15	0.03	0.09	0.04	0.07	0.07	0.07	0.03									
1-BUTENE+2-METHYLPROPENE	2.44	2.10	1.80	2.39	1.99	2.44	2.33	2.42	2.00									
N-BUTANE	0.43	0.43	0.52	0.47	0.37	0.47	0.46	0.48	0.39									
TRANS-2-BUTENE	0.06	0.08	0.04	0.07	0.04	0.06	0.06	0.06	0.06									
CIS-2-BUTENE	0.08	0.09	0.05	0.09	0.06	0.09	0.09	0.08	0.07									
3-METHYL-1-BUTENE	0.14	0.12	0.10	0.13	0.11	0.13	0.13	0.13	0.11									
1-PENTANE	0.06	0.21	0.06	0.09	0.04	0.06	0.06	0.06	0.06									
1-PENTENE	1.78	1.56	1.37	1.78	1.52	1.81	1.76	1.84	1.55									
2-METHYL-1-BUTENE	0.08	0.07	0.06	0.08	0.06	0.07	0.07	0.07	0.06									
N-PENTANE	0.32	0.34	0.25	0.35	0.28	0.34	0.34	0.36	0.30									
TRANS-2-PENTENE	0.05	0.04	0.03	0.04	0.03	0.04	0.05	0.05	0.04									
2-METHYL-2-BUTENE	0.05	0.04	0.03	0.04	0.04	0.05	0.05	0.05	0.04									
HEXENES + ISO-HEXANES	0.21	0.20	0.15	0.24	0.19	0.21	0.21	0.21	0.20									
2,3-DIMETHYLBUTANE	0.00	0.02	0.02	0.00	0.00	0.19	0.02	0.02	0.00									
2-METHYLPENTANE	0.02	0.03	0.02	0.03	0.01	0.02	0.03	0.03	0.01									
3-METHYLPENTANE	0.03	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.03									
1-HEXENE	1.22	1.15	1.02	1.32	1.12	1.26	1.24	1.33	1.17									
N-HEXANE	0.24	0.22	0.19	0.26	0.21	0.25	0.25	0.27	0.23									
HEPTENES + ISO-HEPTANES	0.22	0.18	0.13	0.20	0.17	0.21	0.21	0.22	0.18									
1-HEPTENE	0.52	0.64	0.58	0.72	0.62	0.68	0.61	0.68	0.60									
N-HEPTANE	0.12	0.13	0.11	0.14	0.12	0.13	0.13	0.14	0.13									
C8-OLEFINS + ISO-P	0.06	0.06	0.04	0.06	0.06	0.08	0.07	0.08	0.06									
1-OCTENE	0.15	0.23	0.22	0.25	0.23	0.26	0.18	0.21	0.20									
N-OCTANE	0.04	0.05	0.05	0.05	0.06	0.22	0.04	0.04	0.04									
C9-OLEFINS + ISO-P	0.16	0.08	0.08	0.08	0.08	0.13	0.07	0.08	0.07									
ACETONE	0.16	0.10	0.15	0.20	0.18	0.22	0.22	0.26	0.21									
1-PROPANOL	0.11	0.00	0.08	0.10	0.09	0.10	0.10	0.11	0.09									
UNKNOWN LITE HYDRO-CARB LIQ (1)	7.94	0.93	0.58	0.83	0.37	7.58	6.59	5.74	6.68									
UNKNOWN HVY HYDRO-CARB LIQ (2)	14.69	12.12	13.64	13.11	14.41	13.47	15.63	14.56	14.58									
SLURRY REACTOR-WAX	60.00	65.28	64.78	62.45	64.71	61.17	60.81	61.93	64.08									

(1) Collected in Ambient and Chilled Condensers

(2) Collected in Hot Condenser

Table G-2 (Cont'd)  
Composition of Hydrocarbon Products from  
First-Stage Slurry F-I Reactor  
(Based on Inter-Reactor Sample)  
(Run CT-256-13)

M.B. No. Days On-stream	13-11	13-15	13-16	13-17	13-18	13-21	13-22	13-23	13-24
	12.8	16.8	17.8	18.8	19.8	22.8	23.8	24.8	25.8
METHANOL	0.00	0.09	0.10	0.06	0.07	0.09	0.12	0.12	0.08
METHANE	2.15	2.37	2.09	2.43	2.69	2.43	2.37	2.44	2.32
ETHENE	1.83	1.88	1.65	1.86	1.92	1.83	1.73	1.78	1.75
ETHANE	0.83	0.78	0.71	0.84	1.00	0.84	0.88	0.90	0.85
PROPENE	3.08	3.40	2.99	3.47	3.75	3.43	3.35	3.45	3.32
PROPANE	0.52	0.52	0.49	0.55	0.63	0.58	0.58	0.60	0.60
I-BUTANE	0.08	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.10
1-BUTENE+2-METHYLPROPENE	2.40	2.69	2.32	2.65	2.84	2.97	2.51	2.57	2.54
N-BUTANE	0.49	0.54	0.49	0.55	0.62	0.59	0.59	0.60	0.63
TRANS-2-BUTENE	0.66	0.11	0.07	0.08	0.10	0.08	0.12	0.12	0.10
CIS-2-BUTENE	0.09	0.00	0.10	0.12	0.14	0.12	0.15	0.15	0.13
3-METHYL-1-PENTENE	0.13	0.14	0.12	0.14	0.15	0.14	0.13	0.14	0.14
I-PENTANE	0.08	0.06	0.10	0.11	0.12	0.13	0.12	0.19	0.11
1-PENTENE	1.85	2.03	1.79	2.04	2.17	2.13	1.88	1.92	1.95
2-METHYL-1-BUTENE	0.07	0.08	0.07	0.08	0.09	0.08	0.08	0.08	0.08
N-PENTANE	0.05	0.06	0.38	0.43	0.48	0.46	0.44	0.47	0.47
TRANS-2-PENTENE	0.06	0.06	0.06	0.07	0.08	0.07	0.11	0.14	0.08
CIS-2-PENTENE	0.01	0.00	0.01	0.00	0.01	0.00	0.31	0.02	0.02
2-METHYL-2-BUTENE	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.03
CYCLOPENTANE	0.21	0.23	0.20	0.23	0.25	0.27	0.19	0.20	0.24
HEXENES + ISO-HEXANES	0.04	0.01	0.01	0.09	0.02	0.02	0.02	0.02	0.02
2,4-DIMETHYLBUTANE	0.02	0.04	0.03	0.04	0.01	0.05	0.04	0.04	0.04
2-METHYLPENTANE	0.00	0.02	0.00	0.02	0.04	0.02	0.02	0.02	0.03
3-METHYLPENTANE	1.38	1.47	1.31	1.47	1.52	1.68	1.26	1.28	1.45
1-HEXENE	0.29	0.31	0.29	0.32	0.35	0.40	0.34	0.36	0.37
N-HEXANE	0.21	0.25	0.25	0.28	0.30	0.35	0.34	0.41	0.31
HEPTENES + ISO-HEPTANES	0.77	0.81	0.78	0.77	0.77	1.07	0.61	0.58	0.81
1-HEPTENE	0.16	0.18	0.17	0.18	0.19	0.28	0.21	0.24	0.23
N-HEPTANE	0.07	0.09	0.08	0.09	0.11	0.18	0.18	0.21	0.13
C8-OLEFINS + ISO-P	0.25	0.29	0.23	0.25	0.25	0.48	0.17	0.17	0.32
1-OCTENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
MONOMETHYL-ISO-C8-P	0.06	0.07	0.05	0.06	0.07	0.13	0.07	0.08	0.10
N-OCTANE	0.05	0.11	0.09	0.10	0.12	0.23	0.12	0.17	0.15
C9-OLEFINS + ISO-P	0.26	0.27	0.25	0.27	0.26	0.31	0.21	0.19	0.26
ACETONE	0.11	0.11	0.05	0.06	0.06	0.06	0.06	0.03	0.09
I-PROPANOL	8.11	9.71	10.52	7.59	9.00	9.22	9.18	10.04	10.38
UNKNOWN LITE HYDRO-CARB LIQ (1)	14.06	14.89	16.53	17.46	14.76	14.90	15.99	16.36	16.60
UNKNOWN HVY HYDRO-CARB LIQ (2)	59.95	55.85	55.57	55.20	54.93	54.53	55.67	53.77	53.60
SLURRY REACTOR-WAX									

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

Table G-2 (Cont'd)  
Composition of Hydrocarbon Products from  
First-Stage Slurry F-I Reactor  
(Based on Inter-Reactor Sample)  
(Run CT-256-13)

M.B. No.	13-25	13-26	13-27	13-28	13-29	13-30	13-31	13-32
Days On-stream	20.8	27.8	28.8	29.8	30.8	31.8	32.8	33.8
METHANE	2.43	2.91	3.01	3.00	3.17	3.17	2.71	3.18
ETHENE	1.76	2.04	2.06	2.06	2.16	2.15	2.22	2.33
ETHANE	0.91	1.11	1.13	1.17	1.22	1.26	1.17	1.10
PROPENE	3.34	4.04	4.06	4.07	4.27	4.27	4.20	4.10
PROPANE	0.61	0.74	0.75	0.77	0.80	0.81	0.77	0.78
1-BUTANE	0.64	0.66	0.66	0.65	0.66	0.66	0.66	0.66
1-BUTENE + 2-METHYLPROPENE	2.51	3.10	3.12	3.02	3.21	3.18	3.14	3.17
N-BUTANE	0.61	0.75	0.77	0.77	0.80	0.81	0.80	0.81
TRANS-2-BUTENE	0.09	0.10	0.10	0.11	0.12	0.13	0.11	0.11
CIS-2-BUTENE	0.13	0.16	0.16	0.17	0.17	0.19	0.18	0.14
3-METHYL-1-BUTENE	0.13	0.17	0.17	0.17	0.18	0.18	0.18	0.19
1-PENTANE	0.06	0.13	0.13	0.13	0.14	0.09	0.09	0.09
1-PENTENE	1.89	2.39	2.40	2.37	2.45	2.40	2.39	2.39
2-METHYL-1-BUTENE	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N-PENTANE	0.00	0.67	0.67	0.69	0.81	0.82	0.80	0.60
TRANS-2-PENTENE	0.06	0.09	0.09	0.10	0.11	0.12	0.10	0.09
CIS-2-PENTENE	0.08	0.10	0.10	0.11	0.11	0.12	0.00	0.09
2-METHYL-2-BUTENE	0.01	0.01	0.01	0.02	0.02	0.02	0.10	0.00
CYCLOPENTANE	0.02	0.03	0.01	0.01	0.01	0.00	0.00	0.03
HEXENES + ISO-HEXANES	0.23	0.31	0.32	0.35	0.37	0.37	0.37	0.38
2,3-DIMETHYLBUTANE	0.01	0.01	0.03	0.01	0.03	0.03	0.37	0.06
2-METHYLPENTANE	0.04	0.05	0.05	0.06	0.02	0.06	0.06	0.03
3-METHYLPENTANE	0.02	0.03	0.03	0.03	0.35	0.03	0.03	0.00
1-HEXENE	1.34	1.77	1.77	1.76	1.80	1.77	1.78	1.90
N-HEXANE	0.35	0.45	0.45	0.48	0.48	0.45	0.49	0.49
HEPTENES + ISO-HEPTANES	0.28	0.42	0.40	0.44	0.50	0.50	0.46	0.46
1-HEPTENE	0.73	1.01	0.99	1.01	1.04	1.04	1.09	1.10
N-HEPTANE	0.21	0.29	0.28	0.31	0.33	0.34	0.34	0.34
C8-OLEFINS + ISO-P	0.12	0.20	0.20	0.22	0.25	0.28	0.26	0.21
1-OCTENE	0.30	0.43	0.41	0.44	0.48	0.48	0.51	0.52
N-OCTANE	0.00	0.13	0.13	0.14	0.16	0.17	0.17	0.18
C9-OLEFINS + ISO-P	0.21	0.30	0.33	0.40	0.44	0.50	0.51	0.53
METHANOL	0.08	0.06	0.06	0.07	0.07	0.09	0.08	0.06
ACETONE	0.25	0.38	0.37	0.39	0.43	0.43	0.45	0.48
1-PROPANOL	0.11	0.07	0.08	0.08	0.03	0.14	0.15	0.15
UNKNOWN LITE HYDRO-CARB LIQ (1)	10.90	9.76	9.79	10.45	10.24	9.66	8.32	8.17
UNKNOWN Hvy HYDRO-CARB LIQ (2)	16.48	15.09	17.10	16.68	16.24	17.18	17.78	16.80
SLURRY REACTOR-WAX	53.27	49.98	48.46	47.83	47.30	47.42	46.18	46.77

(1) Collected in Ambient and Chilled Condensers

(2) Collected in Hot Condenser



Table G-3  
 Second-Stage Fired-Rec ZSV-5 Reactor  
 Operating Conditions and Material Balances  
 (Run 11 256-13)

(Nitrogen-Free Basis)	13- 1	13- 3	13- 4	13- 5	13- 6	13- 7	13- 8
W.B. No							
Days On-stream	2.8	4.8	5.8	6.8	7.9	8.8	9.8
First-Stage Conditions:							
Charge H <sub>2</sub> /CO (Molar)	0.700	0.697	0.699	0.700	0.699	0.700	0.694
Temperature, °C	258	257	257	256	256	257	256
Pressure, MPa	1.473	1.473	1.473	1.480	1.480	1.480	1.480
Feed Sup. Vel., cm/s	4.581	4.341	4.366	4.304	4.296	4.260	4.082
Space Vel., NL/gFe-hr	2.586	2.481	2.486	2.490	2.484	2.458	2.359
N <sub>2</sub> in Feed, Mol %	1.4	2.1	2.6	1.5	1.6	1.6	1.6
Second-Stage Conditions:							
Temp., Inlet, °C	316	329	341	347	349	352	357
Outlet, °C	337	376	380	386	391	395	403
Pressure, MPa	1.480	1.480	1.480	1.480	1.480	1.480	1.480
GHSV, l/hr	2335	2185	2197	2175	2152	2088	1983
Days On-stream	33.8	35.8	38.8	37.8	38.9	39.8	40.8
Conversions, Mol % :							
H <sub>2</sub>	88.87	78.28	71.24	78.12	89.86	71.79	73.85
CO	83.96	85.79	84.89	85.42	88.11	87.79	89.90
H <sub>2</sub> +CO	77.75	79.41	79.15	79.12	79.42	81.16	83.33
Yields, Wt % of Products :							
Hydrocarbons	19.55	21.38	21.15	21.98	21.62	22.98	23.41
CO <sub>2</sub>	90.96	61.50	68.82	68.10	61.38	62.84	63.59
H <sub>2</sub> O	2.71	2.32	2.17	2.65	2.36	2.36	2.44
H <sub>2</sub>	1.50	1.41	1.37	1.43	1.45	1.34	1.21
CO	15.28	13.39	14.48	13.83	13.27	11.35	9.35
Total	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	99.77	100.00	100.48	100.17	99.44	102.17	102.72
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	12.64	15.92	15.18	13.36	16.22	18.18	19.24
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	192	209	206	213	208	221	222
(H/C) Atomic Ratio in HC :	2.18	2.18	2.09	2.12	2.18	2.11	2.13
Selectivities, Wt % of HC :							
Methane	2.84	1.67	1.61	2.09	1.72	2.11	2.33
Ethene	0.57	0.82	0.54	0.66	0.61	0.78	0.75
Ethane	0.53	0.58	0.53	0.36	0.62	0.74	0.86
Propene	1.83	1.71	1.62	1.94	1.74	1.99	2.05
Propene	2.18	2.47	2.53	3.13	2.99	3.47	4.07
Butenes	2.68	2.65	1.89	2.24	1.95	2.28	2.12
i-Butane	3.89	3.63	3.72	4.55	4.14	4.88	5.12
n-Butane	1.94	1.92	1.92	2.42	2.22	2.54	2.84
C <sub>5</sub> - C <sub>11</sub>	24.45	28.81	21.91	22.23	22.47	24.38	22.79
C <sub>12</sub> + (Excl. Rx.-Wax)	0.89	0.61	0.43	0.63	0.23	0.43	0.31
Slurry Rx.-Wax	68.00	64.53	63.31	68.86	61.32	56.76	56.74
Total	100	100	100	100	100	100	100
i-C <sub>4</sub> /(C <sub>3</sub> = + C <sub>4</sub> =) Molar :	0.78	0.81	0.89	0.91	0.94	0.93	1.02
(C <sub>3</sub> /C <sub>3</sub> =) Molar Ratio :	1.14	1.38	1.49	1.64	1.64	1.66	1.88
Alkylate, Wt % of HC :	7.84	6.70	6.89	8.48	7.82	8.81	9.23
Cat-Poly, Wt % of HC :	1.17	0.63	0.34	0.33	0.21	0.25	0.68
C <sub>6</sub> - C <sub>11</sub> PDNA, Wt % :							
Paraffins	-	-	-	-	-	-	-
Olefins	-	-	-	-	-	-	-
Naphthenes	-	-	-	-	-	-	-
Aromatics	-	-	-	-	-	-	-

Table G-3 (Cont'd)  
 Second-Stage Fixed-Bed ZSM-5 Reactor  
 Operating Conditions and Material Balances  
 (Run CT-256-13)

(Nitrogen-Free Basis)	13- 9	13- 10	13- 11	13- 15	13- 16	13- 17	13- 18
M.B. No.	13- 9	13- 10	13- 11	13- 15	13- 16	13- 17	13- 18
Days On-stream	10.8	11.8	12.8	15.8	17.8	18.8	19.8
First-Stage Conditions:							
Charge H <sub>2</sub> /CO (Molar)	0.686	0.707	0.706	0.707	0.710	0.701	0.738
Temperature, °C	256	257	257	257	257	257	257
Pressure, MPa	1.400	1.473	1.480	1.480	1.480	1.480	1.480
Feed Sup. Vel., cm/s	4.134	4.063	4.120	4.024	4.009	4.042	3.939
Space Vel., NL/gFe-hr	2.389	2.338	2.405	2.389	2.379	2.399	2.337
N <sub>2</sub> in Feed, Mol %	1.6	1.5	2.5	1.6	1.5	1.5	1.6
Second-Stage Conditions:							
Temp., Inlet, °C	359	383	366	379	382	387	391
Outlet, °C	403	405	407	423	426	429	437
Pressure, MPa	1.480	1.480	1.480	1.487	1.487	1.480	1.487
GHSV, 1/hr	2002	2050	2063	2008	1997	2004	1957
Days On-stream	41.8	42.8	43.8	47.8	48.8	49.8	50.8
Conversions, Mol % :							
H <sub>2</sub>	72.90	71.88	74.35	73.79	73.67	73.68	72.37
CO	89.42	88.10	88.69	88.85	88.17	88.51	89.95
H <sub>2</sub> +CO	82.70	80.21	81.59	82.50	82.15	82.14	82.49
Yields, Wt % of Products :							
Hydrocarbons	22.54	22.09	21.07	22.21	21.62	22.22	23.38
CO <sub>2</sub>	63.47	62.50	63.63	64.58	63.43	63.80	63.86
H <sub>2</sub> O	2.07	1.55	1.91	1.57	2.92	2.03	2.26
H <sub>2</sub>	1.27	1.30	1.21	1.22	1.23	1.27	1.34
CO	10.05	12.57	12.20	10.33	10.79	10.68	9.16
Total	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	100.17	105.18	103.04	104.46	104.23	102.41	104.18
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	17.17	23.78	18.50	25.99	14.09	21.23	23.49
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	211	222	204	216	210	213	223
(H/C) Atomic Ratio in HC :	2.12	2.11	2.10	2.11	2.13	2.13	2.14
Selectivities, Wt % of HC :							
Methane	2.23	2.03	1.97	2.30	2.38	2.40	2.58
Ethane	0.75	0.78	0.76	1.00	1.09	1.15	1.10
Ethene	0.83	0.79	0.78	1.00	1.13	1.19	1.37
Propene	2.04	2.12	1.98	2.56	2.72	2.87	2.91
Propane	3.97	3.93	3.07	5.21	5.45	5.62	6.24
Butenes	2.20	2.05	1.93	2.52	2.47	2.56	2.56
i-Butane	5.06	4.75	4.50	5.50	5.36	5.34	5.66
n-Butane	2.88	2.67	2.55	3.45	3.33	3.37	3.70
C <sub>5</sub> - C <sub>11</sub>	20.74	22.01	22.23	23.46	21.97	23.21	23.27
C <sub>12</sub> + (Excl. Rx.-Wax)	3.27	0.00	0.40	0.00	0.00	0.00	0.00
Slurry Rx.-Wax	50.01	50.87	50.00	52.93	54.12	52.31	50.53
Total	100	100	100	100	100	100	100
i-C <sub>4</sub> /(C <sub>3</sub> + C <sub>4</sub> ) Molar :	0.99	0.94	0.95	0.89	0.85	0.81	0.85
(C <sub>3</sub> /C <sub>3</sub> ) Molar Ratio :	1.00	1.77	1.00	1.94	1.91	1.87	2.05
Alkylate, Wt % of HC :	9.27	0.71	0.24	10.11	9.80	9.85	10.40
Cat-Poly, Wt % of HC :	0.03	0.22	0.17	0.47	0.70	0.92	0.73
C <sub>5</sub> - C <sub>11</sub> PONA, Wt % :							
Paraffins	39.63	-	-	38.56	-	-	-
Diolefins	10.19	-	-	10.28	-	-	-
Naphthenes	10.15	-	-	10.22	-	-	-
Aromatics	40.04	-	-	42.94	-	-	-

Table G-3 (Cont'd)  
 Second-Stage Fixed-Bed ZSM-5 Reactor  
 Operating Conditions and Material Balances  
 (Run C-256-13)

(Nitrogen-Free Basis)	13- 19	13- 20	13- 21	13- 22	13- 23	13- 24	13- 25
M.B. No.							
Days On-stream	20.8	21.8	22.8	23.8	24.8	25.8	26.8
First-Stage Conditions:							
Charge H <sub>2</sub> /CO (Molar)	0.711	0.712	0.699	0.707	0.709	0.707	0.706
Temperature, °C	257	256	257	257	257	257	257
Pressure, MPa	1.487	1.487	1.487	1.487	1.549	1.653	1.653
Feed S.V. Vel., cm/s	3.981	3.988	4.013	4.016	4.024	4.013	3.721
Space Vel., NL/gFe-hr	2.378	2.372	2.395	2.396	2.501	2.862	2.485
N <sub>2</sub> in Feed, Mol %	1.5	1.4	1.5	1.5	1.4	1.4	1.4
Second-Stage Conditions:							
Temp., Inlet, °C	394	397	399	402	412	417	427
Outlet, °C	432	433	438	440	440	451	463
Pressure, MPa	1.487	1.487	1.487	1.494	1.549	1.653	1.653
GHSV, 1/hr	2003	2001	2045	2053	2210	2411	2186
Days On-stream	51.8	52.8	53.8	54.8	55.6	56.8	57.8
Conversions, Mol % :							
H <sub>2</sub>	72.71	70.12	71.23	70.95	70.19	68.93	69.26
CO	87.60	84.71	86.18	85.62	85.45	82.41	84.89
H <sub>2</sub> +CO	81.41	78.64	80.03	79.67	79.12	75.82	77.95
Yields, Wt % of Products :							
Hydrocarbons	22.34	21.62	21.77	22.11	21.25	19.89	21.81
CO <sub>2</sub>	62.66	66.57	61.84	60.79	62.36	60.16	60.65
H <sub>2</sub> O	2.21	2.14	2.19	2.39	1.78	2.31	1.98
H <sub>2</sub>	1.38	1.43	1.37	1.39	1.39	1.46	1.45
CO	11.58	14.24	13.84	13.32	13.25	16.19	14.78
Total	100	100	100	100	100	100	100
Bal Recovery, Wt % of Charge:	102.52	102.07	100.89	101.20	104.42	103.36	102.40
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	18.25	16.15	16.84	15.15	21.12	13.37	17.72
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv.:	216	215	212	216	215	205	220
(H/C) Atomic Ratio in HC :	2.13	2.12	2.12	2.13	2.14	2.13	2.14
Selectivities, Wt % of HC :							
Methane	2.50	2.33	2.46	2.54	2.75	2.64	2.75
Ethene	1.28	1.31	1.35	1.43	1.61	1.68	1.88
Ethane	1.23	1.14	1.26	1.33	1.50	1.46	1.70
Propene	3.29	3.38	3.41	3.67	4.00	4.27	4.41
Propene	6.37	6.02	5.48	5.50	6.00	5.78	6.38
Butenes	2.95	3.08	3.18	3.25	3.52	3.84	3.65
i-Butane	5.02	4.62	4.91	4.72	4.79	4.43	4.44
n-Butane	3.29	3.05	3.38	3.24	3.45	3.27	3.48
C <sub>5</sub> - C <sub>11</sub>	23.39	22.79	22.32	23.19	22.87	22.68	22.89
C <sub>12</sub> + (Excl. Rx.-Wax)	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Slurry Rx.-Wax	51.67	53.27	52.25	51.12	49.48	50.13	49.30
Total	100	100	100	100	100	100	100
i-C <sub>4</sub> /(C <sub>3</sub> = + C <sub>4</sub> =) Molar :	0.66	0.59	0.61	0.56	0.52	0.40	0.45
(C <sub>3</sub> /C <sub>3</sub> =) Molar Ratio :	1.58	1.42	1.53	1.43	1.41	1.29	1.38
Alkylate, Wt % of HC :	9.39	8.73	9.26	8.95	9.13	8.55	8.57
Cat-Poly, Wt % of HC :	1.88	2.35	2.24	2.69	3.24	3.86	3.94
C <sub>6</sub> - C <sub>11</sub> PDNA, Wt % :							
Paraffins	-	-	34.49	-	-	-	-
Diolefins	-	-	12.40	-	-	-	-
Naphthenes	-	-	10.59	-	-	-	-
Aromatics	-	-	42.44	-	-	-	-

Table G-3 (cont'd)  
 Second-Stage Fixed-Bed ZSM-5 Reactor  
 Operating Conditions and Material Balances  
 (Run CT 256-13)

(Nitrogen-Free Basis)	13- 26	13- 27	13- 28	13- 29	13- 30	13- 31	13- 32
M.B. No.	13- 26	13- 27	13- 28	13- 29	13- 30	13- 31	13- 32
Days On-stream	27.8	28.8	29.8	30.8	31.8	32.8	33.8
<b>First-Stage Conditions:</b>							
Charge H <sub>2</sub> /CO (Molar)	0.726	0.714	0.712	0.712	0.705	0.709	0.711
Temperature, °C	257	258	257	258	258	258	257
Pressure, MPa	1.653	1.653	1.660	1.653	1.660	1.653	1.653
Feed Sup. Vel., cm/s	3.633	3.613	3.592	3.590	3.579	3.603	3.592
Space Vel., NL/gFe-hr	2.423	2.403	2.400	2.388	2.390	2.397	2.389
N <sub>2</sub> in Feed, Mol %	1.4	1.6	1.7	1.7	1.7	1.6	1.7
<b>Second-Stage Conditions:</b>							
Temp., Inlet, °C	266	272	277	283	305	311	310
Outlet, °C	294	297	299	313	341	347	345
Pressure, MPa	1.657	1.653	1.653	1.653	1.653	1.653	1.653
GHSV, 1/hr	2023	2065	2135	2165	2178	2257	2304
Days On-stream	0.8	1.8	2.8	3.8	4.8	5.8	6.8
<b>Conversions, Mol % :</b>							
H <sub>2</sub>	71.35	68.88	67.56	65.55	65.11	64.16	68.82
CO	87.23	85.60	84.07	81.71	80.39	78.57	75.09
H <sub>2</sub> +CO	80.55	78.64	77.21	75.00	74.07	72.59	69.08
<b>Yields, Wt % of Products :</b>							
Hydrocarbons	21.29	22.65	21.89	20.85	21.91	21.82	19.97
CO <sub>2</sub>	63.50	60.96	60.54	59.83	57.16	55.76	53.80
H <sub>2</sub> O	2.66	1.78	2.25	1.84	0.88	1.83	1.81
H <sub>2</sub>	1.38	1.47	1.53	1.63	1.66	1.69	1.63
C <sub>3</sub>	11.75	13.22	14.59	16.88	18.39	19.71	22.59
Total	100	100	100	100	100	100	100
<b>Bal Recovery, Wt % of Charge:</b>	103.14	103.31	103.59	102.85	101.22	103.28	104.07
(CO <sub>2</sub> )(H <sub>2</sub> )/(CO)(H <sub>2</sub> O) :	20.59	22.76	18.82	17.88	33.51	14.88	13.74
gHC/Nm <sup>3</sup> (H <sub>2</sub> +CO) conv. :	207	226	215	215	229	228	230
(H/C) Atomic Ratio in HC :	2.05	2.03	2.05	2.05	2.10	2.13	2.13
<b>Selectivities, Wt % of HC :</b>							
Methane	2.91	2.72	2.86	2.83	2.76	2.90	3.00
Ethane	0.41	0.61	0.69	0.49	0.34	0.38	0.38
Ethene	1.14	1.05	1.16	1.14	1.19	1.24	1.15
Propene	0.98	1.08	1.28	1.38	1.15	1.25	1.23
Propane	1.61	1.33	1.50	1.80	3.45	3.77	3.53
Butenes	2.87	3.29	3.82	3.47	1.70	1.70	1.74
i-Butane	1.02	1.15	1.52	2.30	5.34	5.89	5.68
n-Butane	1.87	1.55	1.70	2.81	3.22	3.45	3.30
C <sub>5</sub> - C <sub>11</sub>	36.44	41.58	38.77	38.38	36.69	34.41	33.14
C <sub>12</sub> + (Excl. Rx.-Wax)	0.00	0.00	0.00	0.00	0.13	0.00	0.00
Slurry Rx.-Wax	49.95	45.45	46.69	46.21	44.83	45.88	46.92
Total	100	100	100	100	100	100	100
<b>i-C<sub>4</sub>/(C<sub>3</sub>= + C<sub>4</sub>=) Molar :</b>	0.42	0.28	0.28	0.42	1.59	1.69	1.60
(C <sub>3</sub> /C <sub>3</sub> =) Molar Ratio :	1.57	1.18	1.11	1.25	2.85	2.89	2.73
Alkylate, Wt % of HC :	3.58	2.86	2.98	4.52	8.28	6.45	6.47
Cat-Poly, Wt % of HC :	2.89	3.06	3.64	2.63	0.80	0.80	0.80
<b>C<sub>6</sub> - C<sub>11</sub> PDNA, Wt % :</b>							
Paraffins	-	-	-	-	-	-	-
Diolefins	-	-	-	-	-	-	-
Naphthenes	-	-	-	-	-	-	-
Aromatics	-	-	-	-	-	-	-

Table G-4  
 Composition of Hydrocarbon Products from  
 Two-Stage Slurry F-T/ZSM 5 Syngas Conversion  
 (Run C1-286-13)

M.B. No. Days On-stream	13- 1 2.8	13- 3 4.8	13- 4 5.8	13- 5 6.8	13- 6 7.9	13- 7 8.8	13- 8 9.8
METHANE	2.04	1.67	1.61	2.09	1.72	2.11	2.33
ETHENE	0.57	0.62	0.54	0.66	0.61	0.70	0.75
ETHANE	0.53	0.56	0.53	0.66	0.62	0.74	0.86
PROPENE	1.83	1.71	1.62	1.94	1.74	1.99	2.06
PROPANE	2.18	2.47	2.53	3.13	2.99	3.47	4.07
I-BUTANE	3.69	3.63	3.72	4.55	4.14	4.88	5.12
1-BUTENE-2-METHYLPROPENE	1.62	1.18	1.14	1.35	1.17	1.32	1.27
N-BUTANE	1.94	1.92	1.92	2.42	2.22	2.54	2.84
TRANS-2-BUTENE	0.63	0.51	0.45	0.53	0.46	0.52	0.51
CIS-2-BUTENE	0.43	0.36	0.31	0.35	0.32	0.36	0.35
3-METHYL-1-BUTENE	0.04	0.03	0.03	0.03	0.03	0.03	0.03
I-PENTANE	2.38	2.04	2.12	2.58	2.32	2.61	2.71
1-PENTENE	0.06	0.04	0.05	0.04	0.03	0.04	0.04
2-METHYL-1-BUTENE	0.30	0.16	0.17	0.20	0.17	0.18	0.17
N-PENTANE	1.03	0.85	0.85	1.05	0.94	1.01	1.10
TRANS-2-PENTENE	0.20	0.11	0.12	0.14	0.12	0.12	0.12
CIS-2-PENTENE	0.10	0.05	0.06	0.07	0.06	0.06	0.06
2-METHYL-2-BUTENE	0.77	0.58	0.41	0.48	0.40	0.42	0.40
2,2-DIMETHYLBUTANE	0.02	0.00	0.02	0.02	0.02	0.02	0.02
CYCLOPENTANE	0.01	0.05	0.05	0.08	0.07	0.08	0.10
HEXENES + ISO-HEXANES	0.11	0.05	0.05	0.03	0.07	0.04	0.02
2,3-DIMETHYLBUTANE	0.04	0.04	0.04	0.05	0.00	0.05	0.06
2-METHYLPENTANE	0.70	0.45	0.49	0.61	0.50	0.56	0.50
3-METHYLPENTANE	0.27	0.20	0.21	0.27	0.23	0.25	0.26
N-HEXANE	0.33	0.22	0.24	0.30	0.24	0.28	0.27
METHYLCYCLOPENTANE	0.16	0.16	0.18	0.24	0.21	0.24	0.26
HEPTENES + ISO-HEPTANES	0.27	0.11	0.11	0.14	0.10	0.13	0.11
2-METHYLHEXANE	0.12	0.07	0.00	0.10	0.08	0.09	0.06
2,3-DIMETHYLPENTANE	0.02	0.02	0.02	0.02	0.02	0.02	0.02
3-METHYLHEXANE	0.09	0.06	0.07	0.08	0.07	0.07	0.07
1-CIS-3-DIMETHYL-NS	0.04	0.03	0.04	0.05	0.04	0.04	0.04
1-TRANS-3-DIMETHYL-NS	0.03	0.03	0.03	0.04	0.04	0.04	0.04
1-TRANS-2-DIMETHYL-NS	0.03	0.04	0.05	0.04	0.03	0.03	0.04
N-HEPTANE	0.12	0.05	0.07	0.08	0.06	0.07	0.06
METHYLCYCLOHEXANE	0.02	0.03	0.04	0.04	0.04	0.04	0.03
C8-OLEFINS + ISO-P	0.11	0.02	0.03	0.08	0.07	0.07	0.05
ISO-C8-P + O + NS + NS	0.09	0.02	0.02	0.04	0.04	0.06	0.03
C9-OLEFINS + ISO-P	0.00	0.00	0.00	0.10	0.00	0.08	0.07
BENZENE	0.11	0.00	0.09	0.13	0.12	0.13	0.15
TOLUENE	0.13	0.06	0.09	0.22	0.22	0.22	0.24
ETHYLBENZENE	0.10	0.62	0.02	0.19	0.16	0.16	0.16
UNKNOWN LITE HYDRO-CARB LIQ (1)	10.57	15.36	16.07	14.68	15.00	17.22	15.43
UNKNOWN HVY HYDRO-CARB LIQ (2)	0.09	0.01	0.43	0.03	0.23	0.43	0.31
SLURRY REACTOR-WAX	00.00	64.53	63.31	00.00	61.32	58.76	56.74

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

Table 2.4 (Cont'd)  
Composition of Hydrocarbon Products from  
Two-Stage Slurry Full-DSU-S Syngas Conversion  
Run 100000-10

M.B. No. Days On-stream	13- 9	13- 10	13- 11	13- 15	13- 15	13- 17	13- 18
	10 B	11 B	12 B	16 B	17 B	18 B	19 B
METHANE	2.23	2.83	1.92	2.38	2.35	2.48	2.58
ETHANE	0.75	0.78	0.74	1.00	1.09	1.15	1.18
ETHANE	0.83	0.79	0.70	1.06	1.13	1.19	1.37
PROPENE	0.04	0.12	1.98	2.56	2.72	2.87	2.97
PROPANE	3.97	3.33	1.57	5.21	5.45	5.82	6.24
1-BUTANE	5.04	4.75	4.58	5.58	5.38	5.34	5.88
1-BUTENE (1-METHYLPROPENE)	1.31	1.23	1.14	1.48	1.47	1.50	1.52
N-BUTANE	0.88	0.87	1.55	3.45	3.33	3.37	3.78
TRANS-2-BUTENE	0.51	0.43	2.45	2.61	0.59	0.51	0.51
CIS-2-BUTENE	0.37	0.33	0.31	0.43	0.41	0.43	0.43
3-METHYL-1-BUTENE	0.83	0.83	0.83	0.84	0.83	0.83	0.83
1-PENTANE	3.06	1.48	2.31	1.22	1.53	2.59	2.75
1-PENTENE	0.84	0.83	0.84	0.85	0.84	0.84	0.84
2-METHYL-1-BUTENE	0.21	0.18	0.15	0.24	0.19	0.19	0.19
N-PENTANE	1.33	0.39	0.92	1.49	1.31	1.11	1.18
TRANS-2-PENTENE	0.15	0.11	0.10	0.19	0.14	0.14	0.14
CIS-2-PENTENE	0.07	0.06	0.05	0.09	0.07	0.07	0.08
3-METHYL-2-BUTENE	0.50	0.38	0.31	0.58	0.42	0.41	0.48
UNKNOWN (S-METHYLOLEFINS)	0.00	0.00	0.00	0.00	0.00	0.00	0.07
CE-COLEFINS (DIENES)	0.00	0.00	0.00	0.00	0.00	0.00	0.04
2,2-DIMETHYLBUTANE	0.80	0.82	0.82	0.82	0.82	0.82	0.82
CYCLOPENTANE	0.15	0.11	0.09	0.14	0.15	0.15	0.16
HEPTENES + ISO-HEXANES	2.33	0.82	0.83	0.82	0.83	0.83	2.02
2,3-DIMETHYLBUTANE	0.09	0.06	0.05	0.11	0.06	0.05	0.06
2-METHYLPENTANE	0.91	0.49	0.43	0.91	0.78	0.44	0.44
3-METHYLPENTANE	0.47	0.24	0.21	0.51	0.25	0.23	0.23
HEPTENES	0.17	0.00	0.00	0.34	0.00	0.00	0.00
N-HEXANE	0.54	0.24	0.22	0.61	0.26	0.25	0.25
2,2-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.07
2,4-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
METHYLCYCLOPENTANE	0.59	0.27	0.22	0.77	0.38	0.29	0.28
3,3-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CYCLOHEXANE	0.91	0.00	0.00	0.02	0.00	0.00	0.00
HEPTENES + ISO-HEPTANES	0.18	0.10	0.00	0.10	0.10	0.11	0.18
2-METHYLHEXANE	0.20	0.08	0.00	0.26	0.06	0.28	0.05
2,3-DIMETHYLPENTANE	0.11	0.02	0.02	0.12	0.02	0.02	0.02
3-METHYLHEXANE	0.38	0.07	0.06	0.29	0.05	0.05	0.04
1-CIS-3-DIMETHYLN5	0.10	0.06	0.03	0.20	0.04	0.04	0.00
1-TRANS-3-DIMETHYLN5	0.17	0.04	0.03	0.20	0.04	0.04	0.07
1-TRANS-2-DIMETHYLN5	0.15	0.04	0.05	0.17	0.03	0.04	0.03
N-HEPTANE	0.24	0.07	0.06	0.28	0.05	0.00	0.05
C7-OLEFINS	0.20	0.00	0.00	0.23	0.00	0.00	0.00
METHYLCYCLOHEXANE	0.12	0.04	0.03	0.14	0.04	0.04	0.03
C8-OLEFINS + ISO-P	0.00	0.00	0.02	0.03	0.02	0.04	0.02
ISO-C8-P + D + NS + NS	0.03	0.04	0.02	0.00	0.00	0.00	0.00
MONOMETHYL-ISO-C8-P	0.11	0.00	0.00	0.20	0.00	0.00	0.00
OTHER ISO-C8-P	0.07	0.00	0.00	0.07	0.00	0.00	0.00
C8-OLEFINS	0.27	0.00	0.00	0.26	0.00	0.00	0.00
C8-NAPHTHENES (NS-NS)	0.00	0.00	0.00	0.03	0.00	0.00	0.00
N-OCTANE	0.00	0.00	0.00	0.09	0.00	0.00	0.00
C8-OLEFINS + ISO-P	0.07	0.18	0.00	0.00	0.07	0.01	0.05
MONOMETHYL-ISO-C9-P	0.00	0.00	0.00	0.07	0.00	0.00	0.00
OTHER ISO-C9-P	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C9-OLEFINS	0.11	0.00	0.00	0.19	0.00	0.00	0.00
C9-NAPHTHENES (NS-NS)	0.13	0.00	0.00	0.14	0.00	0.00	0.00
N-NONANE	0.03	0.00	0.00	0.03	0.00	0.00	0.00
ISO-2-10-P + D + NS + NS	0.10	0.00	0.00	0.15	0.00	0.00	0.00
N-DECANE	0.01	0.00	0.00	0.00	0.00	0.00	0.00
C11 + D + NS + NS	0.07	0.00	0.00	0.00	0.00	0.00	0.00
BENZENE	0.37	0.15	0.24	0.57	0.19	0.19	0.19
TOLUENE	1.88	0.29	0.00	2.17	0.28	0.29	0.28
ETHYLBENZENE	0.63	0.22	0.03	0.72	0.19	0.17	0.14
M-XYLENE	1.71	0.09	0.00	2.17	0.00	0.00	0.00
O-XYLENE	0.54	0.00	0.00	0.71	0.00	0.00	0.00
N-PROPYLBENZENE	0.06	0.00	0.00	0.06	0.00	0.00	0.00
1-METHYL-3-ETHYL-BENZENE	0.78	0.00	0.00	0.79	0.00	0.00	0.00
1-METHYL-4-ETHYL-BENZENE	0.15	0.00	0.00	0.36	0.00	0.00	0.00
1,3,5-TRIMETHYLBENZENE	0.03	0.00	0.00	0.04	0.00	0.00	0.00
1-METHYL-2-ETHYLBENZENE	0.09	0.03	0.00	0.12	0.00	0.00	0.00
1,2,4-TRIMETHYLBENZENE	0.00	0.03	0.00	1.01	0.00	0.00	0.00
1,3-DIETHYLBENZENE	0.16	0.00	0.00	0.14	0.00	0.00	0.00
1-METHYL-3-N-C3-BENZENE	0.03	0.00	0.00	0.04	0.00	0.00	0.00
N-C4-BENZENE	0.07	0.00	0.00	0.07	0.00	0.00	0.00
1,2,3-TRIMETHYLBENZENE	0.03	0.00	0.00	0.04	0.00	0.00	0.00
C10-ALKYLBENZENES	0.32	0.00	0.00	0.32	0.00	0.00	0.00
1,2,4,5-TETRAMETHYLBENZENE	0.05	0.00	0.00	0.05	0.00	0.00	0.00
1,2,3,5-TETRAMETHYLBENZENE	0.01	0.00	0.00	0.02	0.00	0.00	0.00
1,2,3,4-TETRAMETHYLBENZENE	0.01	0.00	0.00	0.00	0.00	0.00	0.00
C11-ALKYLBENZENES	0.04	0.00	0.00	0.04	0.00	0.00	0.00
UNKNOWN (HC AROMATICS)	0.59	0.00	0.00	0.25	0.00	0.00	0.00
UNKNOWN LIQ HYDRO-CARB LIQ (1)	0.00	4.93	10.32	0.00	14.58	15.95	17.00
UNKNOWN HVY HYDRO-CARB LIQ (2)	0.27	0.00	0.48	0.00	0.00	0.00	0.00
SLURRY REACTOR-WAX	59.81	58.87	59.00	52.83	54.12	52.31	54.53

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

Table 1  
 Comparison of Hydrocarbon Condensates from  
 Two-stage Slurry FCC Gasolines  
 (C-260-13)

Wt % No. Days On-stream	13-19	13-20	13-21	13-22	13-23	13-24	13-25
	20 8	21 9	22 0	23 0	24 8	25 0	26 0
METHANE	0.50	2.33	2.48	2.54	2.75	2.04	2.75
ETHANE	1.28	1.31	1.35	1.43	1.91	1.00	1.00
ETHANE	1.23	1.14	1.20	1.33	1.50	1.46	1.70
PROPENE	3.29	3.30	3.41	3.67	4.06	4.77	4.41
PROPANE	5.37	5.02	5.48	5.50	6.00	5.78	6.30
1-BUTANE	5.02	4.62	4.91	4.72	4.73	4.23	4.44
1-BUTENE+2-METHYLPROPENE	1.76	1.83	1.87	1.92	2.09	2.17	2.15
N-BUTANE	3.29	3.05	3.38	3.24	3.45	3.27	3.40
TRANS-2-BUTENE	0.70	0.73	0.77	0.78	0.94	0.87	0.88
CIS-2-BUTENE	0.49	0.52	0.51	0.54	0.50	0.61	0.63
3-METHYL-1-BUTENE	0.04	0.04	0.05	0.04	0.05	0.05	0.05
1-PENTANE	2.50	2.31	2.81	1.29	2.28	2.12	2.13
1-PENTENE	0.05	0.00	0.07	0.00	0.00	0.07	0.07
2-METHYL-1-BUTENE	0.23	0.24	0.30	0.24	0.25	0.27	0.26
N-PENTANE	1.13	1.07	1.43	1.00	1.10	1.00	1.09
TRANS-2-PENTENE	0.18	0.17	0.23	0.19	0.19	0.10	0.19
CIS-2-PENTENE	0.00	0.09	0.12	0.00	0.10	0.10	0.10
2-METHYL-2-BUTENE	0.49	0.51	0.70	0.51	0.53	0.50	0.53
1,5-DIUFLEINS (DIENES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,2-DIMETHYLBUTANE	0.03	0.03	0.03	0.03	0.03	0.03	0.03
CYCLOPENTANE	0.10	0.15	0.27	0.10	0.10	0.17	0.19
HEXENES + ISO-HEXANES	0.04	0.04	0.03	0.05	0.05	0.05	0.04
2,3-DIMETHYLBUTANE	0.05	0.05	0.09	0.05	0.05	0.05	0.05
2-METHYLPENTANE	0.44	0.41	0.74	0.38	0.36	0.33	0.31
3-METHYLPENTANE	0.22	0.22	0.44	0.27	0.21	0.19	0.10
HEXENES	0.00	0.00	0.20	0.00	0.00	0.00	0.00
N-HEXANE	0.27	0.20	0.50	0.28	0.27	0.25	0.24
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	0.00	0.00	0.00	0.00
METHYLCYCLOPENTANE	0.31	0.31	0.70	0.30	0.32	0.29	0.28
3,3-DIMETHYLPENTANE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CYCLOHEXANE	0.00	0.00	0.02	0.00	0.00	0.00	0.00
HEPTENES + ISO-HEPTANES	0.14	0.15	0.13	0.15	0.10	0.10	0.15
2-METHYLHEXANE	0.00	0.00	0.20	0.00	0.00	0.04	0.03
2,3-DIMETHYLPENTANE	0.02	0.02	0.11	0.02	0.02	0.02	0.02
3-METHYLHEXANE	0.01	0.06	0.22	0.04	0.04	0.04	0.03
1-CIS-3-DIMETHYL-NS	0.04	0.04	0.10	0.04	0.04	0.03	0.03
1-TRANS-3-DIMETHYL-NS	0.04	0.04	0.10	0.04	0.04	0.03	0.03
1-TRANS-2-DIMETHYL-NS	0.04	0.04	0.10	0.04	0.04	0.03	0.03
N-HEPTANE	0.00	0.07	0.20	0.07	0.07	0.00	0.00
C7-OLEFINS	0.00	0.10	0.30	0.00	0.00	0.00	0.00
METHYLCYCLOHEXANE	0.04	0.04	0.15	0.04	0.03	0.03	0.02
C8-OLEFINS + ISO-P	0.05	0.05	0.03	0.04	0.03	0.04	0.02
ISO-C8-P + C + NS + NB	0.00	0.00	0.00	0.00	0.00	0.01	0.00
MONOMETHYL-ISO-C8-P	0.00	0.00	0.15	0.00	0.00	0.00	0.00
OTHER ISO-C8-P	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C8-OLEFINS	0.00	0.00	0.30	0.00	0.00	0.00	0.00
C9-NAPHTHENES (NS+NB)	0.00	0.00	0.51	0.00	0.00	0.00	0.00
N-OCTANE	0.00	0.30	0.12	0.00	0.00	0.00	0.00
C9-OLEFINS + ISO-P	0.00	0.00	0.05	0.05	0.05	0.04	0.04
MONOMETHYL-ISO-C9-P	0.00	0.00	0.05	0.00	0.00	0.00	0.00
OTHER ISO-C9-P	0.00	0.00	0.05	0.00	0.00	0.00	0.00
C9-OLEFINS	0.00	0.00	0.20	0.00	0.00	0.00	0.00
C9-NAPHTHENES (NS+NB)	0.00	0.00	0.11	0.00	0.00	0.00	0.00
N-NONANE	0.00	0.00	0.05	0.00	0.00	0.00	0.00
ISO-C10-P + C + NS + NB	0.00	0.00	0.14	0.00	0.00	0.00	0.00
N-DECANE	0.00	0.00	0.02	0.00	0.00	0.00	0.00
C11-P + C + NS + NB	0.00	0.00	0.07	0.00	0.00	0.00	0.00
BENZENE	0.19	0.10	0.67	0.19	0.21	0.10	0.21
TOLUENE	0.27	0.20	2.82	0.20	0.20	0.25	0.27
ETHYLBENZENE	0.17	0.19	0.87	0.19	0.17	0.16	0.16
M-XYLENE	0.00	0.00	2.10	0.00	0.00	0.00	0.00
O-XYLENE	0.00	0.00	0.80	0.00	0.00	0.00	0.00
N-PROPYLBENZENE	0.30	0.00	0.34	0.00	0.00	0.00	0.00
1-METHYL-3-ETHYL-BENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-METHYL-4-ETHYL-BENZENE	0.00	0.00	0.31	0.00	0.00	0.00	0.00
1,3,5-TRIMETHYL-BENZENE	0.00	0.00	0.04	0.00	0.00	0.00	0.00
1-METHYL-2-ETHYL-BENZENE	0.00	0.00	0.11	0.00	0.00	0.00	0.00
1,2,4-TRIMETHYL-BENZENE	0.00	0.00	0.59	0.00	0.00	0.00	0.00
1,3-DIETHYLBENZENE	0.00	0.00	0.13	0.00	0.00	0.00	0.00
1-METHYL-3-N-C3-BENZENE	0.00	0.00	0.03	0.00	0.00	0.00	0.00
N-C4-BENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2,3-TRIMETHYL-BENZENE	0.00	0.00	0.04	0.00	0.00	0.00	0.00
C10-ALKYLBENZENES	0.00	0.00	0.20	0.00	0.00	0.00	0.00
1,2,4,5-TETRAMETHYL-BENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2,3,5-TETRAMETHYL-BENZENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,2,3,4-TETRAMETHYL-BENZENE	0.00	0.00	0.01	0.00	0.00	0.00	0.00
C11-ALKYLBENZENES	0.00	0.00	0.04	0.00	0.00	0.00	0.00
NAPHTHALENE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1-INDANONE (HC AROMATICS)	0.00	0.00	0.03	0.00	0.00	0.00	0.00
MONOMETHYL HYDRO-CARB L10 (1)	16.04	15.57	0.00	15.04	17.01	15.70	15.25
MONOMETHYL HYDRO-CARB L10 (2)	0.02	0.02	0.00	0.00	0.00	0.00	0.00
SLURRY REACTOR-WAX	51.07	53.2	52.25	51.12	49.48	50.13	49.30

(1) Collected in Air-ent and Cold Condensers  
 (2) Collected in Hot Condenser

Table 3-4 (Cont'd)  
 Composition of Hydrocarbon Products from  
 Two-Stage Slurry 5-T/ZSM 5 Syngas Conversion  
 (Run 11-26-13)

M.B. No. Days On-stream	13- 26 27 8	13- 27 28 8	13- 28 29 8	13- 29 30 8	13- 30 31 8	13- 31 32 8	13- 32 33 8
METHANE	2.91	2.72	2.86	2.83	2.76	2.90	3.08
ETHENE	0.41	0.61	0.69	0.49	0.34	0.38	0.38
ETHANE	1.14	1.05	1.16	1.14	1.19	1.24	1.18
PROPENE	0.98	1.08	1.28	1.38	1.15	1.25	1.23
PROPANE	1.51	1.33	1.50	1.80	3.45	3.77	3.53
I-BUTANE	1.82	1.35	1.52	2.30	5.34	5.89	5.60
1-BUTENE+2-METHYLPROPENE	1.80	2.08	2.39	2.15	1.04	1.84	1.05
N-BUTANE	1.87	1.55	1.70	2.01	3.22	3.45	3.38
TRANS-2-BUTENE	0.66	0.75	0.88	0.80	0.40	0.40	0.41
CIS-2-BUTENE	0.42	0.48	0.55	0.52	0.26	0.27	0.27
3-METHYL-1-BUTENE	0.06	0.07	0.08	0.07	0.03	0.02	0.03
1-PENTANE	1.44	1.13	1.25	1.72	3.28	3.78	3.67
1-PENTENE	0.06	0.07	0.09	0.07	0.03	0.03	0.03
2-METHYL-1-BUTENE	0.46	0.59	0.67	0.53	0.17	0.17	0.16
N-PENTANE	1.31	1.17	1.20	1.33	1.65	1.79	1.77
TRANS-2-PENTENE	0.28	0.35	0.40	0.32	0.11	0.11	0.12
CIS-2-PENTENE	0.12	0.15	0.18	0.14	0.06	0.05	0.05
2-METHYL-2-BUTENE	1.33	1.66	1.89	1.44	4.43	4.42	4.45
2,2-DIMETHYLBUTANE	0.00	0.00	0.00	0.01	0.00	0.00	0.01
CYCLOPENTANE	0.02	0.03	0.04	0.03	0.03	0.04	0.04
HEXENES + ISO-HEXANES	0.02	0.12	0.09	0.03	0.02	0.03	0.03
2,3-DIMETHYLBUTANE	0.04	0.01	0.07	0.05	0.06	0.07	0.07
2-METHYLPENTANE	0.61	0.50	0.51	0.67	0.91	0.96	1.01
3-METHYLPENTANE	0.14	0.12	0.12	0.17	0.32	0.36	0.38
1-HEXENE	0.07	0.10	0.11	0.00	0.02	0.00	0.00
N-HEXANE	0.45	0.43	0.45	0.46	0.46	0.45	0.49
METHYLCYCLOPENTANE	0.11	0.14	0.16	0.12	0.13	0.10	0.17
HEPTENES + ISO-HEPTANES	0.37	0.47	0.58	0.27	0.12	0.08	0.12
2-METHYLHEXANE	0.11	0.10	0.10	0.13	0.15	0.15	0.16
2,3-DIMETHYLPENTANE	0.50	0.60	0.60	0.60	0.61	0.62	0.62
3-METHYLHEXANE	0.06	0.05	0.05	0.07	0.11	0.12	0.12
1-CIS-3-DIMETHYL-N6	0.00	0.00	0.00	0.00	0.03	0.04	0.04
1-TRANS-3-DIMETHYL-N6	0.00	0.01	0.00	0.00	0.03	0.03	0.03
1-TRANS-2-DIMETHYL-N6	0.00	0.01	0.00	0.00	0.02	0.03	0.03
N-HEPTANE	0.13	0.14	0.15	0.15	0.09	0.09	0.09
METHYLCYCLOHEXANE	0.03	0.02	0.01	0.01	0.04	0.05	0.05
C8-OLEFINS + ISO-P	0.00	0.00	0.02	0.02	0.04	0.04	0.05
ISO-C8-P + O - N6 + N6	0.05	0.03	0.02	0.00	0.00	0.00	0.00
C9-OLEFINS + ISO-P	0.00	0.00	0.00	0.00	0.00	0.07	0.05
BENZENE	0.64	0.60	0.65	0.60	0.60	0.69	0.69
TOLUENE	0.02	0.03	0.02	0.03	0.12	0.15	0.14
ETHYLBENZENE	0.00	0.00	0.00	0.00	0.00	0.09	0.08
UNKNOWN LITE HYDRO-CARB LIQ (1)	29.18	34.84	38.48	38.29	27.93	24.93	23.51
UNKNOWN HVY HYDRO-CARB LIQ (2)	0.00	0.00	0.00	0.00	0.13	0.00	0.00
SLURRY REACTOR-WAX	49.95	45.45	48.69	46.21	44.83	45.00	46.92

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



**APPENDIX H**

**SUMMARY OF FISCHER-TROPSCH CATALYSTS**

Table H-1  
 Summary of Slurry  
Fischer-Tropsch Catalysts

<u>Run No.</u>	<u>Startup Medium (g)</u>	<u>Initial Catalyst Loading (g)</u>	<u>Makeup Catalyst (g)</u>	<u>Run Duration (Days)</u>	<u>Catalyst Settling</u>
1(1)	3,400 FT-200(2) 750 F-509 (3)	625 I-A-(4)		01	No
2	4,000 Run 1 895 FT-200 791 F-509	1,375 I-B-1		20	No
3	4,572 Run 2 818 F-509	589 I-B-1 818 I-B-2	No.	86	Yes
4	5,000 Run 3 1,100 F-509	2,000 I-B-3	493 I-B-2	37	No
5	6,900 Run 4 1,070 F-509	1,950 I-C-1	None	13	No
6	6,046 Run 4 1,327 F-509	1,863 I-D-2	350 I-D-2 400 I-D-2	33	No
7	5,940 Run 4 1,220 F-509	2,200 I-B-3	600 I-D-1 700 I-D-1	92	No
8	5,480 Run 5 1,420 F-509	2,300 I-C-2	300 I-C-2 200 I-C-2 200 I-B-3	70	No
9	5,130 Run 7 1,770 F-509	552 I-B-2 214 I-B-3 1,534 I-B-4	None	17	Yes
10	6,180 Run 5 1,620 F-509	2,200 I-D-3	None	9	No
11	6,260 Run 7 1,540 F-509	2,200 I-B-5	None	20	Yes

Table H-1 (Cont'd)

<u>Run No.</u>	<u>Startup Medium (g)</u>	<u>Initial Catalyst Loading (g)</u>	<u>Makeup Catalyst (g)</u>	<u>Run Duration (Days)</u>	<u>Catalyst Settling</u>
12	5,390 Run 7 1,300 F-509	1,600 I-B-6	None	32	Yes
13	5,100 Run 7 1,300 F-509	1,000 I-B-6 600 I-B-7	None	39	Yes

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(1) Foaming occurred only during the startup of Run 1.

(2) A F-T paraffinic wax from SASOL, with an average molecular weight of 600.

(3) A Mobil proprietary high molecular-weight paraffinic base stock.

(4) The second letter of the catalyst identification identifies the catalyst composition and the last number indicates the batch number. All catalysts are precipitated Fe promoted with Cu and  $K_2CO_3$ . The catalyst weight is given as  $Fe_2O_3$ , CuO, and  $K_2CO_3$ .

**APPENDIX I**

**SUMMARY OF SLURRY  
FISCHER-TROPSCH PRODUCT BREAKDOWNS**

Table I-1

Slurry Fischer-Tropsch Operation  
Conditions and Product Breakdowns

	<u>Design Base</u>		<u>Run CT-256-13</u>
	<u>Low-Wax</u> (1)	<u>High-Wax</u> (2)	<u>High-Wax</u> (3)
<u>Operation Conditions</u>			
Catalyst	I-B	I-B	I-B
Feed H <sub>2</sub> +CO Pres., MPa	1.48	2.27	1.48
Reactor Temperature, °C	260	258	258
SV, NL(H <sub>2</sub> +CO)/gFe-hr	2.75	3.5	2.4
<u>Hydrocarbon and Oxygenate Breakdowns</u>			
Methane	7.5	3.3	2.7
Ethylene	3.0	1.9	1.9
Ethane	1.6	1.7	1.0
Propylene	8.0	2.8	3.8
Propane	2.0	0.8	0.6
Butenes	6.6	2.5	3.1
Butanes	2.1	1.0	0.7
C <sub>5</sub> -C <sub>11</sub> Gasoline	39.7	24.3	18.1
C <sub>12</sub> -C <sub>18</sub> Diesel	14.8	9.1	10.2
C <sub>19</sub> -C <sub>23</sub>	3.0	3.0	4.5
C <sub>23</sub> <sup>+</sup>	7.5	48.1	52.8
C <sub>3</sub> <sup>-</sup> Non-Acids	3.9	2.3	0.6
C <sub>3</sub> <sup>-</sup> Acids	0.3	0.2	-
Total	100.0	100.0	100.0
<u>C<sub>5</sub>-C<sub>11</sub> Gasoline</u>			
Olefins	63.5	63.0	70.7
n-Paraffins	27.4	27.2	18.0
i-Paraffins	2.0	2.0	2.0
Acids + Alcohols (C <sub>4</sub> -C <sub>9</sub> )	4.4	4.9	8.3
Esters + Ketones (C <sub>4</sub> -C <sub>9</sub> )	2.7	2.9	1.0
Total	100.0	100.0	100.0

Table I-1 (Cont'd)

	<u>Design Base</u>		<u>Run CT-256-13</u>
	<u>Low-Wax</u> <sup>(1)</sup>	<u>High-Wax</u> <sup>(2)</sup>	<u>High-Wax</u> <sup>(3)</sup>
C <sub>12</sub> -C <sub>18</sub> Diesel			
Olefins	39.4	40.0	58.4
n-Paraffins	45.7	46.5	31.1
i-Paraffins	6.8	6.9	1.4
Acids + Alcohols (C <sub>10</sub> -C <sub>15</sub> )	5.1	4.1	7.5
Esters + Ketones (C <sub>10</sub> -C <sub>15</sub> )	3.0	2.5	1.6
	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

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(1) Based on Run CT-256-3.

(2) Based on Run CT-256-7, assuming similar reactor-wax and C<sub>5</sub><sup>+</sup> overhead product distributions as those of low-wax base case.

(3) Based on Balance #18; no analyses of the aqueous stream.