Appendix H

Complex Mass Balances and Economic Evaluation Data

Appendix H

Complex Mass Balances and Economic Evaluation Data
(Continued)

Appendix H

Complex Mass Balances and Economic Evaluation Data
(Continued)

Description		% LCO in Diesel	F-T Product Cost $/MT	Page
Base Case	Summary	60	100	H-62
Change F-T	Cash Flow Calc.	60	100	H-63
Product Cost &				
Determine IRR	Summary	60	120	H-64
(Continued)	Cash Flow Calc.	60	120	H-65
	Summary	60	140	H-66
	Cash Flow Calc.	60	140	H-67

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool = 0%
3. Fix IRR at 20%

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	.0		Diesel Pool	"	3288.2
Hydrogen	"	16.2		Fuel Oil	"	.0
Total	MT/D	5331.8		Total	MT/D	5331.8

Diesel Pool Properties

Flow Rate	MT/D	3288.2
" "	M3/D	4190.7
" "	BPSD	26358
Specific Gravity		.7846
API Gravity		48.8
LCO Content	wt%	.0 *
Cetane Index		75.9
Flash Point	deg F	188
Pour Point	deg F	13
Viscosity	cSt	3.5

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3
Total EEC		$MM	109.0
Sales Revenue		$MM/yr	301.9
Raw Materials		$MM/yr	(240.7)
Gross Margin		$MM/yr	61.2
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)
Pretax Income		$MM/yr	27.8
Internal Rate of Return			20.0%

Feedstock Values

F-T LPG	$/MT	121
F-T Condensate	$/MT	121
F-T Wax	$/MT	146.4
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	168
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		---		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	301.9	Pretax Inc yrs 1-10	27.77	$MM/yr
Feedstock	$MM/yr	(240.7)	Aftax Inc yrs 1-10	18.60	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	29.51	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	38.67	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	25.91	$MM/yr
			Cash Flow yrs 10-20	25.91	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	121		Internal Rate
F-T Condensate	1770.0	121		of Return
F-T Wax from F-T Unit	2537.0	146.4		
LCO to Diesel Pool	.0	128	.46	20.0%
Hydrogen	16.2	900		
	======	=====		
Total	5331.8	240.7		IRR Calc Guess
				20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	3288.2	168	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	5331.8	301.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$29.5	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Base Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to HC Unibon	3.5
		======
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		======
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	169.1
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	757.7
	Hydrogen	9.3
		======
Total		1601.4
Products	C5/C6 to Penex-Molex	551.2
	Naphtha to CCR Platforming Unit	1042.2
	Fuel Gas	8.0
		======
Total		1601.4

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naptha from NHT	1042.2
Products	Hydrogen	23.6
	Fuel Gas	172.3
	LPG	104.0
	Platformate to Gasoline Blending	742.4
		======
Total		1042.2

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	551.2
	Hydrogen	.1
		======
Total		551.3
Products	Fuel Gas	.3
	LPG	2.6
	Penexate to Gasoline Blending	548.4
		======
Total		551.3

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to HC Unibon	601.8
		======
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	2537.0
	Hvy Polymer from Cat Con Unit	3.5
	F-T Condensate 650 F- EP Cut	601.8
	Hydrogen	26.9
		======
Total		3169.2
Products	Fuel Gas	4.1
	LPG	82.0
	C5/C6 to NHT	169.1
	IBP-350 F Cut to NHT	757.7
	350-400 F Cut to Diesel Blending	174.8
	400-450 F Cut to Diesel Blending	204.0
	450-500 F Cut to Diesel Blending	174.8
	500-650 F Cut to Diesel Blending	582.8
	650 F- EP Cut to Diesel Blending	1019.9
		======
Total		3169.2

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	.0
	Hydrogen	16.2
		======
Total		5331.8
Products	Fuel Gas	184.6
	LPG	467.5
	Gasoline Pool	1391.4
	Diesel Pool	3288.2
		======
Total		5331.8

Fischer Tropsch Products Upgrading Complex / Base Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	174.8	5.3	232.4	5.5	56.6	.7523	370	62.8	136	-75	1.15
400-450	100	204.0	6.2	267.0	6.4	53.7	.7640	421	68.5	174	-75	1.55
450-500	100	174.8	5.3	226.0	5.4	51.4	.7736	475	73.3	210	-35	2.09
500-650	100	582.8	17.7	740.1	17.7	48.2	.7874	575	77.7	260	-10	3.59
650-700	100	1019.9	31.0	1267.1	30.2	44.3	.8049	675	73.1	360	15	8.52
Total		2156.4	65.6	2732.7	65.2							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	3.2	141.2	3.4	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	3.8	162.4	3.9	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	6.5	275.0	6.6	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	13.5	562.9	13.4	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	26.9	1141.6	27.2							
Distillate Hydrotreater Product												
Total	100	246.8	7.5	316.4	7.5	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	.0	.0	.0	0	.0	#DIV/0!	0	572	31.4	163	10	3.34
LCO 2	.0	.0	.0	0	.0	#DIV/0!	0	559	26.5	204	0	3.93
LCO 3	.0	.0	.0	0	.0	#DIV/0!	0	592	26.6	191	-25	3.23
Total		.0	.0	0	.0	#VALUE!	#DIV/0!					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		3288.2	100.0	4190.7	100.0	48.8	.7846	548	76	188	13	3.6
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6	*	Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0	*	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0	*	Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	822.0		Diesel Pool	"	4110.2
Hydrogen	"	16.2		Fuel Oil	"	.0
		******				******
Total	MT/D	6153.8		Total	MT/D	6153.8

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool = 20%
3. Fix IRR at 20%

Diesel Pool Properties

Flow Rate	MT/D	4110.2	
" "	M3/D	5054.0	
" "	BPSD	31788	
Specific Gravity		.8133	
API Gravity		42.5	
LCO Content	wt%	20.0	*
Cetane Index		66.0	
Flash Point	deg F	187	
Pour Point	deg F	5	
Viscosity	cSt	3.5	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	339.9
Raw Materials		$MM/yr	(278.6)

Gross Margin		$MM/yr	61.2
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	27.7
Internal Rate of Return			20.0%

Feedstock Values

F-T LPG	$/MT	121.5
F-T Condensate	$/MT	121.5
F-T Wax	$/MT	149.4
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	160
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	162
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	20.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		---		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	339.9	Pretax Inc yrs 1-10	27.72	$MM/yr
Feedstock	$MM/yr	(278.8)	Aftax Inc yrs 1-10	18.58	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	29.48	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	38.63	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	25.88	$MM/yr
			Cash Flow yrs 10-20	25.88	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	121.5		Internal Rate
F-T Condensate	1770.0	121.5		of Return
F-T Wax from F-T Unit	2537.0	149.4		
LCO to Diesel Pool	822.0	128	.46	20.0%
Hydrogen	16.2	900		
	======	=====		
Total	6153.8	278.8		IRR Calc Guess
				20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	4110.2	162	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	6153.8	339.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$29.5	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Base Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to HC Unibon	3.5
		******
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		******
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	169.1
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	757.7
	Hydrogen	9.3
		******
Total		1601.4
Products	C5/C6 to Penex-Molex	551.2
	Naphtha to CCR Platforming Unit	1042.2
	Fuel Gas	8.0
		******
Total		1601.4

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naptha from NHT	1042.2
Products	Hydrogen	23.6
	Fuel Gas	172.3
	LPG	104.0
	Platformate to Gasoline Blending	742.4
		******
Total		1042.2

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	551.2
	Hydrogen	.1
		******
Total		551.3
Products	Fuel Gas	.3
	LPG	2.6
	Penexate to Gasoline Blending	548.4
		******
Total		551.3

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to HC Unibon	601.8
		******
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	2537.0
	Hvy Polymer from Cat Con Unit	3.5
	F-T Condensate 650 F- EP Cut	601.8
	Hydrogen	26.9
		******
Total		3169.2
Products	Fuel Gas	4.1
	LPG	82.0
	C5/C6 to NHT	169.1
	IBP-350 F Cut to NHT	757.7
	350-400 F Cut to Diesel Blending	174.8
	400-450 F Cut to Diesel Blending	204.0
	450-500 F Cut to Diesel Blending	174.8
	500-650 F Cut to Diesel Blending	582.8
	650 F- EP Cut to Diesel Blending	1019.9
		******
Total		3169.2

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	822.0
	Hydrogen	16.2
		******
Total		6153.8
Products	Fuel Gas	184.6
	LPG	467.5
	Gasoline Pool	1391.4
	Diesel Pool	4110.2
		******
Total		6153.8

Fischer Tropsch Products Upgrading Complex / Base Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	174.8	4.3	232.4	4.6	56.6	.7523	370	62.8	136	-75	1.15
400-450	100	204.0	5.0	267.0	5.3	53.7	.7640	421	68.5	174	-75	1.55
450-500	100	174.8	4.3	226.0	4.5	51.4	.7736	475	73.3	210	-35	2.09
500-650	100	582.8	14.2	740.1	14.6	48.2	.7874	575	77.7	260	-10	3.59
650-700	100	1019.9	24.8	1267.1	25.1	44.3	.8049	675	73.1	360	15	8.52
Total		2156.4	52.5	2732.7	54.1							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	2.6	141.2	2.8	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	3.0	162.4	3.2	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	5.2	275.0	5.4	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	10.8	562.9	11.1	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	21.5	1141.6	22.6							
Distillate Hydrotreater Product												
Total	100	246.8	6.0	316.4	6.3	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	27.4	274.0	6.7	295.5	5.8	21.1	.9273	572	31.4	163	10	3.34
LCO 2	27.4	274.0	6.7	285.8	5.7	16.1	.9587	559	26.5	204	0	3.93
LCO 3	27.4	274.0	6.7	282.0	5.6	14.1	.9718	592	26.6	191	-25	3.23
Total		822.0	20.0	863.3	17.1	17.1	.9522					
Other Components												
1												
2												
Total		0	0	0	0							
==============	=========	=========	=========	=========	=========	=========	=========	=========	=========	=========	=========	=========
Blended Diesel Product		4110.2	100.0	5054.0	100.0	42.5	.8133	553	66	187	8	3.5
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool ≤ 40%
3. Fix IRR at 20%

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	2192.1		Diesel Pool	"	5480.3
Hydrogen	"	16.2		Fuel Oil	"	.0
		======				======
Total	MT/D	7523.9		Total	MT/D	7523.9

Diesel Pool Properties

Flow Rate	MT/D	5480.3
" "	M3/D	6492.8
" "	BPSD	40838
Specific Gravity		.8441
API Gravity		36.1
LCO Content	wt%	40.0 *
Cetane Index		55.6
Flash Point	deg F	186
Pour Point	deg F	3
Viscosity	cSt	3.4

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	403.3
Raw Materials		$MM/yr	(342.0)

Gross Margin		$MM/yr	61.3
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	27.8
Internal Rate of Return			20.0%

Feedstock Values

F-T LPG	$/MT	122.5
F-T Condensate	$/MT	122.5
F-T Wax	$/MT	154
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	156
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	40.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		---		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	403.3	Pretax Inc yrs 1-10	27.84	$MM/yr
Feedstock	$MM/yr	(342.0)	Aftax Inc yrs 1-10	18.65	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	29.56	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	38.74	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	25.96	$MM/yr
			Cash Flow yrs 10-20	25.96	$MM/yr

Feedstocks

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	122.5	
F-T Condensate	1770.0	122.5	
F-T Wax from F-T Unit	2537.0	154	
LCO to Diesel Pool	2192.1	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	7523.9	342.0	

Internal Rate of Return

20.0%

IRR Calc Guess

20.0%

Products

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	5480.3	156	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	7523.9	403.3	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$29.6	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Base Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to HC Unibon	3.5
		======
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		======
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	169.1
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	757.7
	Hydrogen	9.3
		======
Total		1601.4
Products	C5/C6 to Penex-Molex	551.2
	Naphtha to CCR Platforming Unit	1042.2
	Fuel Gas	8.0
		======
Total		1601.4

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naphtha from NHT	1042.2
Products	Hydrogen	23.6
	Fuel Gas	172.3
	LPG	104.0
	Platformate to Gasoline Blending	742.4
		======
Total		1042.2

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	551.2
	Hydrogen	.1
		======
Total		551.3
Products	Fuel Gas	.3
	LPG	2.6
	Penexate to Gasoline Blending	548.4
		======
Total		551.3

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to HC Unibon	601.8
		======
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	2537.0
	Hvy Polymer from Cat Con Unit	3.5
	F-T Condensate 650 F- EP Cut	601.8
	Hydrogen	26.9
		======
Total		3169.2
Products	Fuel Gas	4.1
	LPG	82.0
	C5/C6 to NHT	169.1
	IBP-350 F Cut to NHT	757.7
	350-400 F Cut to Diesel Blending	174.8
	400-450 F Cut to Diesel Blending	204.0
	450-500 F Cut to Diesel Blending	174.8
	500-650 F Cut to Diesel Blending	582.8
	650 F- EP Cut to Diesel Blending	1019.9
		======
Total		3169.2

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	2192.1
	Hydrogen	16.2
		======
Total		7523.9
Products	Fuel Gas	184.6
	LPG	467.5
	Gasoline Pool	1391.4
	Diesel Pool	5480.3
		======
Total		7523.9

Fischer Tropsch Products Upgrading Complex / Base Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	174.8	3.2	232.4	3.6	56.6	.7523	370	62.8	136	-75	1.15
400-450	100	204.0	3.7	267.0	4.1	53.7	.7640	421	68.5	174	-75	1.55
450-500	100	174.8	3.2	226.0	3.5	51.4	.7736	475	73.3	210	-35	2.09
500-650	100	582.8	10.6	740.1	11.4	48.2	.7874	575	77.7	260	-10	3.59
650-700	100	1019.9	18.6	1267.1	19.5	44.3	.8049	675	73.1	360	15	8.52
Total		2156.4	39.3	2732.7	42.1							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	1.9	141.2	2.2	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	2.3	162.4	2.5	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	3.9	275.0	4.2	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	8.1	562.9	8.7	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	16.1	1141.6	17.6							
Distillate Hydrotreater Product												
Total	100	246.8	4.5	316.4	4.9	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	73.1	730.7	13.3	788.0	12.1	21.1	.9273	572	31.4	163	10	3.34
LCO 2	73.1	730.7	13.3	762.2	11.7	16.1	.9587	559	26.5	204	0	3.93
LCO 3	73.1	730.7	13.3	751.9	11.6	14.1	.9718	592	26.6	191	-25	3.23
Total		2192.1	40.0	2302.1	35.5	17.1	.9522					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		5480.3	100.0	6492.8	100.0	36.1	.8441	558	56	186	3	3.4
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1038.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	4932.3		Diesel Pool	"	8220.5
Hydrogen	"	16.2		Fuel Oil	"	.0
		======				======
Total	MT/D	10264.1		Total	MT/D	10264.1

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool = 60%
3. Fix IRR at 20%

Diesel Pool Properties				Gasoline Pool Properties		
Flow Rate	MT/D	8220.5		Flow Rate	MT/D	1391.5
" "	M3/D	9370.4		" "	M3/D	1953.5
" "	BPSD	58937		" "	BPSD	12286
Specific Gravity		.8773		Specific Gravity		.7123
API Gravity		29.8		API Gravity		67.1
LCO Content	wt%	60.0 *		RONC		93.5
				MONC		85.9
Cetane Index		44.5		(R + M) / 2		89.7
Flash Point	deg F	185				
Pour Point	deg F	-2		RVP		10.5
Viscosity	cSt	3.3				

Economic Summary				Feedstock Values		
ISBL EEC	$MM	72.7		F-T LPG	$/MT	124.4
Offsites EEC (50%)	$MM	36.3		F-T Condensate	$/MT	124.4
		-----		F-T Wax	$/MT	163.7
Total EEC	$MM	109.0		LCO	$/MT	128
				Hydrogen	$/MT	900

				Product Values		
Sales Revenue	$MM/yr	530.0				
Raw Materials	$MM/yr	(468.8)				

Gross Margin	$MM/yr	61.2		Fuel Gas	$/MT	100
				LPG	$/MT	140
Variable Costs	$MM/yr	(12.5)				
Fixed Expenses	$MM/yr	(10.0)		Gasoline	$/gal	.52
Fixed Charges	$MM/yr	(10.9)		Gasoline	$/MT	193

Pretax Income	$MM/yr	27.7		Diesel	$/gal	.50
				Diesel	$/MT	151
Internal Rate of Return		20.0%		Fuel Oil	$/gal	.40
				Fuel Oil	$/MT	115
				LCO	$/gal	.46
				LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	60.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	403.3	Pretax Inc yrs 1-10	27.84	$MM/yr
Feedstock	$MM/yr	(342.0)	Aftax Inc yrs 1-10	18.65	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	29.56	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	38.74	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	25.96	$MM/yr
			Cash Flow yrs 10-20	25.96	$MM/yr

Feedstocks

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	124.4	
F-T Condensate	1770.0	124.4	
F-T Wax from F-T Unit	2537.0	163.7	
LCO to Diesel Pool	4932.3	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	10264.1	468.8	

Internal Rate of Return

20.0%

IRR Calc Guess

20.0%

Products

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	5480.3	151	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	7523.9	392.5	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$29.6	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Base Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to HC Unibon	3.5
		======
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		======
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	169.1
	F-T Condensate IBP 350 F Cut	283.2
	HC Unibon IBP-350 F Cut	757.7
	Hydrogen	9.3
		======
Total		1601.4
Products	C5/C6 to Penex-Molex	551.2
	Naphtha to CCR Platforming Unit	1042.2
	Fuel Gas	8.0
		======
Total		1601.4

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naphtha from NHT	1042.2
Products	Hydrogen	23.6
	Fuel Gas	172.3
	LPG	104.0
	Platformate to Gasoline Blending	742.4
		======
Total		1042.2

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	551.2
	Hydrogen	.1
		======
Total		551.3
Products	Fuel Gas	.3
	LPG	2.6
	Penexate to Gasoline Blending	548.4
		======
Total		551.4

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to HC Unibon	601.8
		======
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	2537.0
	Hvy Polymer from Cat Con Unit	3.5
	F-T Condensate 650 F- EP Cut	601.8
	Hydrogen	26.9
		======
Total		3169.2
Products	Fuel Gas	4.1
	LPG	82.0
	C5/C6 to NHT	169.1
	IBP-350 F Cut to NHT	757.7
	350-400 F Cut to Diesel Blending	174.8
	400-450 F Cut to Diesel Blending	204.0
	450-500 F Cut to Diesel Blending	174.8
	500-650 F Cut to Diesel Blending	582.8
	650 F- EP Cut to Diesel Blending	1019.9
		======
Total		3169.2

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	4932.3
	Hydrogen	16.2
		======
Total		10264.1
Products	Fuel Gas	184.6
	LPG	467.5
	Gasoline Pool	1391.4
	Diesel Pool	8220.5
		======
Total		10264.1

Fischer Tropsch Products Upgrading Complex / Base Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	174.8	2.1	232.4	2.5	56.6	.7523	370	62.8	136	-75	1.15
400-450	100	204.0	2.5	267.0	2.8	53.7	.7640	421	68.5	174	-75	1.55
450-500	100	174.8	2.1	226.0	2.4	51.4	.7736	475	73.3	210	-35	2.09
500-650	100	582.8	7.1	740.1	7.9	48.2	.7874	575	77.7	260	-10	3.59
650-700	100	1019.9	12.4	1267.1	13.5	44.3	.8049	675	73.1	360	15	8.52
Total		2156.4	26.2	2732.7	29.2							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	1.3	141.2	1.5	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	1.5	162.4	1.7	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	2.6	275.0	2.9	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	5.4	562.9	6.0	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	10.8	1141.6	12.2							
Distillate Hydrotreater Product												
Total	100	246.8	3.0	316.4	3.4	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	164.4	1644.1	20.0	1773.1	18.9	21.1	.9273	572	31.4	163	10	3.34
LCO 2	164.4	1644.1	20.0	1715.0	18.3	16.1	.9587	559	26.5	204	0	3.93
LCO 3	164.4	1644.1	20.0	1691.7	18.1	14.1	.9718	592	26.6	191	-25	3.23
Total		4932.3	60.0	5179.8	55.3	17.1	.9522					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		8220.5	100.0	9370.4	100.0	29.8	.8773	564	45	185	(2)	3.3
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Alternate Case / Summary of Calculations

Complex Material Balance

Feedstocks			Products			Basis:
F-T C3 to C6 Material	MT/D	1008.6 *	Fuel Gas	MT/D	50.6	1. Hydrocracker Not Includ
F-T Condensate	"	1770.0 *	LPG	"	309.1	2. LCO in Diesel Pool = 0
F-T Wax from F-T Unit	"	2537.0 *	Gasoline Pool	"	683.5	3. Fix IRR at 20%
LCO to Diesel Pool	"	.0	Diesel Pool	"	1131.8	
Hydrogen	"	1.7	Fuel Oil	"	3142.3	
		------			------	
Total	MT/D	5317.3	Total	MT/D	5317.3	

Diesel Pool Properties

Flow Rate	MT/D	1131.8
" "	M3/D	1458.0
" "	BPSD	9170
Specific Gravity		.7763
API Gravity		50.8
LCO Content	wt%	.0 *
Cetane Number		73.7
Flash Point	deg F	168
Pour Point	deg F	31
Viscosity	cSt	2.5

Gasoline Pool Properties

Flow Rate	MT/D	683.6
" "	M3/D	990.0
" "	BPSD	6226
Specific Gravity		.6905
API Gravity		73.4
RONC		92.2
MONC		86.0
(R + M) / 2		89.1
RVP		11.7

Economic Summary

ISBL EEC		$MM	33.6
Offsites EEC	(50%)	$MM	16.8

Total EEC		$MM	50.3
Sales Revenue		$MM/yr	245.9
Raw Materials		$MM/yr	(214.9)

Gross Margin		$MM/yr	31.0
Variable Costs		$MM/yr	(6.5)
Fixed Expenses		$MM/yr	(6.8)
Fixed Charges		$MM/yr	(5.0)

Pretax Income		$MM/yr	12.7
Internal Rate of Return			20.0%

Feedstock Values

F-T LPG	$/MT	121
F-T Condensate	$/MT	121
F-T Wax	$/MT	121
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	199
Diesel	$/gal	.50
Diesel	$/MT	170
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Alternate Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$33.56	1st year capital factor	.2	1st year capital	$14.41	MM
Off-sites EEC	MM	$16.78	2nd year capital factor	.5	2nd year capital	$32.75	MM
Royalty	MM	$3.79	3rd year capital factor	.3	3rd year capital	$17.86	MM
		-----		...		-----	
Total		$54.13	Totals	1.0	Total Capital	$65.02	MM

Income Summary

Revenue	$MM/yr	245.9	Pretax Inc yrs 1-10	12.72	$MM/yr
Feedstock	$MM/yr	(214.9)	Aftax Inc yrs 1-10	8.52	$MM/yr
Variable Costs	$MM/yr	(6.5)	Cash Flow yrs 1-10	13.56	$MM/yr
Fixed Expenses	$MM/yr	(6.8)			
ISBL Deprec	$MM/yr	(3.4)	Pretax Inc yrs 10-20	17.75	$MM/yr
Off-site Deprec	$MM/yr	(1.7)	Aftax Inc yrs 10-20	11.89	$MM/yr
			Cash Flow yrs 10-20	11.89	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	121		Internal Rate
F-T Condensate	1770.0	121		of Return
F-T Wax from F-T Unit	2537.0	121		
LCO to Diesel Pool	.0	128	.46	20.0%
Hydrogen	1.7	900		
	======	=====		
Total	5317.3	214.9		IRR Calc Guess
				20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	50.6	100	
LPG	309.1	140	
Gasoline	683.5	199	.52
Diesel	1131.8	170	.50
Fuel Oil	3142.3	115	.40
	======	=====	
Total	5317.3	245.9	

Simple Payback Calculations

Total EEC + Royalty	$54.1	MM
Cash Flow yrs 1-10	$13.6	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Alternate Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to Fuel Oil	3.5
		======
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		======
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	.0
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	.0
	Hydrogen	4.7
		======
Total		670.0
Products	C5/C6 to Penex-Molex	382.1
	Naphtha to CCR Platforming Unit	284.6
	Fuel Gas	3.3
		======
Total		670.0

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naphtha from NHT	284.6
Products	Hydrogen	6.4
	Fuel Gas	47.0
	LPG	28.4
	Platformate to Gasoline Blending	202.7
		======
Total		284.6

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	382.1
	Hydrogen	.1
		======
Total		382.2
Products	Fuel Gas	.2
	LPG	1.8
	Penexate to Gasoline Blending	380.2
		======
Total		382.2

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to Fuel Oil	601.8
		======
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	.0
	Hvy Polymer from Cat Con Unit	.0
	F-T Condensate 650 F- EP Cut	.0
	Hydrogen	.0
		======
Total		.0
Products	Fuel Gas	.0
	LPG	.0
	C5/C6 to NHT	.0
	IBP-350 F Cut to NHT	.0
	350-400 F Cut to Diesel Blending	.0
	400-450 F Cut to Diesel Blending	.0
	450-500 F Cut to Diesel Blending	.0
	500-650 F Cut to Diesel Blending	.0
	650 F- EP Cut to Diesel Blending	.0
		======
Total		.0

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	.0
	Hydrogen	1.7
		======
Total		5317.3
Products	Fuel Gas	50.6
	LPG	309.1
	Gasoline Pool	683.5
	Diesel Pool	1131.8
	Fuel Oil	3142.3
		======
Total		5317.3

Fischer Tropsch Products Upgrading Complex / Alternate Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	0	.0	0	.0	#VALUE!	#DIV/0!	370	62.8	136	-75	1.15
400-450	100	0	.0	0	.0	#VALUE!	#DIV/0!	421	68.5	174	-75	1.55
450-500	100	0	.0	0	.0	#VALUE!	#DIV/0!	475	73.3	210	-35	2.09
500-650	100	0	.0	0	.0	#VALUE!	#DIV/0!	575	77.7	260	-10	3.59
650-700	100	0	.0	0	.0	#VALUE!	#DIV/0!	675	73.1	360	15	8.52
Total		0	.0	0	.0							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	9.4	141.2	9.7	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	10.9	162.4	11.1	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	18.8	275.0	18.9	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	39.1	562.9	38.6	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	78.2	1141.6	78.3							
Distillate Hydrotreater Product												
Total	100	246.8	21.8	316.4	21.7	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	.0	.0	.0	0	.0	#DIV/0!	0	572	31.4	163	10	3.34
LCO 2	.0	.0	.0	0	.0	#DIV/0!	0	559	26.5	204	0	3.93
LCO 3	.0	.0	.0	0	.0	#DIV/0!	0	592	26.6	191	-25	3.23
Total		.0	.0	0	.0	#VALUE!	#DIV/0!					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		1131.8	100.0	1458.0	100.0	50.8	.7763	481	74	168	31	2.5
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Alternate Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	50.6
F-T Condensate	"	1770.0 *		LPG	"	309.1
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	683.5
LCO to Diesel Pool	"	283.0		Diesel Pool	"	1414.7
Hydrogen	"	1.7		Fuel Oil	"	3142.3
		------				------
Total	MT/D	5600.3		Total	MT/D	5600.3

Basis:
1. Hydrocracker Not Includ
2. LCO in Diesel Pool = 20'
3. Fix IRR at 20%

Diesel Pool Properties

Flow Rate	MT/D	1414.8
" "	M3/D	1755.1
" "	BPSD	11039
Specific Gravity		.8061
API Gravity		44.0
LCO Content	wt%	20.0 *
Cetane Number		64.3
Flash Point	deg F	169
Pour Point	deg F	25
Viscosity	cSt	2.5

Gasoline Pool Properties

Flow Rate	MT/D	683.6
" "	M3/D	990.0
" "	BPSD	6226
Specific Gravity		.6905
API Gravity		73.4
RONC		92.2
MONC		86.0
(R + M) / 2		89.1
RVP		11.7

Economic Summary

ISBL EEC		$MM	33.6
Offsites EEC	(50%)	$MM	16.8

Total EEC		$MM	50.3
Sales Revenue		$MM/yr	259.0
Raw Materials		$MM/yr	(227.9)

Gross Margin		$MM/yr	31.1
Variable Costs		$MM/yr	(6.5)
Fixed Expenses		$MM/yr	(6.8)
Fixed Charges		$MM/yr	(5.0)

Pretax Income		$MM/yr	12.9
Internal Rate of Return			20.1%

Feedstock Values

F-T LPG	$/MT	121.5
F-T Condensate	$/MT	121.5
F-T Wax	$/MT	121.5
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	199
Diesel	$/gal	.50
Diesel	$/MT	164
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.44
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Alternate Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	20.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$33.56	1st year capital factor	.2	1st year capital	$14.41	MM
Off-sites EEC	MM	$16.78	2nd year capital factor	.5	2nd year capital	$32.75	MM
Royalty	MM	$3.79	3rd year capital factor	.3	3rd year capital	$17.86	MM
		.....		...		.....	
Total		$54.13	Totals	1.0	Total Capital	$65.02	MM

Income Summary

Revenue	$MM/yr	259.0	Pretax Inc yrs 1-10	12.85	$MM/yr
Feedstock	$MM/yr	(227.9)	Aftax Inc yrs 1-10	8.61	$MM/yr
Variable Costs	$MM/yr	(6.5)	Cash Flow yrs 1-10	13.64	$MM/yr
Fixed Expenses	$MM/yr	(6.8)			
ISBL Deprec	$MM/yr	(3.4)	Pretax Inc yrs 10-20	17.89	$MM/yr
Off-site Deprec	$MM/yr	(1.7)	Aftax Inc yrs 10-20	11.98	$MM/yr
			Cash Flow yrs 10-20	11.98	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	121.5		Internal Rate
F-T Condensate	1770.0	121.5		of Return
F-T Wax from F-T Unit	2537.0	121.5		
LCO to Diesel Pool	283.0	128	.46	20.1%
Hydrogen	1.7	900		
	======	=====		
Total	5600.3	227.9		IRR Calc Guess
				20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	50.6	100	
LPG	309.1	140	
Gasoline	683.5	199	.52
Diesel	1414.7	164	.50
Fuel Oil	3142.3	115	.40
	======	=====	
Total	5600.3	259.0	

Simple Payback Calculations

Total EEC + Royalty	$54.1	MM
Cash Flow yrs 1-10	$13.6	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Alternate Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to Fuel Oil	3.5
		======
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		======
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	.0
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	.0
	Hydrogen	4.7
		======
Total		670.0
Products	C5/C6 to Penex-Molex	382.1
	Naphtha to CCR Platforming Unit	284.6
	Fuel Gas	3.3
		======
Total		670.0

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naphtha from NHT	284.6
Products	Hydrogen	6.4
	Fuel Gas	47.0
	LPG	28.4
	Platformate to Gasoline Blending	202.7
		======
Total		284.6

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	382.1
	Hydrogen	.1
		======
Total		382.2
Products	Fuel Gas	.2
	LPG	1.8
	Penexate to Gasoline Blending	380.2
		======
Total		382.2

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to Fuel Oil	601.8
		======
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	.0
	Hvy Polymer from Cat Con Unit	.3
	F-T Condensate 650 F- EP Cut	.0
	Hydrogen	.0
		======
Total		.0
Products	Fuel Gas	.0
	LPG	.0
	C5/C6 to NHT	.0
	IBP-350 F Cut to NHT	.0
	350-400 F Cut to Diesel Blending	.0
	400-450 F Cut to Diesel Blending	.0
	450-500 F Cut to Diesel Blending	.0
	500-650 F Cut to Diesel Blending	.0
	650 F- EP Cut to Diesel Blending	.0
		======
Total		.0

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	283.0
	Hydrogen	1.7
		======
Total		5600.3
Products	Fuel Gas	50.6
	LPG	309.1
	Gasoline Pool	683.5
	Diesel Pool	1414.7
	Fuel Oil	3142.3
		======
Total		5600.3

Fischer Tropsch Products Upgrading Complex / Alternate Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	0	.0	0	.0	#VALUE!	#DIV/0!	370	62.8	136	-75	1.15
400-450	100	0	.0	0	.0	#VALUE!	#DIV/0!	421	68.5	174	-75	1.55
450-500	100	0	.0	0	.0	#VALUE!	#DIV/0!	475	73.3	210	-35	2.09
500-650	100	0	.0	0	.0	#VALUE!	#DIV/0!	575	77.7	260	-10	3.59
650-700	100	0	.0	0	.0	#VALUE!	#DIV/0!	675	73.1	360	15	8.52
Total		0	.0	0	.0							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	7.5	141.2	8.0	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	8.8	162.4	9.3	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	15.0	275.0	15.7	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	31.3	562.9	32.1	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	62.6	1141.6	65.0							
Distillate Hydrotreater Product												
Total	100	246.8	17.4	316.4	18.0	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	9.4	94.3	6.7	101.7	5.8	21.1	.9273	572	31.4	163	10	3.34
LCO 2	9.4	94.3	6.7	98.4	5.6	16.1	.9587	559	26.5	204	0	3.93
LCO 3	9.4	94.3	6.7	97.0	5.5	14.1	.9718	592	26.6	191	-25	3.23
Total		283.0	20.0	297.1	16.9	17.1	.9522					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		1414.8	100.0	1755.1	100.0	44.0	.8061	499	64	169	25	2.5
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Alternate Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products			Basis:
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	50.6	1. Hydrocracker Not Includ
F-T Condensate	"	1770.0 *		LPG	"	309.1	2. LCO in Diesel Pool = 40
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	683.5	3. Fix IRR at 20%
LCO to Diesel Pool	"	754.5		Diesel Pool	"	1886.3	
Hydrogen	"	1.7		Fuel Oil	"	3142.3	
		======				======	
Total	MT/D	6071.9		Total	MT/D	6071.9	

Diesel Pool Properties

Flow Rate	MT/D	1886.3
" "	M3/D	2250.4
" "	BPSD	14154
Specific Gravity		.8382
API Gravity		37.3
LCO Content	wt%	40.0 *
Cetane Number		54.3
Flash Point	deg F	171
Pour Point	deg F	19
Viscosity	cSt	2.6

Gasoline Pool Properties

Flow Rate	MT/D	683.6
" "	M3/D	990.0
" "	BPSD	6226
Specific Gravity		.6905
API Gravity		73.4
RONC		92.2
MONC		86.0
(R + M) / 2		89.1
RVP		11.7

Economic Summary

ISBL EEC		$MM	33.6
Offsites EEC	(50%)	$MM	16.8

Total EEC		$MM	50.3
Sales Revenue		$MM/yr	280.8
Raw Materials		$MM/yr	(249.7)

Gross Margin		$MM/yr	31.1
Variable Costs		$MM/yr	(6.5)
Fixed Expenses		$MM/yr	(6.8)
Fixed Charges		$MM/yr	(5.0)

Pretax Income		$MM/yr	12.8
Internal Rate of Return			20.0%

Feedstock Values

F-T LPG	$/MT	122.5
F-T Condensate	$/MT	122.5
F-T Wax	$/MT	122.5
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	199
Diesel	$/gal	.50
Diesel	$/MT	158
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Alternate Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	40.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$33.56	1st year capital factor	.2	1st year capital	$14.41	MM
Off-sites EEC	MM	$16.78	2nd year capital factor	.5	2nd year capital	$32.75	MM
Royalty	MM	$3.79	3rd year capital factor	.3	3rd year capital	$17.86	MM
		.....		...		.....	
Total		$54.13	Totals	1.0	Total Capital	$65.02	MM

Income Summary

Revenue	$MM/yr	280.8	Pretax Inc yrs 1-10	12.78	$MM/yr
Feedstock	$MM/yr	(249.7)	Aftax Inc yrs 1-10	8.56	$MM/yr
Variable Costs	$MM/yr	(6.5)	Cash Flow yrs 1-10	13.59	$MM/yr
Fixed Expenses	$MM/yr	(6.8)			
ISBL Deprec	$MM/yr	(3.4)	Pretax Inc yrs 10-20	17.81	$MM/yr
Off-site Deprec	$MM/yr	(1.7)	Aftax Inc yrs 10-20	11.93	$MM/yr
			Cash Flow yrs 10-20	11.93	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	122.5	
F-T Condensate	1770.0	122.5	
F-T Wax from F-T Unit	2537.0	122.5	
LCO to Diesel Pool	754.5	128	.46
Hydrogen	1.7	900	
	======	=====	
Total	6071.9	249.7	

Internal Rate of Return

20.0%

IRR Calc Guess

20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	50.6	100	
LPG	309.1	140	
Gasoline	683.5	199	.52
Diesel	1886.3	158	.50
Fuel Oil	3142.3	115	.40
	======	=====	
Total	6071.9	280.8	

Simple Payback Calculations

Total EEC + Royalty	$54.1	MM
Cash Flow yrs 1-10	$13.6	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Alternate Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to Fuel Oil	3.5
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	.0
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	.0
	Hydrogen	4.7
Total		670.0
Products	C5/C6 to Penex-Molex	382.1
	Naphtha to CCR Platforming Unit	284.6
	Fuel Gas	3.3
Total		670.0

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naphtha from NHT	284.6
Products	Hydrogen	6.4
	Fuel Gas	47.0
	LPG	28.4
	Platformate to Gasoline Blending	202.7
Total		284.6

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	382.1
	Hydrogen	.1
Total		382.2
Products	Fuel Gas	.2
	LPG	1.8
	Penexate to Gasoline Blending	380.2
Total		382.2

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to Fuel Oil	601.8
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	.0
	Hvy Polymer from Cat Con Unit	.0
	F-T Condensate 650 F- EP Cut	.0
	Hydrogen	.0
Total		.0
Products	Fuel Gas	.0
	LPG	.0
	C5/C6 to NHT	.0
	IBP-350 F Cut to NHT	.0
	350-400 F Cut to Diesel Blending	.0
	400-450 F Cut to Diesel Blending	.0
	450-500 F Cut to Diesel Blending	.0
	500-650 F Cut to Diesel Blending	.0
	650 F- EP Cut to Diesel Blending	.0
Total		.0

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	754.5
	Hydrogen	1.7
Total		6071.9
Products	Fuel Gas	50.6
	LPG	309.1
	Gasoline Pool	683.5
	Diesel Pool	1886.3
	Fuel Oil	3142.3
Total		6071.9

Fischer Tropsch Products Upgrading Complex / Alternate Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	0	.0	0	.0	#VALUE!	#DIV/0!	370	62.8	136	-75	1.15
400-450	100	0	.0	0	.0	#VALUE!	#DIV/0!	421	68.5	174	-75	1.55
450-500	100	0	.0	0	.0	#VALUE!	#DIV/0!	475	73.3	210	-35	2.09
500-650	100	0	.0	0	.0	#VALUE!	#DIV/0!	575	77.7	260	-10	3.59
650-700	100	0	.0	0	.0	#VALUE!	#DIV/0!	675	73.1	360	15	8.52
Total		0	.0	0	.0							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	5.6	141.2	6.3	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	6.6	162.4	7.2	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	11.3	275.0	12.2	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	23.5	562.9	25.0	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	46.9	1141.6	50.7							
Distillate Hydrotreater Product												
Total	100	246.8	13.1	316.4	14.1	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	25.2	251.5	13.3	271.2	12.1	21.1	.9273	572	31.4	163	10	3.34
LCO 2	25.2	251.5	13.3	262.4	11.7	16.1	.9587	559	26.5	204	0	3.93
LCO 3	25.2	251.5	13.3	258.8	11.5	14.1	.9718	592	26.6	191	-25	3.23
Total		754.5	40.0	792.4	35.2	17.1	.9522					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		1886.3	100.0	2250.4	100.0	37.3	.8382	518	54	171	19	2.6
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Alternate Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C5 to C6 Material	MT/D	1008.6	*	Fuel Gas	MT/D	50.6
F-T Condensate	"	1770.0	*	LPG	"	309.1
F-T Wax from F-T Unit	"	2537.0	*	Gasoline Pool	"	683.5
LCO to Diesel Pool	"	1697.7		Diesel Pool	"	2829.5
Hydrogen	"	1.7		Fuel Oil	"	3142.3
		======				======
Total	MT/D	7015.0		Total	MT/D	7015.0

Basis:
1. Hydrocracker Not Includ
2. LCO in Diesel Pool = 60
3. Fix IRR at 20%

Diesel Pool Properties

Flow Rate	MT/D	2829.5
" "	M3/D	3240.8
" "	BPSD	20384
Specific Gravity		.8731
API Gravity		30.6
LCO Content	wt%	60.0 *
Cetane Number		43.7
Flash Point	deg F	173
Pour Point	deg F	11
Viscosity	cSt	2.7

Gasoline Pool Properties

Flow Rate	MT/D	683.6
" "	M3/D	990.0
" "	BPSD	6226
Specific Gravity		.6905
API Gravity		73.4
RONC		92.2
MONC		86.0
(R + M) / 2		89.1
RVP		11.7

Economic Summary

ISBL EEC		$MM	33.6
Offsites EEC	(50%)	$MM	16.8

Total EEC		$MM	50.3
Sales Revenue		$MM/yr	324.4
Raw Materials		$MM/yr	(293.3)

Gross Margin		$MM/yr	31.1
Variable Costs		$MM/yr	(6.5)
Fixed Expenses		$MM/yr	(6.8)
Fixed Charges		$MM/yr	(5.0)

Pretax Income		$MM/yr	12.8
Internal Rate of Return			20.1%

Feedstock Values

F-T LPG	$/MT	124.4
F-T Condensate	$/MT	124.4
F-T Wax	$/MT	124.4
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	199
Diesel	$/gal	.50
Diesel	$/MT	151
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Alternate Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	60.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$33.56	1st year capital factor	.2	1st year capital	$14.41	MM
Off-sites EEC	MM	$16.78	2nd year capital factor	.5	2nd year capital	$32.75	MM
Royalty	MM	$3.79	3rd year capital factor	.3	3rd year capital	$17.86	MM
		-----		...		-----	
Total		$54.13	Totals	1.0	Total Capital	$65.02	MM

Income Summary

Revenue	$MM/yr	324.4	Pretax Inc yrs 1-10	12.81	$MM/yr
Feedstock	$MM/yr	(293.3)	Aftax Inc yrs 1-10	8.58	$MM/yr
Variable Costs	$MM/yr	(6.5)	Cash Flow yrs 1-10	13.61	$MM/yr
Fixed Expenses	$MM/yr	(6.8)			
ISBL Deprec	$MM/yr	(3.4)	Pretax Inc yrs 10-20	17.84	$MM/yr
Off-site Deprec	$MM/yr	(1.7)	Aftax Inc yrs 10-20	11.95	$MM/yr
			Cash Flow yrs 10-20	11.95	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	124.4		Internal Rate
F-T Condensate	1770.0	124.4		of Return
F-T Wax from F-T Unit	2537.0	124.4		
LCO to Diesel Pool	1697.7	128	.46	20.1%
Hydrogen	1.7	900		
	======	=====		
Total	7015.0	293.3		IRR Calc Guess
				20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	50.6	100	
LPG	309.1	140	
Gasoline	683.5	199	.52
Diesel	2829.5	151	.50
Fuel Oil	3142.3	115	.40
	======	=====	
Total	7015.0	324.4	

Simple Payback Calculations

Total EEC + Royalty	$54.1	MM
Cash Flow yrs 1-10	$13.6	MM
Simple Payback	4.0	years

Fischer Tropsch Products Upgrading Complex / Alternate Case / Material Balance

Catalytic Condensation Unit

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
Products	LPG	278.9
	C5/C6 to NHT	382.2
	Poly Gasoline to Gasoline Blending	100.7
	Poly Diesel to DHT	243.4
	Hvy Polymer to Fuel Oil	3.5
		======
Total		1008.6

Diesel Hydrotreater

		Flow Rate MT/D
Feeds	Poly Diesel from Cat Con	243.4
	Hydrogen	3.4
		======
Total		246.8
Products	Diesel to Diesel Blending	246.8

Naptha Hydrotreater

		Flow Rate MT/D
Feeds	C5/C6 from Cat Con	382.2
	C5/C6 from HC Unibon	.0
	F-T Condensate IBP-350 F Cut	283.2
	HC Unibon IBP-350 F Cut	.0
	Hydrogen	4.7
		======
Total		670.0
Products	C5/C6 to Penex-Molex	382.1
	Naphtha to CCR Platforming Unit	284.6
	Fuel Gas	3.3
		======
Total		670.0

CCR Platforming Unit

		Flow Rate MT/D
Feeds	Naphtha from NHT	284.6
Products	Hydrogen	6.4
	Fuel Gas	47.0
	LPG	28.4
	Platformate to Gasoline Blending	202.7
		======
Total		284.6

Penex - Molex Unit

		Flow Rate MT/D
Feeds	C5/C6 to Penex-Molex	382.1
	Hydrogen	.1
		======
Total		382.2
Products	Fuel Gas	.2
	LPG	1.8
	Penexate to Gasoline Blending	380.2
		======
Total		382.2

F-T Condensate Breakup

		Flow Rate MT/D
Feeds	F-T Condensate	1770.0
Products	IBP-350 F Cut to NHT	283.2
	350-400 F Cut to Diesel Blending	106.2
	400-450 F Cut to Diesel Blending	123.9
	450-500 F Cut to Diesel Blending	212.4
	500-650 F Cut to Diesel Blending	442.5
	650 F- EP Cut to Fuel Oil	601.8
		======
Total		1770.0

HC Unibon

		Flow Rate MT/D
Feeds	F-T Wax from F-T Unit	.0
	Hvy Polymer from Cat Con Unit	.0
	F-T Condensate 650 F- EP Cut	.0
	Hydrogen	.0
		======
Total		.0
Products	Fuel Gas	.0
	LPG	.0
	C5/C6 to NHT	.0
	IBP-350 F Cut to NHT	.0
	350-400 F Cut to Diesel Blending	.0
	400-450 F Cut to Diesel Blending	.0
	450-500 F Cut to Diesel Blending	.0
	500-650 F Cut to Diesel Blending	.0
	650 F- EP Cut to Diesel Blending	.0
		======
Total		.0

Total Complex

		Flow Rate MT/D
Feeds	F-T C3 to C6 Material	1008.6
	F-T Condensate	1770.0
	F-T Wax from F-T Unit	2537.0
	LCO to Diesel Pool	1697.7
	Hydrogen	1.7
		======
Total		7015.0
Products	Fuel Gas	50.6
	LPG	309.1
	Gasoline Pool	683.5
	Diesel Pool	2829.5
	Fuel Oil	3145.3
		======
Total		7015.0

Fischer Tropsch Products Upgrading Complex / Alternate Case / Blended Diesel Product

	Wt% of Cut	Flow Rate MT/D	Wt%	Flow Rate M3/D	Vol%	API	s.g.	50% pt deg F	Cetane Index	Flash Point deg F	Pour Point deg F	Viscosity cSt @ 100 F
Hydrocracked Distillate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	237	46.2	30	-75	.57
350-400	100	0	.0	0	.0	#VALUE!	#DIV/0!	370	62.8	136	-75	1.15
400-450	100	0	.0	0	.0	#VALUE!	#DIV/0!	421	68.5	174	-75	1.55
450-500	100	0	.0	0	.0	#VALUE!	#DIV/0!	475	73.3	210	-35	2.09
500-650	100	0	.0	0	.0	#VALUE!	#DIV/0!	575	77.7	260	-10	3.59
650-700	100	0	.0	0	.0	#VALUE!	#DIV/0!	675	73.1	360	15	8.52
Total		0	.0	0	.0							
F-T Hot+Cold Condensate												
IBP-350	0	0	.0	0	.0	#VALUE!	#DIV/0!	271	43.6	30	-75	.57
350-400	100	106.2	3.8	141.2	4.4	56.7	.7519	365	61.7	132	-35	1.19
400-450	100	123.9	4.4	162.4	5.0	54	.7628	401	64.7	168	-10	1.56
450-500	100	212.4	7.5	275.0	8.5	51.7	.7724	475	74.0	208	20	2.13
500-650	100	442.5	15.6	562.9	17.4	48.5	.7861	575	78.3	265	60	3.54
650-700	0	0	.0	0	.0	#VALUE!	#DIV/0!	675	44.5	345	125	8.52
Total		885.0	31.3	1141.6	35.2							
Distillate Hydrotreater Product												
Total	100	246.8	8.7	316.4	9.8	49.9	.7800	406	57.0	126	-60	1.20
Light Cycle Oil												
LCO 1	56.6	565.9	20.0	610.3	18.8	21.1	.9273	572	31.4	163	10	3.34
LCO 2	56.6	565.9	20.0	590.3	18.2	16.1	.9587	559	26.5	204	0	3.93
LCO 3	56.6	565.9	20.0	582.3	18.0	14.1	.9718	592	26.6	191	-25	3.23
Total		1697.7	60.0	1782.9	55.0	17.1	.9522					
Other Components												
1												
2												
Total		0	0	0	0							
Blended Diesel Product		2829.5	100.0	3240.8	100.0	30.6	.8731	537	44	173	11	2.7
Diesel Specifications									40 min	125 min	20 max	1.9 min 4.1 max

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks			Products		
F-T C5 to C6 Material	MT/D	1008.5 *	Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *	Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	.0	Diesel Pool	"	3288.2
Hydrogen	"	16.2	Fuel Oil	"	.0
Total	MT/D	5331.8	Total	MT/D	5331.8

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool = C%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	3288.2
" "	M3/D	4190.7
" "	BPSD	26358
Specific Gravity		.7846
API Gravity		48.8
LCO Content	wt%	.0 *
Cetane Index		75.9
Flash Point	deg F	168
Pour Point	deg F	13
Viscosity	cSt	3.6

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3
Total EEC	$MM	109.0
Sales Revenue	$MM/yr	301.9
Raw Materials	$MM/yr	(219.2)
Gross Margin	$MM/yr	82.7
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)
Pretax Income	$MM/yr	49.2
Internal Rate of Return		30.8%

Feedstock Values

F-T LPG	$/MT	121
F-T Condensate	$/MT	121
F-T Wax	$/MT	121
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	168
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	301.9	Pretax Inc yrs 1-10	49.25	$MM/yr
Feedstock	$MM/yr	(219.2)	Aftax Inc yrs 1-10	32.99	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	43.90	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	60.15	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	40.30	$MM/yr
			Cash Flow yrs 10-20	40.30	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	121	
F-T Condensate	1770.0	121	
F-T Wax from F-T Unit	2537.0	121	
LCO to Diesel Pool	.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	5331.8	219.2	

Internal Rate of Return

30.8%

IRR Calc Guess

30.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	3288.2	168	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	5331.8	301.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$43.9	MM
Simple Payback	2.7	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	822.0		Diesel Pool	"	4110.2
Hydrogen	"	16.2		Fuel Oil	"	.0
		******				******
Total	MT/D	6153.8		Total	MT/D	6153.8

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool @ 20%
3. Fix F-T Product Value

Diesel Pool Properties				Gasoline Pool Properties		
Flow Rate	MT/D	4110.2		Flow Rate	MT/D	1391.5
" "	M3/D	5054.0		" "	M3/D	1953.5
" "	BPSD	31788		" "	BPSD	12286
Specific Gravity		.8133		Specific Gravity		.7123
API Gravity		42.5		API Gravity		67.1
LCO Content	wt%	20.0 *		RONC		93.5
				MONC		85.9
Cetane Index		66.0		(R + M) / 2		89.7
Flash Point	deg F	187				
Pour Point	deg F	8		RVP		10.5
Viscosity	cSt	3.5				

Economic Summary				Feedstock Values		
ISBL EEC	$MM	72.7		F-T LPG	$/MT	121.5
Offsites EEC (50%)	$MM	36.3		F-T Condensate	$/MT	121.5
		-----		F-T Wax	$/MT	121.5
Total EEC	$MM	109.0		LCO	$/MT	128
				Hydrogen	$/MT	900
Sales Revenue	$MM/yr	339.9				
Raw Materials	$MM/yr	(255.2)		**Product Values**		

Gross Margin	$MM/yr	84.7		Fuel Gas	$/MT	100
				LPG	$/MT	140
Variable Costs	$MM/yr	(12.5)				
Fixed Expenses	$MM/yr	(10.0)		Gasoline	$/gal	.52
Fixed Charges	$MM/yr	(10.9)		Gasoline	$/MT	193

Pretax Income	$MM/yr	51.3		Diesel	$/gal	.50
				Diesel	$/MT	162
Internal Rate of Return		31.8%		Fuel Oil	$/gal	.40
				Fuel Oil	$/MT	115
				LCO	$/gal	.46
				LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	20.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	339.9	Pretax Inc yrs 1-10	51.32	$MM/yr
Feedstock	$MM/yr	(255.2)	Aftax Inc yrs 1-10	34.38	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	45.29	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	62.22	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	41.69	$MM/yr
			Cash Flow yrs 10-20	41.69	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	121.5	
F-T Condensate	1770.0	121.5	
F-T Wax from F-T Unit	2537.0	121.5	
LCO to Diesel Pool	822.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	6153.8	255.2	

Internal Rate of Return

31.8%

IRR Calc Guess

30.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	4110.2	162	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	6153.8	339.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$45.3	MM
Simple Payback	2.6	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks

F-T C3 to C6 Material	MT/D	1008.6	*
F-T Condensate	"	1770.0	*
F-T Wax from F-T Unit	"	2537.0	*
LCO to Diesel Pool	"	2192.1	
Hydrogen	"	16.2	
		======	
Total	MT/D	7523.9	

Products

Fuel Gas	MT/D	184.6
LPG	"	467.5
Gasoline Pool	"	1391.4
Diesel Pool	"	5480.3
Fuel Oil	"	.0
		======
Total	MT/D	7523.9

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool <=40%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	5480.3	
" "	M3/D	6492.8	
" "	BPSD	40838	
Specific Gravity		.844	
API Gravity		36.1	
LCO Content	wt%	40.0	*
Cetane Index		55.6	
Flash Point	deg F	186	
Pour Point	deg F	3	
Viscosity	cSt	3.4	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3

Total EEC	$MM	109.0
Sales Revenue	$MM/yr	403.3
Raw Materials	$MM/yr	(315.4)

Gross Margin	$MM/yr	87.9
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)

Pretax Income	$MM/yr	54.5
Internal Rate of Return		33.3%

Feedstock Values

F-T LPG	$/MT	122.5
F-T Condensate	$/MT	122.5
F-T Wax	$/MT	122.5
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	156
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	40.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		...		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	403.3	Pretax Inc yrs 1-10	54.48	$MM/yr
Feedstock	$MM/yr	(315.4)	Aftax Inc yrs 1-10	36.50	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	47.40	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	65.38	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	43.81	$MM/yr
			Cash Flow yrs 10-20	43.81	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	122.5	
F-T Condensate	1770.0	122.5	
F-T Wax from F-T Unit	2537.0	122.5	
LCO to Diesel Pool	2192.1	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	7523.9	315.4	

Internal Rate of Return

33.3%

IRR Calc Guess

30.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	5480.3	156	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	7523.9	403.3	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$47.4	MM
Simple Payback	2.5	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	4932.3		Diesel Pool	"	8220.5
Hydrogen	"	16.2		Fuel Oil	"	.0
		======				======
Total	MT/D	10264.1		Total	MT/D	10264.1

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool ~60%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	8220.5
" "	M3/D	9370.4
" "	BPSD	58937
Specific Gravity		.8773
API Gravity		29.8
LCO Content	wt%	60.0 *
Cetane Index		44.5
Flash Point	deg F	185
Pour Point	deg F	-2
Viscosity	cSt	3.3

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3

Total EEC	$MM	109.0
Sales Revenue	$MM/yr	530.0
Raw Materials	$MM/yr	(435.6)

Gross Margin	$MM/yr	94.4
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)

Pretax Income	$MM/yr	61.0
Internal Rate of Return		36.4%

Feedstock Values

F-T LPG	$/MT	124.4
F-T Condensate	$/MT	124.4
F-T Wax	$/MT	124.4
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	151
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	60.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	530.0	Pretax Inc yrs 1-10	60.98	$MM/yr
Feedstock	$MM/yr	(435.6)	Aftax Inc yrs 1-10	40.85	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	51.76	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	71.88	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	48.16	$MM/yr
			Cash Flow yrs 10-20	48.16	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	124.4	
F-T Condensate	1770.0	124.4	
F-T Wax from F-T Unit	2537.0	124.4	
LCO to Diesel Pool	4932.3	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	10264.1	435.6	

Internal Rate of Return

36.4%

IRR Calc Guess

40.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	8220.5	151	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	10264.1	530.0	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$51.8	MM
Simple Payback	2.3	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks			Products		
F-T C3 to C6 material	MT/D	1006.6 *	Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *	Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	.0	Diesel Pool	"	3288.2
Hydrogen	"	18.2	Fuel Oil	"	.0
		======			======
Total	MT/D	5331.8	Total	MT/D	5331.8

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool * .%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	3288.2
" "	M3/D	4190.7
" "	BPSD	26358
Specific Gravity		.7846
API Gravity		48.8
LCO Content	wt%	.0 *
Cetane Index		75.9
Flash Point	deg F	188
Pour Point	deg F	13
Viscosity	cSt	3.6

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3

Total EEC	$MM	109.0
Sales Revenue	$MM/yr	301.9
Raw Materials	$MM/yr	(182.0)

Gross Margin	$MM/yr	119.9
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)

Pretax Income	$MM/yr	86.5
Internal Rate of Return		48.6%

Feedstock Values

F-T LPG	$/MT	100
F-T Condensate	$/MT	100
F-T Wax	$/MT	100
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	168
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	301.9	Pretax Inc yrs 1-10	86.45	$MM/yr
Feedstock	$MM/yr	(182.0)	Aftax Inc yrs 1-10	57.92	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	68.83	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	97.36	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	65.23	$MM/yr
			Cash Flow yrs 10-20	65.23	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	100	
F-T Condensate	1770.0	100	
F-T Wax from F-T Unit	2537.0	100	
LCO to Diesel Pool	.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	5331.8	182.0	

Internal Rate of Return

48.6%

IRR Calc Guess

50.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	3288.2	168	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	5331.8	301.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$68.8	MM
Simple Payback	1.7	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C5 to C6 Material	MT/D	1008.6	*	Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0	*	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0	*	Gasoline Pool	"	1391.6
LCO to Diesel Pool	"	.0		Diesel Pool	"	3288.2
Hydrogen	"	16.2		Fuel Oil	"	.0
		======				======
Total	MT/D	5331.8		Total	MT/D	5331.8

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool = 0%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	3288.2	
" "	M3/D	4190.7	
" "	BPSD	26358	
Specific Gravity		.7846	
API Gravity		48.8	
LCO Content	wt%	.0	*
Cetane Index		75.9	
Flash Point	deg F	188	
Pour Point	deg F	13	
Viscosity	cSt	3.6	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	301.9
Raw Materials		$MM/yr	(217.5)

Gross Margin		$MM/yr	84.4
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	51.0
Internal Rate of Return			31.6%

Feedstock Values

F-T LPG	$/MT	120
F-T Condensate	$/MT	120
F-T Wax	$/MT	120
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	168
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		---		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	301.9	Pretax Inc yrs 1-10	51.02	$MM/yr
Feedstock	$MM/yr	(217.5)	Aftax Inc yrs 1-10	34.18	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	45.09	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	61.92	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	41.49	$MM/yr
			Cash Flow yrs 10-20	41.49	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	120	
F-T Condensate	1770.0	120	
F-T Wax from F-T Unit	2537.0	120	
LCO to Diesel Pool	.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	5331.8	217.5	

Internal Rate of Return

31.6%

IRR Calc Guess

30.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	3288.2	168	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	5331.8	301.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$45.1	MM
Simple Payback	2.6	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6	*	Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0	*	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0	*	Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	.0		Diesel Pool	"	3288.2
Hydrogen	"	16.2		Fuel Oil	"	.0
		======				======
Total	MT/D	5331.8		Total	MT/D	5331.8

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool . 0%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	3288.2
" "	M3/D	4190.7
" "	BPSD	26358
Specific Gravity		.7846
API Gravity		48.8
LCO Content	wt%	.0 *
Cetane Index		75.9
Flash Point	deg F	188
Pour Point	deg F	13
Viscosity	cSt	3.6

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	301.9
Raw Materials		$MM/yr	(252.9)

Gross Margin		$MM/yr	49.0
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	15.6
Internal Rate of Return			13.4%

Feedstock Values

F-T LPG	$/MT	140
F-T Condensate	$/MT	140
F-T Wax	$/MT	140
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	195
Diesel	$/gal	.50
Diesel	$/MT	168
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		...		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	301.9	Pretax Inc yrs 1-10	15.58	$MM/yr
Feedstock	$MM/yr	(252.9)	Aftax Inc yrs 1-10	10.44	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	21.34	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	26.48	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	17.74	$MM/yr
			Cash Flow yrs 10-20	17.74	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	140	
F-T Condensate	1770.0	140	
F-T Wax from F-T Unit	2537.0	140	
LCO to Diesel Pool	.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	5331.8	252.9	

Internal Rate of Return

13.4%

IRR Calc Guess

10.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	3288.2	168	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	5331.8	301.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$21.3	MM
Simple Payback	5.5	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	822.0		Diesel Pool	"	4110.2
Hydrogen	"	16.2		Fuel Oil	"	.0
Total	MT/D	6153.8		Total	MT/D	6153.8

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool, ~ 20%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	4110.2
" "	M3/D	5054.0
" "	BPSD	31788
Specific Gravity		.8133
API Gravity		42.5
LCO Content	wt%	20.0 *
Cetane Index		66.0
Flash Point	deg F	187
Pour Point	deg F	6
Viscosity	cSt	3.5

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3
Total EEC	$MM	109.0
Sales Revenue	$MM/yr	339.9
Raw Materials	$MM/yr	(217.1)
Gross Margin	$MM/yr	122.8
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)
Pretax Income	$MM/yr	89.4
Internal Rate of Return		50.1%

Feedstock Values

F-T LPG	$/MT	100
F-T Condensate	$/MT	100
F-T Wax	$/MT	100
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	162
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	20.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	339.9	Pretax Inc yrs 1-10	89.41	$MM/yr
Feedstock	$MM/yr	(217.1)	Aftax Inc yrs 1-10	59.91	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	70.81	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	100.32	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	67.21	$MM/yr
			Cash Flow yrs 10-20	67.21	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	100	
F-T Condensate	1770.0	100	
F-T Wax from F-T Unit	2537.0	100	
LCO to Diesel Pool	822.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	6153.8	217.1	

Internal Rate of Return

50.1%

IRR Calc Guess

50.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	4110.2	162	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	6153.8	339.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$70.8	MM
Simple Payback	1.7	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks			Products			Basis:
F-T C5 to C6 Material	MT/D	1008.6 *	Fuel Gas	MT/D	184.6	1. Includes Hydrocracker
F-T Condensate	"	1770.0 *	LPG	"	467.5	2. LCO in Diesel Pool ~20%
F-T Wax from F-T Unit	"	2537.0 *	Gasoline Pool	"	1391.6	3. Fix F-T Product Value
LCO to Diesel Pool	"	822.0	Diesel Pool	"	4110.2	
Hydrogen	"	16.2	Fuel Oil	"	.0	
Total	MT/D	6153.8	Total	MT/D	6153.8	

Diesel Pool Properties

Flow Rate	MT/D	4110.2
" "	M3/D	5054.0
" "	BPSD	31789
Specific Gravity		.8133
API Gravity		42.5
LCO Content	wt%	20.0 *
Cetane Index		66.0
Flash Point	deg F	187
Pour Point	deg F	8
Viscosity	cSt	3.5

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3
Total EEC		$MM	109.0
Sales Revenue		$MM/yr	339.9
Raw Materials		$MM/yr	(252.5)
Gross Margin		$MM/yr	87.4
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)
Pretax Income		$MM/yr	54.0
Internal Rate of Return			33.1%

Feedstock Values

F-T LPG	$/MT	120
F-T Condensate	$/MT	120
F-T Wax	$/MT	120
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	162
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.44
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel 20.0
2. Tax rate %	33	4. Constant dollars	

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		---		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	339.9	Pretax Inc yrs 1-10	53.98	$MM/yr
Feedstock	$MM/yr	(252.5)	Aftax Inc yrs 1-10	36.16	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	47.07	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	64.88	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	43.47	$MM/yr
			Cash Flow yrs 10-20	43.47	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	120	
F-T Condensate	1770.0	120	
F-T Wax from F-T Unit	2537.0	120	
LCO to Diesel Pool	822.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	6153.8	252.5	

Internal Rate of Return

33.1%

IRR Calc Guess

30.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	4110.2	162	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	6153.8	339.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$47.1	MM
Simple Payback	2.5	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks			Products		
F-T C5 to C6 Material	MT/D	1008.5 *	Fuel Gas	MT/D	164.6
F-T Condensate	"	1770.0 *	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *	Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	822.0	Diesel Pool	"	4110.2
Hydrogen	"	16.2	Fuel Oil	"	.0
		======			======
Total	MT/D	6153.8	Total	MT/D	6153.8

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool 20%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	4110.2
" "	M3/D	5054.0
" "	BPSD	31788
Specific Gravity		.8133
API Gravity		42.5
LCO Content	wt%	20.0 *
Cetane Index		66.0
Flash Point	deg F	187
Pour Point	deg F	8
Viscosity	cSt	3.5

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12285
Specific Gravity		.7124
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3

Total EEC	$MM	109.0
Sales Revenue	$MM/yr	339.9
Raw Materials	$MM/yr	(288.0)

Gross Margin	$MM/yr	52.0
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)

Pretax Income	$MM/yr	18.5
Internal Rate of Return		15.0%

Feedstock Values

F-T LPG	$/MT	140
F-T Condensate	$/MT	140
F-T Wax	$/MT	140
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	162
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	20.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	339.9	Pretax Inc yrs 1-10	18.54	$MM/yr
Feedstock	$MM/yr	(288.0)	Aftax Inc yrs 1-10	12.42	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	23.33	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	29.44	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	19.73	$MM/yr
			Cash Flow yrs 10-20	19.73	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	140	
F-T Condensate	1770.0	140	
F-T Wax from F-T Unit	2537.0	140	
LCO to Diesel Pool	822.0	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	6153.8	288.0	

Internal Rate of Return

15.0%

IRR Calc Guess

20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	4110.2	162	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	6153.8	339.9	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$23.3	MM
Simple Payback	5.0	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks

F-T C3 to C6 Material	MT/D	1008.6	*
F-T Condensate	"	1770.0	*
F-T Wax From F-T Unit	"	2537.0	*
LCO to Diesel Pool	"	2192.1	
Hydrogen	"	16.2	
		======	
Total	MT/D	7523.9	

Products

Fuel Gas	MT/D	184.6
LPG	"	467.5
Gasoline Pool	"	1391.4
Diesel Pool	"	5480.3
Fuel Oil	"	.0
		======
Total	MT/D	7523.9

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool 40%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	5480.3	
" "	M3/D	6492.8	
" "	BPSD	40838	
Specific Gravity		.8441	
API Gravity		36.1	
LCO Content	wt%	40.0	*
Cetane Index		55.6	
Flash Point	deg F	166	
Pour Point	deg F	3	
Viscosity	cSt	3.4	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12286
Specific Gravity		.7123
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	403.3
Raw Materials		$MM/yr	(275.5)

Gross Margin		$MM/yr	127.8
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	94.3
Internal Rate of Return			52.4%

Feedstock Values

F-T LPG	$/MT	100
F-T Condensate	$/MT	100
F-T Wax	$/MT	100
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	156
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	40.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		...		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	403.3	Pretax Inc yrs 1-10	94.34	$MM/yr
Feedstock	$MM/yr	(275.5)	Aftax Inc yrs 1-10	63.21	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	74.12	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	105.25	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	70.52	$MM/yr
			Cash Flow yrs 10-20	70.52	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	100		Internal Rate of Return
F-T Condensate	1770.0	100		
F-T Wax from F-T Unit	2537.0	100		
LCO to Diesel Pool	2192.1	128	.46	52.4%
Hydrogen	16.2	900		
	======	=====		
Total	7523.9	275.5		IRR Calc Guess 50.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	5480.3	156	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	7523.9	403.3	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$74.1	MM
Simple Payback	1.6	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks

F-T C3 to C4 Material	MT/D	1008.6	*
F-T Condensate	"	1770.0	*
F-T Wax from F-T Unit	"	2537.0	*
LCO to Diesel Pool	"	2192.1	
Hydrogen	"	16.2	
		======	
Total	MT/D	7523.9	

Products

Fuel Gas	MT/D	184.6
LPG	"	467.5
Gasoline Pool	"	1391.4
Diesel Pool	"	5480.3
Fuel Oil	"	.0
		======
Total	MT/D	7523.9

Basis:

1. Includes Hydrocracker
2. LCO in Diesel F- l = 40%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	5480.3	
" "	M3/D	6492.8	
" "	BPSD	40838	
Specific Gravity		.844	
API Gravity		36.1	
LCO Content	wt%	40.0	*
Cetane Index		55.6	
Flash Point	deg F	186	
Pour Point	deg F	3	
Viscosity	cSt	3.4	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12286
Specific Gravity		.7123
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	403.3
Raw Materials		$MM/yr	(310.9)

Gross Margin		$MM/yr	92.3
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	58.9
Internal Rate of Return			35.4%

Feedstock Values

F-T LPG	$/MT	120
F-T Condensate	$/MT	120
F-T Wax	$/MT	120
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	156
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	40.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32 MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18 MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82 MM
		.....		...		.....
Total		$117.65	Totals	1.0	Total Capital	$141.32 MM

Income Summary

Revenue	$MM/yr	403.3	Pretax Inc yrs 1-10	58.91	$MM/yr
Feedstock	$MM/yr	(310.9)	Aftax Inc yrs 1-10	39.47	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	50.37	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	69.81	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	46.77	$MM/yr
			Cash Flow yrs 10-20	46.77	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	120		Internal Rate
F-T Condensate	1770.0	120		of Return
F-T Wax from F-T Unit	2537.0	120		
LCO to Diesel Pool	2192.1	128	.46	35.4%
Hydrogen	16.2	900		
	======	=====		
Total	7523.9	310.9		IRR Calc Guess
				30.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	5480.3	156	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	7523.9	403.3	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$50.4	MM
Simple Payback	2.3	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C6 Material	MT/D	1008.6	*	Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0	*	LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0	*	Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	2192.1		Diesel Pool	"	5480.3
Hydrogen	"	16.2		Fuel Oil	"	.0
		------				------
Total	MT/D	7523.9		Total	MT/D	7523.9

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool , .0%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	5480.3	
" "	M3/D	6492.8	
" "	BPSD	40838	
Specific Gravity		.8441	
API Gravity		36.1	
LCO Content	wt%	40.0	*
Cetane Index		55.6	
Flash Point	deg F	186	
Pour Point	deg F	3	
Viscosity	cSt	3.4	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12286
Specific Gravity		.7123
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	403.3
Raw Materials		$MM/yr	(346.4)

Gross Margin		$MM/yr	56.9
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	23.5
Internal Rate of Return			17.7%

Feedstock Values

F-T LPG	$/MT	140
F-T Condensate	$/MT	140
F-T Wax	$/MT	140
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	156
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	40.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	403.3	Pretax Inc yrs 1-10	23.47	$MM/yr
Feedstock	$MM/yr	(346.4)	Aftax Inc yrs 1-10	15.73	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	26.63	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	34.38	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	23.03	$MM/yr
			Cash Flow yrs 10-20	23.03	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	140		Internal Rate
F-T Condensate	1770.0	140		of Return
F-T Wax from F-T Unit	2537.0	140		
LCO to Diesel Pool	2192.1	128	.46	17.7%
Hydrogen	16.2	900		
	======	=====		
Total	7523.9	346.4		IRR Calc Guess
				20.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	5480.3	156	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	7523.9	403.3	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$26.6	MM
Simple Payback	4.4	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C5 to C6 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	4932.3		Diesel Pool	"	8220.5
Hydrogen	"	16.2		Fuel Oil	"	.0
		======				======
Total	MT/D	10264.1		Total	MT/D	10264.1

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Poo 60%
3. Fix F-T Product Value

Diesel Pool Properties				Gasoline Pool Properties		
Flow Rate	MT/D	8220.5		Flow Rate	MT/D	1391.5
" "	M3/D	9370.4		" "	M3/D	1953.5
" "	BPSD	58937		" "	BPSD	12286
Specific Gravity		.8773		Specific Gravity		.7123
API Gravity		29.8		API Gravity		67.1
LCO Content	wt%	60.0 *		RONC		93.5
				MONC		85.9
Cetane Index		44.5		(R + M) / 2		89.7
Flash Point	deg F	185				
Pour Point	deg F	-2		RVP		10.5
Viscosity	cSt	3.3				

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	530.0
Raw Materials		$MM/yr	(392.3)

Gross Margin		$MM/yr	137.6
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	104.2
Internal Rate of Return			57.1%

Feedstock Values

F-T LPG	$/MT	100
F-T Condensate	$/MT	100
F-T Wax	$/MT	100
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	151
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity	5. wt% LCO in Diesel	60.0
2. Tax rate %	33	4. Constant dollars		

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	530.0	Pretax Inc yrs 1-10	104.21	$MM/yr
Feedstock	$MM/yr	(392.3)	Aftax Inc yrs 1-10	69.82	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	80.72	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	115.11	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	77.13	$MM/yr
			Cash Flow yrs 10-20	77.13	$MM/yr

Feedstocks	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	100	
F-T Condensate	1770.0	100	
F-T Wax from F-T Unit	2537.0	100	
LCO to Diesel Pool	4932.3	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	10264.1	392.3	

Internal Rate of Return

57.1%

IRR Calc Guess

60.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	8220.5	151	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	10264.1	530.0	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$80.7	MM
Simple Payback	1.5	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks				Products		
F-T C3 to C5 Material	MT/D	1008.6 *		Fuel Gas	MT/D	184.6
F-T Condensate	"	1770.0 *		LPG	"	467.5
F-T Wax from F-T Unit	"	2537.0 *		Gasoline Pool	"	1391.4
LCO to Diesel Pool	"	4932.3		Diesel Pool	"	8220.5
Hydrogen	"	16.2		Fuel Oil	"	.0
		******				******
Total	MT/D	10264.1		Total	MT/D	10264.1

Basis:
1. Includes Hydrocracker
2. LCO in Diesel Pool 60%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	8220.5
" "	M3/D	9370.4
" "	BPSD	58937
Specific Gravity		.8773
API Gravity		29.8
LCO Content	wt%	60.0 *
Cetane Index		44.5
Flash Point	deg F	185
Pour Point	deg F	-2
Viscosity	cSt	3.3

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12286
Specific Gravity		.7123
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

ISBL EEC		$MM	72.7
Offsites EEC	(50%)	$MM	36.3

Total EEC		$MM	109.0
Sales Revenue		$MM/yr	530.0
Raw Materials		$MM/yr	(427.8)

Gross Margin		$MM/yr	102.2
Variable Costs		$MM/yr	(12.5)
Fixed Expenses		$MM/yr	(10.0)
Fixed Charges		$MM/yr	(10.9)

Pretax Income		$MM/yr	68.8
Internal Rate of Return			40.2%

Feedstock Values

F-T LPG	$/MT	120
F-T Condensate	$/MT	120
F-T Wax	$/MT	120
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	151
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	60.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		.....		...		.....	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	530.0	Pretax Inc yrs 1-10	68.77	$MM/yr
Feedstock	$MM/yr	(427.8)	Aftax Inc yrs 1-10	46.08	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	56.98	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	79.68	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	53.38	$MM/yr
			Cash Flow yrs 10-20	53.38	$MM/yr

Feedstocks	MT/D	$/MT	$/gal	
F-T C3 to C6 Material	1008.6	120		Internal Rate
F-T Condensate	1770.0	120		of Return
F-T Wax from F-T Unit	2537.0	120		
LCO to Diesel Pool	4932.3	128	.46	40.2%
Hydrogen	16.2	900		
	======	=====		
Total	10264.1	427.8		IRR Calc Guess
				40.0%

Products	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	8220.5	151	.50
Fuel Oil	.0	115	.40
	======	=====	
Total	10264.1	530.0	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$57.0	MM
Simple Payback	2.1	years

Fischer Tropsch Products Upgrading Complex / Base Case / Summary of Calculations

Complex Material Balance

Feedstocks

F-T C3 to C6 Material	MT/D	1308.6	*
F-T Condensate	"	1770.0	*
F-T Wax from F-T Unit	"	2537.0	*
LCO to Diesel Pool	"	4932.3	
Hydrogen	"	16.2	

Total	MT/D	10264.1	

Products

Fuel Gas	MT/D	184.6
LPG	"	467.5
Gasoline Pool	"	1391.4
Diesel Pool	"	8220.5
Fuel Oil	"	.0

Total	MT/D	10264.1

Basis:

1. Includes Hydrocracker
2. LCO in Diesel Pool - 60%
3. Fix F-T Product Value

Diesel Pool Properties

Flow Rate	MT/D	8220.5	
" "	M3/D	9370.4	
" "	BPSD	58937	
Specific Gravity		.8773	
API Gravity		29.8	
LCO Content	wt%	60.0	*
Cetane Index		44.3	
Flash Point	deg F	185	
Pour Point	deg F	-2	
Viscosity	cSt	3.3	

Gasoline Pool Properties

Flow Rate	MT/D	1391.5
" "	M3/D	1953.5
" "	BPSD	12286
Specific Gravity		.7123
API Gravity		67.1
RONC		93.5
MONC		85.9
(R + M) / 2		89.7
RVP		10.5

Economic Summary

1984 EEC	$MM	72.7
Offsites EEC (50%)	$MM	36.3

Total EEC	$MM	109.0
Sales Revenue	$MM/yr	530.0
Raw Materials	$MM/yr	(463.2)

Gross Margin	$MM/yr	66.8
Variable Costs	$MM/yr	(12.5)
Fixed Expenses	$MM/yr	(10.0)
Fixed Charges	$MM/yr	(10.9)

Pretax Income	$MM/yr	33.3
Internal Rate of Return		22.9%

Feedstock Values

F-T LPG	$/MT	140
F-T Condensate	$/MT	140
F-T Wax	$/MT	140
LCO	$/MT	128
Hydrogen	$/MT	900

Product Values

Fuel Gas	$/MT	100
LPG	$/MT	140
Gasoline	$/gal	.52
Gasoline	$/MT	193
Diesel	$/gal	.50
Diesel	$/MT	151
Fuel Oil	$/gal	.40
Fuel Oil	$/MT	115
LCO	$/gal	.46
LCO	$/MT	128

Fischer Tropsch Products Upgrading Complex / Base Case / Discounted Cash Flow Calculations

Basis

1. Interest rate %	10	3. 100% equity		5. wt% LCO in Diesel	60.0
2. Tax rate %	33	4. Constant dollars			

Calculation of Total Capital Requirements

ISBL EEC	MM	$72.69	1st year capital factor	.2	1st year capital	$31.32	MM
Off-sites EEC	MM	$36.35	2nd year capital factor	.5	2nd year capital	$71.18	MM
Royalty	MM	$8.60	3rd year capital factor	.3	3rd year capital	$38.82	MM
		-----		---		-----	
Total		$117.65	Totals	1.0	Total Capital	$141.32	MM

Income Summary

Revenue	$MM/yr	530.0	Pretax Inc yrs 1-10	33.33	$MM/yr
Feedstock	$MM/yr	(463.2)	Aftax Inc yrs 1-10	22.33	$MM/yr
Variable Costs	$MM/yr	(12.5)	Cash Flow yrs 1-10	33.24	$MM/yr
Fixed Expenses	$MM/yr	(10.0)			
ISBL Deprec	$MM/yr	(7.3)	Pretax Inc yrs 10-20	44.24	$MM/yr
Off-site Deprec	$MM/yr	(3.6)	Aftax Inc yrs 10-20	29.64	$MM/yr
			Cash Flow yrs 10-20	29.64	$MM/yr

Feedstocks

	MT/D	$/MT	$/gal
F-T C3 to C6 Material	1008.6	140	
F-T Condensate	1770.0	140	
F-T Wax from F-T Unit	2537.0	140	
LCO to Diesel Pool	4932.3	128	.46
Hydrogen	16.2	900	
	======	=====	
Total	10264.1	463.2	

Internal Rate of Return

22.9%

IRR Calc Guess

20.0%

Products

	MT/D	$/MT	$/gal
Fuel Gas	184.6	100	
LPG	467.5	140	
Gasoline	1391.4	193	.52
Diesel	8220.5	151	.50
Fuel Oil	.0	115	.40
	=======	=====	
Total	10264.1	530.0	

Simple Payback Calculations

Total EEC + Royalty	$117.6	MM
Cash Flow yrs 1-10	$33.2	MM
Simple Payback	3.5	years

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