

Exxon Means 50 MMSCFD Case

C3 RECOVERY = 25%, CO2 LEAKAGE = 2%
CORRECTED FOR PRESENTATION 8/30/03

Economic Input Parameters

Product Value \$/Barrel	\$	18.00
Fuel Gas Cost \$/MMBTU	\$	5.00
Electricity Cost \$/KWH	\$	0.06
Calc Electric \$/HP-Day	\$	1.07

Recovery BBL/day	Value \$/BBL	Comp. Cost \$/Day	Heater Cost \$/Day	Operator Cost \$/Day	Misc Cost \$/Day	Net \$/Year
802	\$18	\$1,021	\$915	\$685	\$110	\$4,214,143

Exxon Means Optimization 11/17/02

Inlet Flow = 25MMSCFD
 Set CO2 Leakage at 2%
 Water = 10#/MMSCF = 10.4167 Lb/hr

C3 Recovery	Cond. Duty	Ref HP	Prod. BBL	Ovhd Temp	Est Capital	Est Rev	Gross Return
40.9	6.656	951	549	41.8	\$5,706,000	\$3,366,468	59.00%
35	5.26	752	524	42	\$4,512,000	\$3,213,168	71.21%
30	4.23	602	496	42.3	\$3,612,000	\$3,041,472	84.20%
25	3.342	479	462	42.7	\$2,874,000	\$2,832,984	98.57%
20	2.579	366	418	43.3	\$2,196,000	\$2,563,176	116.72%
17	2.163	309	387	43.8	\$1,854,000	\$2,373,084	128.00%

Inlet Flow = 50MMSCFD
 Set CO2 Leakage at 2%
 Water = 10#/MMSCF = 20.8333 Lb/hr

C3 Recovery	Cond. Duty	Ref HP	Prod. BBL	Ovhd Temp	Est Capital	Est Rev	Gross Return
17	4.325	620	774	43.8	\$3,720,000	\$4,746,168	127.59%
20	5.135	690	836	43.3	\$4,140,000	\$5,126,352	123.82%
25	6.668	953	923	42.7	\$5,718,000	\$5,659,836	98.98% PICK HERE!!!!!!!!!!!!!!
30	8.46	1204	992	42.3	\$7,224,000	\$6,082,944	84.20%
35	10.52	1504	1048	42	\$9,024,000	\$6,426,336	71.21%
40.9	13.312	1902	1098	41.8	\$11,412,000	\$6,732,936	59.00%

Optimized Economics

Flow = 50 MMscf/day

CO2 Leakage = 2%

Propane Recovery = 25%

0.80568

14436

Recovery BBL/day	Value \$/BBL	Comp. Cost \$/Day	Heater Cost \$/Day	Op Cost \$/Day	Misc Cost \$/Day	Net \$/Year
802	\$18	\$1,021	\$915	\$685	\$110	\$4,214,143
		372492.72	333975	250000	40000	996467.72

Year	Gross Rev	Op Cost	Comp Rent	Est TIC	Interest	Payment	Net \$
1	\$5,196,960	\$996,468	\$120,000	\$7,000,000	6.50%	(\$2,043,319)	\$2,037,173
2	\$4,937,112	\$1,036,326	\$120,000	\$7,000,000	6.50%	(\$2,043,319)	\$1,737,466
3	\$4,690,256	\$1,077,779	\$120,000	\$7,000,000	6.50%	(\$2,043,319)	\$1,449,158
4	\$4,455,744	\$1,120,891	\$120,000	\$7,000,000	6.50%	(\$2,043,319)	\$1,171,534
5	\$4,232,956	\$1,165,726	\$120,000				\$2,947,230
6	\$4,021,309	\$1,212,355	\$132,000				\$2,676,953
7	\$3,820,243	\$1,260,850	\$132,000				\$2,427,394
8	\$3,629,231	\$1,311,284	\$132,000				\$2,185,947
9	\$3,447,769	\$1,363,735	\$132,000				\$1,952,035
10	\$3,275,381	\$1,418,284	\$132,000				\$1,725,097

Specifications

Flow = 50 MMscf/day

CO2 Leakage = 2%

Propane Recovery = 25%

1) Refrigeration Compressor - 2 Stage. Apx 1000 Hp - Lease

	Temperature Deg F	Pressure PSIA	Flow MMSCFD	Comp
Suction		19	55	11.5 C3
Discharge	150 Est		250	11.5 C3

2) Inlet Separator

Size	7.5 X 22	S/S Vertical
Pressure	740	PSIG
Temp	-20 to 200	Degrees

3) Gas to Gas Exchanger

Pressure	740	PSIG
Temp	-20 to 200	Degrees
Duty	3,600,000	Btu/hr
UA	162,000	Btu/F-Hr
A est	2500	Sq Ft

4) NGL Recovery Column

Pressure	740	PSIG
Temp	-20 to 200	Degrees
Diameter	72	Inches ID
Height	55	Ft S/S

5) Overhead Condenser

Pressure	740	PSIG	Tubes
Pressure	270	PSIG	Shell
Temp	-20 to 200	Degrees	
Duty	6,683,000	Btu/hr	

UA 479,000 Btu/F-Hr
A est 4000 Sq Ft

6) Reboiler

Pressure 740 PSIG Tubes
Pressure 150 PSIG Shell
Temp -20 to 450 Degrees
Duty 6,200,000 Btu/hr
UA est 440,000 Btu/F-Hr
A est 3,667 Sq Ft

7) Amine Treating - Lease

CO2 2.44 Moles/hr
H2S 9 Moles/hr
CO2 15.4126667 SCFM
H2S 56.85 SCFM
Total 72.2626667 SCFM

Assume DEA @ 25% = 4 SCF/GPM

Amine = 18.0656667 GPM
Design = 20 GPM

8) Propane Discharge Condenser - Air Exchanger

Pressure 350 PSIG
Temp -20 to 350 Degrees
Duty 9,100,000 Btu/hr
UA 326,100 Btu/F-Hr
A est 5435 Sq Ft

9) Acid Gas Compression Apx 40 Hp

Suction 16 PSIA
 100 Deg F
 115,200 Cu Ft/Day

Disc 60 PSIA
 115,200 Cu Ft/Day
 250 Deg F Est

Note: All Stainless System

10) NGL Storage

4- storage tanks
250 PSI design @ 30,000 Gal

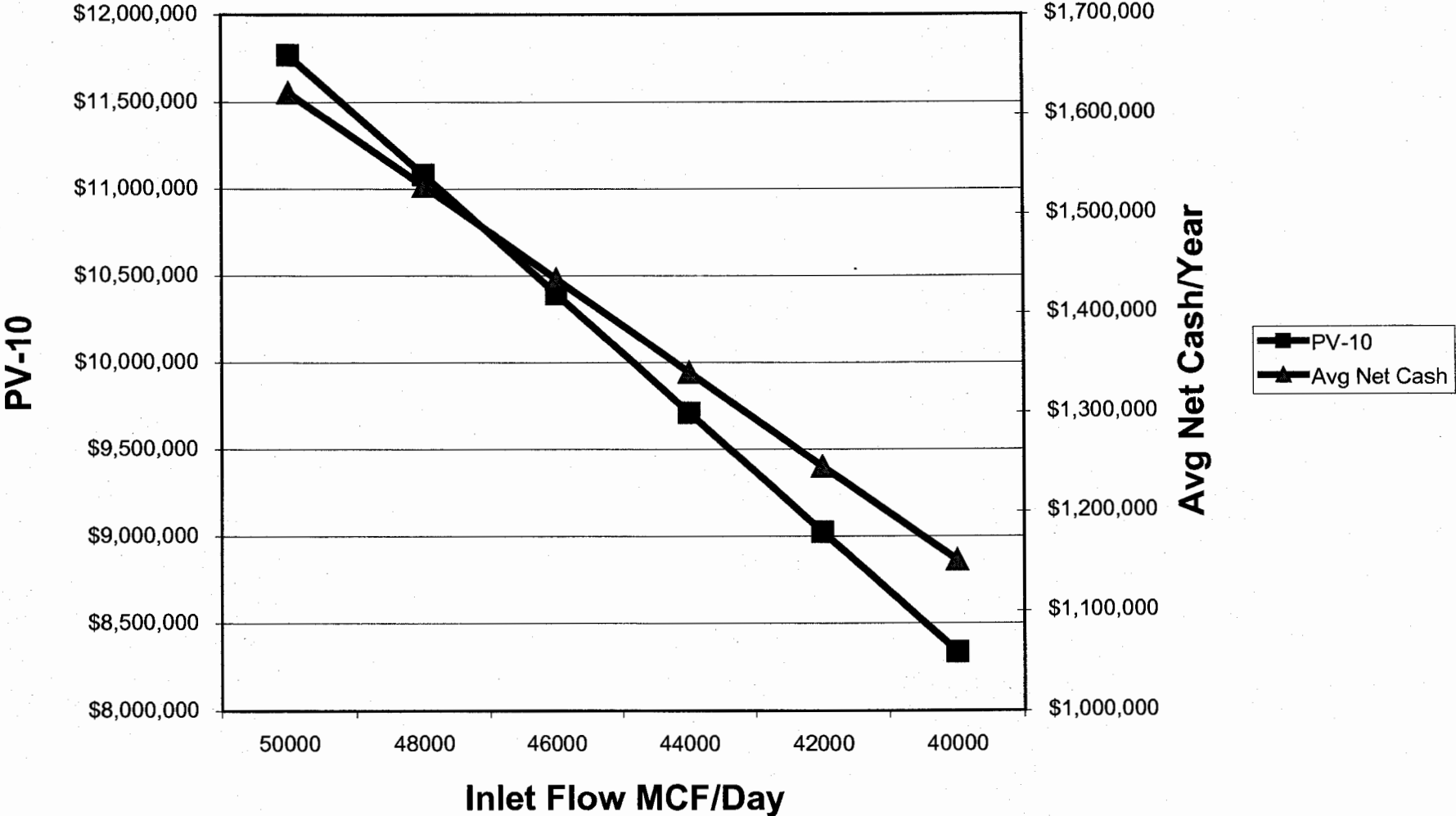
11) Refrigeration Receiver

 60 Inch ID
 50 Ft S/S
 270 PSIG Design
Temp -20 to 350 Degrees

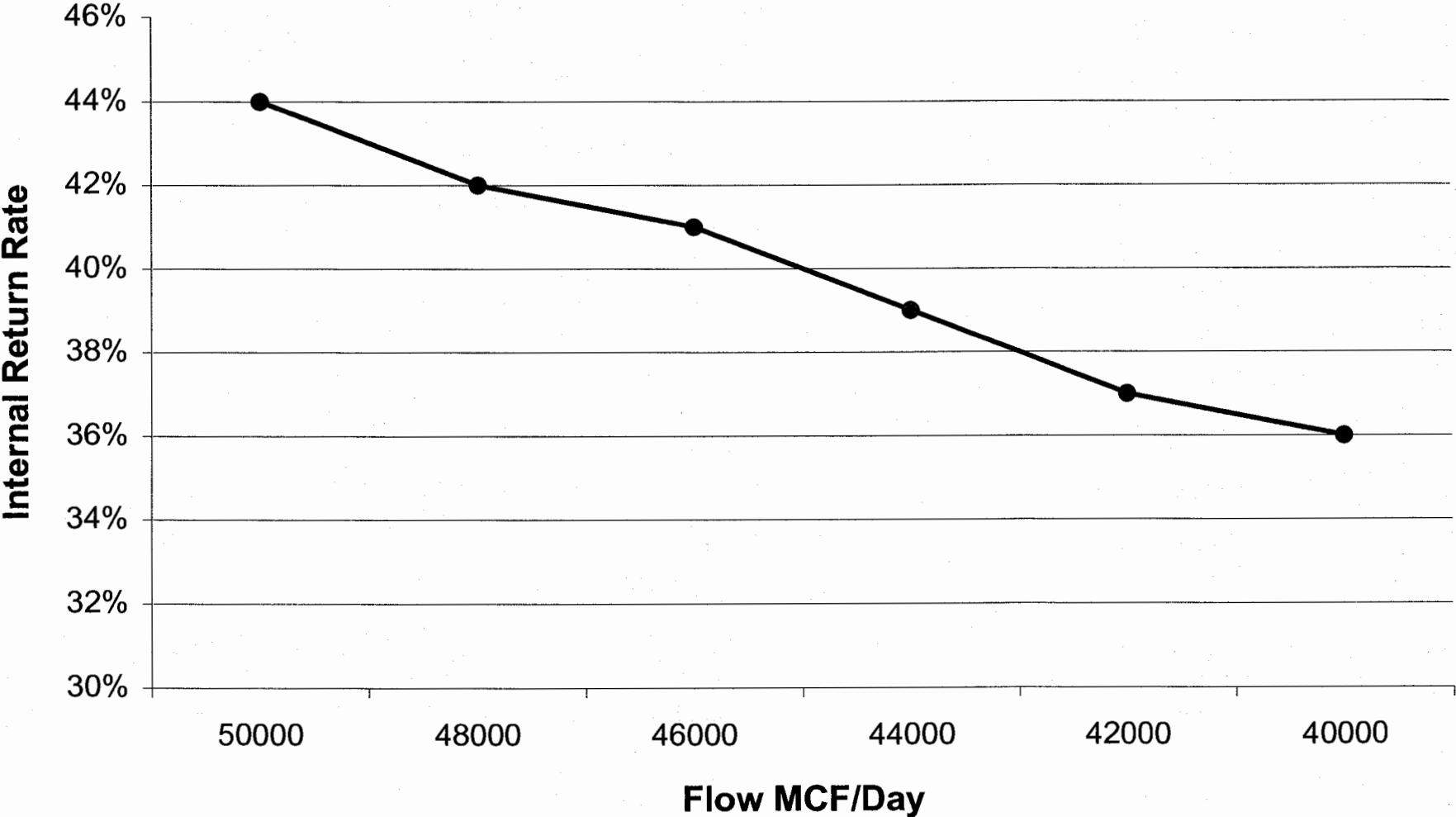
12) NGL Product Cooler - Air Cooler

Pressure 350 PSIG
Temp -20 to 350 Degrees
Duty 1,360,000 Btu/hr
UA 12,030 Btu/F-Hr
A est 200.5 Sq Ft

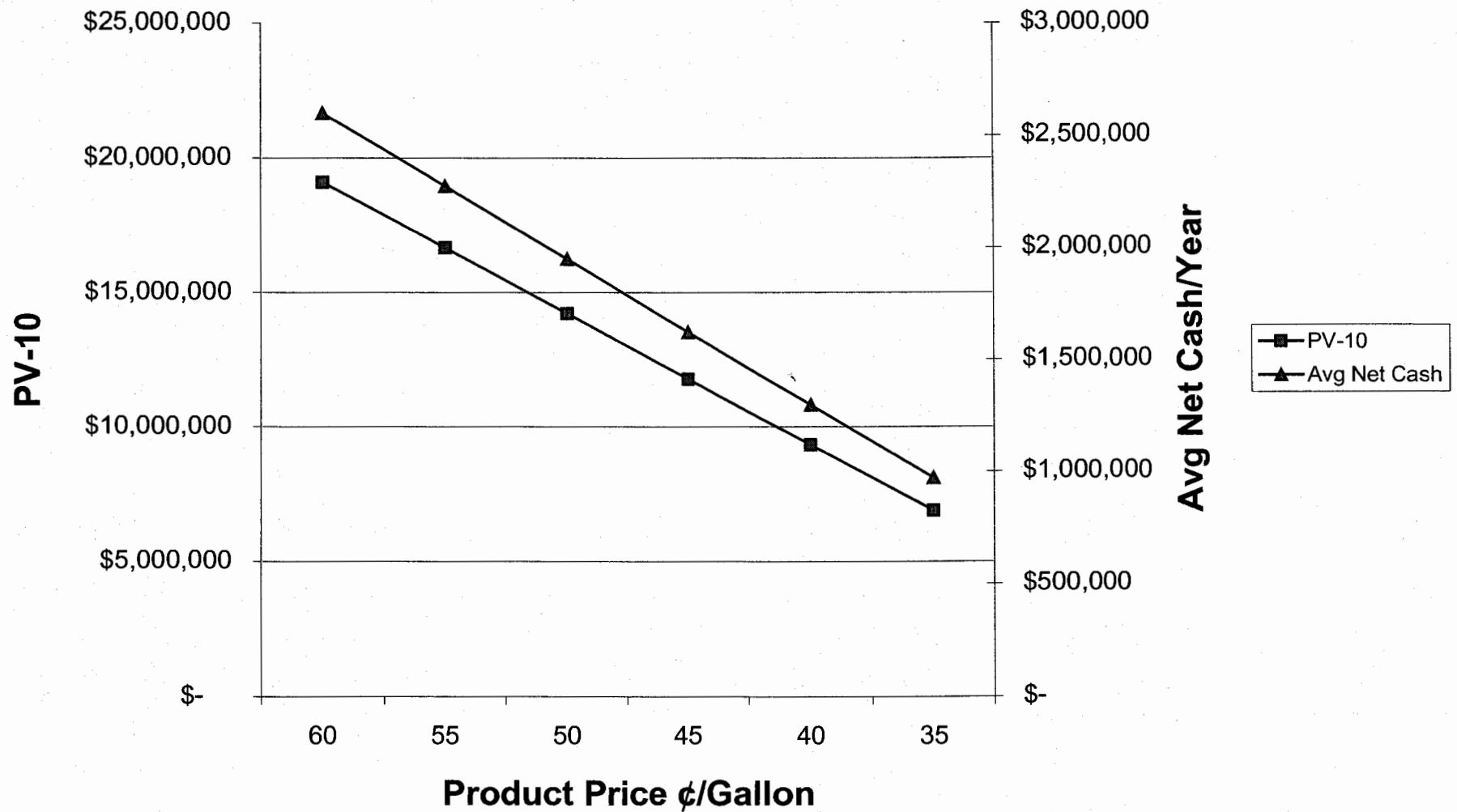
Flow Sensitivity



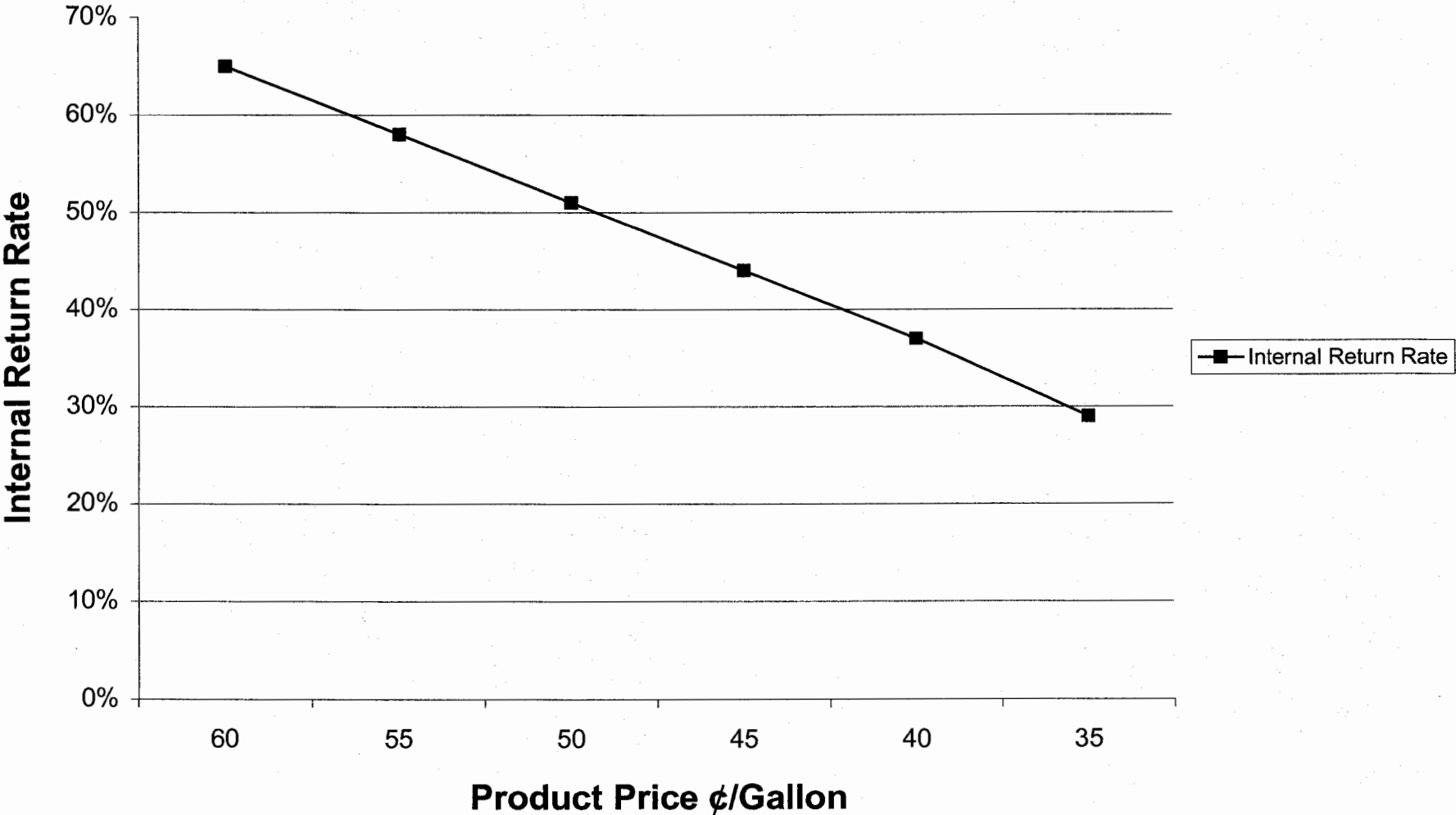
Flow Sensitivity



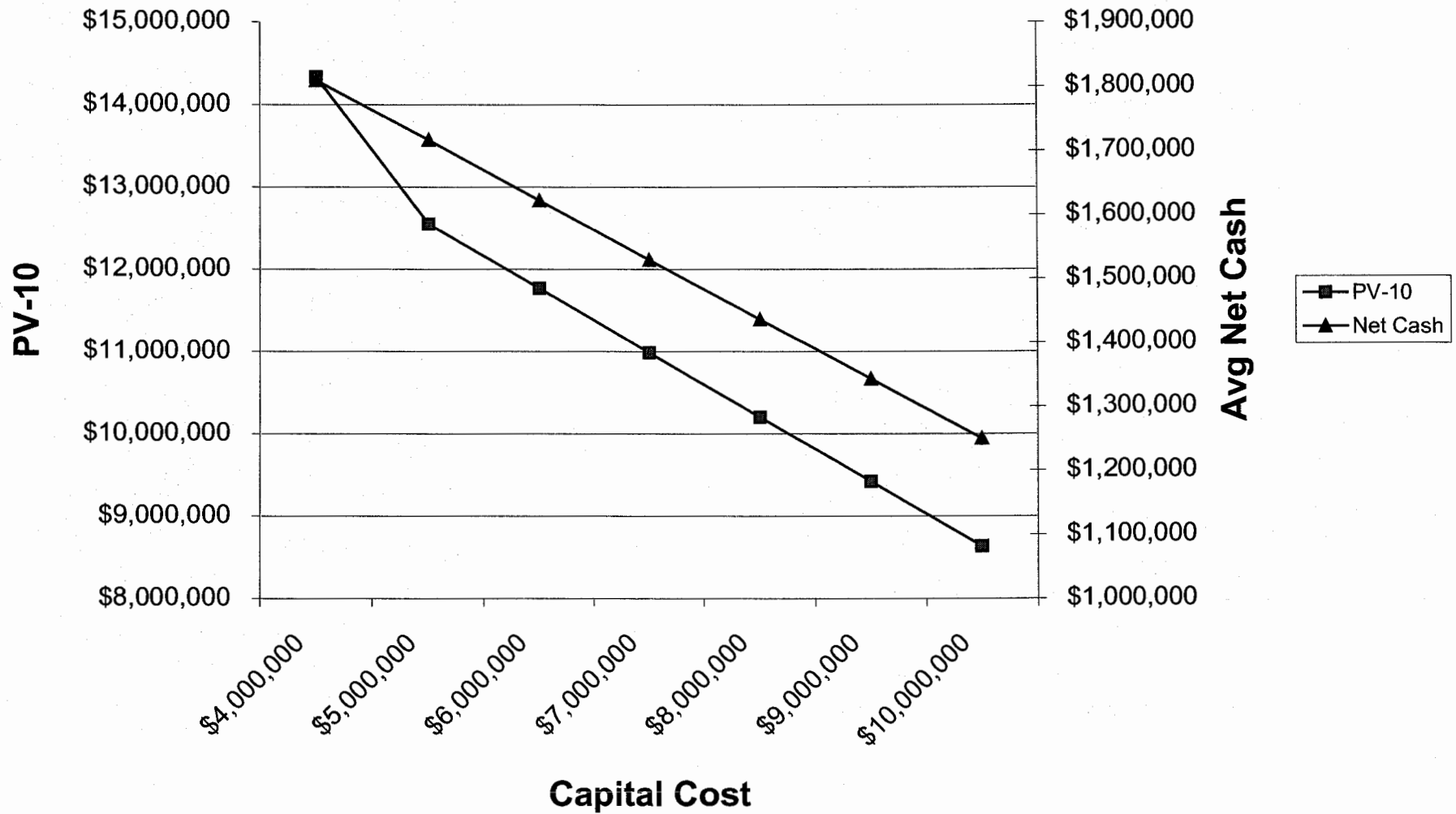
Product Price Sensitivity



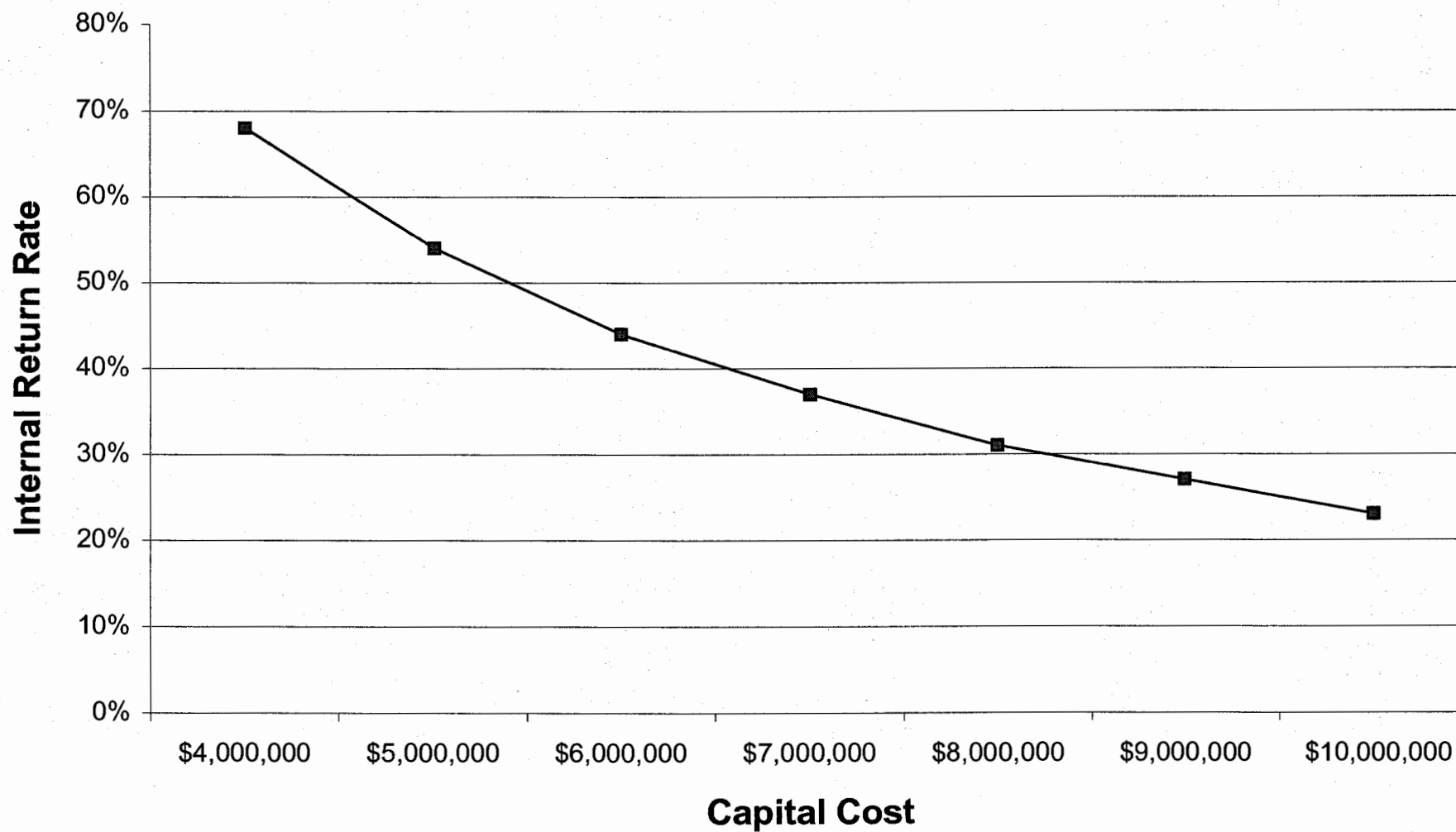
Product Price Sensitivity



Capital Sensitivity



Capital Sensitivity



11/02 Analysis

Flow = 50 MMscf/day

CO2 Leakage = 2%

Propane Recovery = 25%

0.80568

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Recovery BBL/day	Value \$/BBL	Comp. Cost \$/Day	Heater Cost \$/Day	Op Cost \$/Day	Misc Cost \$/Day	Net \$/Year
802	\$20	\$760	\$549	\$685	\$110	\$5,017,133
		277400	200385	250000	40000	767785

Recoveries

Component	Inlet Moles	Product Moles	Recovery	Product Lbs	Product Gal	Value \$/gal	Total \$
Ethane	148.14	0.07	0.05%	1.96	0.66216216	0.3	\$ 0.20
Propane	69.13	17.28	25.00%	760.32	180.170616	0.55	\$ 99.09
I-Butane	21.37	13.5	63.17%	783	166.950959	0.61	\$ 101.84
N-Butane	31.46	25.46	80.93%	1476.68	303.219713	0.61	\$ 184.96
I-Pentane	18.63	18.41	98.82%	1325.52	254.418426	0.7	\$ 178.09
N-Pentane	6.58	6.55	99.54%	471.6	89.6577947	0.7	\$ 62.76
Hexane +	16.44	16.44	100.00%	1644	274	0.7	\$ 191.80
Totals		97.71		6463.08	1269.07967		\$ 818.75
Average \$/Gallon		\$ 0.65					
T&F		0.04					
Net Means		\$ 0.61					

Inlet Flow 03	IRR	NPV-10	Average Net \$
50000	44%	\$ 11,768,000	\$ 1,622,000
48000	42%	\$ 11,081,000	\$ 1,528,000
46000	41%	\$ 10,395,000	\$ 1,434,000
44000	39%	\$ 9,709,000	\$ 1,340,000
42000	37%	\$ 9,023,000	\$ 1,245,000
40000	36%	\$ 8,337,000	\$ 1,151,000

Product Price	IRR	NPV-10	Average Net \$
60	65%	\$ 19,100,000	\$ 2,599,000
55	58%	\$ 16,655,000	\$ 2,274,000
50	51%	\$ 14,212,000	\$ 1,948,000
45	44%	\$ 11,767,000	\$ 1,622,000
40	37%	\$ 9,324,000	\$ 1,297,000
35	29%	\$ 6,880,000	\$ 971,000

Cap Cost	IRR	NPV-10	Average Net \$
\$ 4,000,000	68%	\$ 14,334,000	\$ 1,809,000
\$ 5,000,000	54%	\$ 12,551,000	\$ 1,716,000
\$ 6,000,000	44%	\$ 11,767,000	\$ 1,622,000
\$ 7,000,000	37%	\$ 10,985,000	\$ 1,529,000
\$ 8,000,000	31%	\$ 10,202,000	\$ 1,436,000
\$ 9,000,000	27%	\$ 9,419,000	\$ 1,343,000
\$ 10,000,000	23%	\$ 8,636,000	\$ 1,250,000

Means Cash Flow Analysis

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Plant Inlet Volume	MCF/day		50,000	47,500	45,125	42,869	40,725	38,689	36,755	34,917	33,171	31,512	
	MCF/Year		18,250,000	17,337,500	16,470,625	15,647,094	14,864,739	14,121,502	13,415,427	12,744,656	12,107,423	11,502,052	146,461,017
Fuel Gas Usage	MCF/day		183	174	165	157	149	142	135	128	121	115	
	MCF/Year		66,795	63,455	60,282	57,268	54,405	51,685	49,100	46,645	44,313	42,098	536,047
Liquid Production	Gallons/day		33,684	32,000	30,400	28,880	27,436	26,064	24,761	23,523	22,347	21,229	
	Gallons/year		12,294,660	11,679,927	11,095,931	10,541,134	10,014,077	9,513,374	9,037,705	8,585,820	8,156,529	7,748,702	98,667,858
Liquids Price	\$/gallon		\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	\$0.45	
Gross Liquids Revenue	\$/day		\$15,158	\$14,400	\$13,680	\$12,996	\$12,346	\$11,729	\$11,142	\$10,585	\$10,056	\$9,553	
	\$/year		\$5,532,597	\$5,255,967	\$4,993,169	\$4,743,510	\$4,506,335	\$4,281,018	\$4,066,967	\$3,863,619	\$3,670,438	\$3,486,916	\$44,400,536
Compressor Lease	\$/year		\$ 120,000	\$ 120,000	\$ 120,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 145,200	\$ 145,200	\$ 145,200	\$ 145,200	\$1,336,800
Operator Cost	\$/year		\$250,000	\$260,000	\$270,400	\$281,216	\$292,465	\$304,163	\$316,330	\$328,983	\$342,142	\$355,828	\$3,001,527
Power	\$/year		\$372,493	\$353,868	\$336,175	\$319,366	\$303,398	\$288,228	\$273,816	\$260,126	\$247,119	\$234,763	\$2,989,351
Fuel Gas	\$/year		\$333,975	\$317,276	\$301,412	\$286,342	\$272,025	\$258,423	\$245,502	\$233,227	\$221,566	\$210,488	
Supplies & Filters	\$/year		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$100,000
Repairs & Maintenance	\$/year		\$12,000	\$12,600	\$13,230	\$13,892	\$14,586	\$15,315	\$16,081	\$16,885	\$17,729	\$18,616	\$150,935
Property Taxes guess	\$/year		\$50,000	\$51,500	\$53,045	\$54,636	\$56,275	\$57,964	\$59,703	\$61,494	\$63,339	\$65,239	\$573,194
Insurance	\$/year		\$25,000	\$25,750	\$26,523	\$27,318	\$28,138	\$28,982	\$29,851	\$30,747	\$31,669	\$32,619	\$286,597
Admin, Accounting, Travel	\$/year		\$20,000	\$20,600	\$21,218	\$21,855	\$22,510	\$23,185	\$23,881	\$24,597	\$25,335	\$26,095	\$229,278
Operations Cost	\$/year		\$ 1,193,468	\$ 1,171,594	\$ 1,152,003	\$ 1,146,624	\$ 1,131,396	\$ 1,118,261	\$ 1,120,365	\$ 1,111,259	\$ 1,104,100	\$ 1,098,848	\$8,667,681
Plant Cost		\$ 7,000,000											
Payment 6% for 4 Years			\$2,020,140	\$2,020,140	\$2,020,140	\$2,020,140							\$8,080,562

ECONOMICS

Operating Income		\$4,339,129	\$4,084,373	\$3,841,166	\$3,596,886	\$3,374,938	\$3,162,757	\$2,946,603	\$2,752,360	\$2,566,338	\$2,388,068	\$33,052,618
Depreciation SL-20		\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$3,500,000
Interest Expense		\$ 270,140	\$ 270,140	\$ 270,140	\$ 270,140	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$1,080,562
Taxable Income		\$3,718,989	\$3,464,232	\$3,221,026	\$2,976,746	\$3,024,938	\$2,812,757	\$2,596,603	\$2,402,360	\$2,216,338	\$2,038,068	\$28,472,056
FIT @ 34%		\$1,264,456	\$1,177,839	\$1,095,149	\$1,012,093	\$1,028,479	\$956,337	\$882,845	\$816,802	\$753,555	\$692,943	\$9,680,499
After Tax Income		\$2,454,533	\$2,286,393	\$2,125,877	\$1,964,652	\$1,996,459	\$1,856,420	\$1,713,758	\$1,585,558	\$1,462,783	\$1,345,125	\$18,791,557
Dep/Int Add Back		\$ 620,140	\$ 620,140	\$ 620,140	\$ 620,140	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$ 350,000	\$4,580,562
Cash Flow	\$ (7,000,000)	\$3,074,673	\$2,906,534	\$2,746,017	\$2,584,793	\$2,346,459	\$2,206,420	\$2,063,758	\$1,935,558	\$1,812,783	\$1,695,125	\$23,372,119
Debt Payment		\$2,020,140	\$2,020,140	\$2,020,140	\$2,020,140	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Earnings		\$1,054,533	\$886,393	\$725,877	\$564,652	\$2,346,459	\$2,206,420	\$2,063,758	\$1,935,558	\$1,812,783	\$1,695,125	\$15,291,557

Internal Rate of Return 37%
PV-10 at 5% \$ 10,984,865
Average 100% Revenue \$ 1,529,156

Operations Proposal

I) Operator Cost

Salary	\$45,000
Benefits	\$15,750
OT Coverage	\$3,600
	\$64,350

II) Vehicles

Payments	\$7,800
Gas	\$3,120
Repairs	\$800
	\$11,720

III) Misc.

Training/Travel	\$2,000
Safety Equip	\$1,000
Tools	\$500
	\$3,500

Totals

Operators	\$64,350
Vehicles	\$11,720
Misc	\$3,500
	\$79,570

Total Estimate for 3 Operators

\$238,710

Contingency

35%

\$83,549

Total

\$322,259