# Analysis and Recommendations for McPhee Distillers

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## 1. Analysis of 2015 & 2016

The first year in business was successful, as McPhee generated net income of $210,000, and finished 2015 with $22,500 cash in hand. McPhee was profitable with gross profit margin of 30.8% and net profit margin of 8.6%. However, the company had negative cash flow of $727,500 due to initial equipment purchase, start-up marketing, and inventory on hand.

The second year in business was not successful. In 2016, McPhee sold the same amount of barrels as in 2015 (275) but was not profitable due to higher production costs per barrel, and decreased revenues as a greater portion of barrels were sold at 25% discount to Piercy.

Due to lower production levels (low inventory) and rising COGS, Inventory Turnover increased from 1.42 in 2015 to 4.73 in 2016. Gross Profit Margin in 2016 fell by nearly half, to 15.7%. Net cash flow in 2016 was $210,000 as no equipment purchases were required and unsold inventory from the previous year reduced production requirements for 2016. McPhee lost money in 2016 as Net income was ($127,500) and net profit margin was (5.5%).

## 2. Recommendations for 2017 and onwards

Following the current trend, McPhee's business is not sustainable. To remain solvent in 2017, we recommend the following:

1. Revise operational strategy to minimize unsold inventory, while maximizing cashflow and procuring materials at greater volume discounts. See "2017 Recommendation 1: Buy large batch of Inventory at year end (volume discount)" in Appendix II.

2. McPhee sold 275 barrels in each of the first two years of business, and finished 2016 with 50 barrels in inventory. Based on projected sales of 275 barrels, McPhee should run one large batch of 225 barrels in November 2017.

3. Purchases of materials and ingredients for the November 2017 production run, should be agreed upon in January 2017, with delivery dates in November and payment dates in January 2018. This will ensure volume discounts are maximized and provide vendors an opportunity to plan for their obligations 10 months in advance, resulting in lower commodity pricing where applicable.

4. McPhee must establish sales prices based on actual costs. Arranging materials and ingredients in ahead of time (January 2017) will ensure accurately known costs per barrel for the November 2017 production run. Initially McPhee was producing barrels at $6,000 each with a selling price of $10,000. Since barrels prices were 1.67x COGS, if McPhee maintains this ratio on its future sale prices, then barrels sold to Piercy will never result in a loss.

5. Explore additional opportunities:

    - Given Piercy's vested interest in McPhee's success, leverage Piercy's already well established sales/distribution channels
    - Renegotiate Piercy's discount level to a lower level
    - Incremental revenue - establish restocking fees for returns, and resell aged returns at a premium
    - Consider using barrels made of Canadian Oak, as Quebec is a major producer of Oak.

## 3. Appendix I: Assumptions

- Straight line depreciation over 10 years, based on equipment requiring higher than initially anticipated maintenance.
- $50,000 spent on logo and website design is a one-time expense during the first year of business, and is in addition to fixed costs listed in Exhibit 3.
- McPhee only uses Spanish sherry barrels made of European oak.
- Piercy Distillers exercises their option to purchase barrels at a discount of 25% off retail.
- Until McPhee can demonstrate stable annual profitability, it is understood by Piercy that payment of dividends will be at the sole discretion is McPhee.
- All variable costs, including direct labour, are included in costs listed in Exhibit 2. Direct labour is supplied on a contract basis due to the infrequent scheduling of production runs.
- The Production Schedule shows that production costs per barrel have been steadily increasing due to:
    - Increasing costs of materials, ingredients, and contracted labour.
    - Lower volume discounts on materials and ingredients due to steadily decreasing batch sizes.
    - Lower productivity as batch size decreases (ie. greater proportion of production cycle spent on start-up and stopping, rather than producing barrels of whiskey) – more maintenance and repairs on PP&E.

## 4. Appendix II: Financial Statements Forecasts

**APPENDIX II: Financial Statements and Forecasts**

2015, 2016 Financial Statements and 2017 Forecast (Recommendation 1)

Ratio Analysis (2015, 2016 & 2017 Forecast)

2015 Journal & Ledger

2016 Journal & Ledger

2017 Journal and Ledger (Forecast under Recommendation 1)

Recommendation 1: Buy large batch of Inventory at year end (volume discount)

Recommendation 2: Buy large batch of Inventory and pass on price increase to customers

Scenario A: Sale of only last years remaining inventory (50 barrels)

Scenario B: Calculating break even barrels sold to regular customers

## Appendix II: Financial Statements and Forecast

| Yearly Ledger Changes | | | | |
|---|---|---|---|---|
| **Account** | **2014** | **2015** | **2016** | **2017 Recommendation 1** |
| Cash | 750,000 | (727,500) | 210,000 | 1,660,000 |
| Inventory | | 1,187,500 | (775,000) | (412,500) |
| PP&E | | 500,000 | - | - |
| Accounts Payable | | 700,000 | (487,500) | 1,137,500 |
| Paid-In Capital (Common) | 250,000 | - | - | - |
| Paid-In Capital (Preferred) | 500,000 | - | - | - |
| Revenue | | 2,437,500 | 2,312,500 | 2,312,500 |
| COGS | | 1,687,500 | 1,950,000 | 1,762,500 |
| SG&A | | 490,000 | 440,000 | 440,000 |
| Depreciation Expense | | 50,000 | 50,000 | 50,000 |
| Accumulated Depreciation | | (50,000) | (50,000) | (50,000) |
| **Total** | | **6,275,000** | **3,650,000** | **6,900,000** |
| | | | | - |

| Balance Sheet | | | | |
|---|---|---|---|---|
| **Account** | **2014** | **2015** | **2016** | **2017 Recommendation 1** |
| **Assets** | | | | |
| Cash | 750,000 | 22,500 | 232,500 | 1,892,500 |
| Inventory | | 1,187,500 | 412,500 | - |
| PP&E | | 500,000 | 500,000 | 500,000 |
| Accum. Depreciation | | (50,000) | (100,000) | (150,000) |
| **Total Assets** | **750,000** | **1,660,000** | **1,045,000** | **2,242,500** |
| | | | | |
| **Liabilities & Equity** | | | | |
| Accounts Payable | | 700,000 | 212,500 | 1,350,000 |
| **Total Liabilities** | **-** | **700,000** | **212,500** | **1,350,000** |
| Paid-In Capital (Common) | 250,000 | 250,000 | 250,000 | 250,000 |
| Paid-In Capital (Preferred) | 500,000 | 500,000 | 500,000 | 500,000 |
| Retained Earnings | | 210,000 | 82,500 | 142,500 |
| **Total Equity** | **750,000** | **960,000** | **832,500** | **892,500** |
| **Total Liabilities & Equity** | **750,000** | **1,660,000** | **1,045,000** | **2,242,500** |

**Retained Earnings (now) = RE (last year) + Net Income (this year) - Dividends Paid**

| Start-up (Paid-In) Capital | Amount | Shares |
|---|---|---|
| Common Shares (2014) - Kingley | 250,000 | 250 |
| Preferred Shares(2014) - Piercy Distillers | 500,000 | 500 |
| Total | 750,000 | |

## Appendix II: Financial Statements and Forecast

| Income Statement | | | | | |
|---|---|---|---|---|---|
| **Account** | **2014** | **2015** | **2016** | **2017 Recommendation 1** | **TREND (effect of Recommedation 1 in 2017)** |
| Revenue | | 2,437,500 | 2,312,500 | 2,312,500 | revenue flat YoR |
| COGS | | 1,687,500 | 1,950,000 | 1,762,500 | COGS decreased due to bulk purchase |
| **Gross Profit** | | **750,000** | **362,500** | **550,000** | Profitability increased |
| SG&A | | 490,000 | 440,000 | 440,000 | Fixed Costs same |
| **EBITDA** | | **260,000** | **(77,500)** | **110,000** | Earnings have increased |
| Depreciation Expense | | 50,000 | 50,000 | 50,000 | Same |
| **EBIT** | | **210,000** | **(127,500)** | **60,000** | Earnings now positive |
| Taxes | | - | - | - | Assume none |
| **Net Income** | | **210,000** | **(127,500)** | **60,000** | 2017 using BULK puchases have lowered COGS and increased net profit |

| | **2015** | **2016** | **2017 Recommendation 1** | |
|---|---|---|---|---|
| Number of Barrels bought | 450 | 150 | 225 | |
| Cost of barrels in inventory (purchased) | $ 2,875,000.00 | $ 1,175,000.00 | $ 1,350,000.00 | |
| **Gross Cost per barrel** | **$ 6,388.89** | **$ 7,833.33** | **$ 6,000.00** | 2017 recovered as cost of barrels decreased |
| SSGA + Depreciation | $ 540,000.00 | $ 490,000.00 | $ 490,000.00 | |
| **Avg Net Cost per Barrel Inventory** | **$ 7,588.89** | **$ 11,100.00** | **$ 8,177.78** | 2016 was expensive |

| Cash Flow Statement | | | | | |
|---|---|---|---|---|---|
| **Account** | **2014** | **2015** | **2016** | **2017 Recommendation 1** | **TREND (effect of Recommedation 1 in 2017)** |
| Net Income | - | 210,000 | (127,500) | 60,000 | |
| Depreciation | - | 50,000 | 50,000 | 50,000 | |
| Change in Inventory | - | (1,187,500) | 775,000 | 412,500 | more inventory purchased than needed due to bulk discount |
| Change in Accounts Payable | - | 700,000 | (487,500) | 1,137,500 | CF from Ops have increased significnatly since inventory can be paid 90 days later |
| **Total Operating Cash Flows** | **-** | **(227,500)** | **210,000** | **1,660,000** | |
| | | | | | |
| Purchase of PP&E | - | (500,000) | - | - | |
| **Total Investing Cash Flows** | **-** | **(500,000)** | **-** | **-** | |
| | | | | | |
| Increase in Paid-In Capital (C/S) | 250,000 | - | - | - | |
| Increase in Paid-In Capital (P/S) | 500,000 | - | - | - | |
| **Total Financing Cash Flows** | **750,000** | **-** | **-** | **-** | |
| | | | | | |
| **Total Cash Flows** | **750,000** | **(727,500)** | **210,000** | **1,660,000** | total CF has increased (more liquidity) |
| Beginning Cash | - | 750,000 | 22,500 | 232,500 | |
| **Ending Cash** | **750,000** | **22,500** | **232,500** | **1,892,500** | |

MCPHEE Distillers was funded in 2014. Operations did not start until Jan. 2015

| RATIO ANALYSIS | | | | TREND and ANALYSIS | | |
|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 Recommendation 1: Buy large batch of Inventory at year end |
| Net Income | 210,000 | (127,500) | 60,000 | + | Loss in 2nd year | improved |
| Total Equity | 960,000 | 832,500 | 892,500 | + | ++ | |
| Total Sales (Revenue) | 2,437,500 | 2,312,500 | 2,312,500 | flat | flat | same |
| Total Assets | 1,660,000 | 1,045,000 | 2,242,500 | + | - | increase of invent |
| Gross Profit | 750,000 | 362,500 | 550,000 | | | |

| | | | | TREND and ANALYSIS | | |
|---|---|---|---|---|---|---|
| **PROFITABLILITY ANALYSIS** | **2015** | **2016** | **2017** | **2015** | **2016** | **2017 Recommendation 1: Buy large batch of Inventory at year end** |
| Gross Profit Margin | 30.77% | 15.68% | 23.78% | + | Big drop from 1st yr | Improved |
| ROE | 21.88% | -15.32% | 6.72% | + | Loss | Improved |
| Net Profit Margin | 8.62% | -5.51% | 2.59% | - | Loss in 2nd year | Improved |
| Asset Turnover | 1.468 | 2.213 | 1.031 | + | Better use of assets | |
| Equity Multiplier | 1.729 | 1.255 | 2.513 | | | |
| ROA | 12.65% | -12.20% | 2.68% | + | Loss | Improved |
| EPS | 840.00 | (510.00) | 240.00 | + | - | |

| | | | | TREND and ANALYSIS | | |
|---|---|---|---|---|---|---|
| | **2015** | **2016** | **2017** | **2015** | **2016** | **2017 Recommendation 1: Buy large batch of Inventory at year end** |
| Current Assets | 1,210,000 | 645,000 | 1,892,500 | | | |
| Current Liabilities | 700,000 | 212,500 | 1,350,000 | - | + | |
| Total Liabilities | 700,000 | 212,500 | 1,350,000 | - | + | |
| COGS | 1,687,500 | 1,950,000 | 1,762,500 | | | |
| Inventory | 1,187,500 | 412,500 | - | | | |
| Cash | 22,500 | 232,500 | 1,892,500 | + | ++ | |

| | | | | TREND | | |
|---|---|---|---|---|---|---|
| **LIQUIDITY ANALYSIS** | **2015** | **2016** | **2017** | 2015 | 2016 | |
| Current Ratio | 1.72857 | 3.03529 | 1.40185 | + | High Liquidity …but | OK |
| Quick Ratio | 0.03214 | 1.09412 | 1.40185 | + | cash tied up in inventory | OK |
| Debt / Equity | 72.92% | 25.53% | 151.26% | - | debt decreasing | Huge increase as inventory all in A/P |
| Debt / Assets | 42.17% | 20.33% | 60.20% | - | debt decreasing | |
| Asset Turnover | 1.468 | 2.213 | 1.031 | - | increasing -> efficient sales vs assets | Too much cash but temporary as A/P not paid |
| Inventory Turnover | 1.42 | 4.73 | #DIV/0! | + | Costs rising significantly! | inventory costs decreasing with BULK purchase |
| P/B = total assets / total SH Equity | 1.73 | 1.26 | 2.51 | | McPhee is worth less | McPhee is more valuable |

## Appendix II: Financial Statements and Forecasts

2015 Journal Ledger

| 2015 Journal | | | | |
|---|---|---|---|---|
| Debited Account | Credited Account | Debit | Credit | |
| PP&E | | 500,000 | | Initial purchase of equipment |
| | Cash | | 500,000 | |
| SG&A | | 50,000 | | One time fixed costs added to SG&A - website/logo design |
| | Cash | | 50,000 | |
| Inventory | | 1,200,000 | | Buy 200 barrels @ $6,000 (Mar 2015) |
| | Accounts Payable | | 1,200,000 | |
| Accounts Payable | | 1,200,000 | | Payment of A/P inventory (Mar 2015) |
| | Cash | | 1,200,000 | |
| Inventory | | 975,000 | | Buy 150 barrels @$6,500 (July 2015) |
| | Accounts Payable | | 975,000 | |
| Accounts Payable | | 975,000 | | Payment of A/P inventory (July 2015) |
| | Cash | | 975,000 | |
| Inventory | | 700,000 | | Buy 100 barrels @ $7,000 (Nov 2015) |
| | Accounts Payable | | 700,000 | |
| Cash | | 2,437,500 | | Sales: 150@$10,000 and 125@$7,500 |
| COGS | | 1,687,500 | | COGS: 200@$6,000 and 75@$6,500 |
| | Revenue | | 2,437,500 | |
| | Inventory | | 1,687,500 | |
| SG&A | | 440,000 | | Annual fixed costs |
| | Cash | | 440,000 | |
| Depreciation Expense | | 50,000 | | Straightline Dep'n over 10 |
| | Accumulated Depreciation | | 50,000 | years as equipment will wear |
| Total | | 10,215,000 | 10,215,000 | |

| 2015 Ledger | | | | |
|---|---|---|---|---|
| Account | Usual Balance | Total Debits | Total Credits | Change from Previous Year |
| Cash | Debit | 2,437,500 | 3,165,000 | (727,500) |
| Inventory | Debit | 2,875,000 | 1,687,500 | 1,187,500 |
| PP&E | Debit | 500,000 | - | 500,000 |
| Accounts Payable | Credit | 2,175,000 | 2,875,000 | 700,000 |
| Paid-In Capital (Common) | Credit | - | - | - |
| Paid-In Capital (Preferred) | Credit | - | - | - |
| Revenue | Credit | - | 2,437,500 | 2,437,500 |
| COGS | Debit | 1,687,500 | - | 1,687,500 |
| SG&A | Debit | 490,000 | - | 490,000 |
| Depreciation Expense | Debit | 50,000 | - | 50,000 |
| Accumulated Depreciation | Debit | - | 50,000 | (50,000) |
| Total | | 10,215,000 | 10,215,000 | 6,275,000 |

## Appendix II: Financial Statements and Forecasts

2015 Journal Ledger

**2015 NOTES:**

PP&E useful life assumed 10 years

Annual depreciation 50,000

| REVENUE | | | 25% Piercy discount | | |
|---|---|---|---|---|---|
| # barrels | Revenue | | Revenue | | Piercy savings |
| 125 | $ | 7,500 | 937,500 | Piercy sales | $312,500 |
| 150 | $ | 10,000 | 1,500,000 | Regualr sales | |
| 275 | | | 2,437,500 | | |

Inventory

| Inventory (barrels) | Produced | Sold | Ending Inv. | Cost/barrell | COGS |
|---|---|---|---|---|---|
| Mar-15 | 200 | 200 | 0 | $ 6,000 | $ 1,200,000.00 |
| Jul-15 | 150 | 75 | 75 | $ 6,500 | $ 487,500.00 |
| Nov-15 | 100 | 0 | 100 | $ 7,000 | $ - |
| Inventory | 450 | 275 | 175 | | $ 1,687,500.00 |

Inventory Production Schedule

| | | | | | | **Inventory** | Revenue | |
|---|---|---|---|---|---|---|---|---|
| Batch | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | Accounts Payable | A/P to Cash | |
| 1 | Mar-15 | 200 | $6,000 | $1,200,000 | $1,200,000 | $0 | Paid June 2015 | |
| 2 | Jul-15 | 150 | $6,500 | $975,000 | $975,000 | $0 | Paid Oct 2015 | |
| 3 | Nov-15 | 100 | $7,000 | $700,000 | 0 | $700,000 | to be paid in Feb 2016 | |
| | | 450 | | $2,875,000 | $2,175,000 | $700,000 | | |

## Appendix II: Financial Statements and Forecasts

2016 Journal Ledger

| 2016 Journal | | | | |
|---|---|---|---|---|
| Debited Account | Credited Account | Debit | Credit | |
| Accounts Payable | | 700,000 | | Payment of Nov 2015 inventory invoice |
| | Cash | | 700,000 | |
| SG&A | | 440,000 | | Annual fixed costs |
| | Cash | | 440,000 | |
| Depreciation Expense | | 50,000 | | Straightline Dep'n over 10 years |
| | Accumulated Depreciation | | 50,000 | |
| Inventory | | 562,500 | | Buy 75 barrels @ $7,500 (Mar 2016) |
| | Accounts Payable | | 562,500 | |
| Accounts Payable | | 562,500 | | Payment of A/P inventory (Mar 2016) |
| | Cash | | 562,500 | |
| Inventory | | 400,000 | | Buy 50 barrels @ $8,000 (July 2016) |
| | Accounts Payable | | 400,000 | |
| Accounts Payable | | 400,000 | | Payment of A/P inventory (July 2016) |
| | Cash | | 400,000 | |
| Inventory | | 212,500 | | Buy 25 barrels @ $8,500 (Nov 2016) |
| | Accounts Payable | | 212,500 | |
| Cash | | 2,312,500 | | Sales: 100@10,000 and 175@$7,500 |
| COGS | | 1,950,000 | | COGS: 75@$6.5k, 100@$7k. 75@$7.5 & 25@$8k |
| | Revenue | | 2,312,500 | |
| | Inventory | | 1,950,000 | |
| Total | | 7,590,000 | 7,590,000 | |

| 2016 Ledger | | | | |
|---|---|---|---|---|
| Account | Usual Balance | Total Debits | Total Credits | Change from Previous Yea |
| Cash | Debit | 2,312,500 | 2,102,500 | 210,000 |
| Inventory | Debit | 1,175,000 | 1,950,000 | (775,000) |
| PP&E | Debit | - | - | - |
| Accounts Payable | Credit | 1,662,500 | 1,175,000 | (487,500) |
| Paid-In Capital (Common) | Credit | - | - | - |
| Paid-In Capital (Preferred) | Credit | - | - | - |
| Revenue | Credit | - | 2,312,500 | 2,312,500 |
| COGS | Debit | 1,950,000 | - | 1,950,000 |
| SG&A | Debit | 440,000 | - | 440,000 |
| Depreciation Expense | Debit | 50,000 | - | 50,000 |
| Accumulated Depreciation | Debit | - | 50,000 | (50,000) |
| Total | | 7,590,000 | 7,590,000 | 3,650,000 |

**2016 NOTES:**

PP&E useful life assumed 10 years

Annual depreciatio 50,000

| REVENUE | | | 25% Piercy discount | | |
|---|---|---|---|---|---|
| # barrels | | Revenue | Revenue | | Piercy savings |
| | 175 | $7,500 | 1,312,500 | Piercy sales | $437,500 |
| | 100 | $10,000 | 1,000,000 | Regular sales | |
| | 275 | | 2,312,500 | | |

**2016 Inventory**

| Inventory (barrels) | Produced/Avail. | **Sold** | Ending Inventory | Cost/barrell | COGS |
|---|---|---|---|---|---|
| ~~Mar-15~~ | | | | ~~$6,000~~ | |
| Jul-15 | 75 | 75 | 0 | $ 6,500 | $ 487,500.00 |
| Nov-15 | 100 | 100 | 0 | $ 7,000 | $ 700,000.00 |
| Mar-16 | 75 | 75 | 0 | $ 7,500 | $ 562,500.00 |
| Jul-16 | 50 | 25 | 25 | $ 8,000 | $ 200,000.00 |
| Nov-16 | 25 | 0 | 25 | $ 8,500 | $ - |
| Inventory | 325 | 275 | 50 | | $ 1,950,000.00 |

Inventory Production Schedule

| **Batch** | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | Accounts Payable | A/P to Cash |
|---|---|---|---|---|---|---|---|
| **1** | Mar-15 | 200 | $6,000 | $1,200,000 | $1,200,000 | $0 | Paid June 2015 |
| **2** | Jul-15 | 150 | $6,500 | $975,000 | $975,000 | $0 | Paid Oct 2015 |
| **3** | Nov-15 | 100 | $7,000 | $700,000 | 0 | $700,000 | to be paid in Feb 2016 |
| | | 450 | | $2,875,000 | $2,175,000 | $700,000 | |

| **Batch** | | # Barrels | Cost per Barrel | Total Cost | Paid by cash | A/P | A/P to Cash |
|---|---|---|---|---|---|---|---|
| **4** | Mar-16 | 75 | $7,500 | $562,500 | $562,500 | $0 | Paid June 2016 |
| **5** | Jul-16 | 50 | $8,000 | $400,000 | $400,000 | $0 | Paid Oct 2016 |
| **6** | Nov-16 | 25 | $8,500 | $212,500 | 0 | $212,500 | to be paid in Feb 2017 |
| | | 150 | | $1,175,000 | $962,500 | $212,500 | |

**Appendix II: Financial Statements and Forecasts** 2017 Forecasts (Recommendations Scenarios)

## 2017 Journal & Ledger (Under Recommendation 1)

| 2017 Journal (RECOMMEDANTION) | | | | |
|---|---|---|---|---|
| Debited Account | Credited Account | Debit | Credit | |
| Accounts Payable | | 212,500 | | Payment of Nov 2016 inventory invoice |
| | Cash | | 212,500 | |
| SG&A | | 440,000 | | Annual fixed costs |
| | Cash | | 440,000 | |
| Depreciation Expense | | 50,000 | | Straightline Dep'n over 10 years |
| | Accumulated Depreciation | | 50,000 | |
| Inventory | | 1,350,000 | | Buy 225 barrels @ $6,000 (Nov 176) |
| | Accounts Payable | | 1,350,000 | |
| Cash | | 1,000,000 | | Regular sales of 100 barrels @$10,000 |
| COGS | | 712,500 | - | 50@$8250 (old 2016 Inv) and 50@$6000 |
| | Revenue | | 1,000,000 | |
| | Inventory | | 712,500 | |
| Cash | | 1,312,500 | | Piercy Sales of 175 barrels @ $7500 |
| COGS | | 1,050,000 | | 175@$6000 |
| | Revenue | | 1,312,500 | |
| | Inventory | | 1,050,000 | |
| | | | | |
| | | | | |
| Total | | 6,127,500 | 6,127,500 | |

| 2017 Ledger (RECOMMENDATION) | | | | |
|---|---|---|---|---|
| Account | Usual Balance | Total Debits | Total Credits | Change from Previous Yea |
| Cash | Debit | 2,312,500 | 652,500 | 1,660,000 |
| Inventory | Debit | 1,350,000 | 1,762,500 | (412,500) |
| PP&E | Debit | - | - | - |
| Accounts Payable | Credit | 212,500 | 1,350,000 | 1,137,500 |
| Paid-In Capital (Common | Credit | - | - | - |
| Paid-In Capital (Preferred | Credit | - | - | - |
| Revenue | Credit | - | 2,312,500 | 2,312,500 |
| COGS | Debit | 1,762,500 | - | 1,762,500 |
| SG&A | Debit | 440,000 | - | 440,000 |
| Depreciation Expense | Debit | 50,000 | - | 50,000 |
| Accumulated Depreciatic | Debit | - | 50,000 | (50,000) |
| | | - | - | - |
| Total | | 6,127,500 | 6,127,500 | 6,900,000 |

## RECOMMENDATION 1: Buy large batch of Inventory at year end (volume discount)

**2017 Forecast of Barrel Purchases and Sales**

| Batch | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | A/P |
|---|---|---|---|---|---|---|
| **7** | Mar-17 | 0 | $0 | $0 | $0 | $0 |
| **8** | Jul-17 | 0 | $0 | $0 | $0 | $0 |
| **9** | Nov-17 | 225 | $6,000 | $1,350,000 | 0 | $1,350,000 |
| | barrels bought | 225 | | $1,350,000 | $0 | $1,350,000 |

**2017 RECOMMENDATION 1: Buy large batch of Inventory at year end (volume discount)**

| | Inventory (barrels) | Produced/Available | Sold | Ending Inventory | Cost/barrel | COGS | |
|---|---|---|---|---|---|---|---|
| starting inventory | Nov-16 | 50 | 50 | | $ 8,250 | $ 412,500.00 | |
| inventory (barrel) | Mar-17 | 0 | 50 | 0 | $ 6,000 | $ 300,000.00 | |
| purchases to meet | Jul-17 | 0 | 175 | -175 | $ 6,000 | $ 1,050,000.00 | Total Cost (COGS+ |
| expected sales | Nov-17 | 225 | 0 | 225 | $ - | $ - | SSGA+Depn) |
| | COGS (Inventory) | 275 | 275 | 50 | | $ 1,762,500 | $ 2,252,500 |

| | **REVENUE** | | 25% Piercy discount | | | |
|---|---|---|---|---|---|---|
| | # barrels | Sale Price | Revenue | | 2017 Gross profit | 2017 Net Profit (loss) |
| Sales to Piercy | 175 | $7,500 | 1,312,500 | Piercy sales | $ 550,000 | $ 60,000 |
| Expected reg. sales | 100 | $10,000 | 1,000,000 | Regular sales | | |
| total barrels sold | 275 | | 2,312,500 | | | |

| Barrel check | Plug Forecast sales | # barrels |
|---|---|---|
| | Beginning inventory | 50 |
| | less: Sold to Piercy | 175 |
| | less: Sold to Regula | 100 |
| | Inventory bought | 225 |
| | Ending Inventory | 0 |

Assume all inventory bought up at year end

These alter

Summary: Making one large volume purchase of barrels at year end lowers the COGS. This in turn increases the net income and overall profitability. In addition, the investory is invoiced in 90 days as A/P allowing McPhee to hold cash unitl Feb 2018. McPhee ends up with high net operating cash flow.

## RECOMMENDATION 2: Buy large batch of Inventory and pass on price increase to customers

**2017 Forecast of Barrel Purchases and Sales**

| Batch | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | A/P |
|---|---|---|---|---|---|---|
| **7** | Mar-17 | 0 | $0 | $0 | $0 | $0 |
| **8** | Jul-17 | 0 | $0 | $0 | $0 | $0 |
| **9** | Nov-17 | 225 | $6,500 | $1,462,500 | 0 | $1,462,500 |
| | barrels bought | 225 | | $1,462,500 | $0 | $1,462,500 |

**2017 RECOMMENDATION 2: Buy large batch of Inventory and pass on price increase to customers**

| | Inventory (barrels) | Produced/Available | Sold | Ending Inventory | Cost/barrel | COGS | |
|---|---|---|---|---|---|---|---|
| starting inventory | Nov-16 | 50 | 50 | | $ 8,250 | $ 412,500.00 | |
| inventory (barrel) purchases to meet expected sales | Mar-17 | 0 | 50 | 0 | $ 6,000 | $ 300,000.00 | |
| | Jul-17 | 0 | 175 | -175 | $ 6,000 | $ 1,050,000.00 | Total Cost (COGS+ SSGA+Depn) |
| | Nov-17 | 225 | 0 | 225 | $ - | $ - | |
| | COGS (Inventory) | 275 | 275 | 50 | | $ 1,762,500 | $ 2,252,500 |

| | **REVENUE** | | 25% Piercy discount | | | |
|---|---|---|---|---|---|---|
| | # barrels | Sale Price | Revenue | | 2017 Gross profit | 2017 Net Profit (loss) |
| Sales to Piercy | 175 | $7,875 | 1,378,125 | Piercy sales | $ 665,625 | $ 175,625 |
| Expected reg. sales | 100 | $10,500 | 1,050,000 | Regular sales | | |
| total barrels sold | 275 | | 2,428,125 | | profit from piercy | $1,375 |

| Barrel check | Plug Forecast sales | # barrels |
|---|---|---|
| | Beginning inventory | 50 |
| | less: Sold to Piercy | 175 |
| | less: Sold to Regula | 100 |
| | Inventory bought | 225 |
| | Ending Inventory | 0 |

These alter revenue and sales

Summary: Using the same modelinig as Recommendation 1, if suppliers charge price increases (ie. $500) per barrel, McPhee would pass on this inrease by raising sale prices by an equal amount (ie.$500).

**Appendix II: Financial Statements and Forecasts** 2017 Forecasts (Recommendations Scenarios)

**2017 NOTES:**

PP&E useful life assumed 10 years | Annual deprecia | 50,000

enter discount

**REVENUE** 25% Piercy discount

| # barrels | Revenue | Revenue | | Piercy savings |
|---|---|---|---|---|
| 175 | $7,500 | 1,312,500 | Piercy sales | $437,500 |
| 100 | $10,000 | 1,000,000 | Regular sales | |
| 275 | | 2,312,500 | | |

**2016 Inventory**

**Inventory**

| Inventory (barrels) | roduced/Availab | **Sold** | Ending Inventory | Cost/barrell | COGS |
|---|---|---|---|---|---|
| ~~Mar-15~~ | | | | ~~$6,000~~ | |
| Jul-15 | 75 | 75 | 0 | $ 6,500 | $ 487,500.00 |
| Nov-15 | 100 | 100 | 0 | $ 7,000 | $ 700,000.00 |
| Mar-16 | 75 | 75 | 0 | $ 7,500 | $ 562,500.00 |
| Jul-16 | 50 | 25 | 25 | $ 8,000 | $ 200,000.00 |
| Nov-16 | 25 | 0 | 25 | $ 8,500 | $ - |
| Inventory | 325 | **275** | 50 | | $ 1,950,000.00 |

Inventory Production Schedule

| **Batch** | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | Accounts Payable | A/P to Cash |
|---|---|---|---|---|---|---|---|
| **1** | Mar-15 | 200 | $6,000 | $1,200,000 | $1,200,000 | $0 | Paid June 2015 |
| **2** | Jul-15 | 150 | $6,500 | $975,000 | $975,000 | $0 | Paid Oct 2015 |
| **3** | Nov-15 | 100 | $7,000 | $700,000 | 0 | $700,000 | to be paid in Feb 2016 |
| | barrels purchased | 450 | | $2,875,000 | $2,175,000 | $700,000 | |

| **Batch** | | # Barrels | Cost per Barrel | Total Cost | Paid by cash | A/P | A/P to Cash |
|---|---|---|---|---|---|---|---|
| **4** | Mar-16 | 75 | $7,500 | $562,500 | $562,500 | $0 | Paid June 2016 |
| **5** | Jul-16 | 50 | $8,000 | $400,000 | $400,000 | $0 | Paid Oct 2016 |
| **6** | Nov-16 | 25 | $8,500 | $212,500 | 0 | $212,500 | to be paid in Feb 2017 |
| | barrels purchased | 150 | | $1,175,000 | $962,500 | $212,500 | |

## Scenario A: Sale of only last years remaining inventory (50 barrels)

**2017 Forecast of Barrel Purchases and Sales**

| Batch | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | A/P |
|---|---|---|---|---|---|---|
| **7** | Mar-17 | 0 | $9,000 | $0 | $0 | $0 |
| **8** | Jul-17 | 0 | $9,500 | $0 | $0 | $0 |
| **9** | Nov-17 | 0 | $10,000 | $0 | 0 | $0 |
| | barrels bought | 0 | | $0 | $0 | $0 |

**Scenario A: Sale of only last years remaining inventory (50 barrels)**

| | Inventory (barrels) | Produced/Available | Sold | Ending Inventor | Cost/barrel | COGS | |
|---|---|---|---|---|---|---|---|
| starting inventory | Nov-16 | 50 | | | $ 8,250 | $ - | |
| inventory (barrel) | Mar-17 | 0 | 50 | 0 | $ 9,000 | $ 412,500.00 | |
| purchases to meet | Jul-17 | 0 | 0 | 0 | $ 9,500 | $ - | Total Cost (COGS+ |
| expected sales | Nov-17 | 0 | 0 | 0 | $ 10,000 | $ - | SSGA+Depn) |
| | COGS (Inventory) | 50 | 50 | 0 | | $ 412,500 | $ 902,500 |

**REVENUE**

25% Piercy discount

| | # barrels | Revenue | | Revenue | | 2017 Gross profit | 2017 Net Profit (loss) |
|---|---|---|---|---|---|---|---|
| Sales to Piercy | 0 | | $7,500 | - | Piercy sales | $ 87,500 | $ (402,500) |
| Expected reg. sales | 50 | | $10,000 | 500,000 | Regular sales | | |
| total barrels sold | 50 | | | 500,000 | | | |

| Barrel check | Plug Forecast sales | # barrels |
|---|---|---|
| | Beginning inventory | 50 |
| | less: Sold to Piercy | 0 |
| | less: Sold to Regular | 50 |
| | Inventory bought | 0 |
| | Ending Inventory | 0 |

Assume all inventory bought up at year end

## Scenario B: Calculating break even barrels sold to regular customers

| | Inventory (barrels) | Produced/Available | Sold | | | | |
|---|---|---|---|---|---|---|---|
| **Batch** | Date | # Barrels | Cost per Barrel | Total Cost | Paid by cash | Sale Price/barrel | Profit/barrel |
| **7** | Mar-17 | 211 | $6,000 | $1,266,000 | $1,266,000 | $10,000 | $4,000 |
| **8** | Jul-17 | 0 | $7,500 | $0 | $0 | $10,000 | $2,500 |
| **9** | Nov-17 | 0 | $7,500 | $0 | 0 | $10,000 | $2,500 |
| | barrels bought | 211 | | $1,266,000 | $1,266,000 | | |

**Scenario B: Calculating break even barrels sold to regular customers**

| | Inventory (barrels) | Produced/Available | Sold | Ending Inventory | Cost/barrel | COGS | |
|---|---|---|---|---|---|---|---|
| starting inventory | Nov-16 | 50 | | | $ 8,250 | $ - | |
| inventory (barrel) | Mar-17 | 200 | 211 | 39 | $ 6,000 | $ 1,612,500.00 | |
| purchases to meet | Jul-17 | 0 | 0 | 0 | $ 7,500 | $ - | Total Cost (COGS+ |
| expected sales | Nov-17 | 0 | 0 | 0 | $ 7,500 | $ - | SSGA+Depn) |
| | COGS (Inventory) | 200 | 211 | 39 | | $ 1,612,500 | $ 2,102,500 |

| | **REVENUE** | | 25% Piercy discount | | | |
|---|---|---|---|---|---|---|
| | # barrels | Revenue | Revenue | | 2017 Gross profit | 017 Net Profit (loss) |
| Sales to Piercy | 0 | $7,500 | - | Piercy sales | $ 497,500 | $ 7,500 |
| Expected reg. sales | 211 | $10,000 | 2,110,000 | Regular sales | | |
| total barrels sold | 211 | | 2,110,000 | | | |

| Barrel check | Plug Forecast sales | # barrels |
|---|---|---|
| | Beginning inventory | 50 |
| | less: Sold to Piercy | 0 |
| | less: Sold to Regular | 211 |
| | Inventory bought | 200 |
| | Ending Inventory | 39 |

Assume all inventory bought up at year end

These alter revenue &sales

Summary: BREAKEVEN requires 212 barrels purchased by the regualr sales with no discount sales to Piercy (assumes sale price $10,000 and all inventory bought in Batch #7 cheapest) --> not feasible as actual customer demand will be spread out over year; increasing COGS as smaller batche swillbe bought and made

## 5. Appendix III: Notes on 2017 Forecasted Financial Statements

After reviewing the results of 2016 and the net loss, we expect Kingsley has concerns on profitability which she brings up with Piercy Distillers (preferred shareholder). To ensure that McPhee can continue operations in the future, we assume Kingsley convinces Piercy that the option of 25% off discounted barrels should only be bought by Piercy near year-end 2017 on inventory barrels that remain and have not been sold to regular customers. This allows McPhee to maximize revenue from sales to regular customers while also recouping some inventory costs paid during the year if any were to be sold to Piercy.

**Assumptions for 2017:**

1. **SG&A** remains the same as previous years at $440,000.

2. **Depreciation expense** remains the same as previous years at $50,000 per year.

3. **Beginning inventory** left over from 2016 = 50 barrels at a cost of $8,500 each

4. **Inventory:** Although regular sales for McPhee has decreased from 150 barrels in 2015 to 100 barrels in 2016, we expect regular sales will remain at 100 barrels for 2017. Although competition in the niche high end whisky marketplace may have accounted for the drop in regular McPhee's sales in 2016, we are making an assumption that current advertising, word-of-mouth referrals from current customers and Piercy's reputation and marketing back in Scotland could also increase sales. Thus, we are making an assumption that the net change is 0 barrels sales from 2016 to 2017 for regular customers, which excludes Piercy purchases.

5. **Sale price per barrel**: To model the base case scenario, we will also assume McPhee's sale price of $10,000 remains.

6. **COGS:** The largest expense is the purchase of inventory (barrels from cooperages), which have been increasing every quarter. Since McPhee started in 2015, the cost of barrels have increased from $6000 to $8500 by the end of 2016 for roughly a 20% increase each year (or 42% increase over 2 years) in COGS.

7. If regular customer demand ends up being more than McPhee's supply (inventory), McPhee's reputation and differentiated product could help drive up future prices due to limited supply and being a premium product. Any barrels cancelled by buyers in the future could be sold at higher prices.

8. If we assume that the market price to buy inventory barrels continues to increase at the historical rate of $500 per quarter, the cost per barrel at Nov. 2017 (batch 9) would be estimated to be $10,000 per barrel, which would be equivalent to the current sale price.

**Potential Scenarios for 2017 (see Appendix II for examples)**

**Scenario A: Analysis of selling only last year's remaining barrels with no new inventory bought; with sales price at current $10,000 price:**

- If only last year's remaining barrels are sold and no new inventory is purchased in 2017, 2017 gross profit would be $87,500 but McPhee would generate a net loss of $402,500, which is similar to annual fixed operating costs.

**Scenario B: Calculating break even barrels sold to regular customers, no discount sales to Piercy, and sale price per barrel $10,000:**

- Under Scenario B, the break-even sales to regular customers assuming no discount sales to Piercy is 212 barrels. The calculation of COGS assumes that all inventory is bought cheapest at the beginning of the year ($6,000 per barrel in Batch # 7) based on the volume discount at $200/barrel. This is not actually practical as customer purchases for a whole year are not likely to all occur in one quarter and if McPhee bought 212 barrels, Kingsley would need to pay $1,625,000 cash within 90 days while there could be uncertainty that sales for the remainder of the year would cover all these purchases. Therefore, it is likely that McPhee only buys barrels (inventory) as customers purchase barrels, which will drive up COGS. McPhee should group purchase orders in larger quantities to get a discount on barrel prices or else COGS will reduce profitability.

- With inventory costs rising and sale prices flat, McPhee's financial position would get worse each year - net loss will keep getting worse. McPhee needs to lower costs and/or increase revenue per barrel.

**Recommendation 2: Increasing the sales price in proportion with the increase in barrel costs (ie. $500) based on changing operational strategy using Recommendation 1:**

- Under Recommendation 2, McPhee would just take customer orders and buy new sherry oak whisky barrels (forecast of 275 sales spread out the year) as need for production. If McPhee can pass on the future price increases of barrel costs (ie. $500) and raise its sales price by the same dollar amount to customers, McPhee can be profitable. Net Income would increase to $175,625 as compared to our $60,000 net income from Recommendation 1 of one large batch purchase at year end. Assume cooperages have decided to raise barrel prices by $500. Using the production schedule of 200 barrels with an average production cost at $6000 per barrel, the new average production cost per barrel would increase to $6500. Recommendation 2 shows that the average production cost per barrel ($6500) results in a higher sales price ($10,500) and now ensures that 25% discounted sales to Piercy ($7875) are always profitable. As such, the 25% discount offered to Piercy does not need to be reviewed at this time as McPhee nets $1375 from each barrel sold to Piercy (excluding fixed costs).

## 6. Appendix IV: Detailed Explanation on Recommendation 1 & 2

If McPhee continues to operate in 2017, we would make the following recommendations:

1. Buy barrels from cooperages and order materials and supplies in one large order to obtain the lowest price possible from volume discounts which would ultimately lower COGS.

2. Sell more barrels to the public to maximize revenue and limit the volume of barrels sold to Piercy.

3. Convert Piercy's preferred stock into a new class of preferred shares with a lower barrel discount and limit volume per year as inventory cost/barrel exceeds Piercy's discounted revenue/barrel starting with Batch 5 (July 2016). All barrels purchased by Piercy in July 2016 and later are eating into McPhee's profits. Kingsley should change the discount by charging actual barrel costs plus a premium (e.g. 5-10% over cost of barrel) to cover some overhead costs, or increase the overall sales price and then offer a Piercy discount.

4. Increase the sale price per barrel in line with rising inventory barrel costs: One main issue is that the sale price has remained the same the past 2 years while inventory costs have risen. In addition, the 25% discount available to Piercy has lowered McPhee's profitability since the price paid by Piercy for a barrel was the same as buying raw barrels in Batch # 4 (March 2016). Any purchase by Piercy after Batch #5 results in Piercy "profiting" from McPhee as it cost more to make than for Piercy to buy. In this scenario, it would be in Piercy's best interest to buy as many barrels as possible. To mitigate these two issues, we recommend raising the sale price per barrel by passing on this cost to customers. See "2017 Recommendation 2" in Appendix II where McPhee's sale price of barrels are increased dollar for dollar in line with the cost increase (ie. $500). In this Scenario, annual sales of 275 barrels would generate a Net Profit of $163,125.

5. Inventory (COGS): this is the main expense that is lowering profits. The cost per barrel has been increasing $500 every 4 months when bought from the Cooperages. Based on the historical price increases, barrels prices will likely equal McPhee's sale price at the Nov. 2017 (Batch # 9) purchase order. There are three ways to lower barrel inventory costs (COGS):
    i. Offer customers the option to buy McPhee's used barrels – depending on the cost of used barrels (i.e. half price of barrels direct from Europe), McPhee could offer customers a discount off the sale price.
    ii. Source North American barrels at a cheaper price.
    iii. Allow customers to supply their own barrels - this option may be the most feasible since it may be in the customer's best interest to either find the cheapest cooperage to buy barrels or find an ultra premium barrel from a specialty cooperage. McPhee can charge a fee for the full production process (mashing, fermentation, distillation, and maturation). Customers who buy their own barrels will not have the option of a refund since their own barrels are being used in the production process.

6. Extra revenue from refunds and sales of "aged" barrels: It has been assumed that no sales are returned. The case mentioned that 10% of Piercy's buyers requested refunds after the first year. If McPhee allows refunds or transfers of barrel ownership, McPhee could charge a fee (e.g. 10% of the purchase price) to generate extra revenue. Barrels that have aged and been "returned" could be sold to new buyers at a slight premium to account for the "time value of money" of the whisky aging process, as the new buyer won't need to wait as long for the barrel to mature.