

# Technical Bulletin

*Colorado Wood Utilization and Marketing Assistance Center*

November 2003

*Robert E. Pajala is the past program coordinator with the Minnesota Department of Natural Resources, Division of Forestry. This publication was prepared in May 1987 in partial fulfillment of requirements for his Master's Degree in Management and Administration from Metropolitan State University. At that time Robert Pajala was a specialist in the forest products utilization and marketing unit.*

*Special thanks to Keith Jacobsen and the Minnesota Department of Natural Resources Division of Forestry for allowing us to reproduce this guide.*

**Colorado State**  
University

*Knowledge to Go Places*



## A Simple Profit Planning and Cost Management System for Small Sawmills

By Robert E. Pajala

### Contents

#### Introduction

- What Is a Profit Planning and Cost Management System?
- Why Have a Formal Profit Planning and Cost Management System?
- How to Use This Booklet

#### The Profit Planning and Cost Management System

- How to Establish Cost and Revenue Standards
- Using Standard Costs and Revenues to Make Production Plans
- How to Monitor Daily Costs
- Summary of the Planning and Monitoring Process
- Controlling Cash Flow and Staying Out of "Cash Trouble"
- Using Cost Information to Make "Smart" Decisions
- How Much Profit Is Enough?

### Introduction

This booklet is a guide to establishing a simple profit planning and cost management system for small sawmills. The booklet can be used to help you, the sawmill manager, custom design and implement a profit planning and cost management system for your sawmill business.

### What is a Profit Planning and Cost Management System?

This profit planning and cost management system is an organized method of collecting and analyzing mill operating information for the purpose of providing you, the mill manager, with the information you need to effectively manage your sawmill business. This system is not a replacement for your ongoing financial accounting or bookkeeping system, but rather a simple procedure by which you can use information you already collect to more effectively manage your business.

There is no single, correct profit planning or cost management system for sawmills. The best system is the simplest system which will produce the information you need to better manage your business.

### Why Have a Formal Profit Planning and Cost Management System?

Many sawmills find out how successful they have been only after their end-of-the-year financial statements have been prepared, or from their banker, when they run out of money.

Simple, systematic profit planning and cost management will provide a picture of operating results daily. Bad news will be known almost immediately, while there is time to correct the cause. It's the bad news learned too late that creates the real problems.

### How To Use This Booklet

The rest of this booklet is a step-by-step description of a simple sawmill profit planning and cost management system. The system uses information regularly collected for other purposes.

## The Profit Planning and Cost Management System

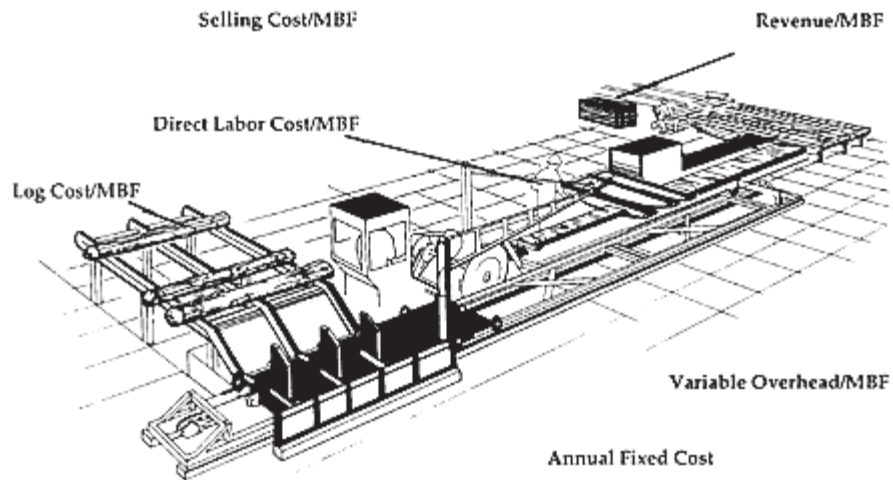
This profit planning and cost management system is based on the development of standards for the key costs and revenues in the business and the regular comparison of actual costs and revenues to the standards. A variance from the standard in a key management area will indicate an operating variance within that key management area. The variance will direct mill management attention to that area.

Figure 1 illustrates the key costs and revenues of a small sawmill business for which standards must be established.

Notice that this profit planning and cost management system is for a sawmill operation only. If you have other businesses associated with your sawmill business (logging operation, pallet part shop, kiln, etc.), you should monitor those businesses separately. It is impossible to determine which business is efficient or successful if a group of separate business are monitored as a single business.

**Figure 1.** The Key Costs and Revenues in the Small Business

*Adapted from a drawing courtesy of Corley Manufacturing*



## How to Establish Costs and Revenue Standards

Cost and revenue standards are those costs and revenues you should expect if your mill is operating at currently attainable efficiency. The following method can be used to quickly establish your initial cost and revenue standards. You can refine your cost and revenue standards when you begin monitoring your mill regularly.

### Standard Revenue

A standard revenue is a weighted average for the sales value per MBF (thousand board feet) of lumber you produce. A separate standard should be developed for each species you

saw. This standard should include the value of all by-products (slabs, chips, sawdust, etc.) you produce per MBF. An initial standard revenue for a species can be quickly estimated by dividing the total sales value of all of the products produced from that species for a period (few days, month, year, etc.) by the total volume (in MBF) of that species produced for the same period. Form 1 shows how A&Z Lumber Company established its initial standard revenue for red oak.

FORM 1

### Revenue Calculation Form

Date MAY 5, 1987 Mill A & Z LUMBER CO.  
 Species RED OAK Production Period MARCH-APRIL 1987

Product	Amount Produced	Selling Price	Total Value
FAS 4/4	16 MBF	\$725 / MBF	\$ 11,600
SEL 4/4	15 MBF	705 / MBF	10,575
1C 4/4	18 MBF	510 / MBF	9,180
2C 4/4	18 MBF	230 / MBF	4,140
LOW GRADE	20 MBF	130 / MBF	2,600
CANTS	62 MBF	150 / MBF	9,300
TIES	8 MBF	230 / MBF	1,840
SLABS	157 BUNDLES	12 / BDL	1,884
SANDUST	150 PICKUP BEDS	3 / LOAD	450

Total MBF 157 MBF Total Sales Value \$51,569

$\frac{\text{(total sales value)} \$51,569}{\text{(total MBF Produced)} 157 \text{ MBF}} = \$ 328.46 / \text{MBF}$

#### INSTRUCTIONS:

1. List all of the products produced from a single species for a given period (day, month, year, ect.).
2. List the volume of each product produced for the period.
3. List the selling price for each product.
4. Calculate total sales value for each product. Add total value column.
5. Divide total sales value for all products by total MBF produced.

Form 1. Revenue Calculation Form

**Standard Selling Costs**

Selling costs are those costs incurred to actually sell the lumber and byproducts after they are produced. Selling costs typically include grading fees, broker fees, discounts, advertising, trucking, etc. Use your past records to determine average selling costs for each species sawed.

Form 2 is an illustration of how A&Z Lumber Company established its initial selling cost standards for red oak. Standards should be set for each species sawed.

FORM 2

**Selling Cost Calculation Form**

Date MAY 1, 1987 Mill A & Z LUMBER CO.  
 Species RED OAK Production Period \_\_\_\_\_

COST CATEGORY	CALCULATION	COST/MBF
---------------	-------------	----------

Grading:	(.520 / MBF FOR GRADER & LABOR) (43% OF LUMBER GRADED) = NOTE: ONLY 20¢ STR IS GRADED	\$ 8.60
----------	---	---------

Broker Fees:	ALL LUMBER BROKERED AT 5% (.05)(\$313.60 / MBF AVERAGE LUMBER VALUE) =	\$15.68
--------------	---	---------

Discounts:	2-10 / n 30, DISCOUNTS ON ALL SALES (.02)( \$328.46) =	\$6.57
------------	---	--------

Delivery Costs: NONE

Other: NONE

Total Selling Cost Per MBF \$30.85

Form 2. Selling Cost Calculation Form

### Standard Log Costs

An initial standard for the cost of logs per thousand board feet of lumber can be calculated by the following formula:

$$\frac{\text{MBF Logs Sawed} \times (\text{Cost of Logs Per MBF})}{\text{MBF Lumber Produced From Those Logs}} = \text{Cost of Logs Per MBF Lumber}$$

Using past records, do this for each species sawed. Form 3 illustrates how A&Z Lumber Company calculated initial standard log cost per MBF lumber sawed for red oak.

FORM 3

### Log Cost Calculation Form

DATE MAY 1, 1987 MILL A&Z LUMBER CO.  
SPECIES RED OAK PRODUCTION PERIOD MARCH - APRIL 1987

Determine A, B or C and D for the Period.

- A. MBF logs sawed: 141 MBF LOG SCALE  
B. Cost of logs/MBF log scale: \$ 190 / MBF  
C. Total Cost of logs for the Period: \$ 26,790  
D. MBF lumber produced for the period: 157 MBF

Calculate Cost of Logs per MBF of lumber as follows:

$$\frac{(A \ 141 \text{ MBF}) (B \ \$190 / \text{MBF})}{(D \ 157 \text{ MBF})} = \$ \underline{170.64} / \text{MBF}$$

OR

$$\frac{(C \ \$26,790)}{(D \ 157 \text{ MBF})} = \$ \underline{170.64} / \text{MBF}$$

Form 3. Log Cost Calculation Form

**Standard Direct Labor Costs**

Initial direct labor cost standards can be calculated by dividing your total cost for direct labor for a period (day, few days, month, year, etc.) by the volume (in MBF) sawed for that same period. Establish standard direct labor costs for each species sawed. Form 4 illustrates how A&Z Lumber Company calculated initial standard direct labor cost per MBF for red

oak. Note that direct labor is only the labor directly associated with producing the lumber. The manager's salary, office help and salaries of maintenance people will be included later.

FORM 4

**Direct Labor Cost Calculation Form**

DATE MAY 1, 1987 MILL A&Z LUMBER CO.  
 SPECIES RED OAK PRODUCTION PERIOD MARCH-APRIL 1987

PER HOUR

Position	Wage	FICA	Unemployment Insurance	Workmans Comp. Ins.	Other Fringe	Total
SAWYER	8.00	.57	.38	2.24	-	11.19
EDGERMAN	5.00	.35	.24	1.40		6.99
LABORER	4.50	.33	.20	1.26		6.29
TOTAL	17.50	1.25	.82	4.90		24.47

(labor cost/hr: \$24.47 ) (paid hrs/period 280 )  
 \_\_\_\_\_ = \$ 43.64 /MBF  
 (MBF lumber produced during period: 157 MBF)

Form 4. Direct Labor Cost Calculation Form

**Standard Variable Overhead Costs**

Variable overhead is the sum of all of the costs, other than logs and direct labor, which are generated by the actual operation of the mill. Variable overhead costs typically include maintenance, repairs, mill supplies, fuel and electricity. Calculate an average daily cost for these items and divide that by an average daily volume of lumber produced. Form 5 illustrates how A&Z Lumber Company calculated an initial variable overhead rate per MBF.

You have now calculated initial standards for all of your revenues and all of your variable costs. Variable costs are those costs which vary directly with the amount of lumber produced. You must now calculate your annual fixed costs. These are the costs you must bear just to own the capacity to be in the sawmill business. They are fixed in that they do not change as the volume of lumber changes.

FORM 5

**Standard Variable Overhead Cost Calculation Form**

COST CATEGORY	AVERAGE DAILY COST
Repairs:	
MILL (\$ 720 / LAST QUARTER)	12.00
PICKUP (\$ 200 / YR.)	.91
FORKLIFT (\$ 400 / YR.)	1.82
Mill Supplies:	
TEETH (1 CHG / WEEK @ .655 / CHG)	11.00
DISPOSABLE TOOLS (\$ 50 / YR.)	.23
CHAINSAW & SUPPLIES (\$ 550 / YR.)	2.50
GREASE, OIL, ECT. (\$ 1000 / YR.)	4.55
Fuel:	
PICKUP (\$ 20 / WEEK)	4.00
FORKLIFT (\$ 10 GAL. / DAY @ .99 / GAL.)	9.90
MILL POWER PLANT (25 GAL. / DAY @ .99 / GAL.)	22.50
Electricity:	
\$ 10 / MONTH	.50
Other:	
(NOTE: BASED ON THE AVG. 220 WORKING DAYS PER YEAR, WHICH A&Z LUMBER CO. OPERATES)	
(Variable overhead/day: \$ 69.91)	Total: \$ 69.91 / Day
(Average MBF produced per day: 4.5)	= \$ 15.54 / MBF

**Form 5.** Standard Variable Overhead Cost Calculation Form

**Annual Fixed Costs**

Fixed costs are those costs which do not vary with the amount of production. Sawmill fixed costs typically include insurance, licenses, leases, property taxes, etc. To determine if a cost is a fixed cost or a variable cost, ask yourself if you will still have to pay the cost if you shut your mill down for a few days or a

month. If the answer is yes, the cost is a fixed cost. If the answer is no, the cost is a variable cost. Calculate your total annual fixed costs for the year as A&Z Lumber Company has done on Form 6.

**Form 6.  
Annual Fixed Cost Calculation Form**

DATE	<u>MAY 1, 1986</u>	MILL	<u>A &amp; Z LUMBER CO.</u>
YEAR FOR WHICH COSTS ARE BEING ESTIMATED <u>1986</u>			
COST CATEGORY	TOTAL ANNUAL COST		
Insurance:	<u>PICKUP</u>	<u>\$ 300</u>	
	<u>LIABILITY &amp; RISK</u>	<u>2,650</u>	
Licenses:	<u>PICKUP</u>	<u>37</u>	
Leases:	<u>LAND</u>	<u>600</u>	
Professional fees			
Accounting:		<u>90</u>	
Legal:		<u>170</u>	
Other:			
Interest:		<u>8,400</u>	
Fixed Salaries:			
	<u>BOOKKEEPER (PART TIME)</u>	<u>3,200</u>	
	<u>MILL OWNER / MANAGER</u>	<u>27,500</u>	
Office:			
	<u>TELEPHONE &amp; SUPPLIES</u>	<u>1,000</u>	
	<u>HARDWOOD MARKET REPORT</u>	<u>125</u>	
Other:		<u>2,500</u>	
Other:			
	Total:	<u>\$ 46,572</u>	

**Form 6.** Annual Fixed Cost Calculation Form

## Using Standard Costs and Revenues to Make Production Plans

You have now calculated initial cost and revenue standards for your entire sawmill operation. You can now use this information to draft an annual production plan which will tell you how much profit you can expect to make on the volumes and species you plan to saw. An initial annual production plan can be quickly drafted using Form 7.

Follow the instructions on the bottom of the form. Using this procedure, you can easily see the adjustments you have to make in your production plans to achieve a specific desired profit. Notice that Form 7 contains the annual production plans for A&Z Lumber Company.

### Form 7. Annual Production and Profit Planning Worksheet

DATE MAY 1, 1987 PLAN FOR THE PERIOD OF YEAR OF 87

SPECIES SAWED. . . . .	RED OAK	ELM	CUSTOM SANDING	Total
1. MBF lumber sawed during planning period. . . . .	800	200	200	1200
2. Standard revenue/MBF . . . . .	328	270	95	
3. Less: Standard selling cost/MBF . . . . .	31	30	0	
4. Net revenue/MBF. . . . .	297	240	95	
5. Less: Standard log cost/MBF . . . . .	171	160	0	
: Standard direct labor cost/MBF. . . . .	44	44	44	
: Standard variable overhead/MBF. . . . .	16	16	16	
6. Total variable cost/MBF. . . . .	231	220	60	
7. Contribution margin/MBF. . . . .	66	20	35	
8. Total contribution margin/year . . . . .	52,800	4,000	7,000	63,800
9. Total fixed costs for the planning period. . . . .				46,572
10. Profit before taxes. . . . .				17,228
11. Estimated income taxes . . . . .				5,000
12. Net profit . . . . .				12,228

INSTRUCTIONS: For each species you plan to saw during the planning period:

1. Enter volume of lumber production planned in MBF.
2. Enter standard revenue per MBF for each species.
3. Enter standard selling cost per MBF for each species.
4. Subtract line 3 from line 2.
5. Enter standard log cost/MBF, standard direct labor cost/MBF, standard variable overhead cost/MBF.
6. The sums of log, labor and variable overhead costs from line 5.
7. Subtract line 6 from line 4.
8. Multiply line 7 times line 1. Put total in line at far right.
9. Enter total fixed costs for the planning period. This would be annual fixed costs if the planning period is one year.
10. Subtract line 9 from line 8.
11. Enter estimated income taxes for the planning period based on the profit before taxes shown in line 10.
12. Subtract line 11 from line 10. This is the estimated net profit for the planning period.

Form 7. Annual Production and Profit Planning Worksheet

## How to Monitor Daily Costs

To achieve profit goals, daily operation must be monitored and compared to plans (standard costs and revenues). A variance from planned standards in a key management area will indicate a need for management attention in that key area. The following procedure will enable easy monitoring of daily operation.

### The Daily Cost Record

Form 8 illustrates the daily cost record form. This form is the key to accurate control of daily operations. The form simply lists the standard revenues and costs you wish to achieve to meet your annual profit plans in one column and spaces to

enter the actual costs and revenues for the day in another column. A comparison of the actual costs and revenues with the standards necessary to achieve your goals will reveal how efficiently you are operating. An unfavorable variance in any category will direct management attention to that individual category.

The following is a description of how to quickly calculate the information necessary to fill in the daily cost record. May 5, 1987 daily production information from A&Z Lumber Company will be used to illustrate the procedure.

### Form 8. Daily Cost Record Form

	\$ per MBF		
	Standard	Actual	Variance
DATE <u>MAY 5, 1987</u>			
MILL <u>A&amp;Z LUMBER CO.</u>			
SPECIES <u>RED OAK</u>			
PRODUCTION PERIOD <u>ONE DAY</u>			
Average Revenue/MBF . . . . .	<u>328</u>	<u>324.28</u>	<u>1.72 UNDER</u>
Less: Selling Cost/MBF . . . . .	<u>31</u>	<u>30.55</u>	<u>.45 UNDER</u>
Net Revenue/MBF . . . . .	<u>297</u>	<u>295.73</u>	<u>1.27 UNDER</u>
Less: Log Cost/MBF . . . . .	<u>171</u>	<u>177.33</u>	<u>6.33 OVER</u>
Labor Cost/MBF . . . . .	<u>44</u>	<u>43.50</u>	<u>.50 UNDER</u>
Variable Overhead/MBF . . . . .	<u>16</u>	<u>16</u>	<u>-</u>
Total Variable Cost/MBF . . . . .	<u>231</u>	<u>236.83</u>	<u>5.83 OVER</u>
Contribution Margin/MBF . . . . .	<u>66</u>	<u>58.90</u>	<u>7.10 UNDER</u>

#### INSTRUCTIONS:

1. Enter the standard revenue and costs for the species from the ANNUAL PRODUCTION PLAN.
2. Enter the actual revenue and costs for the species for production during this period.
3. Calculate variances (difference between actual and standard).

### Form 8. Daily Cost Record Form

## Calculating the Daily Costs and Revenue

**The First Step** is to calculate the value and volume of production. Form 1-A on the following page illustrates production volume and value for A&Z Lumber Company for May 5th. If grading isn't done every day, it is important to at least get volumes sawed and estimates of grade. Lumber can be pile scaled at the end of the day to get volume. Grade estimates can be made and corrected later when the lumber is graded. A separate tally sheet should be made for each species sawed during the day.

Product value should be calculated even though the lumber won't actually be sold until later. Current prices can be used to establish value. A&Z Lumber Company used current prices from the weekly publication "Hardwood Market Report" for May 5th production value calculation.

**The Second Step** is to calculate actual selling costs. Form 2-A illustrates how A&Z Lumber Company calculated selling costs for May 5th. The costs weren't actually incurred on May 5th, but will be before the lumber is sold.

**The Third Step** is to calculate actual log-cost per MBF of lumber sawed. A&Z Lumber Company scales all logs as they are bought. The scaler writes the log scale on the end of each log with a lumber crayon. When the log is sawed, the sawyer writes down the log scale for each log as it is put on the carriage. In this way, an accurate tally of log species and volume sawed per day is kept. Form 3-A illustrates A&Z Lumber Company's daily log cost calculation form for May 5, 1987. If timber is purchased by weight or by the cord, an appropriate method of determining the volume sawed daily will have to be devised.

**The Fourth Step** is to calculate actual direct labor cost per MBF lumber sawed for the day. This is done by dividing the total labor cost for the day by the volume of lumber sawed during the day. Form 4-A illustrates A&Z Lumber Company's actual labor cost per MBF red oak for May 5th.

**The Fifth Step** is to enter standard variable overhead per MBF lumber sawed for the day. Standard variable overhead per MBF calculation is explained on page 7 and Form 5.

Actual variable overhead for the day would require very detailed analysis. The standard overhead rate will be sufficient to provide the information needed to monitor daily efficiency. The standard overhead rate should be analyzed periodically, however, to determine if it is still accurate. A substantial change in such things as maintenance costs, fuel prices, etc. may require that the standard overhead rate be changed during the year.

**The Last Step** is to use the information calculated in steps one through five to complete the daily cost record form. Form 8-A is the completed daily cost record form for A&Z Lumber Company for May 5, 1987. The most important indicator of operating efficiency is the last line, contribution margin. The real magnitude of a variance in contribution margin can be seen by just putting the actual in the place of the planned contribution margin for annual production plans (Form 7) and recalculating profit.

The daily cost record indicates the key management areas needing attention if contribution margin falls seriously below the standard. Major causes for variances within the key revenue and cost areas are listed in Figure 2.

**Figure 2.** Major Causes for Variances Within Individual Key Revenue and Cost Areas

Key Management Area	Causes for Variance from Revenue and Cost Standards
Revenue/MBF	Changing market prices for lumber & byproducts. Changing log quality resulting in changes in lumber volume and/or grade yields.
Selling Costs/MBF	Changing markets and marketing strategies. Changing grade yields.
Log Cost/MBF	Fluctuating log costs. Fluctuating log quality and volume yield.
Labor Cost/MBF	Fluctuating downtime. Fluctuating crew size and wage rates.
Variable Overhead/MBF	Fluctuating daily lumber volume production. Volume & grade yields.

## Summary of the Planning and Monitoring Process

The steps involved in profit and production planning, and the operation efficiency monitoring process are as follows:

1. Establish initial standards for the key revenues and costs involved in the operation.
2. Use the revenue and cost standards to develop an annual production plan.
3. Monitor revenues and costs by regularly comparing actual operating results to the planned standards. Calculate the variances between the planned standards and the actual operating results.

This booklet suggests calculating actual costs and revenues on a daily basis and comparing actual results to the planned standards. Once you get accustomed to doing this it will only take a few minutes a day.

You may find that doing this process over a longer time interval (weekly, monthly) will be sufficient. The time interval you choose will be that amount of time you feel you can afford to have “bad news” go unnoticed.

4. Determine how significant the variances are and take action to correct the causes of the variances if they threaten profit goals. Adjust production plans to accommodate uncontrollable changes in the environment (availability of logs, changing markets, changing prices) in which you do business. Change cost and revenue standards to reflect changes in your business.

This process will help put you, the mill manager, in charge of the success of your business. This process, although quite simple, does take discipline, the same type of discipline required of a routine maintenance program to prevent the breakdown of your mill machinery. However, the benefits of active profit planning and cost management are substantial. Profit (or the lack of it) will become the planned and managed end result of your business instead of an unpleasant surprise if the efficiency of your operation is not monitored from a financial standpoint.

## Controlling Cash Flow and Staying Out of “Cash Trouble”

Unplanned cash shortages can be major causes of “trouble” for small sawmills. The prudent mill manager develops a cash budget to plan and manage cash flow. The following page shows A&Z Lumber Company’s cash budget for the first quarter of 1987. Note that profit and cash do not flow through the business on the same schedule. Profit is the difference between revenue and costs for a given period. The cash associated with those revenues and costs does not necessarily change hands during the same period.

The following is a line by line description of how to plan a monthly cash budget projection.

The monthly cash budget should be made for the entire period of the profit plan. The coming year probably won’t adhere to your plans, though. Adjust the projections every month to reflect your best projection of business for the rest of the year. This will allow you to foresee cash problems in time to make arrangements to solve the problems. This system is invaluable in working with your banker. You will be able to show your banker that you are truly managing your cash flow and can plan when you will need short term credit and when (and how) you will repay loans.

Note: Each numbered line below corresponds to the same line number on Form 9.

**Monthly Cash Flow Projection**

1. Enter the amount of cash you have on hand at the beginning of the month.
2. Enter the amount of cash you expect to collect from sales during the month.
3. Enter any other cash you expect to collect during the month. This could be from loans, sales of equipment, etc.
4. Add lines 1, 2 and 3. This is the amount of cash you will have available during the month.
5. List all of the cash needs you will have during the month and enter the amount of cash needed for each item.
6. Enter the sum of all line 5 items. This is the total amount of cash you will need for the month.
7. Subtract line 6 from line 4. This is your ending cash balance for the month. If this is a negative number, you will want to obtain a loan to tide you over until your cash flow becomes positive. You should have some sort of short term credit arrangement with your bank to cover such needs. The evidence that you maintain a cash budget and a profit and cost management system will be a great asset when dealing with your bank.

FORM 9  
**Monthly Cash Budget Projection**

	January	February	March
1. Beginning Cash Balance . . . . .	<u>5000</u>	<u>7330</u>	<u>7515</u>
2. Collections from Sales . . . . .	<u>28,000</u>	<u>35,000</u>	<u>30,000</u>
3. Other Income:			
_____ . . . . .			
_____ . . . . .			
_____ . . . . .			
4. Total Cash Available . . . . .	<u>33,000</u>	<u>42,330</u>	<u>37,515</u>
5. Cash Disbursements:			
Log Purchases . . . . .	<u>15,000</u>	<u>21,000</u>	<u>12,000</u>
Payroll . . . . .	<u>4,000</u>	<u>4,000</u>	<u>4,000</u>
Manager's Salary . . . . .	<u>2,080</u>	<u>2,080</u>	<u>2,080</u>
Parts & Supplies . . . . .	<u>25</u>	<u>25</u>	<u>25</u>
Fuel . . . . .	<u>750</u>	<u>750</u>	<u>750</u>
Utilities . . . . .	<u>15</u>	<u>10</u>	<u>10</u>
Grading Fees . . . . .	<u>800</u>	<u>800</u>	<u>700</u>
Other			
<u>LOAN PAYMENT</u> . . . . .	<u>3000</u>	<u>3000</u>	<u>3000</u>
<u>NEW CHAIN SAW</u> . . . . .	<u>500</u>	<u>500</u>	<u>500</u>
<u>OVERHAUL FORKLIFT</u> . . . . .	<u>300</u>	<u>300</u>	<u>300</u>
<u>INSURANCE PREMIUM DUES</u> . . . . .	<u>2200</u>	<u>2200</u>	<u>2200</u>
<u>ACCOUNTANT FEE FOR TAX PREP</u> . . . . .	<u>150</u>	<u>150</u>	<u>150</u>
6. Total Cash Disbursements . . . . .	<u>25,670</u>	<u>34,815</u>	<u>22,565</u>
7. Ending Cash Balance . . . . .	<u>7330</u>	<u>7515</u>	<u>14950</u>

Form 9. Monthly Cash Budget Projection

## Using Cost Information to Make “Smart” Decisions

The records you have created to operate this profit planning and cost management system can be an invaluable aid in making “smart” management decisions. Virtually any planned (or unplanned) change in the operation of your mill will have associated changes in individual costs, revenues or volumes. The decision to purchase a new edger, for example, may have the following impact on your mill operation:

1. Increased fixed costs due to new loan and interest payments.
2. Increased grade yield due to increase in edger adjustability.
3. Increased electricity bill due to larger motor.
4. Reduced maintenance costs.
5. Increased daily volume production due to faster processing and less downtime at the edger.
6. Increased fixed costs due to higher insurance rates.
7. Increased volume yield due to narrower kerf.
8. Reduced income taxes due to increased depreciation expenses.

To make this a “smart” purchase decision, you must estimate the cumulative effect these individual impacts will have on your operation. This can be done quite simply by estimating what the magnitude of each of the 8 individual effects are and then making the changes in your individual standard revenue and cost calculation forms. Use these revised standard costs and revenues to recalculate your annual production and profit planning worksheet. If the profit increases sufficiently to give you your planned return on investment, the decision may be a “smart” one. It will, in any event, be significantly “smarter” than if you had made the decision based on “gut-feeling” and the machinery dealer’s glowing projections.

The following example will further illustrate this decision process.

A&Z Lumber Company plans to send the edgerman to a lumber grading shortcourse and increase his wages by \$1 per hour in order to get an estimated 7% increase in red oak 2C&BTR lumber. The following is an estimate of the individual cost and benefits of this decision.

1. Tuition and expenses to send edgerman to a one week Minnesota Extension Service lumber grading shortcourse: \$450
2. One week labor expense to hire a replacement edger operator: \$280
3. 7% increase in red oak 2C&BTR grade yield: increase average revenue/MBF for red oak by \$9 (better edging will also increase grade yield and average revenue of other species sawed)
4. \$1/hour increase in edgerman wage rate: standard labor cost per MBF for all species raised \$2

The following forms illustrate how standard labor and revenue rates were recalculated and the changes incorporated in the annual production and profit plan. You can see that the change will increase before tax profit by \$4600. This is on an initial investment of \$730. Note that the appropriate changes were also made for elm and custom sawing revenues and costs although those forms are not illustrated.

**Form 1.  
Revenue Calculation Form**

Date MAY 5, 1987 Mill A & Z LUMBER CO.  
 Species RED OAK Production Period MARCH-APRIL 1987

Product	Amount Produced	Selling Price	Total Value
FAS 4/4	16 MBF	\$725 / MBF	<del>\$11,600</del> 12,325
SEL 4/4	15 MBF	705 / MBF	<del>10,575</del> 11,240
1C 4/4	18 MBF	510 / MBF	<del>9,180</del> 9,670
2C 4/4	18 MBF	230 / MBF	<del>4,140</del> 4,370
LOW GRADE	2.0 MBF	130 / MBF	2,600
CANTS	62 MBF	150 / MBF	9,300
TIES	8 MBF	230 / MBF	1,840
SLABS	157 BUNDLES	12 / BDL	1,884
SANDUST	150 PICKUP BEDS	3 / LOAD	450

Total MBF 161 ~~157~~ MBF      Total Sales Value \$53,739 ~~\$51,569~~  
 (total sales value) 53,739      333.78  
 (total MBF Produced) 157 MBF      ~~328.46~~ /MBF  
161

**INSTRUCTIONS:**

- List all of the products produced from a single species for a given period (day, month, year, ect.).
- List the volume of each product produced for the period.
- List the selling price for each product.
- Calculate total sales value for each product. Add total value column.
- Divide total sales value for all products by total MBF produced.

**Form 1. Revenue Calculation Form**

**Form 7.  
Annual Production and Profit Planning Worksheet**

DATE MAY 1, 1987 PLAN FOR THE PERIOD OF YEAR OF 87

SPECIES SAWED . . . . .	RED OAK	ELM	CUSTOM. SANDING	Total
1. MBF lumber sawed during planning period.	800	200	200	1200
2. Standard revenue/MBF . . . . .	33 <sup>1</sup> 228	27 <sup>5</sup> 240	95	
3. Less: Standard selling cost/MBF . . . . .	31	30	0	
4. Net revenue/MBF . . . . .	30 <sup>3</sup> 227	27 <sup>5</sup> 240	95	
5. Less: Standard log cost/MBF . . . . .	171	160	0	
: Standard direct labor cost/MBF . . . . .	45 44	45 44	45 44	
: Standard variable overhead/MBF . . . . .	16	16	16	
6. Total variable cost/MBF . . . . .	232 231	221 220	60	
7. Contribution margin/MBF . . . . .	71 66	70 20	34 95	
8. Total contribution margin/year . . . . .	56,800	4,800	6,500	68,100
9. Total fixed costs for the planning period . . . . .	52,800	4,000	7,000	63,800
10. Profit before taxes . . . . .			2,828	2,828
11. Estimated income taxes . . . . .			6,000	6,000
12. Net profit . . . . .			15,828	15,828

INSTRUCTIONS: For each species you plan to saw during the planning period:

1. Enter volume of lumber production planned in MBF.
2. Enter standard revenue per MBF for each species.
3. Enter standard selling cost per MBF for each species.
4. Subtract line 3 from line 4.
5. Enter standard log cost/MBF, standard direct labor cost/MBF, standard variable overhead cost/MBF.
6. The sums of log, labor and variable overhead costs from line 5.
7. Subtract line 6 from line 4.
8. Multiply line 7 times line 1. Put total in line at far right.
9. Enter total fixed costs for the planning period. This would be annual fixed costs if the planning period is one year.
10. Subtract line 9 from line 8.
11. Enter estimated income taxes for the planning period based on the profit before taxes shown in line 10.
12. Subtract line 11 from line 10. This is the estimated net profit for the planning period.

**Form 7. Annual Production and Profit Planning Worksheet**



## How Much Profit Is Enough?

Your profit should compensate you for the time and money you invest in your business. How much profit is enough, though? This will vary with individual mill owners. Sawmill owners are in the sawmill business for various reasons. Profit has a different priority for different people. Your profit should be enough, however, to satisfy the following needs:

1. Your profit should be enough to satisfy your **personal living needs**. If you depend on your mill as the sole source of personal income, your profit will have to supply all of your personal living needs. If the mill only has to supply a portion of your personal living needs, profit should be sufficient to supply that portion.
2. Your profit has to be enough **to repay money borrowed** to start or improve the mill.
3. Your profit has to supply enough **money to reinvest** into the business to keep the business going. Worn equipment eventually has to be replaced.
4. Your profit has **to supply capital for growth**. If you plan to expand your business, your profit has to supply the money for that expansion. Profit must either pay for expansion costs directly or over a longer period of time in the form of repayment of expansion loans.
5. Your profit should be sufficient to give you an adequate **return on the money you have invested** in the business. There are many ways to estimate return on investment. A common way is to calculate certain key operating statistics and compare to industry averages as printed in publications such as financial statement reviews. Ask your banker to help you with this. Your banker has these publications and is familiar with return on investment calculation.
6. Your profit should be enough **to repay you for the time you invest** in your business.

Think about these six items when you are developing your annual profit plan. Will the market accept the level of sales you need to generate your required profit? Will you be able to produce the volume you need to generate the profit you require? Will you be able to get the logs you need to generate the profit you require? Will you be able to control your costs sufficiently to generate your required profit from the volume you plan to produce? These are all questions you should ask and answer each year. The profit planning system contained in this booklet will let you answer those questions. The use of the cost management system contained in this booklet will enable you to manage your business so that you can obtain the profit you have planned to obtain.

An Excel spreadsheet developed based on the Forms illustrated in this publication, as well as blank, printable Forms can be obtained by contacting Chris Jennings at (970) 491-2958, or can be found under the Publications section of our website at [www.colostate.edu/programs/cowood](http://www.colostate.edu/programs/cowood)

*COLORADO WOOD UTILIZATION AND MARKETING ASSISTANCE CENTER*  
DEPARTMENT OF FOREST, RANGE, AND WATERSHED STEWARDSHIP  
COLORADO STATE UNIVERSITY  
FORT COLLINS, CO 80523-1470