

MONROE CLOCK COMPANY (A)

As Jim Monroe, president of Monroe Clock Company, stared at the numbers compiled by his controller, Tom Grant, and his sales manager, Frank Tyler, the look on his face was one of confusion. "The more I look at this the more it looks like we really don't know how much this new household timer is going to cost. We need to get a better handle on the costs of this thing or we will never be able to decide how to price it."

The Company

Monroe Clock Company was started by Jim Monroe, the company's president, in 1985. In 1998, Monroe had sold out to Piedmont Appliance Corporation, but he remained with the company as Monroe Clock's president. Originally, Monroe Clock made decorative electric clocks, but by 1992 Jim had decided he was much better at making the works than the decorations. So the company shifted to making accurate, durable, but inexpensive electric timing mechanisms. The company now made only three basic models, differing in size and strength. Slight modifications were made to fit each customer's needs. Sales had grown to over \$50 million, and the timing mechanisms were made entirely for producers of timed electrical appliances. About half of Monroe's output went to Piedmont Appliance and about half to other companies.

The New Household Timing Device

It all started because sometime over the 2000 Labor Day weekend, Jim Monroe's house was burgled while he and his family were enjoying the last days of their summer vacation. Thereafter, though he knew he was closing the proverbial barn door after the cow had gone, Jim did a number of things to try to prevent a repetition. Besides improving locks, he bought two timers that could be set to turn on house lights in the evening.

That is what gave him the idea to make a better timing mechanism for household use, one that had two features that he thought made his timer superior to those currently on the market.

This case was prepared by Luann J. Lynch, Associate Professor of Business Administration, based, in part, on an earlier version prepared by William Rotch. It was written as a basis for class discussion rather than to illustrate effective or ineffective handling of an administrative situation. Copyright © 2004 by the University of Virginia Darden School Foundation, Charlottesville, VA. All rights reserved. To order copies, send an e-mail to sales@dardenpublishing.com. No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the permission of the Darden School Foundation. ◊

The Monroe timer had two options: a 48-hour cycle (so that lights would not turn on and off at the same time each day), or two different 24-hour cycles, so that one timer could operate two lights, each on a different 24-hour cycle. The design of these features was quite simple. There were two different 24-hour cycles, and for the 48-hour option, the timer switched back and forth.

Jim's sales manager, Frank Tyler, was not sure how important or valuable these options would be to the potential customer. Furthermore, this complete product would have to be sold through wholesalers and manufacturers' representatives, which were new to Monroe Clock. The company's sales force usually sold to a relatively small number of industrial customers. Price, he thought, would be an important factor since other timers were on the market.

Pricing the New Household Timing Device

Jim asked his controller, Tom Grant, to put some cost figures together. Tom presented the table shown in Exhibit 1. The basic timing mechanism, Model A2B, was Monroe's highest volume product, which showed a cost of \$4.40. To make the timer that Jim had designed would cost about \$11.60. No more machining would be required, but a little fabrication work and a number of wiring and assembly operations would be necessary.

Tom had checked on available capacity before computing his costs. As it happened, adequate space for the timer's assembly had just become available because the company had shifted from having one warehouse for finished goods at the plant, to two warehouses, one in Pennsylvania and the other in Texas. Making the warehouse into an assembly area would require some tables, lighting, and small tools but no major capital expenditure. About \$20,000 ought to cover it, Tom thought.

Jim asked Tom to show his figures to Frank. On seeing the \$11.60 production cost, Frank did the following rough calculation using normal mark-ups to see what this cost might indicate for a retail selling price.

\$11.60	Total manufacturing cost
<u>1.74</u>	Selling, General and Administration (15% of cost)
13.34	
<u>1.34</u>	Profit (10% of cost)
14.68	
<u>14.68</u>	Wholesale, Retail and Distribution (50% of Selling Price)
\$28.76	

"Holy smokes," said Frank to himself, "we'll never sell any at that price." He knew that the similar Sears model was selling at \$19.98, and others were not more than a dollar or two away from that.

He studied the controller's numbers. "Tom," he said, "isn't most of this overhead fixed? You have used a plant-wide rate for as long as I can remember, and that seems to have worked

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OK. But if we are just adding on a little fancy assembly stuff to sell more timing mechanisms, that isn't really going to increase our overhead, is it?" /

"Well, yes and no," said Tom, "Any one increment in volume won't necessarily increase overhead by 300 percent of the direct labor for that increment, but somewhere along the line, overhead is going to increase." To explain what overhead consisted of, Tom showed Frank the schedule shown in Exhibit 2.

Frank asked Tom a few questions about the list of overhead costs and then computed his own figures, shown as the right hand column in Exhibit 2. He concluded that only about \$2.00 of the \$7.30 of overhead costs was really variable, so he thought \$5.30 should be considered fixed and not relevant to this decision. In that case, he thought the cost and selling price figures should look like this:

\$11.60	Total manufacturing cost as first computed for the new timer
<u>5.30</u>	Fixed manufacturing costs
6.30	Variable costs for the new timer
<u>1.00</u>	Plus about 15% SG&A
7.30	
<u>.70</u>	Plus profit at about 10% of cost
8.00	Factory price
<u>8.00</u>	Plus wholesale and retail costs (50% of Selling Price)
\$16.00	Estimated retail selling price

At a factory price of \$8.00, Frank figured they could sell 50,000 timers. He figured there should be a \$50,000 advertising budget that would be spent regardless of sales volume. He figured the \$1.00 per unit for general administrative and selling expense would just cover the advertising cost and could be allocated to advertising, since other SG&A costs would be fixed.

When Frank showed his proposal to Jim, the latter flatly disagreed with the idea of cutting overhead. "You start doing that," he said, "and pretty soon you've got lots of volume and no profit. You can't just wave your calculator like a wand over the numbers and have a product actually cost less. Furthermore, I think you haven't figured in the value of the product options. There's not another timer like this on the market. I think we can put a factory price of \$14.70 on it, and customers will be eager to buy it at \$29.40." /

Tom, who had heard most of the discussion, said he thought the \$14.70 factory price was a much better idea. "Look," he said to Frank, "if your breakdown of fixed and variable costs is right—and I think it is probably OK for the short run—then we'll only need to sell some smaller number of units at \$14.70 to be as well off as we would be with your plan."

"Well," said Jim, "That may be right, but the more I look at this the more it seems to me that a little knowledge is a dangerous thing here. I don't think we really know how much the new timer is going to cost either in the short run or the long run."

Exhibit 1
MONROE CLOCK COMPANY (A)
 Estimated Cost of New Timer

	Purchased Parts	Direct Labor	Expend. Supplies	Overhead at 300% of D.L.	Total
Basic mechanism A2B					
Purchased parts	\$ 1.334				
Fabrication		\$ 0.364	\$ 0.022		
Machining		0.152	0.026		
Assembly		0.230	0.034		
Total A2B	1.334	0.746	0.082	\$ 2.238	\$ 4.400
Additions to make new timer					
Purchased parts	0.356				
Fabrication		0.036	0.002		
Machining		—	—		
Assembly		1.650	0.098		
Total additions	0.356	1.686	0.100	5.058	7.200
Total New Timer	\$ 1.690	\$ 2.432	\$ 0.182	\$ 7.296	\$ 11.600

Note:

Fabrication work was punching out shapes, stamping to form pieces, and drilling holes, using both automatic and hand operated machines.

The machining operations used lathes, milling machines, and grinders to make the gears, plates, holes, etc. with proper tolerances. Many of these used automatic feed mechanisms.

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Exhibit 2

MONROE CLOCK COMPANY (A)
The Overhead Schedule Tom Showed Frank
Overhead Components as Percent of Direct Labor

<u>Overhead item</u>	<u>% of Direct Labor</u>	<u>Frank's Estimate of Variable Amount</u>
Supplementary compensation for direct labor (Social Security, holidays, insurance, etc.)	35%	35%
Supervision (including supplemental compensation)	15%	15%
Indirect labor (including supplemental compensation)	30%	30%
Machine maintenance	55%	0%
Machine depreciation	40%	0%
Manufacturing engineering	35%	0%
Plant administration (including supplemental compensation)	40%	0%
Electricity	10%	2%
Occupancy cost	40%	0%
Total as percent of direct labor	300%	82%

(Explanation: This says, for example, that total supervision cost for all departments for the year was expected to be 15% of the total direct labor cost for the year.)

Frank's computation

Total direct labor per timer = \$2.44 (Shown as \$2.432 in Exhibit 1)

82% of \$2.44 = about \$2.00

Therefore, incremental overhead per timer made would be \$2.00.