

CASE # 3a:**The Cable Connection****Commodity Type: Product – Cables, USA**

Tom Maher is a senior contract manager at Advanced Networks. He had recently sent out a request for quotation for a customized cable assembly. The cables are to be used in an expensive and sophisticated networking system. The system routes and connects data and voice transmissions for over 50 million subscribers. Success on this program could well mean a huge increase in demand particularly in emerging countries. The selected supplier will need to be capable of meeting the increase in demand overseas as well as understanding the inherent nuances of international business. Key points of the requirements are summarized below.

Materials 25 pair cable; 24 gauge per ICC specification
Cable insulation: must have an oxygen index of 28% or better
Length: 150 feet per length
Connector: One set (2 connectors) per length
Total number of lengths: 165,000
Delivery Time: 4 weeks (20 days) from placement of order

A week later, Tom received quotes from 5 suppliers, which are summarized below.

Cost per length	A	B	C	D	E
<i>Cable</i>	\$19.50	\$28.10	\$32.50	\$27.75	*
<i>Connector (1 set)</i>	\$2.15	\$1.50	\$1.76	\$1.40	*
<i>Material Mark-up</i>					
Direct Material	<i>\$21.65</i>	<i>\$29.60</i>	<i>\$34.26</i>	<i>\$29.15</i>	*
Direct Labor	\$3.65	\$0.38	\$2.10	\$0.51	*
Manufacturing OH	\$5.49	\$1.16	\$2.24	\$1.46	*
Cost of Goods Sold	<i>\$30.79</i>	<i>\$31.14</i>	<i>\$38.60</i>	<i>\$31.12</i>	*
GSA & other exp.	\$7.25	\$7.47	\$11.68	\$7.87	*
Profit	\$1.15	\$1.65	\$1.05	\$0.95	*
PRICE PER LENGTH	\$39.19	\$40.26	\$51.33	\$39.94	\$23.97

* Supplier E quoted only a total cost per length. No breakdown was provided.

In order to evaluate the proposals, Tom decided to do a little homework.

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Data on Materials:

Cables:

Tom called ICC, the country's leading manufacturer of this kind of cable. The prices provided were \$0.1742 per foot. These prices were available to Advanced Networks because of the special relationship between the two companies. ICC was willing to sell the cable to a selected supplier of Advanced at the preferred rate of \$0.1742 per foot. The suppliers had indicated to Tom that they would charge a material mark-up to cover procurement overhead (various material handling expenses) in the event that they were asked to use sources other than their own. A, C and D indicated that they would charge a 10% mark-up on material costs, while B indicated that its mark-up would be 5%. E indicated it would only use its own material sources.

Connectors:

Tom called one of the major suppliers of connectors in Chicago and asked for a price based on 200,000 sets of standard connectors. The price quoted to him was \$2.49 per set on quantities below 100,000 sets; \$2.00 on quantities between 100,000 and 200,000 sets; and \$1.62 per set on quantities of more than 200,000. Tom realized that these prices could be further negotiated if he were a serious buyer. Besides, Tom feels that suppliers would purchase similar connectors for projects with other customers.

Data on Conversion costs (Labor and Manufacturing Overheads):

In order to understand the conversion costs, Tom called the engineer at Advanced, Sue Lin, who was familiar with the connecting process. After reviewing the specifications, Sue Lin indicated that she knew of some studies that had been performed that evaluated the time standards, yields, and rates for similar requirements. It is a simple two-step process: cut the cable to length and then attach the connectors onto the cable length. Most automated operations, Sue Lin indicated, have machines with one operator that conduct both steps, whereas manual operations have 2 separate workers performing the cutting and the connecting in an assembly line. Sue Lin added that, on an average, each operator contributes approximately 6.5 productive hours per day (8 hours minus time for breaks, waiting for parts, etc.)

Labor Cost

To calculate the labor cost, obtain the salary data for a Floor Assembler and a Machine Operator in Chicago, IL from www.salary.com.

It is also assumed that such employees work approximately 1,800 hours per year.

Using Appendix E from his Zero Base Pricing™ book, Tom estimated that for manual operations the manufacturing overhead would be 100% of direct labor and for an automated process, 300% would be appropriate.

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Table 1:

Manual Operation

	Process	Yield**	Maximum Throughput lengths / hr per person	Labor Rate	MOH Rate*
1 person	Cut Cable	98%	8 lengths / hr	Calculate using data from www.salary.com	100% of Direct Labor
1 person	Attach Connectors	97%	8 lengths / hr	Calculate using data from www.salary.com	100% of Direct Labor

* Manual MOH rate includes plant, indirect labor, indirect supplies, and other misc. MOH items

** A negligible amount of cable is lost when defective connectors are scrapped;

Therefore, assume the cable can be reused when defective connectors are scrapped.

Table 2:

Automated Operation

	Process	Yield	Maximum Throughput lengths / hr per machine	Labor Rate	MOH Rate**
1 machine 1 operator	Cut Cable	99%	40 lengths / hr	Calculate using data from www.salary.com	300% of Direct Labor
	Attach Connectors				

** Automated MOH rate includes **machine**, plant, indirect labor, indirect supplies, and other misc. MOH items

Data on other costs:

Tom pulled out the files of the respective suppliers. In the past, all of them had dealt with Advanced Networks without any major problem. Companies B, C and D were all large companies (greater than \$200 million in revenue with around 1,000 production workers), while A and E were between \$25 and \$30 million companies and had only recently diversified into cable assembly. These companies employed less than 150 production workers.

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From the Risk Management Association’s (RMA) Annual Statement Studies (www.rmau.org), Tom obtained the following:

Table 3:

NAICS: 335931 - Current-Carrying Wiring Device Manufacturing
(all figures are in percent of Net Sales)

335931 - Battery Manufacturers												
View related industries:			Year:		Region:							
335931 - Current-Carrying Wiring Device Manufacturing			2021-22		National - All Regions			Print				
FRB Assets	FRB History	FRB Sales	IDP Assets	IDP History	IDP Sales							
						0-1MM	1-3MM	3-5MM	5-10MM	10-25MM	25MM and Over	All
INCOME DATA												
		Net Sales									100.0	100.0
		Gross Profit									25.7	30.1
		Operating Expenses									19.7	23.7
		Operating Profit									6.0	6.5
		All Other Expenses (net)									.8	1.6
		Profit Before Taxes									5.3	4.9
		EBITDA									9.5	8.5

Tom was intrigued by the quote from Supplier E and called to verify if it really understood the requirement and request a cost breakdown. The sales representative said she believed the quote was correct and that it was against company policy to share cost data. No samples were available to the customer for inspection. However, if Tom wished, he could purchase a minimum of 5,000 cable lengths at a price of \$44 per length. If the full order of 165,000 cables were placed within 15 days, the \$220,000 paid for the 5,000 cables would be adjusted against the full contract price of \$23.97 per length.

The hardware and software for the switching system is nearly complete and the cabling will have to be done within the next five weeks. An order would have to be placed fairly soon and the selected supplier would be given no more than four weeks to deliver the entire quantity.

** This case is an adaptation of a case by Mark L. Cohen of Pacific Bell.*

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Based on the information in the case, develop a Should Cost Model for special connected cable.

Worksheet 1: Calculation of Direct Material Costs

	Cost Element	\$ per length	
		Manual	Automated
1	Cable Cost (\$ per foot * # ft per length) / yield		
2	Connector Cost (\$ per set * # sets per length) / yield		
3	Material Markup (Procurement OH) (<i>use your discretion</i>)		
4	Direct Material Costs (1 + 2 + 3)		

Worksheet 2: Calculation of Labor and Manufacturing Overhead Costs (Manual Operation)

	Column	A	B	C	D	E	F
	Process	Yield %	Throughput lengths / hr per person	Hourly Labor Rate	Hourly MOH Rate	Labor Cost per Length	MOH Cost per Length
1	Cut Cable						
2	Attach Connectors						
3	\$ per length (line 1 + line 2)						

Worksheet 3: Calculation of Labor and Manufacturing Overhead Costs (Automated Operation)

	Column	A	B	C	D	E	F
	Process	Yield %	Throughput lengths / hr per person	Hourly Labor Rate	Hourly MOH Rate	Labor Cost per Length	MOH Cost per Length
1	Cut Cable						
2	Attach Connectors						
3	\$ per length						

Worksheet 4: Calculation of Industry Percentages

	Cost Element	Ind. % of Revenue
1	Cost of Goods Sold	%
2	GSA & Other Expenses	%
3	Profit Before Taxes	%
4	Total Revenue	100%

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Worksheet 5: Should Cost

Costs per length	Manual	Auto	
<i>Cable</i>			
<i>Connectors (1 set)</i>			
<i>Material Mark-up</i>			
Direct Material Cost			
Direct Labor Cost			
Manuf. Overhead			
<i>Cost of Goods Sold</i>			
GSA & other exp.			
Profit before tax			
PRICE PER LENGTH			

Worksheet 6

Using the data from Worksheet 5, complete Worksheet 6 and discuss the questions that follow.

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1. Can Tom eliminate any of the suppliers? If so, which suppliers and why?
2. Which supplier/s should Tom select and why?
3. What is an appropriate amount to pay for material mark-up?
4. List additional costs that constitute the Total Cost of Ownership for this scenario (e.g. cost of installation)