SOM 464
R. Gunther

Tuffy Teddy Bear

Production Planning Game and Case

Tough and Ready Toys, Inc. is producing a new line, known as the Tuffy Teddy Bear. The toys, designed to be indestructible, are intended for destructive-prone children. The firm had intended to sell the toy in time for Christmas sales in 2007, but production did not start until early November of that year, too late for the Christmas rush. It now takes two weeks from the time production is scheduled until the toy is ready to be shipped. This is known as *lead time*.

Tuffy Teddy Bears are all produced in a specially designed factory in Rancho Cucamonga, California where they are shipped to retailers, such as toy stores, across the United States. Eventually marketing hopes to sell the toy worldwide. Even though the firm missed Christmas sales in 2007, company executives expect sales to be brisk and 90,000 units were scheduled for production during the first two weeks of January 2008 (see attached table). Unfortunately, sales orders during that period were only 70,000, contributing to a steady increase in inventory at the factory. Because factory warehouse capacity for finished goods is only 240,000, Operations Vice-President Sandy Dandy decided to rent an additional warehouse several weeks ago. Excess inventory over 240,000 is stored in the warehouse at an additional cost.

The marketing department for Tough and Ready has forecast demand for the first half of 2008 to average approximately 80,000. However, sales managers expect a Christmas rush to start sometime after the company vacation scheduled in July when the plant, except for the warehouses, shuts down. After the vacation, demand is expected to increase slowly and peak at about 200,000. From last year's experience, Ms. Dandy knows the Christmas rush will be over by November. Sales for the year 2007 are given below, broken into two-week periods:

Two-Week Period Number	Sales (1000's)
23	80
24	90
25	140
26	110

Sales for the first period in 2008 is 70,000, as shown in the attached chart. Ms. Dandy has found that sales are primarily from large toy store chains and tend to fluctuate up and down, often by large amounts.

The accounting department has isolated the following relevant costs. Set up and

downtime due to production changes cost $5000 per change, regardless of the amount of the change. Inventory holding cost per year is $200 times the average inventory in thousands as shown in column (6) of the attached table, shortages are not deducted. Excess inventory cost per year is $500 times the average excess inventory in thousands as shown in column (7). Stock shortage costs are roughly estimated to be $750 times the total number of shortages for each two-week period as reported by any negative numbers in column (6). Ms. Dandy's primary objective is to minimize relevant costs.

Your job is to assist Ms. Dandy in trying to set production for periods 2 and 3. You must be prepared to discuss any issues that might be relevant. **DO NOT FILL IN THE ATTACHED TABLE**. You will be asked to do this at a later date with teams of your peers.

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
Two-Week Period Number	Beginning Inventory 1000's	Production Level Set 1000's	Available, Beginning Inventory + Previous Period Prod. 1000's	Orders in Period 1000's	Ending Inventory, Available - Orders 1000's	Excess Inventory, Over 240 1000's
0		90				
1	300	90	390	70	320	80
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13		Vacation				
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						

Cost Calculations

1. Production Change	$ _____
2. Inventory Holding Cost	_____
3. Outside Storage Facilities	_____
4. Stock Shortage Cost	_____
5. Total Yearly Cost	$ _____