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| Sport Obermeyer | October 4BUAD 6600 |
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**Objective/Scope**

The purpose of this article is to determine how many units of each style Sport Obermeyer should produce during its initial phase of production (November through March) and during its second phase of production (March through October). Factors that need to be considered in this decision are the risk associated with each style, from where each product will be sourced (Hong Kong or China), and the numerical and opportunity costs associated with the sourcing decision. Operational changes are also recommended in order to improve performance in the short and long-term.

**Recommendations**

Through a risk analysis it is recommended that:

* The Assault, Seduced, Entice, and Electra lines are produced in China for both the first and second production phase.
* The Gail, Daphne, Isis, Anita, Teri, and Stephanie lines are produced in Hong Kong for both the first and second production phase.
* The following quantities be ordered of each style or he first order: Assault (2,020), Seduced (3,213), Entice (1,200), Electra (1,720), Gail (813), Daphne (600), Isis (600), Anita (600), Teri (600), and Stephanie (600).
* The following quantities be ordered of each style or he first order: Assault (505), Seduced (804), Entice (158), Electra (430), Gail (204), Daphne (1783), Isis (442), Anita (2,637), Teri (500), and Stephanie (513). \*See Assumptions.



It is also recommended that short term and long term operational changes are implemented in order to make production more fluid and productive. These changes include:

* The maximum production should be increased (Short-Term).
* Workers of the China plant should be trained to make products faster and of higher quality in order to shorten the lead time of products (Long-Term).

**Analysis**

*Risk Assessment*

In order to determine what items should be produced where, a risk assessment was conducted for all lines per the average forecast for each line. The Coefficient of Variation (COV) was determined in order to analyze the risk associated with each line.

A benchmark of 0.2 COV was used to determine the associated risk. Any item with a COV below 0.2 is considered a low risk item while any item with a COV higher than 0.2 is considered a high risk item.

When sourcing from China, four styles need to be ordered in excess of the average forecast in order to reach minimum production amounts. To determine how many of each style to order in the first round, preference was given to the lower risk items. 80% of the lower risk items should be ordered initially because it is more certain that the amounts forecasted will be accurate. For items with a COV above 0.2 only 20% of the average forecast will be ordered so that Sport Obermeyer can wait until after the Las Vegas show to verify with 80% certainty the success of each style.

It is recommended that any high risk item be produced in Hong Kong because they are more flexible, produce higher quality items, and the minimum production requirements for an order is only 600 units versus the 1,200 units required in China. [Please refer to Exhibit 1]

Likewise, if an item requires less than 1,200 units, it should be required that it be produced in Hong Kong due to production requirements and to keep from overproducing. It must also be noted that the maximum production for Sport Obermeyer is 20,000 units (on a 10% scale) and therefore this should be met but not exceeded within both orders combined.

*Assessment of Producing All Products in Hong Kong*

At the Hong Kong plant, there is a minimum of 600 units required per line produced. For this reason, the initial quantity for the Daphne, Isis, Teri, and Stephanie lines would need to be increased to meet this requirement for the first order. The quantity ordered per line for the first order would be as follows: Assault (2,020), Seduced (3,213), Entice (1,087), Electra (1,720), Gail (813), Daphne (600), Isis (600), Anita (659), Teri (600), and Stephanie (600).

The second order quantity per item would be as follows: Assault (505), Seduced (803), Entice (272), Electra (430), Gail (203), Daphne (1,783), Isis (442), Anita (2,637), Teri (500), and Stephanie (513).*\**

This brings the total units produced in orders one and two to the maximum of 20,000 units.

[Please refer to Exhibit 2]

*Assessment of Producing All Products in China*

At the China plant, there is a minimum of 1,200 units required per line produced. For this reason, the initial quantity for the Entice, Gail, Daphne, Isis, Anita, Teri, and Stephanie lines would need to be increased to meet this requirement for the first order. The quantity ordered per line for the first order would be as follows: Assault (2,020), Seduced (3,213), Entice (1,200), Electra (1,720), Gail (1,200), Daphne (1,200), Isis (1,200), Anita (1,200), Teri (1,200), and Stephanie (1,200).

The second order quantity per item would be as follows: Assault (505), Seduced (804), Entice (158), Electra (430), Gail (0), Daphne (1,183), Isis (0), Anita (2,096), Teri (0), and Stephanie (0).*\**

This brings the total units produced in orders one and two over the maximum of 20,000 units to 20,529 total produced units.

[Please refer to Exhibit 3]

*Recommended Production Totals*

It is recommended that higher risk items be produced at the Hong Kong plant because these items will be produced more quickly and be of higher quality. It is also beneficial because a majority of the higher risk lines require smaller total quantity orders which Hong Kong is better able to produce because of their smaller unit requirements versus China (600 versus 1,200 units minimum respectively).

This means that the high risk items should be produced at Hong Kong including: Daphne, Isis, Anita, Teri, and Stephanie. The Gail line must also be produced at the Hong Kong plant because the total units forecasted is less than the required minimum production at the China plant.

Production of styles such as Gail can be over produced. It has a lower COV and is less risky so production in China seems to make more sense at first assessment. However, because the minimum amount of 1,200 required for production in China exceeds the average forecast for Gail, or 1,017, it must be sourced in Hong Kong in order to not go over 20,000 items as specified by Wally.

Therefore, all five high risk items and one low risk item should be produced at the Hong Kong plant. The remaining low risk items should be produced at the China plant including: Assault, Seduced, Entice, and Electra.

The quantity ordered per line for the first order would be as follows: Assault (2,020), Seduced (3,213), Entice (1,200), Electra (1,720), Gail (814), Daphne (600), Isis (600), Anita (659), Teri (600), and Stephanie (600). This brings the total quantity ordered for the first order to 12,026. [Please Refer to Exhibit 4]

The second order quantity per item would be as follows: Assault (505), Seduced (804), Entice (158), Electra (430), Gail (203), Daphne (1,783), Isis (442), Anita (2,637), Teri (500), and Stephanie (513)*\*.* This brings the total quantity order for the first order to 7,975. [Please Refer to Exhibit 4]

This just brings the total units produced in orders one and two over the maximum of 20,000 units by only one unit. This is not something we considered since it is such a minuscule difference and was only the product of rounding issues.

At this point in time, the quantity ordered for the first order will remain stagnant per the average forecast. However, the second order quantities will fluctuate after orders are placed following the Las Vegas trade show.

*Short-term Operational Changes*

The maximum production of 20,000 set by Wally should be increased. For example, because there is a maximum of 21,000 available units for the production period (30,000 production capacity x 7 months), extra quantity of Gail could be produced without having to cut into production of other styles. This would be preferable because sourcing Gail from China would require 813 more units to be produced than what is forecasted to be sold. However the cost savings of producing them in China outweigh the cost of selling the extra at an 8% loss. For our recommendations, Gail was produced in Hong Kong in order to adhere to Wally’s 20,000 maximum production guidelines. In reality, the company produces about 200,000 parkas yearly and has production capacity of 210,000 parkas; therefore, it is more cost efficient to overproduce from China in cases such as Gail . [Please Refer to Exhibit 5]

*Long-term Operational Changes*

Train Chinese employees to increase production in China. (Look at questions 4&5 for reference) [JH- WRITE THIS SECTION]

**Assumptions**

\*The first order placed must be at least 600 units per item in Hong Kong and 1,200 units per item in China. The remainder of the average forecast will be made up in the second order.

\*\*It is assumed that color and size of each style of parka has been factored into each sample committee member’s forecast and is not relevant for this analysis.

\*\*\*The average forecast includes safety stock.

**Implementation** **Plan**

The first order will be placed by the beginning of November. The second order will be placed in the beginning of March after the Las Vegas trade show. Please refer to Exhibit 4 for production quantities and sourcing decisions for the first and second order of each item.

**Appendix**

*Exhibit 1*



\*\* See Assumptions.

*Exhibit 2*



*Exhibit 3*



*Exhibit 4*



*Exhibit 5*



