Multi-Echelon Inventory Optimization in a Rapid-Response Supply Chain

by

Robert Giacomantonio, PE

B.S. Mechanical Engineering
Carnegie Mellon, 2006

Submitted to the MIT Sloan School of Management and the Mechanical Engineering Department
in Partial Fulfillment of the Requirements for the Degrees of

Master of Business Administration
and
Master of Science in Mechanical Engineering

In conjunction with the Leaders for Global Operations Program at the
Massachusetts Institute of Technology
June 2013

Signature of Author _____
MIT Sloan School of Management, MIT Department of Mechanical Engineering
May 10th, 2013

Certified by _____
Stephen Graves, Thesis Supervisor
Professor of Management Science, MIT Sloan School of Management

Certified by _____
David Simchi-Levi, Thesis Supervisor
Professor of Engineering Systems, Engineering Systems Division

Certified by _____
David E. Hardt, Thesis Reader
Chairman, Committee on Graduate Students, Mechanical Engineering

Accepted by _____
David E. Hardt
Chairman, Committee on Graduate Students, Mechanical Engineering

Accepted by _____
Maura Herson, Director of MIT Sloan MBA Program
MIT Sloan School of Management

This page intentionally left blank.

Multi-Echelon Inventory Optimization in a Rapid-Response Supply Chain

by

Robert Giacomantonio

Submitted to the MIT Sloan School of Management and the MIT Department of Mechanical Engineering on May 10, 2013 in Partial Fulfillment of the Requirements for the Degrees of Master of Business Administration and Master of Science in Mechanical Engineering

Abstract

The motivation for multi-echelon supply chain management at Nike is to more cost-effectively accommodate customer-facing lead time reduction in the rapid-response replenishment business model. Multi-echelon inventory management, as opposed to a traditional finished-goods only philosophy, provides two clear benefits to a make-to-stock supply chain: first, it increases flexibility through staging calculated work-in-process inventory buffers at critical supply chain links and allowing postponed identification of finished goods; second, inventories held as work-in-process are typically carried at lower cost than finished goods. This thesis details the completion of a project intended to improve Nike's ability to determine optimal inventory levels by balancing cost and service level tradeoffs in a multi-echelon-enabled environment.

The goal is to develop an inventory modeling methodology for Nike's supply chain data architecture specifically to evaluate the hypothesis that multi-echelon inventory management will present only limited opportunity for cost reduction in offshore, long lead time make-to-stock supply chains. To directly asses the hypothesis, Llamasoft's *Supply Chain Guru* optimization software will be deployed to create an inventory optimization model for a specific family of apparel products sold as part of Nike's replenishment offering in North America. The modeling results confirm the hypothesis that multi-echelon inventory management offers little value to the current offshore supply chain. Sensitivity and scenario analysis is utilized to identify significant inventory drivers, areas for substantial improvement, and profitable opportunities for multi-echelon inventory management.

Thesis Supervisor: Stephen Graves
Title: Professor of Management Science, MIT Sloan School of Management

Thesis Supervisor: David Simchi-Levi
Title: Professor of Engineering Systems, Engineering Systems Division

This page intentionally left blank.

Acknowledgments

I would like to express my sincere appreciation to Nike's North American Supply Chain Innovation team for providing me with the resources and support needed to accomplish this work. The success of the internship could certainly not have been possible without the wisdom provided by my project steering committee and the guidance offered by my colleagues in the supply chain function. I would especially like to thank my project coaches, Sitora Muzafarova and Don Reid, my project champion, Karen Stroobants, and Nike's MIT LGO champion, Nikhil Soares. Thanks also to Trish Young, Liesje Hughes, Noel Kinder, Susan Brown, Mike Brewer, Ken Hooton, Jessican McCoy, Tim Lodwick, Jessica Lackey, and everyone else with whom I worked during my internship. Without your patience, this certainly would not have been possible.

I must also acknowledge the Leaders for Global Operations (LGO) program at the Massachusetts Institute of Technology for its incredibly deep community and rich resources generously made available to me. Also, thanks for admitting me and allowing me to pursue this dream. Additionally, my gratitude goes to my faculty advisors, Dr. Stephen Graves and Dr. David Simchi-Levi, for the invaluable mentorship and guidance along the way.

Finally, I'd like to express my deepest gratitude to my wife, Karen, for being the strongest, most supportive, and loving partner a person could reasonably ask for during an action-packed two years of endless study, hard work, and unapologetic unemployment. Also to all the friends, family, and classmates that have made this chapter of life outstanding.

This thesis is dedicated to my parents and brother, Jody, David, and Sam. Without you guys, I'd be lost in the woods.

This page intentionally left blank.

Table of Contents

List of Figures

1 Introduction

The intent of this chapter is to introduce the partner company at which the thesis work was performed by discussing company background, organization, and business models. This chapter will then turn to introducing, in a very general sense, the concepts of multi-echelon supply chain management and inventory optimization. These topics will be discussed in this chapter in the most general sense and will be more thoroughly and technically covered in subsequent chapters.

1.1 Nike Background

Nike, Inc. is a major global designer, manufacturer, and retailer of a wide variety of footwear, apparel, and sports equipment. Originally founded in 1972 by Phil Knight and Bill Bowerman at the University of Oregon, Nike has grown to be among the world's most recognizable brands. Forbes magazine valued the Nike brand at $15B in 2011, which ranks first among all global sports brands [1]. In addition to marketing products under its own Nike brand, the company has also built a diverse portfolio of wholly owned subsidiary brands that reach far beyond the original core sportswear market, including Converse, Hurley, Jordan, and Nike Golf. With its corporate headquarters located in Beaverton, OR, Nike employs more than 40,000 individuals and reported $2.2 billion in net income on $24.1 billion in revenue for fiscal year 2012 [2].

1.2 Nike's Organization Philosophy

Nike employs a highly specialized matrix organization. The primary elements of the Nike matrix are known as Product Engines, Geographies, Product Categories, and Supporting

Functions. A typical Nike employee may reside at the intersection point of three or more of these matrix layers.

1.2.1 Product Engines

The Product Engines layer of the matrix organization consists of Nike's three major categories of product: Footwear, Apparel, and Equipment. While Footwear is largely self-explanatory, the Apparel category consists of all traditional clothing products, such as shirts, pants, socks, or undergarments, and Equipment is comprised of products like golf clubs, duffel bags, or basketballs. Traditionally, Footwear represents the majority of Nike's revenues, with Apparel and Equipment being much smaller.

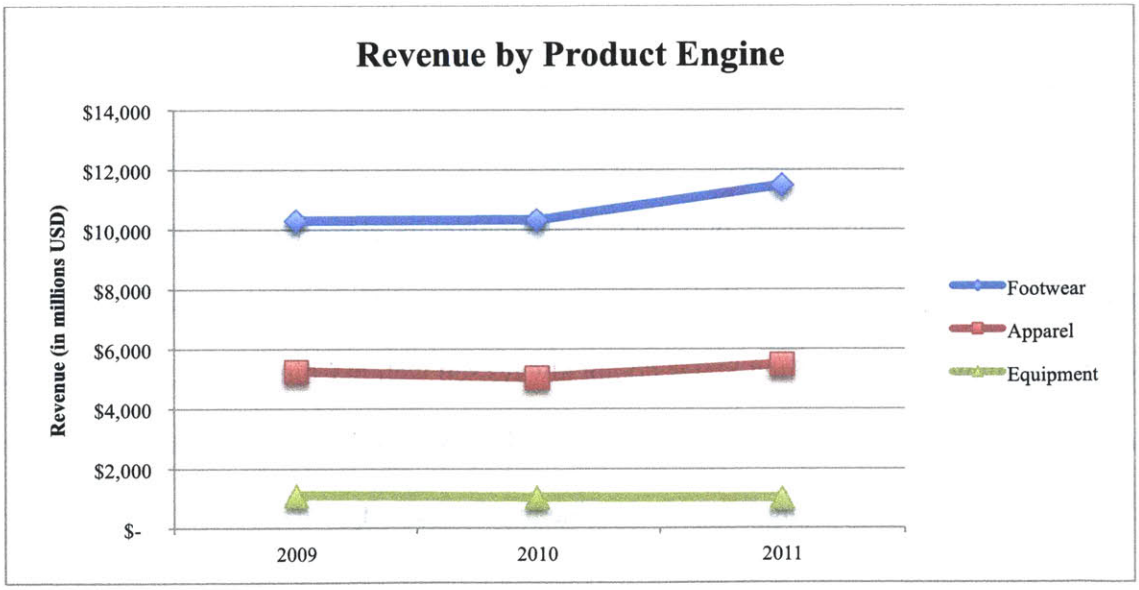

Figure 1: Revenue by Product Engine

Figure 2: Nike Footwear, Apparel, and Equipment

1.2.2 Geographies

The Geographies layer of the matrix divides all of the major regions in which Nike does business into discrete Profit and Loss (PandL) segments. The distinct Geographies into which Nike is organized are: North America, Western Europe, Central and Eastern Europe, Greater China, and Emerging Markets. Each Geography has a full leadership team and offices located throughout the world. The primary purpose of the Geographies element of the organization is to ensure that Nike is bringing appropriate products to market in different regions of the world. Products selling well in the United States do not always sell well in China, Japan, or Europe, for example. The Geographies teams stay apprised of unique regional business trends and then work to ensure Nike's product offering maximizes value in each marketplace.

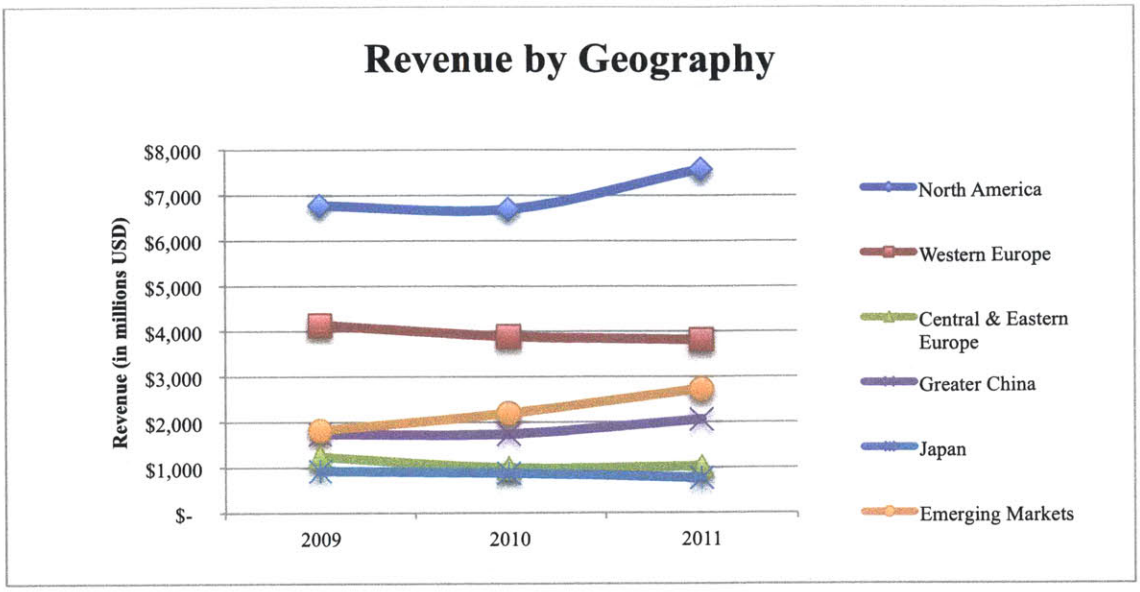

Figure 3: Revenue by Geography

1.2.3 Categories

The Categories layer of the matrix was created as a result of a recent growth strategy announced in 2010: Nike's "Category Offense." The Category Offense adds another facet of corporate alignment that divides the business up into buckets of similarly themed products. The Categories into which Nike's products are divided are: Running, Basketball, Global Football (Soccer), Men's Training, Women's Training, Action Sports, and Sportswear. The purpose of the Categories layer is to ensure that product from each of the three Engines comes together to make a coherent merchandise offering. For example, it is the duty of the Basketball category, among other things, to coordinate the efforts of designers of basketball shoes, apparel, and equipment into a line of product that makes sense to the consumer (i.e. color schemes, fonts, etc.).

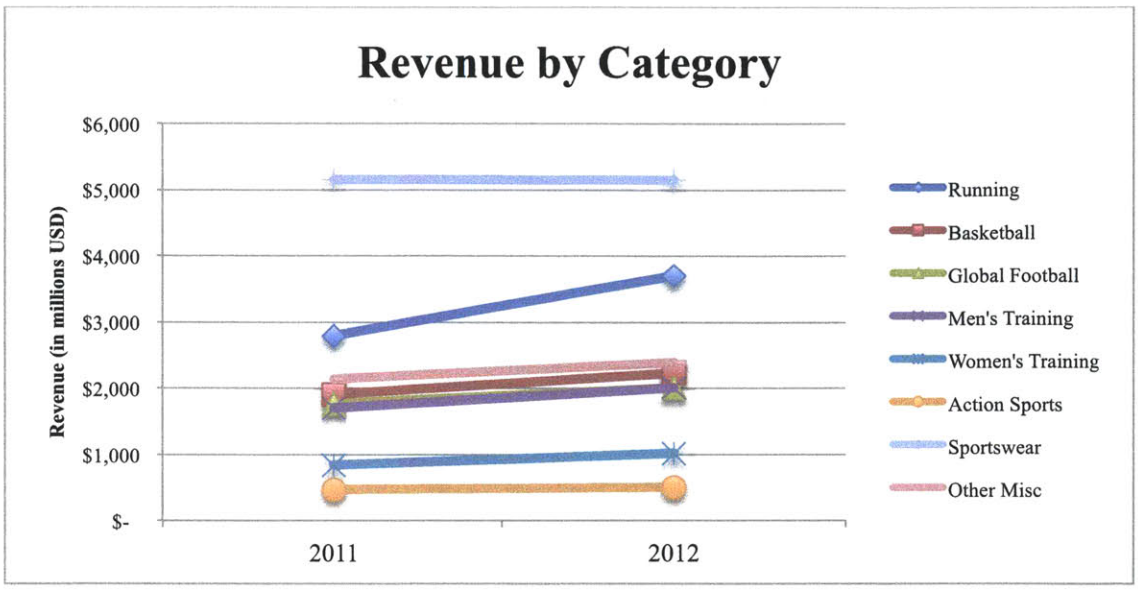

Figure 4: Revenue by Category

1.2.4 Support Functions

Lastly, there is a layer of the Nike matrix that is comprised of what are collectively known as the Support Functions. These functional groups support all other layers of the matrix in their individual areas of expertise. The Support Functions at Nike are: Finance, Legal, Human Resources, Operations, and Information Technology. The Supply Chain Innovation team sponsored the work represented in this thesis, which is located in the Operations (Support Function) and North American (Geography) layers of the matrix.

1.3 Nike Business Models

Nike employs four basic business models in getting footwear, apparel, and equipment into the marketplace: Futures, Replenishment, Quick Turn / Quick Strike, and Custom. Each model is designed to fulfill a specific business need, ranging from the highly customizable to the highly cost-effective.

1.3.1 Futures

The Futures business model is based upon Nike's original supply chain strategy, which accounts for a significant portion of Nike's early success throughout the 1970's and 1980's. In the Futures business model, a customer places a firm purchase order dictating the exact products it requires. A Futures purchase order specifies the styles, colors, sizes, as well as quantities of each, of the products requested. Nike then communicates the demand to its portfolio of contract manufacturers, which produce the goods as ordered. In addition, Futures orders for identical products received at Nike from different customers are often consolidated before a final demand is communicated to the manufacturing base. Product is then delivered to the customer when available, usually at the conclusion of the quoted lead time. In general, all Nike products can be purchased via a Futures order. Retail customers often place Futures orders to "Load In" floor space with product for the upcoming seasons. For example, styles and color schemes for Summer may be ordered by a retailer on a Futures order that is actually placed during the preceding Fall.

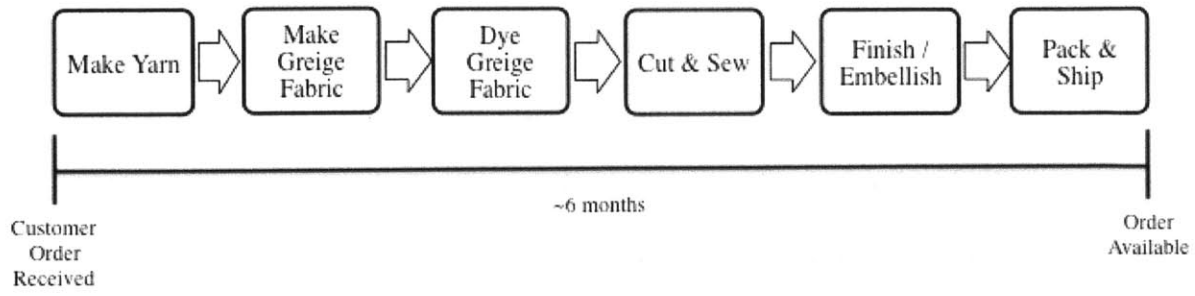

Figure 5: An Example Futures (Make-to-Order) Business Model for Apparel Products

For most footwear, apparel, and equipment products, the lead time averages approximately six months. The Futures business model has advantages and disadvantages for

both Nike and its customers. First, Nike can produce goods with almost complete confidence that they will be delivered to a customer willing to accept the order. Similarly, the customer can be completely confident that when placing a Futures order, the goods will be available at the conclusion of the lead time. However, the certainty associated with a Futures order comes at the expense of flexibility and responsiveness. Nike does not signal the manufacturing base to produce goods until it receives an order; as such, the customer generally must wait the production lead time until goods are available. Additionally, once a Futures order is placed and communicated to the manufacturing base, it is difficult for Nike to offer the customer any flexibility on the styles, colors, or sizes of the products ordered. The replenishment business, particularly with its replenishment strategy, offers customers some of the flexibility and responsiveness that the Futures model fundamentally precludes.

1.3.2 Replenishment

While a major benefit of the Futures Business model is mitigating uncertainty in customer demand, the replenishment business, which includes replenishment, material staging, and other rapid-response strategies, is intended to provide retailers with more flexibility during a selling season. This project focuses largely on the retail replenishment program, which operates similarly to a make-to-forecast system discussed in Chapter 3. Nike offers select products to customers on its replenishment program, which the customers can order at any time during a selling season. Replenishment products are typically comprised of "staple" elements of Nike's product catalog, generally consisting of fundamental, must-have products, such as socks, outerwear, basic workout and athletic gear, or t-shirts. Stated differently, replenishment products are goods that consumers expect retailers to have on the shelves any time they walk into the store. Ideally, replenishment products have long life cycles (generally two years or more) and

stable demand patterns with little seasonality. Unlike the Futures business model, however, not all Nike products are offered on replenishment.

In operating the replenishment business, Nike will request (or produce internally) demand forecasts in advance of an upcoming sales period, consolidate same-product forecasts from various retailers, and then manufacture the products at the forecasted production levels. Because Nike activates the factory base in the replenishment model in response to a forecast rather than a firm customer purchase order, product is manufactured at Nike's own risk, and inventory exposure is directly affected by forecast accuracy. Goods manufactured to forecast are typically shipped into one of Nike's regional distribution centers where they await a discrete purchase order from the downstream customer. When a replenishment purchase order is received from a customer, Nike processes and fulfills the order from inventory available in the distribution center. In the North American Geography, Nike strives to achieve short customer-facing lead times for replenishment products. For the purposes of analysis, the customer-facing lead time is assumed by the author to be two weeks.

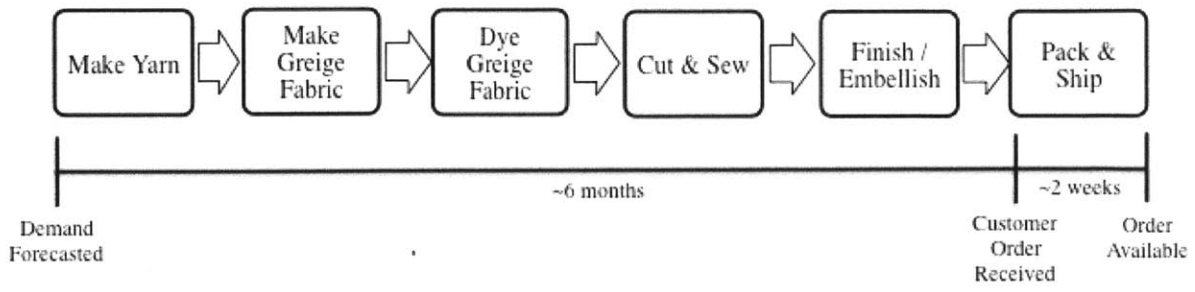

Figure 6: An Example Replenishment (Make-to-Forecast) Business Model for Apparel Products

It is important to note that the actual manufacturing lead time in the replenishment business is not materially different than in the Futures business model, as the same factories and transportation pathways are used to fulfill demand streams for both models.

As will be demonstrated in subsequent chapters, forecast accuracy and lead time are of paramount importance to the replenishment business model, as they directly influence the safety stock inventory levels that Nike must maintain in its warehouses and distribution centers in order to maintain a given service level. Because goods in the replenishment model are sometimes produced at risk in response to a demand forecast as opposed to a firm customer order, inventory is held on Nike's balance sheet until a customer purchases it. Any inventory not sold before the product is retired must be closed out through any number of suboptimal liquidation channels. The concepts of forecasting, forecast accuracy, and safety stocks are of fundamental importance to any retail replenishment strategy, and challenges associated with planning this business comprise the work efforts to be discussed in greater detail in subsequent chapters of the thesis.

1.3.3 Quick Turn & Custom

The Quick Turn business model, also known as Quick Strike, is intended to be highly responsive to instantaneous market trends and is designed to exploit fleeting customer demand. Nike often employs the Quick Turn business model to leverage what it calls "Sports Moments," or instances of peculiar or extraordinary activity in the athletic world which create abnormal consumer demand. For example, if a Nike-sponsored athlete was to break an important record in his or her sport, a t-shirt commemorating the accomplishment might be printed and sold through the Quick Turn business model in order to capitalize on any one-time-only demand among fans or spectators. In this business model, Nike rapidly designs, produces, and distributes product,

which are often screen printed t-shirts, to respond to this type of demand before it dissipates with time.

Finally, Nike offers some products that can be customized by the end-user and produced to his or her own specifications. Nike iD footwear, for example, can be completely configured by the consumer using Nike's online customization utility [3].

While extremely important to Nike's overall portfolio, the Futures, Quick Turn, and Custom business models are not significant factors to be discussed in relation to the thesis project.

1.4 Multi-Echelon Supply Chains & Nike

A fundamental challenge facing supply chain managers is the coordination of activities across various stages, or "echelons," of the production process. Most supply chains for manufactured goods consist of multiple echelons, which may or may not be vertically integrated under the control of one corporate entity. Figure 7 below is an example of a generic multi-echelon supply chain and is provided primarily to reinforce the concept of how multiple supply chain echelons often interact to accomplish the production of a finished good.

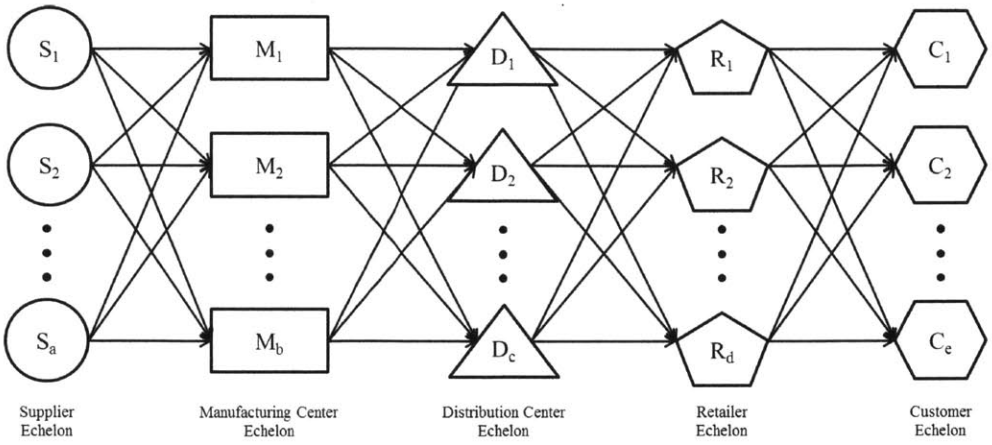

Figure 7: A Generic Multi-Echelon Supply Chain

The supply chain in Figure 7 consists of five generic echelons: Suppliers (S), Manufacturing Centers (M), Distribution Centers (D), Retailers (R), and Customers (C). Each echelon of the supply chain in Figure 7 is comprised of nodes representing individual physical sites, each with their own operating procedures and characteristics. For example, when considering the echelon of Distribution Centers, there should exist a node for each physical Distribution Center currently functioning (or that could potentially function) in the network. These Distribution Centers may each have their own unique characteristics, such as capacities, cycle times, inventory policies, fixed and variable operating costs, etc. Nodes in the figure are connected with arrows across echelons in a manner consistent with the actual flows of products and information. Figure 7 represents a simplified supply chain in which each node in an upstream echelon can flow its product to all nodes in the proceeding downstream echelon. For example, each node in the Distribution Center echelon can obtain product from any node in the Manufacturing Center echelon. In most instances, different nodes represent separate physical entities, and the arrows connecting nodes can be thought of as paths on which products can be physically transported.

Because this thesis will deal with goods in Nike's Apparel Product Engine, we can replace the generality of Figure 7 with slightly more detailed echelons that relate more specifically to the characteristics of a clothing or apparel supply chain. Apparel supply chains at Nike consist of multiple echelons, ranging from the spinning of thread or yarn at the most upstream end to the embellishments of a finished good at the most downstream. Figure 8 represents the manufacturing and distribution echelons of a typical Apparel supply chain.

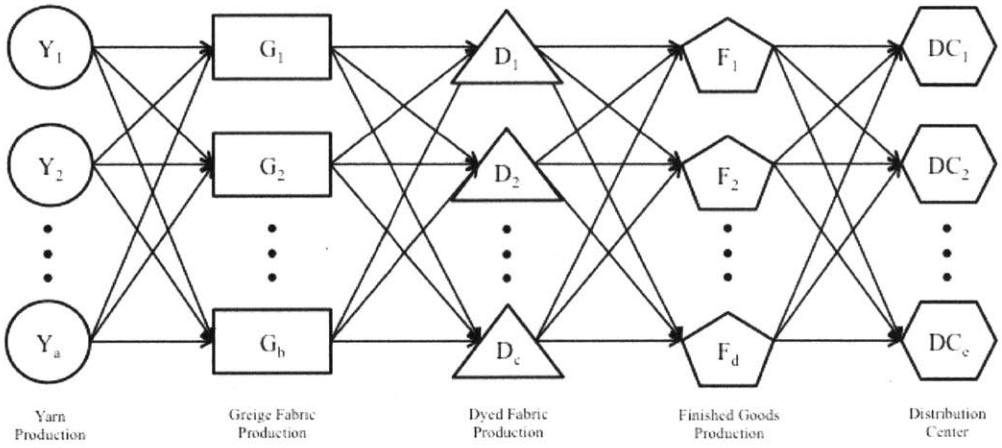

Figure 8: A Generic Multi-Echelon Apparel Supply Chain

A brief, and obviously simplified, summary of the activities performed at each of the echelons in the Apparel supply chain depicted in Figure 8 is as follows:

- **Yarn Production** – At this echelon, fibers such as cotton, wool, fleece, and/or various synthetics are spun together to produce yarns.
- **Greige Fabric Production** – Yarn is woven together to produce raw, uncolored fabric, referred to as "greige," that has the textile composition desired of the finished good (e.g., 25% cotton, 75% polyester).

- **Dyed / Finished Fabric Production** – Greige fabric is dyed to the appropriate color and finished to have the look, feel, wear, strength, etc. characteristics desired of the finished good.
- **Finished Goods Production** – Dyed and finished fabrics are cut and sewn into the silhouette of a finished good (e.g., t-shirts, sweatpants, etc.). Any embellishments or trims, such as screen-printing, logos, labels, buttons, zippers, etc. are also applied at the Finished Goods Production echelon.
- **Distribution Center** – Finished goods are stored as inventory in the distribution center network and await ordering by and shipment to the downstream customer.

It should be noted that the above echelons are often separate physical brick-and-mortar entities, as well as their own distinct companies, but they need not be. In several cases, as will be shown with the replenishment strategy for apparel business in North America in subsequent chapters, one single company can house many of the echelons outlined in Figure 8 under the same roof.

1.5 Multi-Echelon Inventory Optimization

A primary purpose for the carrying of inventory is to reduce the inherent time lag, or lead time, a customer experiences while waiting for a good to be produced. For example, with sufficient finished goods inventory in stock, a hypothetical customer would observe essentially no lead time in the purchase of the product. Additionally, work-in-process (WIP) inventory can be carried at upstream nodes of the supply chain to reduce the customer-facing lead time in the event that the finished goods inventory supply is exhausted.

From the manufacturer's point of view, a policy of carrying inventory at an upstream node reduces the lead time over which the subsequent downstream node needs to protect against stock outs, which reduces the amount of safety stock required downstream. This important concept will be more thoroughly discussed in subsequent chapters.

Figure 9 shows possible customer-facing manufacturing lead times in a simplified supply chain:

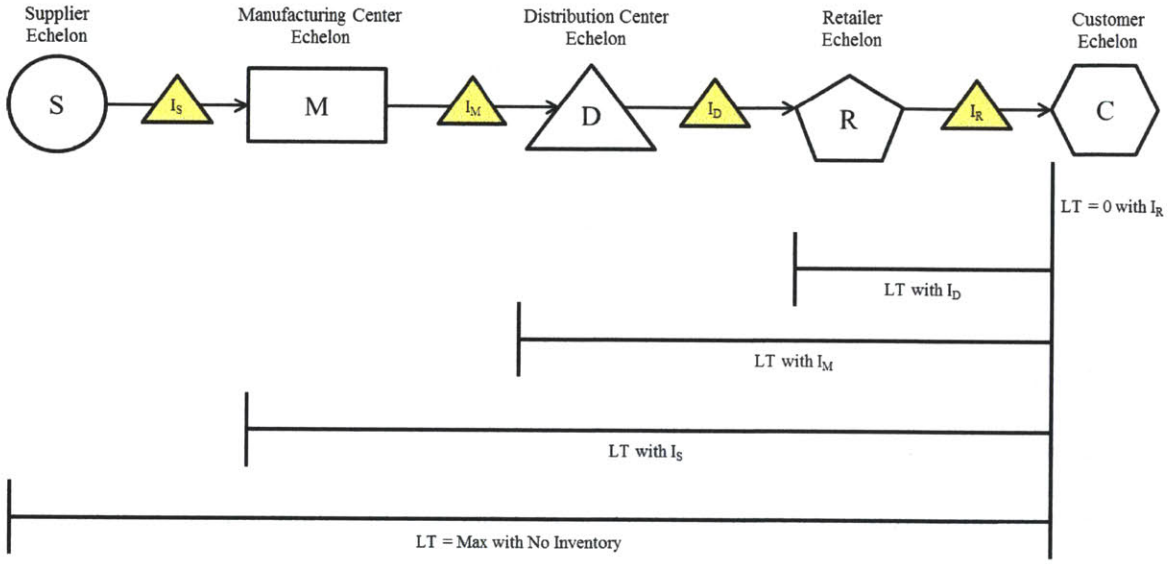

Figure 9: Customer Lead Times with Inventory

It is clear that the customer lead time is minimized by maintaining sufficient inventory of finished goods at the point of sale (which results in zero lead time), represented by I_R in Figure 9 above. However, as we have seen with the replenishment business model, product is manufactured to a forecasted demand and is generally produced at risk, and excessive finished goods inventories are undesirable. Alternatively, if finished goods are held in insufficient supply, the organization runs the risk of missing out on sales. Forecasts can be considerably inaccurate, and forecast error can lead to over- or under-production of finished goods.

Determining the optimal amount of inventory required to capture a sufficient level of sales while simultaneously absorbing excessive inventory risk is the essence of inventory optimization. Additionally, this inventory balancing act can be applied at all echelons of the supply chain, and optimal inventory levels can be calculated for both finished goods and WIP, represented by I_s, I_m, and I_d in Figure 9. Determining the economically optimum inventory levels across all echelons of the supply chain will be referred to as *Multi-Echelon Inventory Optimization* (MEIO) and is the central topic of this thesis.

1.5.1 Multi-Echelon Inventory Optimization and Nike

MEIO is a particularly advantageous philosophy when applied to Nike's replenishment business model. By taking an upstream inventory position in the form of WIP, risk is mitigated in two important manners:

1. WIP inventory can often be manufactured into a variety of finished goods SKUs, thus enabling product flexibility and buffering against forecast error.
2. WIP inventory is usually carried at a lower cost than finished goods inventory, thus reducing the required outlay of cash and the associated cost-of-capital expense.

As noted by Graves and Willems [4], supply chain managers are under ever-increasing pressure to deliver results, and effectively managing inventory across multiple echelons of the supply chain can improve performance by increasing supply chain flexibility and reducing inventory exposure. Indeed, as in the case of most Nike supply chains employing contract manufacturing, each echelon of the process need not be owned or managed by the same business entity for value to exist in a multi-echelon approach to supply chain planning. By effectively utilizing historical supply chain data, including but not limited to manufacturing lead times, on-

time delivery rates of suppliers, production costs, and transportation lead times, Nike can employ MEIO techniques to improve the inventory planning function of the replenishment business. Although Nike employs contract manufacturing in virtually all of its supply chain models and does not directly control the physical manufacture of goods across all echelons of its supply chain, value can be gleaned from MEIO, and from analytical inventory modeling in general, by assuming the supply chain as vertically integrated, calculating target optimal inventory values, and then negotiating with contract manufacturers on implementation strategies. Having presented some basic terminology and concepts regarding Nike's organizational structure and mode of conducting business, an overview of the thesis project can now be discussed.

2 Project Overview

As discussed in Chapter 1, the primary motivation for MEIO implementation at Nike is to investigate strategies to improve operating performance of the replenishment business model. Multi-echelon inventory management, as opposed to finished goods-only strategies, provides two clear benefits: First, it increases flexibility through staging calculated WIP inventory buffers and allows for late-stage differentiation of finished goods; Second, inventories held as WIP are carried at less cost than those held as finished goods. The project will create an inventory modeling methodology with which Nike can determine optimal inventory levels across multiple echelons of the supply chain.

The project proceeds in three phases: Benchmarking, Inventory Modeling, and Implementation Methodology.

2.1 Benchmarking

The Benchmarking phase begins with examination of the processes and systems put in place to support Nike's multi-echelon NFL supply chain and includes learning from reviewing relevant academic literature, industry best practice, and economic trends.

2.2 Inventory Modeling

The Inventory Modeling phase will be the primary focus of the thesis and involves the development of an optimization framework capable of taking Nike supply chain data and calculating an optimal inventory policy for all planned supply chain echelons. The model is also capable of performing various forms of scenario and sensitivity analysis. A pilot model has been developed using a family of apparel products on replenishment sold in the North American Geography. Development and analysis of this pilot model will be of fundamental concern to the

body of this thesis and will provide substance from recommending an appropriate implementation strategy within Nike's supply chain planning organization.

2.3 Implementation Methodology

Finally, the Implementation Methodology phase focuses on integrating into the broader Nike business the MEIO modeling strategy and findings developed via investigation of the apparel pilot model. This includes analysis of required capabilities (people, processes, systems, etc.), potential strategies for integration with the Nike Planning Transformation effort, and recommendations for next steps.

3 Literature Review

A great deal of research has been done in the field of production strategies, service level and safety stock modeling, and inventory optimization. Relevant academic literature was reviewed in great detail at the beginning of the project to develop a basis for setting expectations and goals, as well as for choosing an appropriate package of optimization software. This chapter will summarize some of the findings of the literature review conducted in the areas of production strategy selection, inventory optimization, multi-echelon modeling techniques.

3.1 Production Strategies

Meredit and Akinc characterize and define five distinct models from which a business can choose an appropriate production strategy: Engineer-to-Order (ETO), Make-to-Order (MTO), Make-to-Forecast (MTF), Assemble-to-Order (ATO), and Make-to-Stock (MTS) [5]. Each of these production strategies carries specific characteristics with respect to responsiveness and product customization that the operations manager must treat carefully in designing a supply chain to have the intended functionality.

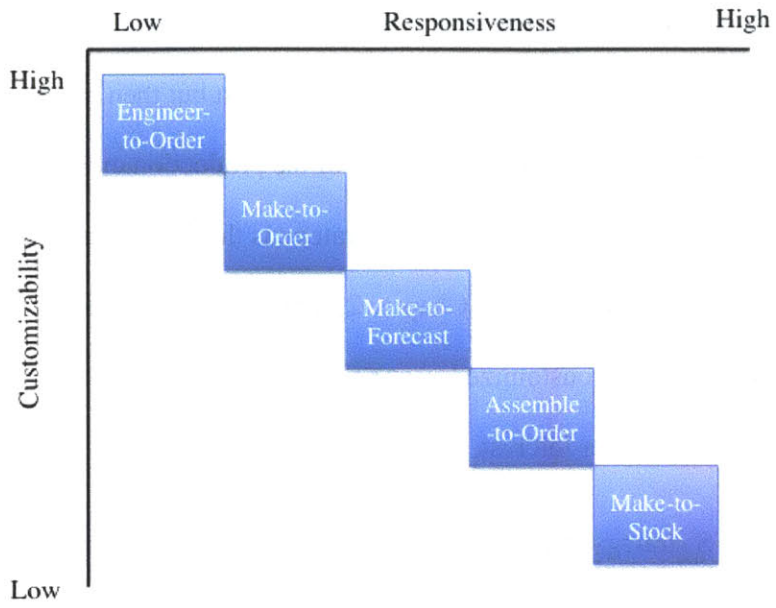

Figure 10: Production Strategies and their Responsiveness vs. Customizability

ETO and MTO are certainly the options that lend the most opportunity for customization, however, as the manufacturing process does not commence until after the formal receipt of a purchase order, these supply chains are not extraordinarily responsive to changing customer needs. MTO is generally the most highly utilized customizable production strategy. In most businesses, outside of perhaps power plant construction, shipbuilding, or other similarly engineering-intensive operations, product can be mostly designed without customer input. Within the framework of Nike business models discussed in Chapter 1, the Futures business corresponds nicely with the MTO production strategy, and in some ways, the Custom / Nike iD business could be considered as ETO products, with the customer doing the "engineering" work him or herself.

The MTF and ATO production strategies attempt to compromise on highly responsive and highly customizable scales. The ATO production strategy, for example, is desirable when quick response (but not instantaneous response) is desired in order to take advantage of fleeting

customer demand. Both the ATO and MTF production models employ a strategy of producing partially finished goods in response to a predetermined forecast but then modifying the goods to fit the specific needs of the consumer at a later stage of the production cycle. The Nike framework closest to an ATO or MTF production strategy is the Quick Turn business model. The Quick Turn business, as mentioned in Chapter 2, largely involves producing t-shirt "blanks" which are kept in stock and then customized very near the time of sale in order to respond to a special event, a fleeting consumer interest, or other "Sport Moment."

Finally, the MTS strategy maximizes customer response by fully manufacturing finished goods and staging them near the point of sale such that the consumer experiences an effectively instantaneous responsiveness from the supply chain. In an MTS system, demand is fulfilled from finished goods inventory, and the primary challenge of the production manager is establishing and maintaining an appropriate amount of inventory sufficient to avoid stockouts. An MTS strategy may employ elements of an ATO or MTF production model in that product may be intentionally stalled at an upstream echelon in order to increase the amount of downstream flexibility (as in the case of holding greige before determining a desired color to dye fabric, for example) or to hold goods at a more reasonable cost; however, the MTS strategy does not allow for late-stage customization in terms of the actual product design. The catalog of possible finished goods in an MTS model is fixed, and there is generally no design or engineering of product during the manufacturing process. The MTS production strategy can be thought of as a direct analog to Nike's replenishment business, and the challenges associated with planning inventory levels in response to an aggregate demand forecast and desired service levels, as covered in Chapter 2, is the focus of the majority of this project.

3.2 Planning in a Make-to-Stock Production Strategy

As Bertsimas and Paschalidis note, the fundamental tradeoff in a Make-to-Stock production strategy is between producing goods and idling production. When goods are produced, stockouts are reduced but inventory carrying costs are incurred. When production is idled, manufacturing and inventory costs are reduced but unsatisfied demand and stockouts can occur [6]. Another challenge of managing the MTS production strategy, as noted by Boylan and Johnston, is determining an appropriate service level at which each stock-holding echelon of the supply chain should operate [7]. This section of the thesis will define and evaluate the manageable characteristics of the MTS production system and highlight current methods for managing challenges in planning.

3.2.1 The Forecast

The characterization of demand in a Make-to-Stock strategy is the forecast. Kalekar defines the forecast as a prediction of future marketplace demand on the basis of historical and current data against which production is planned [9]. There are many established and well-researched forecasting techniques, and the field in general is far too broad to be effectively summarized here. Some common methods of time-series forecasting in business applications are the moving average, the weighted moving average, and exponential smoothing. In general, the goal of these forecasting techniques is to determine a best estimate for demand in an upcoming period. Furthermore, the Holt-Winters method of exponential smoothing is a widely used procedure for forecasting of business data that contain seasonality or trends [8], and is the technique employed in Nike's primary forecasting package, Logility's *Voyager Demand Planning* software[1]. Silver, Pyke, and Peterson offer a more robust description of forecasting

1 http://www.logility.com/solutions/demand-planning-solution/voyager-demand-planning

methods and derivations of the governing equations for each of the simple forecasting techniques mentioned above [11].

Before leaving the topic of forecasting, the idea of forecast accuracy must be discussed. Forecast accuracy statistics represent calculations of the inherent error between a forecast prediction and an actual observation. Hyndman and Koehler identify and evaluate several common measures of forecast accuracy: Mean Absolute Percentage Error (MAPE), Median Absolute Percentage Error (MdAPE), and Mean Absolute Scaled Error (MASE), for example [10].

For the purposes of this project, the Root Mean Square Error (RMSE) method will be utilized when referring to forecast accuracy measures. The forecast error of a particular time period, t, can be defined as:

$$\epsilon_t = x_t - x'_t$$

Where x_t represents the actual observed value and x'_t represents the forecasted value for time period t. In a set of forecast errors over n time periods, $\{\epsilon_1, \epsilon_2, \ldots, \epsilon_n\}$, the RMSE value, which is also an estimate of the standard deviation of the demand variable, σ_D is given by:

$$\sigma_D = \sqrt{\frac{1}{n}(\epsilon_1^2 + \epsilon_1^2 + \cdots + \epsilon_n^2)}$$

The above assumes that the forecasting process utilized produces unbiased projections of future demand. In this fashion, the RMSE can be thought of as an estimation of the standard deviation of forecast error with respect to a mean forecasted value. Furthermore, as will be shown in subsequent chapters, we can consider the forecasted value for a future time period, x'_t, as a

normally distributed random variable with a standard deviation equivalent to the calculated RMSE observed of previous periods' forecasts.

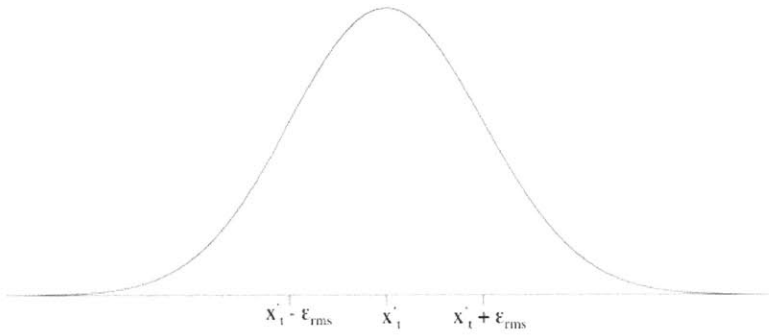

Figure 11: The Forecast as a normally distributed random variable with mean x'_t and standard deviation ϵ_{rms}

3.2.2 Service Level

Having characterized the demand in a MTS production strategy as a forecast modeled as a normally distributed random variable with a mean demand and a standard deviation calculated using historical forecast error, the topics of service level and safety stocks can now be reviewed. Rosenbaum defines service level to be the fraction of units filled from inventory held on-hand [12]. By thinking of the forecast as a normally distributed random variable, the idea of service level can be presented graphically as the percentage of possible demand scenarios that can be satisfied without the occurrence of a stockout. This corresponds directly to the z-score value associated with the cumulative normal distribution.

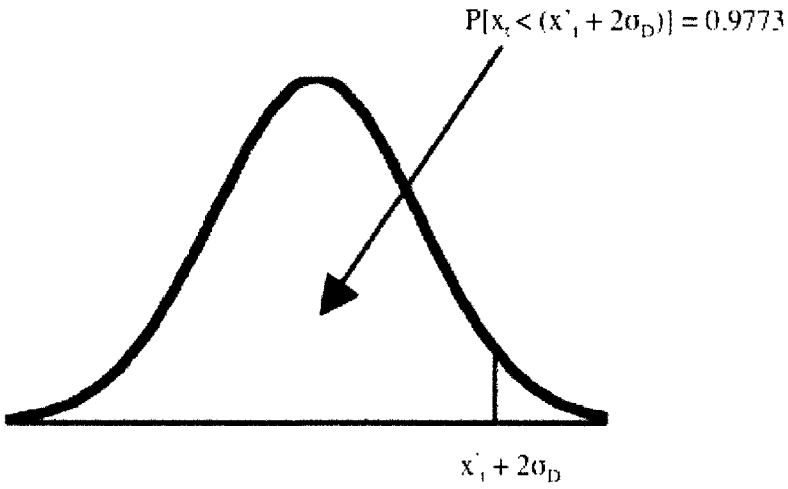

Figure 12: A service level of 97.73%

Figure 12, for example, represents graphically the service level corresponding to an observed demand, x_t, two demand standard deviations above the mean forecasted demand, x'_t. Referring to a z-score table for the cumulative normal distribution function, this can be interpreted as a service level of 97.73% [13]. In other words, the probability of completely satisfying the period's actual demand from inventory on-hand is 97.73%, which is the service level of the supply chain. Correspondingly, 2.27% is the probability of stocking out during the period.

Much research has been done on the subject of establishing an economically optimum service level. Rosenbaum notes that the use of the classic approach of trading ordering and holding costs against backorder costs is theoretically superior to the service level approach in determining inventory planning strategies, accurate determination of backorder (and missed sales costs) is not always plausible [12]. In such situations, supply chain managers must calculate an optimal service level (where possible), or select a service level strategically or anecdotally. The Newsvendor approach, covered in most introductory supply chain textbooks, is a common

strategy employed in MTS systems where tradeoffs between lost sales and excess inventory are utilized in calculating optimum service level [14]. In fact as Parsons has shown, a Newsvendor approach has been effectively applied in determining the inventory strategy for NFL replica jersey demand at Reebok during the 2005 NFL season [15].

In many cases, though, supply chain managers choose service levels not through quantitatively rigorous, academic approaches, but by establishing more qualitative, strategically driven operating policies. As will be shown in subsequent chapters, Nike takes just such an approach in determining service level policies for its replenishment business. Nike utilizes service level metrics that measure the percentage of orders fulfilled in-full by their due date. For the purpose of analysis to be conducted later, it will be assumed a 95% service level is the target for all replenishment offerings.

3.2.3 Safety Stock

Having briefly covered the topics of forecasting, forecast accuracy, and service level constraints, the idea of safety stock can now be discussed. As Baker et al. have noted, most firms typically leverage safety stock in coping with the effects of forecasting errors on service level targets. Commonality between components of finished goods, such as greige fabric in the case of Nike, can be valuable in reducing safety stock inventory investments while maintaining a given level of service [16].

Recalling Figure 9 from Chapter 1, it can be shown that carrying inventories at an upstream node reduces the effective lead time over which the downstream node needs to protect against stockouts. For example, with no inventory buffers in the upstream supply chain, the Distribution Center echelon would need to carry safety stock sufficient to protect against the

Supplier and the Manufacturing Center lead times. However, by carrying an inventory buffer of finished goods at the Manufacturing Center, the Distribution Center would only need to carry safety stock sufficient to protect against the transit lead time between the Manufacturing and Distribution Center nodes. Multi-echelon safety stock strategies may hold upstream inventory buffers to reduce downstream safety stock and, depending on the relative carrying costs of inventories, perhaps overall supply chain costs. These important tradeoffs will be examined by modeling an actual supply chain in Chapter 6.

Talluri, Cetin, and Gardner discuss a concise, effective model for calculating optimal safety stock when demand variability (forecast error, σ_D, from 3.2.1 above) and supply variability can both be considered as independent, normally distributed random variables [17]. The safety stock equations proposed are summarized in Figure 13, where R is the average demand per period, (or forecasted demand, x'_t, for period t); R_L is the average demand over the replenishment lead time; σ_D is the standard deviation of demand over the same period as R; L is the average replenishment lead time; σ_L is the standard deviation of the replenishment lead time, also known as "on-time performance" of a supplier; SS represents safety stock; SL represents the desired service level; σ_{LT} is a measure of total demand and supply variance over the replenishment lead time; and F^{-1} represents the inverse normal function (or z-score) associated with SL:

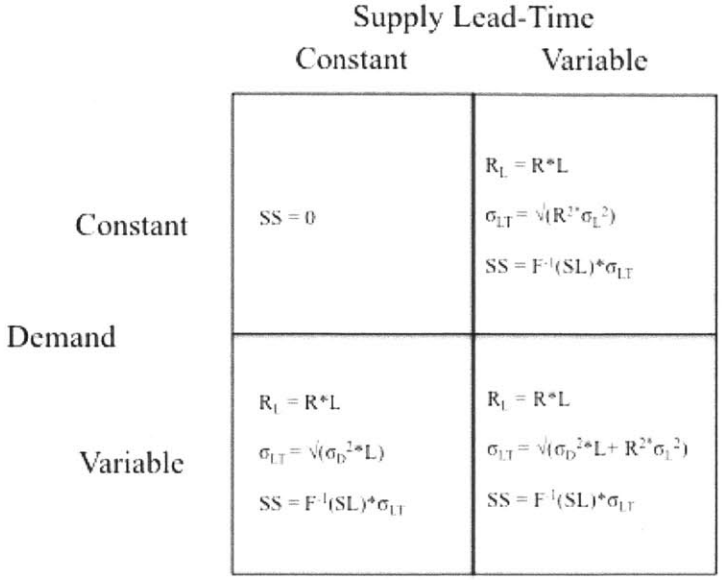

Figure 13: Safety Stock equations under Demand and/or Supply Variability

Graves and Willems expand upon these safety stock calculations by extending the approach to cover multi-echelon supply chain systems and considering the entire system as a network, with each stage operating under a period-review base stock policy. The Graves and Willems model is an optimization algorithm for the placement of safety stock in multi-echelon supply chains modeled as spanning trees. This approach lays the foundation for a number of supply chain optimization software packages, one of which (Llamasoft's *Supply Chain Guru*) has been selected by the author for utilization in performing calculations for the pilot model created as the basis of this project [18] [19].

3.3 Supply Chain Optimization Software

A variety of "off-the-shelf" software packages exist to assist supply chain managers with inventory planning, network design, logistics management, and a wealth of other complex systems requiring quantitative, algorithmic solutions. Software such as the Supply Chain

Optimization suite from Quitinq[2], Logility's *Voyager*[3], the *Enterprise Inventory Optimization* package by SmartOps[4], and *ILOG* from IBM[5] are just a few of the commercially available products aimed at simplifying the inventory and supply chain optimization problems proposed in this chapter.

Nike recently announced a strategic partnership with Llamasoft, creator of the *Supply Chain Guru* software, to begin co-developing solutions for improving the efficiency of supply chain planning [20]. *Supply Chain Guru* specifically invokes the algorithms laid out in Graves and Willems [18] [19].

2 http://www.quintiq.com/solutions/supply-chain-planning/supply-chain-optimization.aspx

3 http://www.logility.com/inventory-optimization-software

4 http://www.smartops.com/enterprise-inventory-optimization/

5 http://www-01.ibm.com/software/websphere/products/sca/

4 Nike, Rapid-Response, & Multi-Echelon Inventory: A Hypothesis

Having presented brief overviews of Nike's corporate structure and the thesis project in Chapters 1 and 2, as well as discussing briefly the concepts of forecasting in Make-to-Stock production systems, service level constraints, safety stock calculations in Chapter 3, a hypothesis can now be formulated regarding the expected effectiveness of applying a multi-echelon inventory optimization approach to the replenishment business model.

As noted in 3.2.3, in an environment of uncertain supply and demand, the level of safety stock required to satisfy a given customer service level is proportional to:

- The standard deviation of the forecasted demand, σ_D
- The standard deviation of the observed replenishment lead time, σ_L
- The length of the replenishment lead time, L

Nike employs contract manufacturing for all finished goods in the Apparel Product Engine that utilizes an installed factory base located largely offshore with respect to the North America Geography. Apparel, for example, is manufactured largely in Asian countries. As a result, the replenishment lead time for Apparel goods is typically in the vicinity of several months.

Two critical points are proposed in arriving at an initial hypothesis:

- ***First, the safety stock levels required to meet a high service level (i.e., assumed 95% service level) will represent a significant portion of the supply chain's overall inventory position.*** With large replenishment lead times, any significant sources of variability in either the forecasted demand, σ_D, or supplier delivery, σ_L, will warrant substantial levels of safety stock. The nature of Apparel products often involves seasonality, short life-

cycles, and swings in demand resulting from fashion trends; all of which are factors contributing to a demand forecast coefficient of variation (σ_D/x'_t) in excess of 50%, as will be shown in subsequent chapters.

- ***Second, long replenishment lead times will necessitate the carrying of all safety stock inventories at the downstream node closest to the point of sale (i.e., in the Distribution Centers).*** For the purpose of analysis it has been assumed that replenishment customer orders, arriving stochastically, must be satisfied in a period of not more than two weeks. It is hypothesized that the relatively short response window, in comparison to the lengthy product replenishment lead time, will force a result of nearly 100% of the system's strategic safety stock to be placed in the most downstream node possible. Anecdotally, safety stock inventories will not be able to be held upstream, either as finished goods at a factory or as WIP at any node, because they simply cannot be delivered to the customer quickly enough in order to meet the service level target.

For these reasons, it is hypothesized that holding WIP inventories at upstream nodes in the supply chain will not present an attractive strategy. As such, a Multi-Echelon Inventory Policy will not substantially outperform a Finished-Goods-Only Inventory Policy in the current replenishment business on the basis of inventory carrying cost. It is the purpose of the remainder of this thesis to detail the creation of the inventory modeling strategy that satisfies the goals established in Chapter 2, evaluates the hypothesis regarding the effectiveness of Multi-Echelon Inventory Optimization, and lays a foundation for evolving the Nike's inventory planning methodologies.

5 Inventory Optimization & Supply Chain Guru

5.1 Selecting a Software Platform

As discussed in previous chapters, the author selected *Supply Chain Guru* (SCG) as the software package of choice for the creation and analysis of inventory optimization models. The decision to utilize an "off-the-shelf" software package for this Multi-Echelon Inventory Optimization project, as opposed to developing the capability using software programmed in-house, was made for a number of reasons to be detailed in this chapter. Additionally, this chapter is concerned with covering in some depth the process of creating inventory optimization models using SCG, as well as documenting the process of gathering necessary supply chain data (as well as any required transformation calculations)[6].

5.1.1 Out-of-Box Functionality

As an established software package specifically tailored to performing supply chain calculations, SCG is attractively positioned to solve the MEIO problems laid out in Chapter 2 directly "out of the box." Additionally, a robust support network exists for developing SCG models both inside Nike's North American Supply Chain Innovation team, as well as with Llamasoft's technical support associates. An alternative solution could be the development a homegrown piece of software which could invoke a well-suited third party linear program/mixed-integer program solver, such as PuLP[7], CPLEX[8], or possibly even Microsoft Excel's Solver[9] add-in; however, this path was not chosen due to up-front investments in development time, concerns around transferability at the conclusion of the internship, as well as

6 This chapter is written with the intent of being a sufficient guide to be used in the creation of additional SCG models at Nike

7 http://packages.python.org/PuLP/index.html

8 http://www-01.ibm.com/software/integration/optimization/cplex-optimizer/

9 http://office.microsoft.com/en-us/excel-help/introduction-to-optimization-with-the-excel-solver-tool-HA001124595.aspx

perceived complications with scalability to the level of complexity inherent in Nike supply chain management applications.

5.1.2 Scalability

A major advantage of an established software package is that the nature of the graphical user interface (or "GUI") lends itself well to training and enabling multiple users of the application. In addition to the time investment required of initial development, scaling the program to multiple users in various functional groups is a considerable risk inherent with internally developed software. SCG has an MS Office-like interface and requires no knowledge of programming, as well as limited knowledge of the underlying optimization algorithms, in order to get a new user up and running; a clear advantage over a potentially cumbersome piece of internally programmed software performing the same function. Additionally, Nike supply chain data is of a sufficient order of magnitude as to overwhelm the computational capabilities of a more basic optimization utility, such as the MS Excel Solver tool. Finally, the use of SCG will allow Nike to easily expand the MEIO philosophy beyond the initial Product Engine and Geography on which the pilot project is focused.

5.2 Building Inventory Optimization Models in Supply Chain Guru

In the next section, this guide will explain the inventory optimization module of SCG by detailing the major tabular components of an Inventory Optimization model: the products, sites, sourcing, transportation, inventory, and demand tables.

5.2.1 Defining the Products

5.2.1.1 The Products Table

The Products Table is a data table within SCG in which all products included in the model, both finished goods and WIP, are defined. At a minimum, each line item of the Products Table requires data concerning the product's name, value (cost), and price. Additionally, the user can input data defining each product's weight, cubic volume, and freight class.

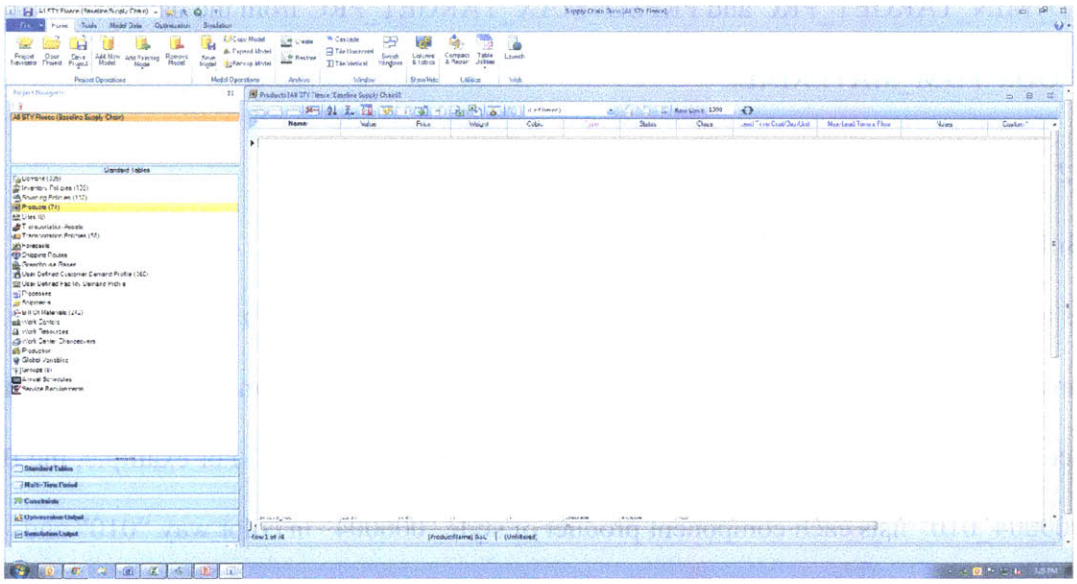

Figure 14: The Products Table

The level of detail at which products are developed is user-defined and can vary from model to model depending on a particular project's needs. As we will see in Chapter 6, the pilot model defines apparel products at a style-color level. The first six digits of a product's name represent the style number. The last three digits represent the color way. For example, "000004_010" represents the finished goods style "000004" in color way "010." Constituent components follow the same nomenclature. For example, "999999_010" represents trim element "999999" in color way "010," while "999999_Greige" represents the same trim element in its

pre-dye greige state. This naming convention is arbitrary, though it applies well to Nike product nomenclature and is simple to implement within SCG.

Product valuation comes directly from Apparel financial databases. Finished goods valuation, both value and price, are respectively extracted from the fields LANDED_COST_USD_WGT_DP and FOB_AMT_QTD_CRCY_WGT_DP located in the database ODS_PRICE_MARGIN_STYLE. WIP valuation can be averaged from the fields PRPSD_MIN_TARGET_PRC and PRPSD_MAX_TARGET_PRC from the database PDM_ODS_PDM_MATERIAL.

5.2.1.2 The Bill of Materials Table

The Bill of Materials (BOM) Table is where relationships are developed between Finished Goods and constituent/WIP products. The BOM Table informs SCG which component products are consumed (and in what quantities) when a unit of finished goods is manufactured. Each finished good has a BOM defining its constituents at a style-color level. For example, the BOM for "000004_010" lists each component product of style "000004" in color way "010" and indicates how much of each component is consumed. Raw material fabrics and trims originating from greige fabric also have BOMs so that SCG can differentiate between dyed and greige material. For example, "464399_010" originates from "464399_Greige," and there exists a corresponding entry in the BOM Table defining this relationship. The BOM nomenclature chosen for the pilot model follows a similar pattern to the product naming convention. An example of a BOM name for product 000004_010 is "BOM_000004_010."

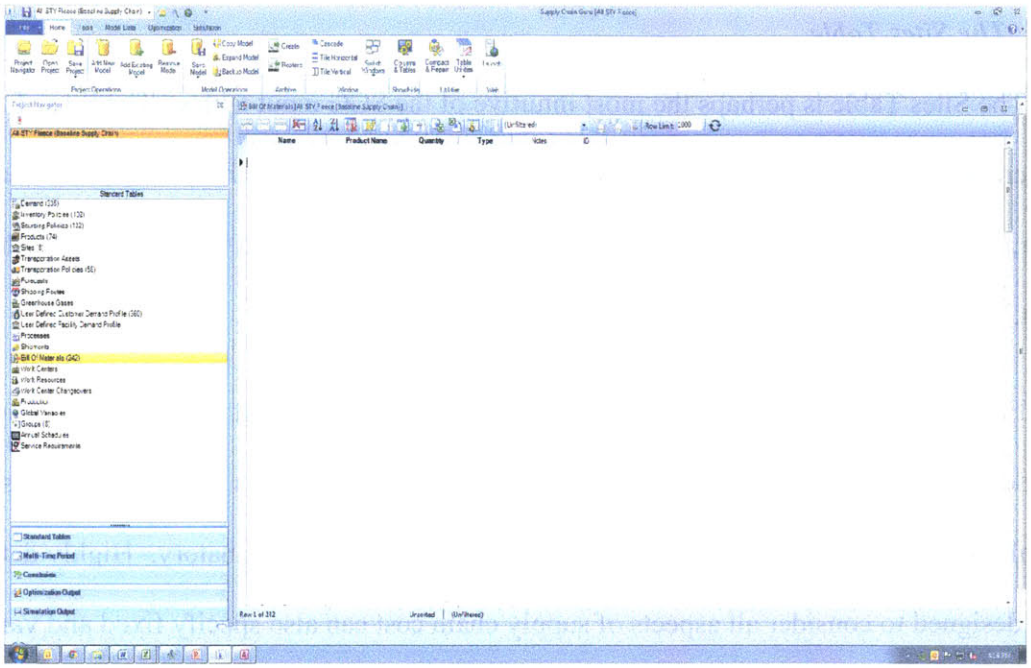

Figure 15: The Bill of Materials Table

BOM information can be extracted from the database RM_RMGREIGE. For each finished goods style in field SY_STY_NBR there is a line item for a BOM component in field ITM_NBR and a usage quantity and unit of measure in AVG_USE_QTY and CONV_UOM_CD, respectively.

5.2.2 Constructing the Supply-Side Model

The supply side of an inventory optimization model consists of all nodes and policies involved in manufacturing, transporting, and distributing product in order to fulfill customer demand. Typically, the supply side of an inventory optimization model will consist of one or more echelons of raw materials suppliers, one or more finished goods manufacturers, at least one distribution center, and transportation routes linking all connected nodes.

In a SCG IO model, the supply side model characteristics are defined primarily by four distinct tables: Sites, Sourcing Policies, Transportation Policies, and Inventory Policies.

5.2.2.1 The Sites Table

The Sites Table is perhaps the most intuitive of the SCG input tables. The Sites Table simply creates the nodes of the physical supply chain network. For each "brick and mortar" supplier, factory, distribution center, or customer, there is a line item in the Sites Table entered to create it.

Each site in the physical network requires an address to locate it on the globe (either street address or GPS coordinates). Site types must also be specified as Existing Facilities, Potential Facilities, or Customers, the meanings of which are self-explanatory. Highly detailed models designed to consider all aspects of supply chain cost can also specify fixed and variable costs of operating a particular site, as well as any relevant capacity limits and capital expenses associated with the facility.

The suppliers and sites associated with a Nike supply chain can be determined by cross-referencing a product's BOM items against the table PDM_ODS_PDM_MATERIAL. The supplier and site addresses can then be geographically located either by simple Internet searching or, more generally, by using the table PDM_ODS_SUPPLIER_LOC_MASTER.

5.2.2.2 The Sourcing Policies Table

The Sourcing Policies Table defines the matter of "who makes what for whom?" Each product, both raw materials and finished goods, has a line item in the Sourcing Policies table, which establishes one of two conditions:

1. **Make Policies** – Every product that is to be produced must have a "Make Policy." A product's Make Policy establishes the supply node that produces the item, the BOM items consumed in the item's production, and the production time the process requires.

2. **Source Policies** – "Source Policies" define how product is allowed to flow between nodes of the supply chain. A Source Policy will establish both where the product originates and to which nodes it is allowed to flow. For example, if the factory producing a finished good must source buttons from a raw material supplier, there must be a Source Policy establishing this relationship. Source Policies can be refined by a number of parameters, such as Single Source, Multiple Sources, or Source by Transfer, that further define how the nodes behave when sourcing product. For each product, however, there must be a unique line item for each "from/to" relationship.

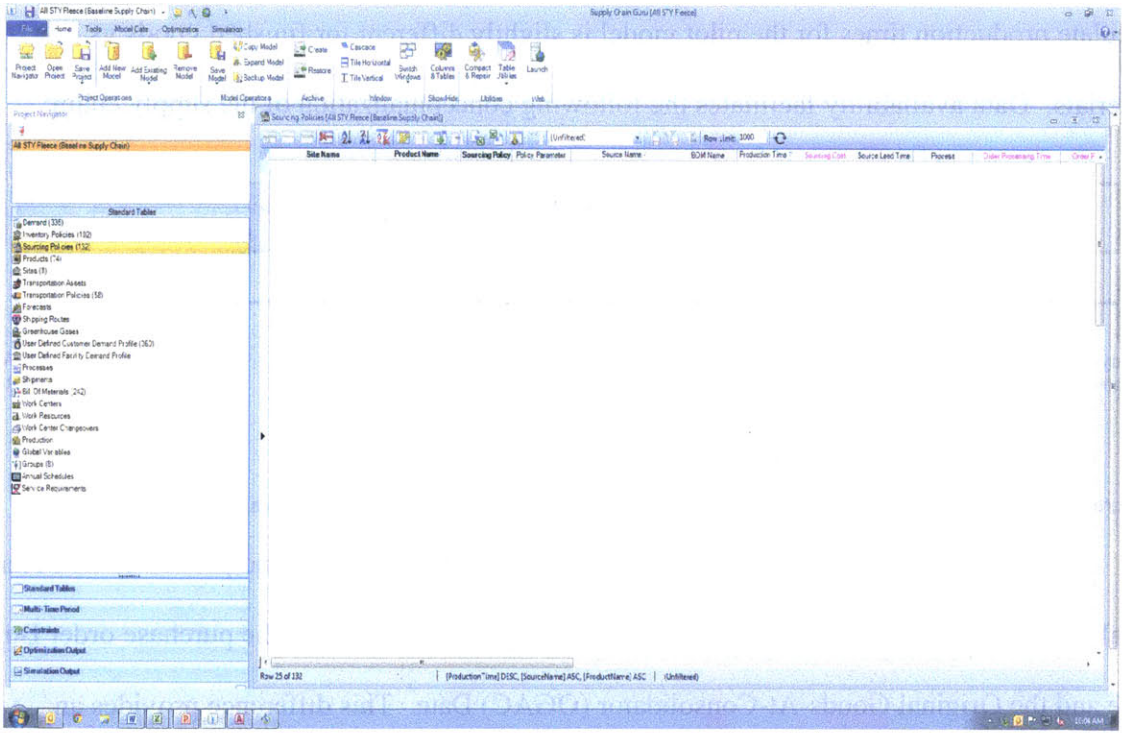

Figure 16: The Sourcing Policies Table

5.2.2.3 Calculating Production Times

In addition to defining the linkages between supply chain nodes and establishing product flow rules, the Sourcing Policies table contains important information on process lead times in

the "Production Time" field. The production time represents the amount of time elapsed between the initialization of an order and the completion of the process. Production times can be modeled deterministically as discrete or continuous numbers, or alternatively as a random variable, with the Gaussian normal distribution being the most common. For example, a production process with a quoted lead time of 10 days and an observed standard deviation of 1 day would be entered into the Production Time field as "N(10, 1) DAY."

Given the nature of Nike data, these production times, as well as the associated variance or uncertainty, must be extracted and calculated from multiple sources. The process utilized to calculate production times for the pilot model is slightly different for finished goods vs. raw materials. Data availability facilitates the following conceptualization of the supply chain:

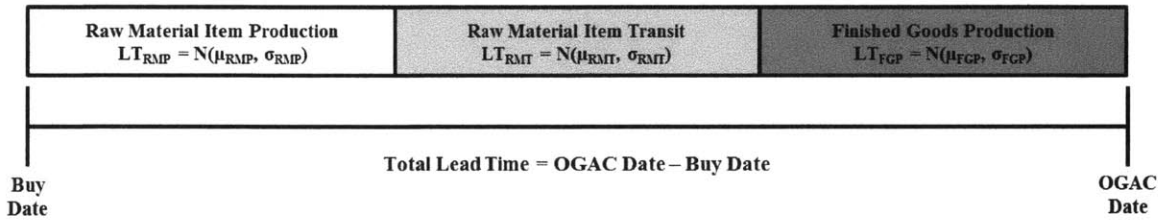

Figure 17: Stages and Lead Times of Production (not including Finished Goods Transit)

With access to Purchase Order data for the appropriate vendors and products, the Mean Total Item Lead Time can be calculated by averaging the time between the purchase order Buy Date and the Original Goods-At-Consolidator (OGAC) Date. This difference provides an average of the planned lead time for products, μ_{LT}, over a sample of Purchase Orders. Additionally, a supply chain's overall on-time performance can be approximated by investigating the observed purchase order lead times in comparison to the planned lead times. Total Lead Time Variance can then be determined by calculating the mean-square difference between the expected lead time and the observed lead time when the goods actually arrived.

$$Mean\ Total\ Lead\ Time, \mu_{LT} = \frac{\sum_{i=1}^{n}(OGACDATE_i - BUYDATE_i)}{n}, where\ n = \#\ of\ PO's$$

$$Total\ Lead\ Time\ Variance, \sigma_{LT}^2 = \frac{\sum_{i=1}^{n}[\mu_{LT} - (BUYDATE_i - GACDATE_i)]^2}{n}$$

The above equations treat the Buy-Date-to-OGAC-Date difference as the mean of a population of purchase order samples, and the Buy-Date-to-GAC-Date difference as the observed value. By summing the squared difference between each observed value and the mean value and dividing by the total number of observations, the variance of the population is obtained.

From the above statistics, mean sub-process lead times can be determined for Raw Material Item Production, Raw Material Item Transit, and Finished Goods Production (μ_{RMP}, μ_{RMT}, and μ_{FGP}, respectively). Nike maintains negotiated values for μ_{RMP} and μ_{RMT} that can be extracted from PDM_ODS_RMDS and industry-standard transportation tables, respectively. Accepting these values as target means for Raw Material Item Production and Raw Material Item Transit lead times, we can then calculate a value for Finished Goods Production lead time as follows:

$$\mu_{FGP} = \mu_{LT} - \mu_{RMP} - \mu_{RMT}$$

Finally, data collection required for completing the Sourcing Policies table can be accomplished by determining appropriate values of variance for the Raw Material Item Production, Raw Material Item Transit, and Finished Goods Production lead times. Since Nike does not collect or maintain discrete data for these items, variances can be approximated in two obvious ways, the latter of which is invoked in the pilot model:

1. The observed Total Lead Time Variance, σ_{LT}^2, can be completely attributed to the Finished Goods Production process, thereby forcing the variance associated with the Raw Material Item Production and Raw Material Item Transit processes to be 0.
2. The observed Total Lead Time Variance, σ_{LT}^2, can be distributed evenly between the Raw Material Item Production, Raw Material Item Transit, and Finished Goods Production processes in the following way:

$$\sigma_{LT}^2 = \sigma_{RMP}^2 + \sigma_{RMT}^2 + \sigma_{FGP}^2$$

$$\sigma_{RMP}^2 = \sigma_{RMT}^2 = \sigma_{FGP}^2$$

The second option presented above, or even distribution of lead time variance, was selected as a result of conversations with the Nike Liaison Offices that indicated finished goods are often late as a result of late arrival of raw materials. Because of this insight, it is not accurate to assume that the values for Raw Materials Production and Raw Materials Transit lead times occur without variance.

At this point, all requisite information for populating the Sourcing Policies table has been identified. Namely, the Production Time field can be populated with the appropriate product lead times and standard deviations determined above and inputted by product as "N(μ, $\sqrt{\sigma^2}$) DAY."

5.2.2.4 The Transportation Policies Table

The Transportation Policies table defines the details of how goods are transported from one node to the next within the physical supply chain. The main information required in the Transportation Policies table is the name of the product being moved, the source site from which

the product originates, the destination site to which the product travels, and the time required for the transportation to occur.

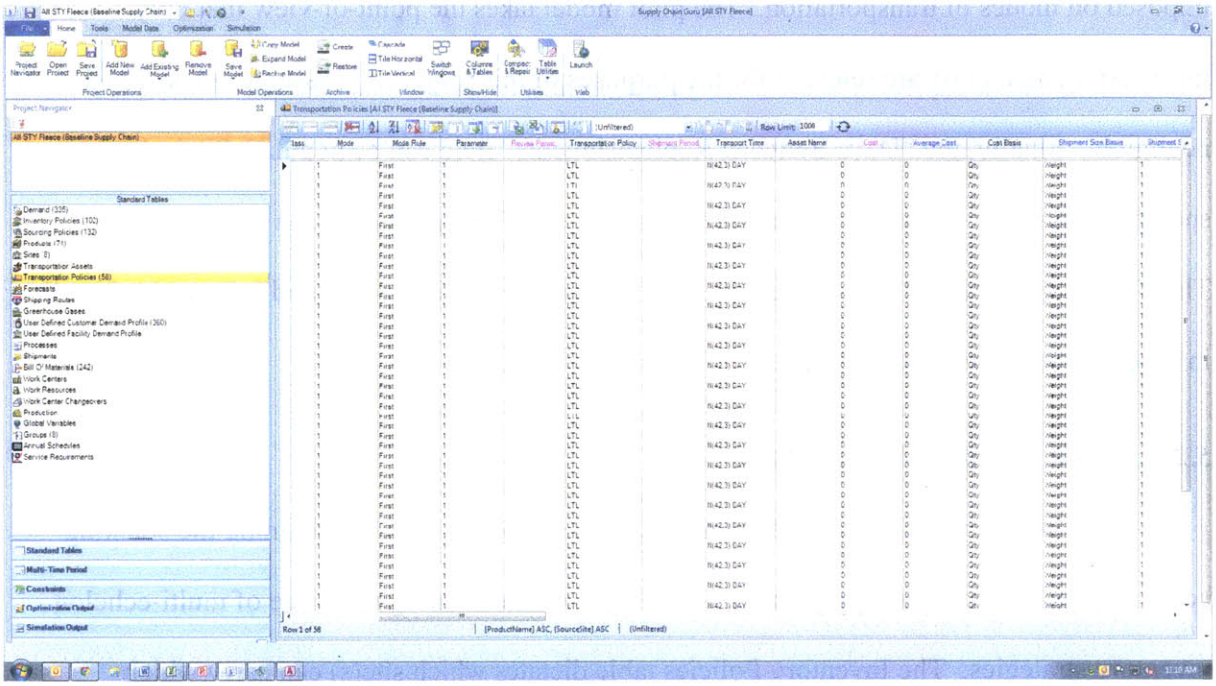

Figure 18: The Transportation Policies Table

Transportation Times are entered in the "Transport Time" field of the Transportation Policies table and can be modeled as either deterministic values or normally distributed random variables. For Raw Material Item Transit time, the data required in the Transportation Table has already been calculated in the Sourcing Policies section of this document and can be as "$N(\mu_{RMT}, \sqrt{\sigma^2_{RMT}})$ DAY". For Finished Goods Transit time, values can be calculated using actual shipment histories from the finished goods vendor to the desired distribution center. For example, the pilot model is constructed using actual finished goods shipments from the vendor to the North American Geography. Alternatively, standard transportation tables can be utilized for populating these fields if actual data is questionable or unavailable.

Additional data can be entered into the Transportation Policy table to further refine the accuracy of a model. Fixed and variable costs, shipment sizes, and flow requirements can all be imposed on modes of transportation. The pilot model takes the point-of-view that only inventory-related costs are relevant for the purposes of this project and assumes these fields to be negligible. Finally, the "Days Between Replenishments" field can be populated in order to specify the number of days between the receipts of additional product at the destination site. This field can be utilized if any fixed interval between shipments exists, and it is used primarily in cycle stock optimization exercises.

5.2.2.5 The Inventory Policies Table

The Inventory Policies table is an extremely important table for defining the stocking behavior of sites within a supply chain, as well as for investigating the value of multi-echelon inventory strategies. The Inventory Policies table dictates which site(s) can carry which product(s) in inventory, as well as that site's inventory replenishment policy (i.e. Reorder Point, Order Up-to Quantity, Min/Max levels, etc.). Product Value can also be specified on a site-by-site basis where inventory is carried. For example, finished goods should be carried at a higher value at a distribution center than at the producing factory due to shipping fees, duties, taxes, etc. Typically, this would be the difference between "total landed cost" at the distribution center, and "FOB" at the finished goods factory.

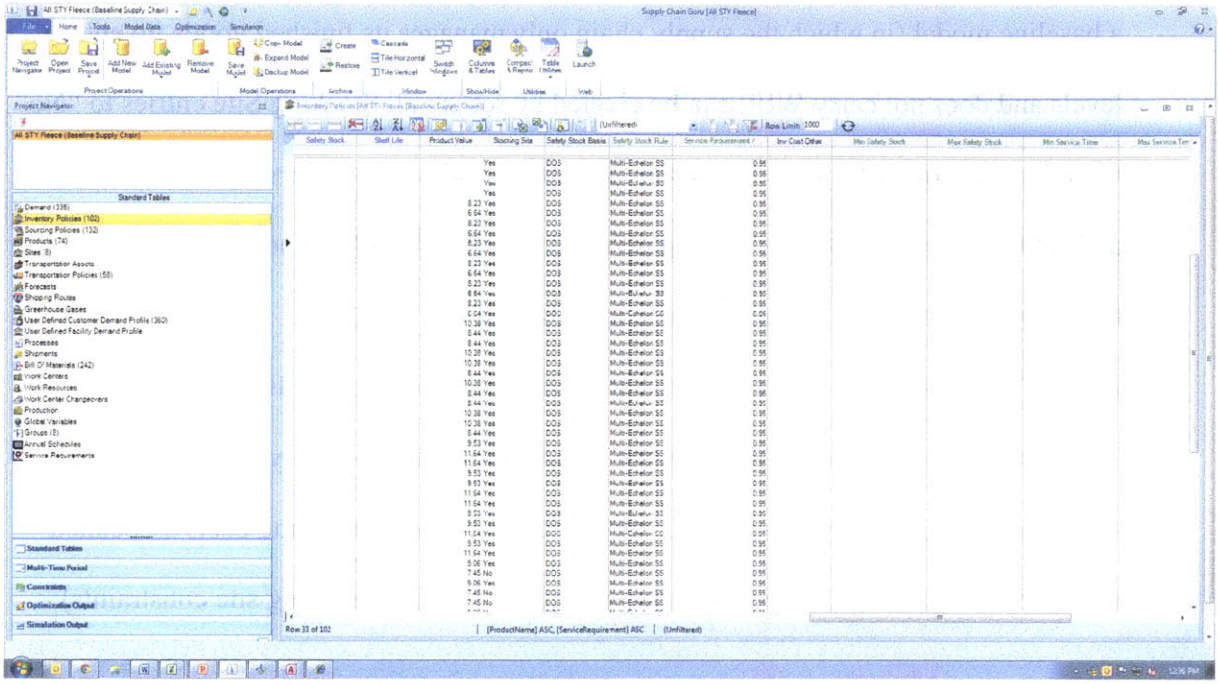

Figure 19: The Inventory Policies Table

Perhaps most critical to the topic of this paper is defining the fields regarding the service level requirement and any stocking site restrictions.

1. **Service Requirement** – The "Service Requirement" field allows the user to specify at what service level the supply chain is expected to satisfy demand. For example, a 95% service level (entered as 0.95 in SCG) would indicate that 95 out of every 100 purchase orders must be delivered in-full and on-time. Examining the sensitivity of the supply chain optimization to this constraint is a key capability of this method of supply chain planning and will be explored in a later section.
2. **Stocking Site** – The "Stocking Site" field instructs the model which sites are allowed to carry inventory buffers. Setting this boolean to "No" for a line item would prohibit the model from carrying that product at the specified site. Setting this boolean to "Yes" relaxes this constraint and permits the site to hold inventory. For this project's purposes,

a baseline model (in which the supply chain only manages its finished goods inventory levels and does not carry WIP) can be created by setting all Stocking Site entries to "No" with the exception of finished goods at the distribution center. Relaxing this constraint and setting all values to "Yes" would permit MEIO in which finished goods and WIP can be freely carried at any permissible site in pursuit of minimum cost. As will be discussed in subsequent sections, the value associated with implementing MEIO in a particular supply chain can be directly investigated by comparing the inventory carrying costs associated with a finished goods-only model to the inventory carrying costs associated with a true multi-echelon model (having completely relaxed stocking site constraints).

Populating these five tables with the supply chain data discussed completely constructs the supply-side of the SCG inventory optimization model.

5.2.3 Characterizing the Demand

Now that the products, sites, sourcing policies, transportation paths, and inventory rules have all been defined, this document will turn to characterizing marketplace demand. Given that this project seeks to explore the value of MEIO as a potential mechanism to support a replenishment-based, Make-to-Stock business model, the demand forecast is an essential element of the modeling philosophy.

Products in a make-to-stock supply chain are manufactured in anticipation of a forecasted demand such that customer requirements can be filled essentially immediately. Required safety stock is calculated and maintained in order to account for inaccuracy in either the forecast or the supply chain's ability to produce product. Demand for make-to-stock products at Nike is largely

being planned using Logility's *Voyager*[10] statistical forecasting package. The statistical package uses historical sales information and previous forecasts in order to make predictions of future demand. The actual prediction algorithm Logility invokes to generate forecasts is out-of-scope for this project, but the forecast data itself is very relevant to this supply chain modeling framework.

For each business month in which a product is being forecasted, the Logility tool captures and stores eight important points of data:

1. The forecasted demand (using past history) for the business month in question during *each of the six months* leading up to it,
2. A forecast for the business month *during* the business month, and
3. An entry for actual, observed demand (recorded at the conclusion of the business month).

Using December 2012 as an example: Beginning in June 2012, the Logility tool will make a new demand prediction in June, July, August, September, October, November, and December for December 2012's demand. At the end of the December, an actual demand (December's observed sales) statistic will be recorded, as well. In this way, various forecast accuracy statistics can be calculated to determine how effectively the forecasted demand met the actual demand in each of the months leading up to the period being forecasted.

10 See also: http://www.logility.com/solutions/demand-planning-solution/voyager-demand-planning

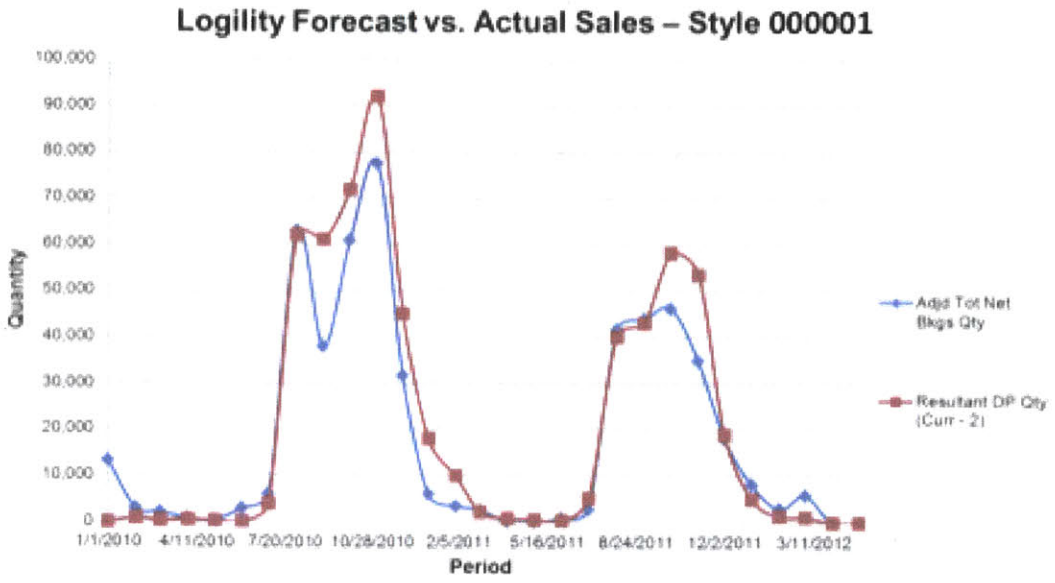

Figure 20: Example of Forecasted and Actual Demand Data from Logility (2 month forecast)

The forecast and forecast accuracy data is used to size safety stock inventories. Essentially, the forecasted demand for a given future period is represented as the mean of a normally distributed random variable in SCG. Recalling the nomenclature set forth in Chapter 3, the standard deviation of demand for an unbiased forecast is then calculated from the historical forecast error observed during previous "like" periods in the following manner:

$$\sigma_{forecast} = \sqrt{\frac{1}{n}\sum_{t=1}^{n}(x_t - x'_{t-y,t})^2}\ , where$$

$\sigma_{forecast}$ = forecast standard deviation,
n = number of "like" forecast periods,
x_t = observed demand for period t,
$x'_{t-y,t}$ = the forecasted demand made for period t in period t-y

It is important here to note that forecast accuracy should be compared across "like" periods; meaning the periods being sampled to produce $\sigma_{forecast}$ should share common characteristics. For seasonal product, the user may be forced to compare "like" periods monthly, i.e. comparing

forecast errors among all Junes, or all Novembers. The user may also be interested in comparing "like" seasons, i.e. comparing forecast errors among Spring 2010 and Spring 2011.

Safety stock is determined in SCG optimization in part by applying a service level to the expected forecast standard deviation and calculating the minimum quantity of inventory needed to buffer against the uncertainty to the desired degree, i.e. assumed 95% service level. (It should be noted when discussing forecasting that the specific method of forecast accuracy calculation with respect to what historical data is sampled is highly subjective, and user input is very important to this practice. For example, one may choose to determine a forecast error by comparing historical demand data of one SKU, or a family of SKUs; during one month, or perhaps during a particular season.) For the purposes of the pilot model, forecast accuracy was determined by comparing the historical monthly forecast errors using the four-month forecast (i.e. $x'_{t-4,t}$) of the entire product family manufactured at the finished goods supplier and not on a style-by-style basis.

5.2.3.1 The User Defined Customer Demand Profile Table

Safety stock calculations are performed using forecasted demand and forecast accuracy data from the User Defined Customer Demand Profile table. This table specifies, by modeling period (monthly, in the case of the pilot model), the forecasted demand and the forecast standard deviation for a given product. The forecasted demand can be extracted directly from the Logility tool, and the forecast standard deviation can be calculated using the process outlined above.

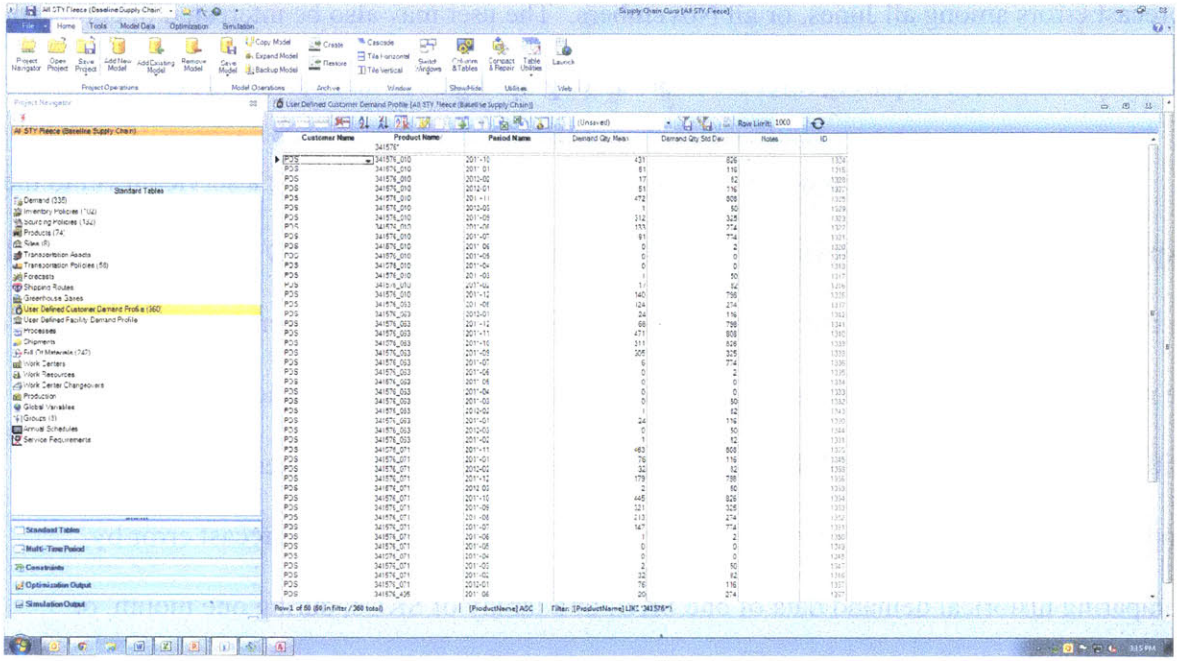

Figure 21: The User Defined Customer Demand Profile Table

An important note regarding the input requirements of the User Defined Customer Demand Profile table is that demand and standard deviation must be entered at a *daily* level, regardless of the model period's predefined unit of measure. For example, if a model is broken into monthly buckets, the user would still need to enter the *daily* forecasted demand and *daily* forecasted standard deviation into the table.

To further illustrate: if a monthly model requires forecast input for a customer "POS" demanding a product "123456_789" in period "June 2012," having a forecasted demand of 30,000 units and a standard deviation of 3000, the user would enter this information into the User Defined Customer Demand Profile table as follows:

Table 1: User Defined Customer Demand Profile Data Sample

Customer Name	Product Name	Period Name	Demand Qty Mean	Demand Qty Std Dev
POS	123456_789	June 2012	1000	547.7

The monthly values given for June 2012 are converted into daily values by dividing the June demand by 30 (the number of days in June): 30,000/30 = 1000. The June standard deviation is calculated by dividing the June monthly standard deviation by $\sqrt{30}$ (the square root of the number of days in June[11]): $3000/\sqrt{30} = 547.7$.

Were daily forecast and sales data available, it would not be necessary to do these monthly-to-daily conversions, but at the moment the Logility tool harvests only monthly aggregates.

5.2.3.2 The Demand Table

Cycle and In-Transit stocks are calculated using input from the Demand Table. This table specifies, by product, site, the expected demand for a given period. Unlike the User Defined Customer Demand Profile Table, the Demand Table does not require demand to be specified on a daily basis. Instead, lines are entered into the Demand Table by identifying the product, demanding site, the demand quantity, and the order due date. Additionally, indicating the desired number of instances and the time between orders can create recurring orders.

11 Standard Deviations cannot be directly added or subtracted. Daily standard deviations can be determined by dividing the monthly standard deviation by the square root of the number of days in the month.

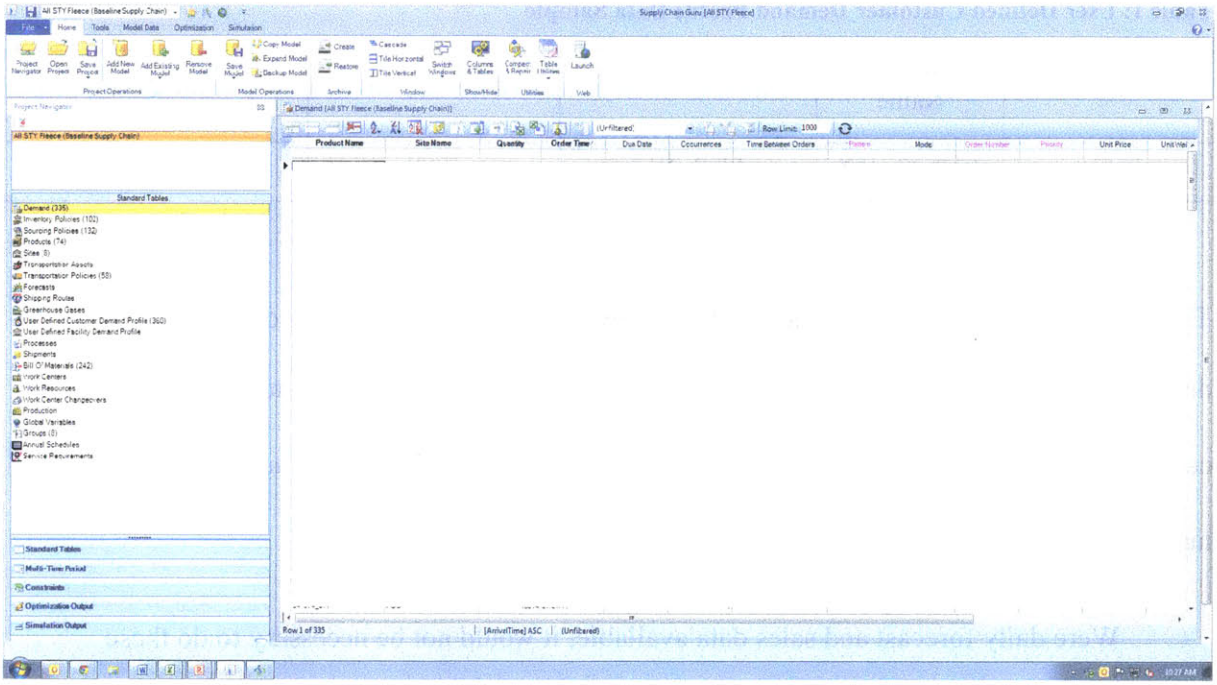

Figure 22: The Demand Table

To further illustrate: if a monthly model requires forecast input for a customer "POS" demanding a product "123456_790" in period "June 2012," having a forecasted monthly demand of 30,000 units and a standard deviation of 3000, the user would enter this information into the User Defined Customer Demand Profile Table as follows:

Table 2: Demand Table Data Sample

Product Name	Site Name	Quantity	Order Time	Occurrences
123456_789	POS	30000	06/01/12	1

It should be noted that, while the demand quantity can be entered into the Demand Table as a probability distribution, i.e. "N(30000, 3000) DAY", the optimization routine only utilizes the mean value when calculating cycle and in-transit inventories. All variability information regarding both demand and supply uncertainty is taken into consideration when calculating the

required safety stock inventory. As previously discussed, demand uncertainty is recorded in the User Defined Customer Demand Profile Table.

5.2.3.3 A Note on Logility Forecast Data

The demand and sales data recorded in the Logility statistical forecasting system can be accessed via Nike's Cognos system. Monthly demand forecast data can be extracted for up to six months prior to any month being forecasted. In a make-to-stock business model, the demand forecast is the basis for the purchasing and planning activity. For the purposes of the pilot model, the "4-month forecast" is utilized in driving the demand. This decision was made by giving consideration to the product lead time and reasoning that purchasing decisions need to be made approximately four months in advance at the latest. In this way, the 4-month forecast presents the most informed portrait of marketplace demand prior to the placing of purchase orders.

5.2.4 Optimizing the Supply Chain

Having fully characterized the forecasted periodic demand, the supply chain previously constructed in Section 5.2.2 can now be leveraged to produce and flow goods to the point of sale. The primary objective of inventory optimization for this project is to minimize the total cost of operating the supply chain, which can be comprised of manufacturing, transportation, and inventory carrying costs, among others, while always maintaining the defined customer service level.

5.2.4.1 Relevant Supply Chain Costs

Supply Chain Guru allows the user to input valuation data for the calculation of essentially any cost that can be incurred in a real supply chain, including but not limited to production costs, taxes and duties, transportation costs, overtime premiums, and inventory carrying costs. However, for the purposes of this project, the only cost element considered relevant to the optimization is the expense associated with carrying inventory, both finished goods and WIP. This simplification will be further elaborated upon in the next chapter discussing the pilot models, and the primary assumptions justifying this position are:

1. The supply chain network is static, meaning that each node producing product(s) does not change. In this fashion, each finished good produced follows an identical path throughout the supply chain and incurs the same manufacturing cost. Overtime, or "surge capacity" attained for a price premium, is not permitted.
2. The transportation policies are static, meaning that the only route from an upstream node to a downstream node is the route explicitly defined. There is no option for airfreight or expedited shipping for a price premium.

Considering these two assumptions, it can be reasonably stated that the only relevant expense tied to the value of the safety-stock-related decision variables incurred by the supply chain network as a whole is the opportunity cost of carrying safety stock inventory. For the purpose of analysis, it has been assumed by the author that inventory is carried at a 12% cost of capital. Each piece of inventory must be produced and transported through a common pathway, so the only remaining variable needing resolution is the appropriate quantity of inventory to produce; Safety stock optimization in SCG provides this resolution.

5.2.4.2 Safety Stock Optimization

The goal of safety stock optimization (SSO) is to determine the optimal amount of inventory to hold and where to hold it in order to satisfy the forecasted demand at a given service level. In this case, the "optimal amount" of inventory is the quantity that minimizes the inventory carrying cost expense while still achieving a defined service level. MEIO occurs when the optimizing engine is allowed to hold both finished goods and WIP inventory at any appropriate producing or stocking node, rather than forcing the system to carry only finished goods in the DC, for example. In fact, the value of MEIO can be explicitly investigated by comparing the results of a finished-goods only model to those of a true multi-echelon model, as will be discussed in detail in subsequent sections.

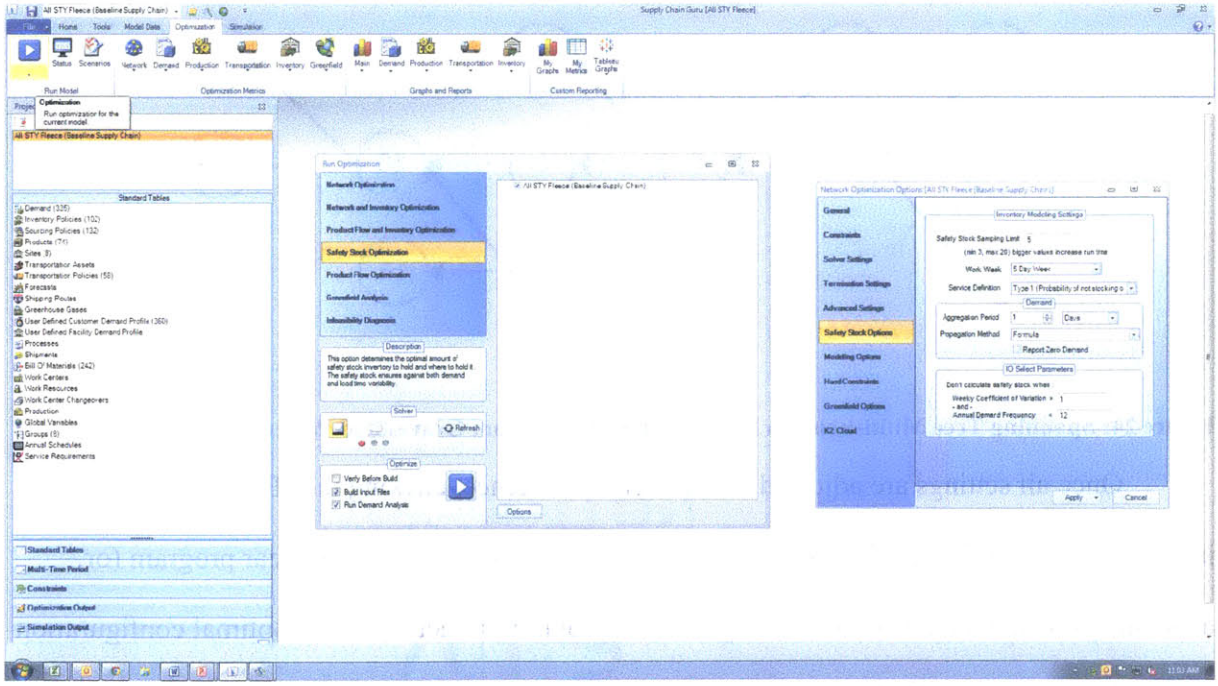

Figure 23: The Optimization and Options Windows

With the supply chain physics and the forecasted demand defined as detailed previously in this chapter, SCG can be utilized to solve the cost minimization problem. Behind the scenes, SCG's SSO engine invokes the algorithm Graves and Willems derive for multi-echelon safety stock optimization [18] [19]. The SSO engine solves the MEIO problem using a variation of the FICO Dash solver, currently part of the FICO Xpress Optimization Suite[12]. Before running the model, the user can modify several optimization-related options, such as termination sensitivity, included constraints, and aggregation periods. The multi-echelon supply chain defined by the sourcing policies and transportation policies discussed in Sections 5.2.2.2 and 5.2.2.4, respectively, is fitted to a spanning tree following the optimization algorithm laid out in Section 5 of Graves and Willems [18] and depicted here in Figure 24:

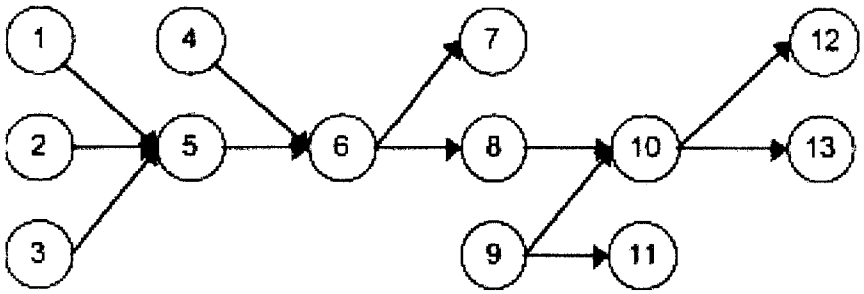

Figure 24: Spanning Tree Multi-Echelon Supply Chain Model from Graves and Willems [18]

Once all settings are adjusted to the user's preference, clicking the "Play" button initializes SSO for the specified model, and the software then executes a linear program (or, depending on constraints, a mixed-integer linear program) to determine an optimal configuration of decision variables. SCG outputs a variety of data to the Optimization Output tables, which together contain the model's complete solution of the problem.

12 See http://www.fico.com/en/Products/DMTools/Pages/FICO-Xpress-Optimization-Suite.aspx for more details.

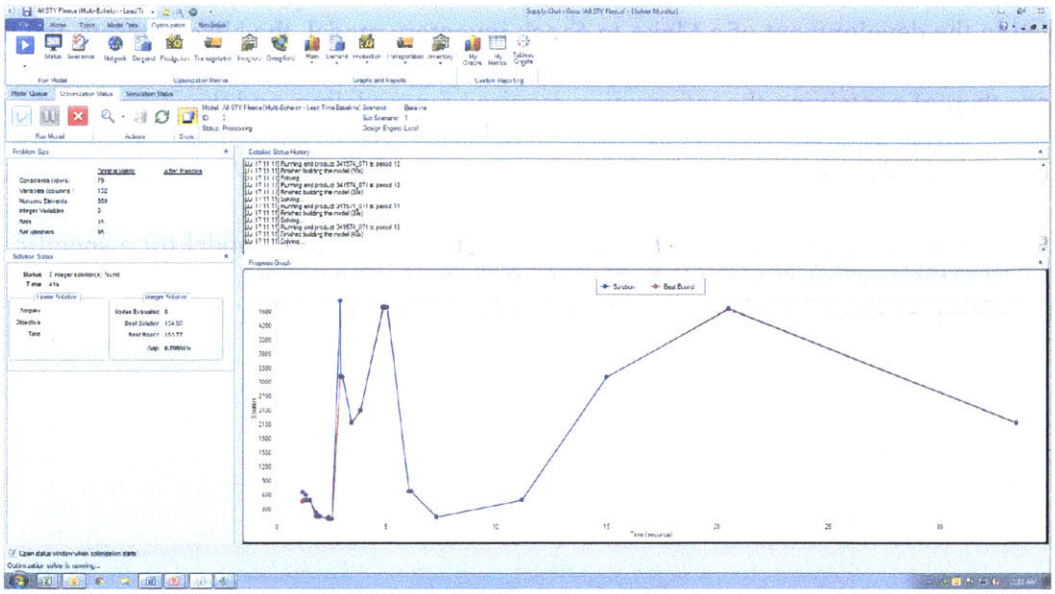

Figure 25: The Optimization Status Window (during Optimization)

The user can also investigate cycle stock and safety stock inventory impacts by running Network and Inventory Optimization. The goal of Network and Inventory Optimization is to determine the optimal amount of inventory to produce, transport, and sell to the customer in response to customer demand. For the purpose of Rapid Response MEIO projects, Network and Inventory Optimization is a relatively trivial exercise. SCG will assess the mean demand for a product during a given time period and produce exactly this quantity in advance of the required delivery date by a factor of one lead time. For example, if an order of 100 units is required on 12/1/12 and the total supply chain lead time is one month, then exactly 100 units will be put into production on 11/1/12. All inventory produced on account of process or demand variability is accounted for in the Safety Stock Optimization routine.

5.3 Chapter Summary

The intent of this chapter was to familiarize the reader with the basics of Inventory Optimization using *Supply Chain Guru*. The topics covered include the SCG policies tables

involved in the development of a Make-to-Stock inventory model, the Nike datasets and the locations thereof containing the information required for modeling, and the transformations/calculations necessary for fully populating the model. The next chapter will now turn to discussing the creation of a pilot Inventory Optimization model for a specific family of Nike apparel products and analyzing the results of the Safety Stock Optimization.

6 A Pilot Model: Replenishment Apparel in North America

To explicitly investigate the value of multi-echelon inventory optimization in the replenishment business model, as well as to more fully explore the capabilities of the *Supply Chain Guru* software for future modeling endeavors, a complete supply chain model was developed for a collection of replenishment apparel products sold in the North American Geography. The multi-period (by month) model was constructed using real supply chain data for the time period ranging from January 2011 to March 2012. The objective function of the inventory optimization model is to minimize the total costs incurred by the supply chain in the production, transportation, and carrying of inventories while satisfying forecasted demand to a prescribed service level. This chapter is concerned with detailing the development of the inventory optimization model, as well as evaluating the effectiveness of multi-echelon inventory management in a simulated environment.

For the purpose of examining the inherent value in multi-echelon approaches, two distinct modeling scenarios will be developed from the same basic model: a "Baseline" scenario in which only finished good inventories can be stored in the distribution center echelon, and a "Multi-Echelon" scenario in which raw materials and finished goods inventories can be stored at any appropriate node throughout the supply chain. These modeling scenarios will be detailed further in subsequent sections of this chapter. Complete model input tables and results will be included as appendices such that, if necessary, the model can be reconstructed in the future.

6.1 Developing the Apparel Pilot Model

6.1.1 The Products

Project leadership involved with the Apparel Product Engine identified a family of products as suitable products for the development of the pilot inventory optimization model. For the purposes of this document, the specific family of apparel products has been excluded. Five product styles[13] available in up to six color codes for a total of 26 distinct finished goods were selected for modeling and are identified in Table 3 below. Additionally, the complete sets of inputs into *Supply Chain Guru*'s Products and Bill of Materials Tables are included in Appendices A and B, respectively.

Table 3: Style and Color Codes of products selected for modeling

Style	Colors
000001	010, 063, 071, 405, 100, 648
000002	010, 063, 071, 100, 405, 648
000003	010, 063, 071, 100, 405, 648
000004	010, 063, 071, 405
000005	010, 063, 071, 405

The specific family of apparel products was selected because substantial seasonality and difficulties in demand forecasting make stocking out a frequent concern. An effective inventory optimization model could lead to significant improvement in supply planning targeting a 95% service level, and this pilot study was intended to lay the groundwork for subsequent initiatives.

Additionally, raw materials commonality makes this family of apparel products particularly well suited for investigating the multi-echelon aspect of the project, because each style is comprised of the same basic body fabric. Table 3 implies that in this particular model,

13 Finished goods product style codes have been disguised.

the same basic inventory of greige fabric can be turned into six different colors and twenty-six different finished goods configurations. Any upstream raw materials pooling effects inherent in multi-echelon inventory optimization should be readily identifiable in the greige echelon of the supply chain.

6.1.2 The Apparel Supply Chain

The apparel pilot model is based on the "bricks-and-mortar" supply network actually leveraged during the subject time period. These supplier details are inputs for the supply side-related tables in *Supply Chain Guru.* The sites involved in the production of the apparel products, as well as those involved in the production of raw materials consumed by finished goods production, are listed in the Sites Table in Appendix B.

The finished goods listed in Table 3 were produced exclusively by an apparel factory located in South-central Asia during the period ranging from January 2011 through March 2012. The finished goods factory is vertically integrated in fabric production and is also the exclusive production center for the greige apparel fabric used as the primary body fabric for the apparel being modeled.

Raw materials needed for production at the finished goods factory are manufactured at various suppliers throughout Southeast Asia. Greige fabric is dyed at the finished goods factory and then consumed by the finished goods production process, along with other raw materials, as specified by the Bill of Materials Table. Finished goods are then transported to a single distribution center in Memphis, TN to satisfy customer demand in the North American Geography. A simple material flow diagram of the apparel production value chain for the product with style-code 000004 is shown in Figure 26:

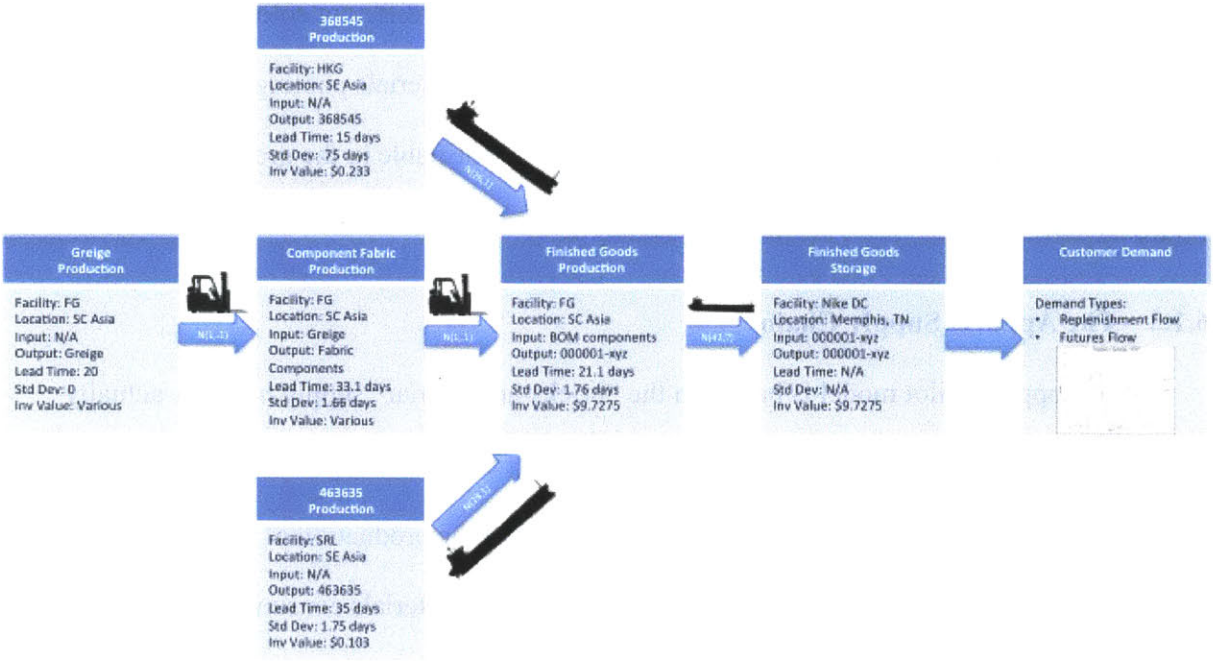

Figure 26: The supply chain for style 000004

The information in Figure 26 regarding production and transportation lead times was gleaned from Nike's databases and represents historical performance of the actual supply chain processes in place during 2011-2012. The blocks represent supply chain nodes in various echelons from greige production through finished goods storage, and the arrows represent transportation pathways. All of the information regarding the production and transportation lead times and variability is included in the Sourcing Policies and Transportation Policies Tables presented in Appendix D and E, respectively.

6.1.3 The Demand for Apparel

Characterizing the demand signal was a primary challenge in developing a comprehensive inventory optimization model for the family of apparel products outlined in Section 6.1. As discussed in earlier chapters, the replenishment business model is a Make-to-Stock supply chain in which product demands are forecasted, consolidated demand signals are

passed along to the supplier network, and finished goods are produced to stock in the distribution center essentially at Nike's risk. By maintaining sufficient finished goods inventories on-hand, customer demand can then be satisfied from stock with lead times targeted to be less than the assumed two weeks. (Section 1.3.2 contains a more complete discussion of the replenishment business.)

To determine an appropriate demand signal for the pilot inventory optimization model, actual North American demand data for the products outlined in Table 3 was harvested from the *Logility* forecasting package. Forecasted demand and actual sales records exist for the majority of the relevant products dating back to April 2010 and running through March 2012, or essentially two years of product history. For example, forecast and sales data for the product with style-color code 000004-010 is shown in Figure 27:

Figure 27: 4-month Forecast vs. Actual Sales, product 000001-010

Using the process outlined in Section 5.2.3, values for forecast accuracy were calculated, in the form of historical forecast-to-actual error standard deviations, for the period from January

2011 to March 2012 using all available data on all products. In other words, a single forecast accuracy measure was calculated based on all apparel products in the same family by using the forecast-to-actual-sales error margin for every product in the apparel family. This decision was made due to the relatively brief two-year history of available data for the apparel products. Once monthly forecast accuracy statistics have been calculated for each product over the period from January 2011 to March 2012, the demand and accuracy data can be utilized in the User-Defined Customer Demand Profile Table, as shown in Appendix F.

6.1.4 Creating a Multi-Echelon Scenario

As discussed in previous sections focusing on multi-echelon inventory management, the fundamental tenet of the multi-echelon philosophy is that carrying inventory at upstream echelons of the supply chain can reduce inventory cost and risk. Material carried as greige, for example, can be held at much lower risk due to its ability to be dyed any number of colors. Additionally, greige material incurs less carrying cost than dyed fabric or finished goods, because it is carried at a lower value.

Of primary concern to this project, in addition to developing a repeatable inventory modeling methodology for Nike supply chains, is the calculation of the potential savings inherent in operating a multi-echelon inventory system, as opposed to stocking finished goods only. Generally speaking, Nike's replenishment strategy has historically been concerned primarily with managing a finished good product into its distribution network, and raw materials tend not to be staged at upstream echelons.

Direct comparison of the finished-goods-only and multi-echelon inventory philosophies requires creating modeling scenarios within *Supply Chain Guru* and toggling the "Stocking Site"

field in the Inventory Policies Table. To create a "Baseline," or finished-goods-only, scenario the Stocking Site field is set to "False" for every product-node combination with the exception of all finished goods and distribution center line items. Stated more simply, no node of the supply chain is allowed to stage any raw material or finished goods inventory with the exception of the single distribution center that services the customer demand. To create a "Multi-Echelon" scenario, the Stocking Site field is set to "True" for all product-node combinations in the model, effectively relaxing all inventory carrying constraints. The Inventory Policies Table for the "Baseline" scenario can be seen in Appendix G.

If there is value inherent in operating in a multi-echelon inventory environment, the "Multi-Echelon" scenario will achieve it in the form of reduced inventory carrying costs, because it represents the same fundamental model with important constraints relaxed. If the Multi-Echelon model can reduce costs while continuing to satisfy the assumed 95% service level constraint, it will do so by stocking fewer finished goods and more raw materials.

6.1.5 Model Input Summary Table

The intent of this section is to consolidate the basic constituents of the model inputs in a summary table serving as a more readily accessible point of reference than the complete repository of model input data contained in the Appendices.

Table 4: Model Input Summary Table

Data Element	Information / Properties
Products	
Style Count	5
Color Options	Up to 5
Total Number of Products	26
Average Product BOM Items	6
Product Engine / Category	Apparel
Supply Chain	
Raw Material Suppliers	4
Finished Goods Suppliers	1
Distribution Centers	1
Fixed Facility Costs	$0*
Inventory	
Inventory Carrying Cost of Capital	12%**
Inventory Buffer Locations	DC-only & All Sites
Inventory Consumption	FIFO
Inventory Policy	s, S
Inventory Review Period	Continuous
Safety Stock Basis	Days of Supply (DOS)
Upstream Sourcing Policy	Most Inventory
Production	
Service Level	95%**
Variable Costs/Item	$0*
Fixed Costs/Item	$0*
Demand	
Demand Probability Distribution	Normal/Gaussian
Demand Period	4/2011 - 4/2012
Order Fill Policy	First Come, First Served
Demand Region	North America
Transportation	
Transportation Policy	Less than Truckload (LTL)
Transportation Modes	Ocean, Truck
Transportation Cost/Item	$0*
Replenishment / Shipment Frequency	15 days**

**Model intended to investigate Inventory Carrying Costs only*
***Values assumed by author*

6.1.6 Optimization and Generating Outputs

Having populated all relevant supply and demand tables, the inventory optimization model can now be solved to determine the lowest cost inventory position for this family of products and production network. *Supply Chain Guru* features a number of distinct optimization options for inventory models, Safety Stock Optimization being the most important of which for this particular project. The Safety Stock Optimization routine allows the user to calculate the

optimal safety stock inventory buffers necessary to satisfy the given demand to the prescribed service level using the supply chain entered. Network Optimization, on the other hand, allows the user to examine the optimal supplier selections, transportation pathways, and flow rates of cycle stock inventories. Because this particular family of products is sourced from only one network of suppliers (and only one finished goods supplier), the primary problem needing solving is the matter of safety stock inventory buffers and their sensitivity to multi-echelon inventory management. As such, the bulk of the remaining discussion will focus on the optimal safety stock inventories calculated by *Supply Chain Guru*'s optimization engine. Select safety stock inventory output data for the Baseline scenario is provided in Appendix H.

6.1.7 Model Validation

During the limited time frame of the project, the preference of the leadership team was to direct a majority of effort toward developing a fully functional modeling environment with the purpose of showcasing the range of capabilities of optimization-based inventory modeling. As a result, only a cursory level of attention was given to verifying the specific product-by-product accuracy of the calculations, as the model outputs were intended to be educational not tactical.

The actual validation exercise was limited to an initial confirmation that the model was flowing product between sites in the desired quantity and time period, and that safety stock was being calculated using supply and demand lead time variation and period demand mean. To explicitly validate the accuracy of the calculations, the model was populated with one product and one month of demand under uncertainty. The optimization engine was invoked to determine the quantity of product to be produced, the timing of inventory positions, and the magnitude of the safety stock buffer. With only one product and time period being initially investigated, calculation of the expected model outputs by hand was a trivial exercise. Once it was confirmed

that the optimization model was producing correct results for one product and time period, the scope of the model was quickly expanded to include all products and time periods without further attention toward validation. Proper validation of the inventory optimization model is a recommended opportunity for future efforts.

6.2 Apparel Pilot Model Key Results and Findings

6.2.1 The Value of Multi-Echelon Inventory Management

Of central importance to the genesis of this project was determining the intrinsic value of multi-echelon inventory management philosophies to support the rapid-response replenishment business model. Creating *Supply Chain Guru* inventory optimization models facilitates studying the effect of relaxing finished-goods-only constraints and creating true multi-echelon environments for apparel products in the North American replenishment business.

On the basis of finished-goods-only safety stock carrying costs (the "Baseline" scenario) to multi-echelon safety stock carrying costs (the "Multi-Echelon" scenario), it can be determined that multi-echelon inventory strategies offer little to no value to the current supply chain configuration. Rolling up the safety stock carrying costs incurred in both the Baseline and Multi-Echelon scenarios serves as a graphical basis for comparison in Figure 28:

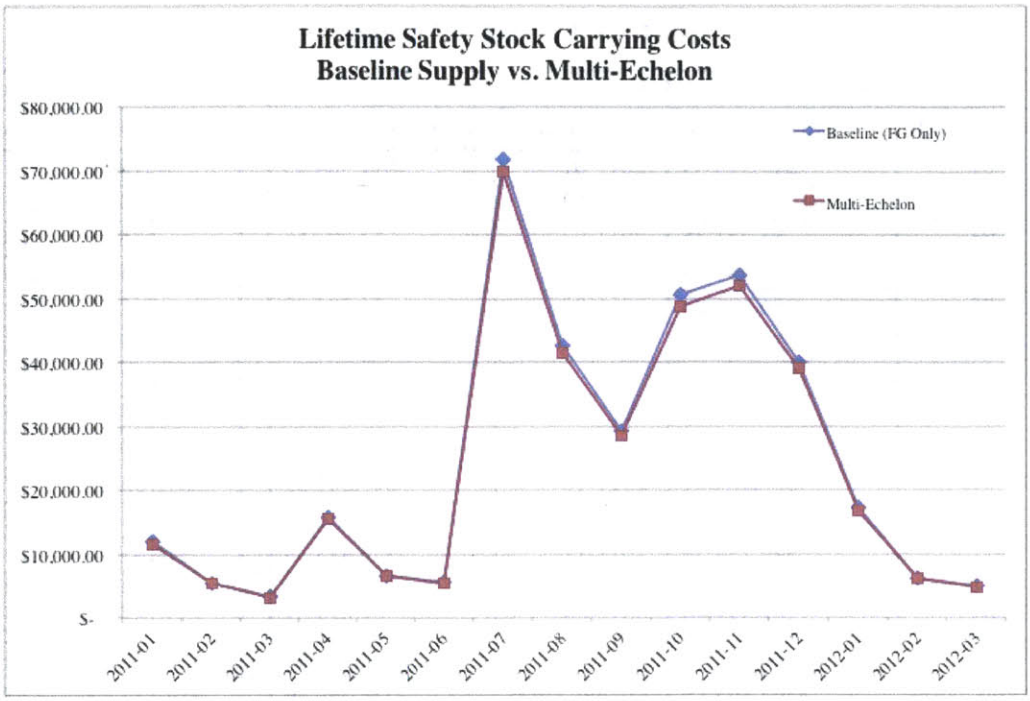

Figure 28: Safety Stock Carrying Costs (@ 12%) Comparison, Baseline (Finished Goods Only) vs. Multi-Echelon

Table 5 summarizes the optimized safety stock carrying costs of the Baseline and Multi-Echelon scenarios, as well as the month-by-month savings presented by operating with a multi-echelon inventory philosophy. Throughout the life cycle of the apparel products comprising the model, multi-echelon inventory management presents an opportunity for savings of $10,177, or 2.79%. Both Figure 28 and Table 5 clearly show the significant seasonality inherent in the apparel replenishment business, and it can be easily seen that the high-volume periods are those in which multi-echelon offers the most opportunity for savings. However, 2.79% lifetime savings on inventory carrying cost is not a particularly compelling figure when considering the additional complexity managing a multi-echelon inventory system would introduce to the supply chain system. It could hardly be argued that $10,000 in inventory carrying cost savings spread across 26 products justifies much impetus for organizational change.

Table 5: Summarized Safety Stock Carrying Costs, Baseline (FG Only) vs. Multi-Echelon

Baseline (FG Only)		Multi-Echelon		Multi-Echelon Savings	
Year-Month	SS Carrying Cost	Year-Month	SS Carrying Cost	in $USD	%
2011-01	$11,915.33	2011-01	$11,604.43	$310.90	2.61%
2011-02	$5,464.14	2011-02	$5,325.35	$138.79	2.54%
2011-03	$3,251.35	2011-03	$3,202.56	$48.79	1.50%
2011-04	$15,909.36	2011-04	$15,644.96	$264.40	1.66%
2011-05	$6,646.06	2011-05	$6,583.48	$62.58	0.94%
2011-06	$5,582.31	2011-06	$5,552.61	$29.70	0.53%
2011-07	$71,758.29	2011-07	$69,875.90	$1,882.40	2.62%
2011-08	$42,549.47	2011-08	$41,364.06	$1,185.40	2.79%
2011-09	$29,306.24	2011-09	$28,416.97	$889.27	3.03%
2011-10	$50,560.60	2011-10	$48,807.25	$1,753.35	3.47%
2011-11	$53,618.12	2011-11	$51,926.56	$1,691.56	3.15%
2011-12	$40,134.58	2011-12	$38,993.39	$1,141.20	2.84%
2012-01	$17,294.13	2012-01	$16,809.13	$484.99	2.80%
2012-02	$6,241.20	2012-02	$6,064.94	$176.26	2.82%
2012-03	$4,932.10	2012-03	$4,814.46	$117.64	2.39%
Grand Total	**$365,163.28**	**Grand Total**	**$354,986.06**	**$10,177.23**	**2.79%**

6.2.2 Multi-Echelon Inventory Management and Transportation Lead Time

The above analysis indicates that very little opportunity for savings exists by applying a multi-echelon inventory philosophy to the apparel supply chain. Furthermore, deeper analysis of the optimized inventory data indicates that despite the relaxed constraints of the Multi-Echelon scenario, 99.8% of the safety stock inventory carrying cost is still being incurred at the distribution center.

Table 6: Cumulative Safety Stock Cost Distribution by Site

Cumulative Safety Stock Costs		
Site Name	in $USD	% of Total
Finished_Goods_Supplier	$827.13	0.233%
Nike_DC	$354,157.85	99.767%
Raw_Supplier_1	$-	0.000%
Raw_Supplier_3	$1.08	0.000%
Raw_Supplier_2	$-	0.000%
Raw_Supplier_4	$-	0.000%
Grand Total	**$354,986.06**	

When considering the physical structure of the apparel supply chain the need for safety stock inventory to be carried in the distribution center becomes clear. Because finished goods are manufactured in off-shore, there is a substantial transportation lead time (on the order of 42 days) separating the production process from availability in the distribution center. It has been assumed that the targeted customer facing order-to-delivery lead time is less than two weeks with an assumed target service level of 95%.

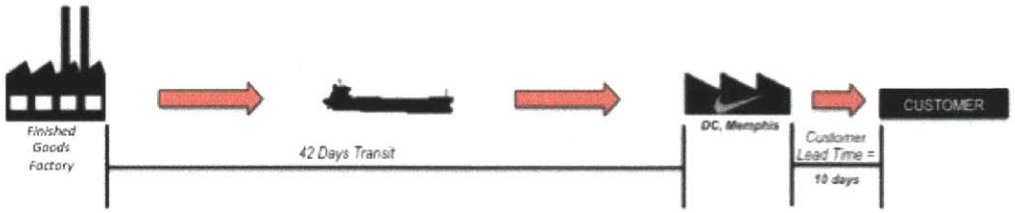

Figure 29: The Transportation lead time vs. Customer lead time

Because the transportation lead time is so much larger than the customer lead time, all inventories in this scenario must be carried as finished goods in the distribution center. Anecdotally, in this scenario inventory cannot be carried at the Finished Goods Factory (or at any of the raw materials suppliers) and transported to the point of sale quickly enough to satisfy the assumed 95% service level and two-week lead time constraints. As was discussed in Section 3.2.3, a multi-echelon strategy might hold upstream inventory so as to reduce the lead time over which the downstream node needs to protect against stockouts; however, given the relative material costs and lead time configuration of this particular supply chain, the optimal solution presented asserts that the upstream inventory investment does not reduce overall cost.

Having shown that multi-echelon inventory management offers very little savings over the finished-goods-only baseline for transportation lead times far exceeding the two-week replenishment customer lead time makes it interesting to investigate the sensitivity of multi-

echelon savings opportunity to transportation lead times. The Transportation Policies Table in *Supply Chain Guru* can be quickly and easily modified to simulate the effect of deploying a multi-echelon inventory strategy in a supply chain with production facilities located closer to market. Figure 30 shows that as the transportation lead time is reduced, the savings inherent in operating a multi-echelon supply chain over a finished-goods-only supply chain increase dramatically. Because both multi-echelon and finished-goods-only scenarios benefit from the reduced transportation time, the savings indicated are due to real reductions in safety stock carrying costs. The current-state savings of approximately $10,000 increase to $117,000 if the transportation lead time were reduced to 5 days.

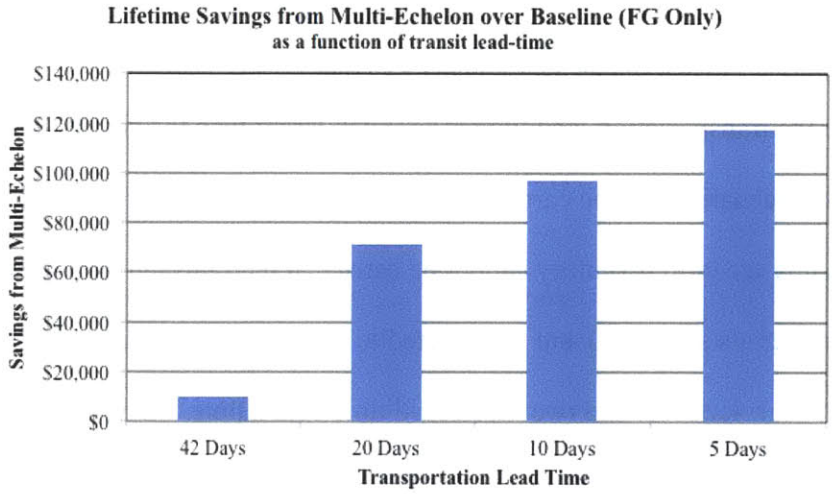

Figure 30: Savings from Multi-Echelon over Baseline (FG Only) vs. Transportation Lead Time

Breaking down the savings shown in Figure 30, it can be shown that as transportation lead time between the Finished Goods Supplier and Distribution Center is reduced, the optimal solution reduces costs in the multi-echelon scenario by taking inventory positions at upstream nodes of the supply chain. Looking at the cumulative safety stock carrying costs in the "20 Days" treatment in Table 7, for example, the multi-echelon scenario takes a modest inventory

position at the Finished Goods Supplier, which reduces substantially the amount of safety stock needed at the Nike DC.

Table 7: Cumulative Safety Stock Carrying costs for Lead Time = 20 days, FG Only vs. Multi-Echelon

Transit Lead Time = 20 Days	Scenario	
Site Name	**FG Only**	**Multi-Echelon**
Nike_DC	$ 314,687.75	$ 240,246.38
Finished_Goods_Supplier	$ -	$ 2,928.89
Raw_Supplier_1	$ -	$ -
Raw_Supplier_3	$ -	$ 1.14
Raw_Supplier_2	$ -	$ -
Raw_Supplier_4	$ -	$ -
Grand Total	$ 314,687.75	$ 243,176.42

It should be noted that in reality, other cost tradeoffs beyond inventory carrying costs exist when considering reducing the transportation lead time from 42 days to 5 days, as the factory would either need to be located physically closer to market, or a faster mode of transportation, such as airfreight, would need to be employed. Such reductions could not be done without cost, and the potential safety stock carrying cost savings from multi-echelon inventory management could easily be overwhelmed by cost increases in labor or freight. However, the above analysis clearly shows that the multi-echelon inventory approach does create value for Make-to-Stock supply chains that have customer lead times that are not far exceeded by the finished goods transportation lead times.

6.2.3 Inventory & Safety Stock Composition

The percentage of total inventory comprised by safety stock is also worthy of investigation, as the optimized lifetime safety stock carrying costs for even this small family of products are substantial. The optimized output of the inventory model allows for direct comparison of the level of cycle and transit stock to the level of safety stock throughout time.

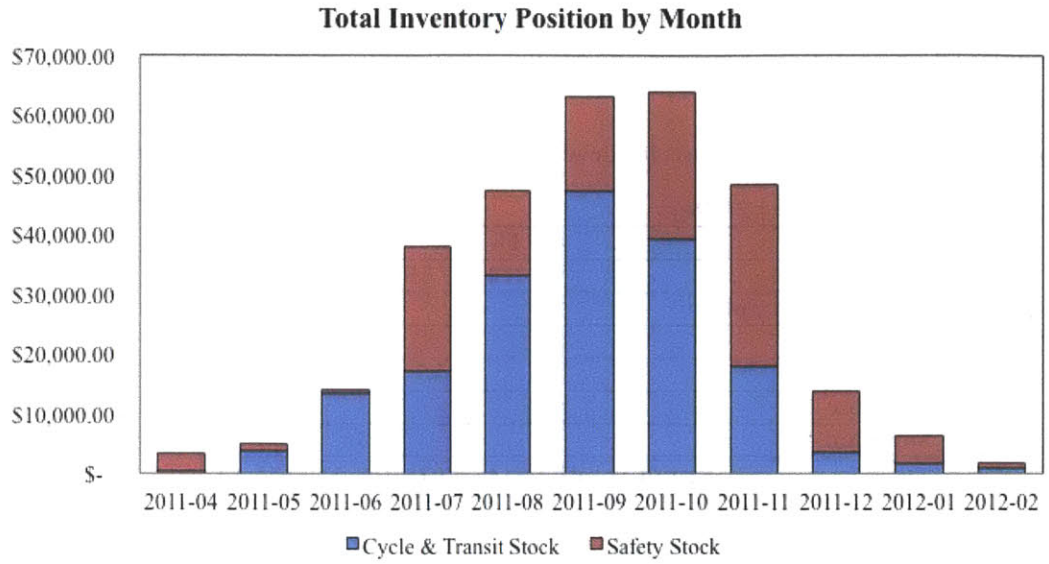

Figure 31: Total Inventory Position by Month

As indicated in Figure 31 and by the safety stock carrying costs discussed previously, safety stock represents a significant portion of the supply chain's total inventory position. For the family of apparel products included in this model, safety stock comprises 41% of the total inventory carrying costs incurred by the supply chain, and because of the magnitude of these costs, huge savings potential exists if safety stock levels could be reasonably reduced. As Section 3.2.3 covered previously, safety stock is determined by demand, lead times, supply chain uncertainties (in this case, forecast accuracy and supply variability), as well as constraints regarding service level.

Customer demand, supply chain variability, and service level constraints are fixed by external conditions and management expectations, but forecast accuracy is an element of the equation that can be tweaked and potentially improved upon. Among the most attractive features of the *Supply Chain Guru* software is the ability to run sensitivity analysis on one or more variables, and the impact of forecast accuracy can be examined explicitly.

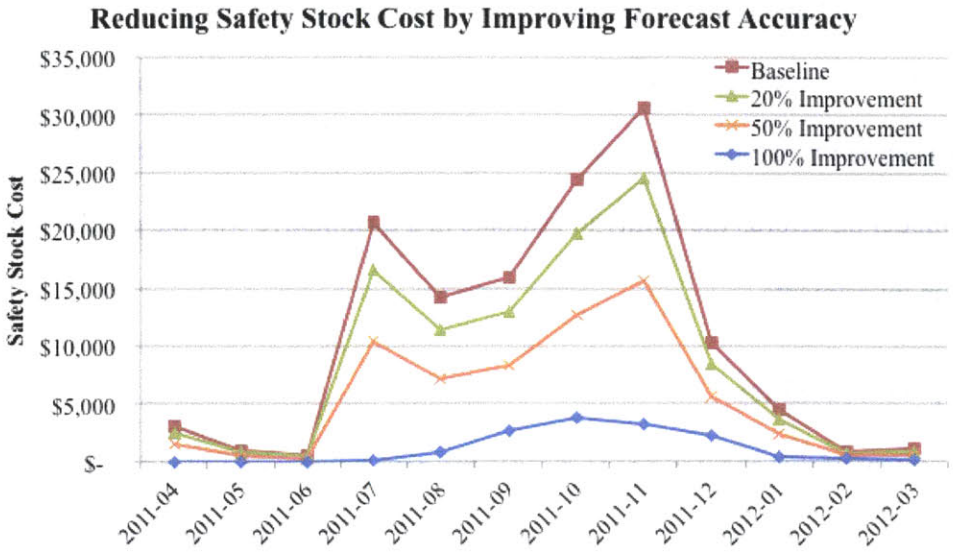

Figure 32: Reducing Safety Stock Cost through Improvements in Forecast Accuracy

Figure 32 shows graphically the reduction in safety stock carrying cost that could potentially be achieved by improving the forecast accuracy for the family of apparel products. Indeed, direct comparison of the "Baseline" current-state safety stock cost to that of the "100% Improvement" scenario allows the extrapolation of the total impact that forecast accuracy has upon the safety stock needed in the supply chain. More than 90% of the safety stock inventories required to meet the assumed 95% service level constraint is because of forecast accuracy, with less than 10% coming from supply-side variability.

Forecast accuracy, however, is a complicated variable of the safety stock equation. It has been said that all forecasts can either be classified as "lucky" or "wrong." Entire collections of books have been written on the subject, attempting to strike the correct balance between scientific, statistical methods, industry knowledge, and "gut" feel for the marketplace. Forecast accuracy can often not be purchased through investments in people, processes, or technology. Moreover, the "100% Improvement" scenario represented in Figure 32 is entirely unrealistic and

merely represents a hypothetical instance to serve as the basis for comparison. The scenarios populating Figure 32 were created specifically to examine the proportional impact forecast accuracy has upon the safety stock position. The important takeaway is that this method of inventory modeling affords the ability to estimate in a quantitative way the potential payoff from supply chain investments.

6.3 Chapter Summary

The intent of this chapter was to discuss the development of a specific optimization model piloted to investigate the value inherent in multi-echelon approaches to inventory management. A family of products was identified by leadership in the Apparel Product Engine, 26 finished goods were identified for inclusion, and both the supply chain and marketplace demand were crafted in *Supply Chain Guru* using historical Nike supply chain data.

Chief among the takeaways from the pilot modeling exercise is that multi-echelon inventory management does not represent a valuable opportunity for replenishment products manufactured via "offshore" supply chains, which have a large transportation lead time separating the finished goods supplier from the point of sale[14]. Furthermore, it can be shown that the savings inherent in multi-echelon inventory management are extremely sensitive to the transportation lead time. In the pilot study, reducing transit time from 42 days to 5 days resulted in a savings increase of more than an order of magnitude. Finally, the modeling exercise identified safety stock as a huge component of the overall inventory position, representing 41% of the total stock required to achieve the assumed 95% service level. Additionally, forecast

14 It would be ideal to include actual historical inventory levels during the period modeled as a basis for comparison of the current state with the recommended state. However, due to external idiosyncrasies with this particular family of product, such a comparison is not possible. All inventories modeled for 2011 sales were purchased at once as a "pre-buy" at management discretion. Additionally, inventories on-hand in the Memphis warehouse are not segmented by demand stream (i.e. Replenishment, Futures, Promotional, etc.), and the percentage of the inventory position attributable to replenishment demand is not discernible.

accuracy was shown to account for more than 90% of the safety stock carrying costs and signifies a huge opportunity for savings from future supply chain improvement projects[15].

15 A major factor in the forecast accuracy for the above apparel products is the significant inherent seasonality of demand. While this chapter's discussion is likely applicable to products exhibiting similar demand seasonality, it may not be relevant to more stable products. A recommendation for future work, covered more thoroughly in Chapter 7, is repeating the above analysis with a product with greater demand stability.

7 Implementation Methodology

Regardless of the specific effectiveness of multi-echelon inventory optimization, the modeling framework established by the apparel pilot study represents a significant opportunity for evolving Nike's supply chain planning capabilities. The general data harvesting, supply modeling, and demand characterization techniques outlined in Chapters 5 and 6 embody a more robust, quantitative, and systematic structure than currently exists in Nike's traditional business processes. The addition of inventory modeling techniques to suggest optimal inventory positions can improve supply chain planning effectiveness and cross-business cohesion. Opportunity exists for implementation of inventory modeling techniques in the present sense, and this section is intended to recommend possible areas for immediate deployment.

7.1 Selecting the Right Products

As shown in the discussion of the pilot model in Chapter 6, the apparel products selected for initial study were not ideal modeling candidates for a variety of reasons. Extreme seasonality inherent in the customer demand drove substantial forecast accuracy issues, and long transit lead times from a single-source, offshore finished goods supplier significantly impaired any savings potential from multi-echelon management. With these factors in mind, it is recommended that a more stable, less seasonal product with a longer sales history be selected for further studies. Socks, Nike Pro Combat compression gear, or non-seasonal selections from the bottoms bar, for example, would represent more attractive footholds into inventory modeling initiatives. Stable, established products would present with more amenable and extensive data samples from which to derive initial supply chain models.

7.2 Organization & People

Nike's matrix organization structure creates an interesting and attractive opportunity for chartering an inventory modeling implementation project. Specifically, the North America Geography, being the largest, most stable and mature of the Geos, is the most compelling business unit in which to launch such an effort. The North America Supply Chain Innovation team also has experience with modeling initiatives, such as the *Supply Chain* Guru work completed previously by the NFL team. Additionally, at the conclusion of this project, it seems that there may be an appetite for establishing a supply chain modeling "center of excellence" at the global level. As such, it is recommended that the North American Supply Chain Innovation team champion immediate-term inventory modeling projects with input from key adjacent organizations, such as the modeling center of excellence, the Supply and Demand Planning teams in the Geographies, the Manufacturing and Sourcing team, the replenishment team, and the appropriate Liaison Offices.

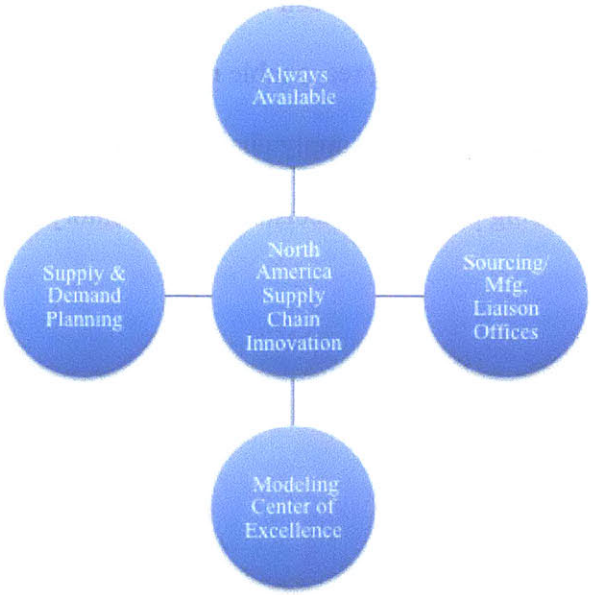

Figure 33: A possible matrix organization for inventory modeling initiatives

7.3 Process

Having suggested appropriate products and a potential organization to manage modeling implementation, the final recommendation regards process. As initial models developed are likely to contain significant sources of error and ambiguity, it is not advisable to begin making production and inventory decisions using model output as direct guidance. As inventory-modeling capability is being developed, there is too much risk inherent in allowing the software to dictate supply chain performance. Accordingly, it is recommended to grow inventory models offline, but in parallel with the current established supply chain planning processes. This strategy would, in effect, create two concurrent planning processes operating with the same data inputs: the existing supply and demand planning methods and a separate, external inventory model existing in a *Supply Chain Guru*-type software. In this way, outputs of the inventory optimization model can be periodically compared with outputs of the actual planning methods, and direct comparisons can be made to evaluate the relative effectiveness of computational approach. Any necessary tuning of the model can be exacted as trust is built throughout the organization that the software is producing reasonable results that improve upon current-state capabilities. Ultimately, the future state of supply chain planning can utilize model output as the primary guidance for influencing purchasing decisions and inventory management.

8 Summary and Conclusions

The primary objective of this project was to explore the value inherent in multi-echelon inventory planning for Nike's replenishment business by developing an inventory model to calculate optimal inventory positions throughout the supply chain. As a Make-to-Stock business, the replenishment supply chain relies largely upon finished goods inventory carried as safety stock to satisfy customer demand with a relatively short amount of lead time. Multi-echelon inventory management, where possible, can reduce both the carrying costs of and the risks associated with inventory positions taken to support the need for rapid response in the replenishment business. A pilot model was created for a family of apparel products to study the feasibility of multi-echelon management in an existing Nike supply chain. The *Supply Chain Guru* software served as an excellent computational backbone for accomplishing these goals and led to a collection of interesting output.

Analysis of the modeling output suggests limited upside potential for multi-echelon inventory optimization in offshore, replenishment supply chains, such as the network employed by the products modeled in the pilot study covered in Chapter 6. Results indicate that where transportation lead times overwhelm the lead time expectations of customers, finished goods inventories must be carried in the most downstream echelon to meet service level constraints. Accordingly, sensitivity analysis shows that as transportation lead time is reduced, the savings potential of multi-echelon inventory management increases dramatically. For the products modeled in the pilot study, safety stock inventories comprise a surprisingly large percentage of total inventory position, driven overwhelmingly by forecast accuracy.

However, opportunity does exist for the inventory modeling techniques developed in this project to be effectively leveraged elsewhere in Nike's supply chain organization. By selecting

appropriate products, identifying a capable team and empowering it to drive change throughout the supply chain planning process, and establishing an effective development process for creating, deploying, and institutionalizing inventory optimization models, Nike's supply chain team can stimulate a significant evolution in a core business process.

9 References

[1] M. Ozanian, The Forbes Fab 40: The World's Most Valuable Sports Brands, *Forbes Magazine*, http://www.forbes.com/sites/mikeozanian/2011/10/03/the-forbes-fab-40-the-worlds-most-valuable-sports-brands-3/

[2] http://www.nikeinc.com

[3] http://www.nike.com/us/en_us/lp/nikeid?sitesrc=id_redir

[4] Graves & Willems, *Optimizing Strategic Safety Stock Placement in Supply Chains*, Manufacturing & Services Operations Management, Vol. 2-1, Winter 2000, pp. 68-83

[5] Meredith & Akinc, *Characterizing and structuring a new make-to-forecast production strategy*, Journal of Operations Management, Vol. 25, 2007, 623-642

[6] Bertsimas & Paschalidis, *Probabilistic service level guarantees in make-to-stock manufacturing systems*, Operations Research, Vol 49, No. 1, January-February 2001, pp. 119 – 113

[7] Boylan & Johnston, *Relationships Between Service Level Measures for Inventory Systems*, Journal of the Operational Research Society, Vol. 45, No. 7, pp. 838-844

[8] Gelper, Fried, & Croux, *Robust Forecasting with Exponential and Holt-Winters Smoothing*, Journal of Forecasting, Vol 29, June 2009, pp 285 – 300.

[9] Kalekar, *Time Series Forecasting Using Holt-Winters Exponential Smoothing*, Kanwal Rekhi School of Information Technology

[10] Hyndman & Koehler, *Another look at measures of forecast accuracy*, International Journal of Forecasting, Vol 22, 2006, pp. 679 – 688

[11] Silver, Pyke, & Peterson, *Inventory Management and Production Planning and Scheduling*, Wiley, 3rd Edition, pp. 74 – 134

[12] Rosenbaum, *Service Level Relationships in a Multi-Echelon Inventory System*, Management Science, Vol 27, No 8, August 1981, pp. 926 – 945

[13] http://www.allianthawk.org/victionary/showdef.php?word=217

[14] Silver, Pyke, & Peterson, *Inventory Management and Production Planning and Scheduling*, Wiley, 3rd Edition, pp. 382 – 404

[15] Parsons, *Using a Newsvendor Model for Demand Planning of NFL Replica Jerseys,* Massachusetts Institute of Technology, June 2004.

[16] Baker, Magazine, & Nuttle, *The Effect of Commonality on Safety Stock in a Simple Inventory Model*, Management Science, Vol. 32, No. 8, August 1986, pp. 982 – 988

[17] Tallur, Cetin, & Gardner, *Integrating Demand and Supply Variability into Safety stock Evaluations*, International Journal of Physical Distribution & Logistics Management, Vol 34, No. 1, pp. 62 – 69

[18] Graves & Willems, *Optimizing Strategic Safety Stock Placement in Supply Chains*, Manufacturing & Service Operations Management, Vol. 2, No. 1, Winter 2000, pp. 68 – 83

[19] Graves & Willems, *Erratum: Optimizing Strategic Safety Stock Placement in Supply Chains*, Manufacturing & Service Operations Management, Vol. 5, No. 2, Spring 2003, pp. 176 – 177

[20] http://nikeinc.com/news/nike-partners-with-llamasoft-for-sustainable-supply-chain-innovation

10 Appendix A – Apparel Pilot Model Products Table Inputs

ProductName	ProductCost	ProductAllowableQuantities	ProductStatus	ProductClass
000004_010	9.06	Discrete	Include	100
464399_010	2.5596	Discrete	Include	100
436635	0.1032	Discrete	Include	100
464400_010	2.5596	Discrete	Include	100
159415_010	2.5596	Discrete	Include	100
165858_010	2.5596	Discrete	Include	100
368545	0.2335	Discrete	Include	100
464399_Greige	0.97	Discrete	Include	100
165858_Greige	0.97	Discrete	Include	100
159415_Greige	0.97	Discrete	Include	100
464400_Greige	0.97	Discrete	Include	100
000004_063	9.06	Discrete	Include	100
464399_063	2.5596	Discrete	Include	100
464400_063	2.5596	Discrete	Include	100
159415_063	2.5596	Discrete	Include	100
165858_063	2.5596	Discrete	Include	100
000004_071	9.06	Discrete	Include	100
464399_071	2.5596	Discrete	Include	100
464400_071	2.5596	Discrete	Include	100
159415_071	2.5596	Discrete	Include	100
165858_071	2.5596	Discrete	Include	100
000004_405	9.06	Discrete	Include	100
464399_405	2.5596	Discrete	Include	100
464400_405	2.5596	Discrete	Include	100
159415_405	2.5596	Discrete	Include	100
165858_405	2.5596	Discrete	Include	100
303325_Greige	0.97	Discrete	Include	100
303323_Greige	0.97	Discrete	Include	100
303323_010	2.5596	Discrete	Include	100
303325_010	2.5596	Discrete	Include	100
303323_063	2.5596	Discrete	Include	100
303325_063	2.5596	Discrete	Include	100
303323_071	2.5596	Discrete	Include	100
303325_071	2.5596	Discrete	Include	100
303323_405	2.5596	Discrete	Include	100
303325_405	2.5596	Discrete	Include	100
303323_100	2.5596	Discrete	Include	100
303325_100	2.5596	Discrete	Include	100
303323_648	2.5596	Discrete	Include	100
303325_648	2.5596	Discrete	Include	100
000001_010	8.23	Discrete	Include	100
000001_063	8.23	Discrete	Include	100
000001_071	8.23	Discrete	Include	100
000001_405	8.23	Discrete	Include	100
000001_100	8.23	Discrete	Include	100
000001_648	8.23	Discrete	Include	100
442324	0.2335	Discrete	Include	100
159415_100	2.5596	Discrete	Include	100
159415_648	2.5596	Discrete	Include	100
165858_100	2.5596	Discrete	Include	100

165858_648	2.5596	Discrete	Include	100
464399_100	2.5596	Discrete	Include	100
464399_648	2.5596	Discrete	Include	100
464400_100	2.5596	Discrete	Include	100
464400_648	2.5596	Discrete	Include	100
000002_010	18.27	Discrete	Include	100
000002_063	18.27	Discrete	Include	100
000002_071	18.27	Discrete	Include	100
000002_100	18.27	Discrete	Include	100
000002_405	18.27	Discrete	Include	100
000002_648	18.27	Discrete	Include	100
000003_010	22.91	Discrete	Include	100
000003_063	22.91	Discrete	Include	100
000003_071	22.91	Discrete	Include	100
000003_100	22.91	Discrete	Include	100
000003_405	22.91	Discrete	Include	100
000003_648	22.91	Discrete	Include	100
000005_010	10.39	Discrete	Include	100
000005_063	10.39	Discrete	Include	100
000005_071	10.39	Discrete	Include	100
000005_405	10.39	Discrete	Include	100
356206	0.1016	Discrete	Include	100
401548	0.3776	Discrete	Include	100

11 Appendix B - Apparel Pilot Model Bill of Materials Table Inputs

BOMName	ProductName	BOMProductQuantity	BOMNotes
BOM_000004_010	464399_010	0.24	LY
BOM_000004_010	464400_010	0.24	LY
BOM_000004_010	436635	1.7	LY
BOM_000004_010	165858_010	1.5	LY
BOM_000004_010	159415_010	1.5	LY
BOM_000004_010	368545	1	EA
BOM_464399	464399_Greige	1	LY
BOM_464400	464400_Greige	1	LY
BOM_159415	159415_Greige	1	LY
BOM_165858	165858_Greige	1	LY
BOM_000004_063	464399_063	0.24	LY
BOM_000004_063	464400_063	0.24	LY
BOM_000004_063	436635	1.7	LY
BOM_000004_063	165858_063	1.5	LY
BOM_000004_063	159415_063	1.5	LY
BOM_000004_063	368545	1	EA
BOM_000004_071	464399_071	0.24	LY
BOM_000004_071	464400_071	0.24	LY
BOM_000004_071	436635	1.7	LY
BOM_000004_071	165858_071	1.5	LY
BOM_000004_071	159415_071	1.5	LY
BOM_000004_071	368545	1	EA
BOM_000004_405	464399_405	0.24	LY
BOM_000004_405	464400_405	0.24	LY
BOM_000004_405	436635	1.7	LY
BOM_000004_405	165858_405	1.5	LY
BOM_000004_405	159415_405	1.5	LY
BOM_000004_405	368545	1	EA
BOM_000004_010	442324	1	EA
BOM_000004_063	442324	1	EA
BOM_000004_071	442324	1	EA
BOM_000004_405	442324	1	EA
BOM_303323	303323_Greige	1	LY
BOM_303325	303325_Greige	1	LY
BOM_000001_010	159415_010	1.2	LY
BOM_000001_010	165858_010	1.2	LY
BOM_000001_010	464400_010	0.09	LY
BOM_000001_010	368545	1	EA
BOM_000001_010	442324	1	EA
BOM_000001_010	303323_010	0.48	LY
BOM_000001_010	303325_010	0.48	LY
BOM_000001_063	159415_063	1.2	LY
BOM_000001_063	165858_063	1.2	LY
BOM_000001_063	464400_063	0.09	LY
BOM_000001_063	368545	1	EA
BOM_000001_063	442324	1	EA
BOM_000001_063	303323_063	0.48	LY
BOM_000001_063	303325_063	0.48	LY
BOM_000001_071	159415_071	1.2	LY
BOM_000001_071	165858_071	1.2	LY

BOM_000001_071	464400_071	0.09	LY
BOM_000001_071	368545	1	EA
BOM_000001_071	442324	1	EA
BOM_000001_071	303323_071	0.48	LY
BOM_000001_071	303325_071	0.48	LY
BOM_000001_405	159415_405	1.2	LY
BOM_000001_405	165858_405	1.2	LY
BOM_000001_405	464400_405	0.09	LY
BOM_000001_405	368545	1	EA
BOM_000001_405	442324	1	EA
BOM_000001_405	303323_405	0.48	LY
BOM_000001_405	303325_405	0.48	LY
BOM_000001_100	159415_100	1.2	LY
BOM_000001_100	165858_100	1.2	LY
BOM_000001_100	464400_100	0.09	LY
BOM_000001_100	368545	1	EA
BOM_000001_100	442324	1	EA
BOM_000001_100	303323_100	0.48	LY
BOM_000001_100	303325_100	0.48	LY
BOM_000001_648	159415_648	1.2	LY
BOM_000001_648	165858_648	1.2	LY
BOM_000001_648	464400_648	0.09	LY
BOM_000001_648	368545	1	EA
BOM_000001_648	442324	1	EA
BOM_000001_648	303323_648	0.48	LY
BOM_000001_648	303325_648	0.48	LY
BOM_000002_010	159415_010	1.49	LY
BOM_000002_010	165858_010	1.49	LY
BOM_000002_010	464399_010	0.19	LY
BOM_000002_010	464400_010	0.19	LY
BOM_000002_010	368545	1	EA
BOM_000002_010	442324	1	EA
BOM_000002_010	303323_010	0.43	LY
BOM_000002_010	303325_010	0.43	LY
BOM_000003_010	159415_010	1.51	LY
BOM_000003_010	165858_010	1.51	LY
BOM_000003_010	464399_010	0.29	LY
BOM_000003_010	464400_010	0.15	LY
BOM_000003_010	368545	1	EA
BOM_000003_010	442324	1	EA
BOM_000003_010	303323_010	0.43	LY
BOM_000003_010	303325_010	0.43	LY
BOM_000002_010	436635	1.3	LY
BOM_000002_010	356206	2	EA
BOM_000002_010	401548	1	EA
BOM_000002_063	159415_010	1.49	LY
BOM_000002_063	165858_010	1.49	LY
BOM_000002_063	464399_010	0.19	LY
BOM_000002_063	464400_010	0.19	LY
BOM_000002_063	368545	1	EA
BOM_000002_063	442324	1	EA
BOM_000002_063	303323_010	0.43	LY
BOM_000002_063	303325_010	0.43	LY

BOM_000002_063	436635	1.3	LY
BOM_000002_063	356206	2	EA
BOM_000002_063	401548	1	EA
BOM_000002_071	159415_010	1.49	LY
BOM_000002_071	165858_010	1.49	LY
BOM_000002_071	464399_010	0.19	LY
BOM_000002_071	464400_010	0.19	LY
BOM_000002_071	368545	1	EA
BOM_000002_071	442324	1	EA
BOM_000002_071	303323_010	0.43	LY
BOM_000002_071	303325_010	0.43	LY
BOM_000002_071	436635	1.3	LY
BOM_000002_071	356206	2	EA
BOM_000002_071	401548	1	EA
BOM_000002_100	159415_010	1.49	LY
BOM_000002_100	165858_010	1.49	LY
BOM_000002_100	464399_010	0.19	LY
BOM_000002_100	464400_010	0.19	LY
BOM_000002_100	368545	1	EA
BOM_000002_100	442324	1	EA
BOM_000002_100	303323_010	0.43	LY
BOM_000002_100	303325_010	0.43	LY
BOM_000002_100	436635	1.3	LY
BOM_000002_100	356206	2	EA
BOM_000002_100	401548	1	EA
BOM_000002_405	159415_010	1.49	LY
BOM_000002_405	165858_010	1.49	LY
BOM_000002_405	464399_010	0.19	LY
BOM_000002_405	464400_010	0.19	LY
BOM_000002_405	368545	1	EA
BOM_000002_405	442324	1	EA
BOM_000002_405	303323_010	0.43	LY
BOM_000002_405	303325_010	0.43	LY
BOM_000002_405	436635	1.3	LY
BOM_000002_405	356206	2	EA
BOM_000002_405	401548	1	EA
BOM_000002_648	159415_010	1.49	LY
BOM_000002_648	165858_010	1.49	LY
BOM_000002_648	464399_010	0.19	LY
BOM_000002_648	464400_010	0.19	LY
BOM_000002_648	368545	1	EA
BOM_000002_648	442324	1	EA
BOM_000002_648	303323_010	0.43	LY
BOM_000002_648	303325_010	0.43	LY
BOM_000002_648	436635	1.3	LY
BOM_000002_648	356206	2	EA
BOM_000002_648	401548	1	EA
BOM_000003_010	401548	1	EA
BOM_000003_010	441030	1	EA
BOM_000003_010	356206	2	EA
BOM_000003_010	436635	1.3	LY
BOM_000003_063	159415_010	1.51	LY

BOM_000003_063	165858_010	1.51	LY
BOM_000003_063	464399_010	0.29	LY
BOM_000003_063	464400_010	0.15	LY
BOM_000003_063	368545	1	EA
BOM_000003_063	442324	1	EA
BOM_000003_063	303323_010	0.43	LY
BOM_000003_063	303325_010	0.43	LY
BOM_000003_063	401548	1	EA
BOM_000003_063	441030	1	EA
BOM_000003_063	356206	2	EA
BOM_000003_063	436635	1.3	LY
BOM_000003_071	159415_010	1.51	LY
BOM_000003_071	165858_010	1.51	LY
BOM_000003_071	464399_010	0.29	LY
BOM_000003_071	464400_010	0.15	LY
BOM_000003_071	368545	1	EA
BOM_000003_071	442324	1	EA
BOM_000003_071	303323_010	0.43	LY
BOM_000003_071	303325_010	0.43	LY
BOM_000003_071	401548	1	EA
BOM_000003_071	441030	1	EA
BOM_000003_071	356206	2	EA
BOM_000003_071	436635	1.3	LY
BOM_000003_100	159415_010	1.51	LY
BOM_000003_100	165858_010	1.51	LY
BOM_000003_100	464399_010	0.29	LY
BOM_000003_100	464400_010	0.15	LY
BOM_000003_100	368545	1	EA
BOM_000003_100	442324	1	EA
BOM_000003_100	303323_010	0.43	LY
BOM_000003_100	303325_010	0.43	LY
BOM_000003_100	401548	1	EA
BOM_000003_100	441030	1	EA
BOM_000003_100	356206	2	EA
BOM_000003_100	436635	1.3	LY
BOM_000003_405	159415_010	1.51	LY
BOM_000003_405	165858_010	1.51	LY
BOM_000003_405	464399_010	0.29	LY
BOM_000003_405	464400_010	0.15	LY
BOM_000003_405	368545	1	EA
BOM_000003_405	442324	1	EA
BOM_000003_405	303323_010	0.43	LY
BOM_000003_405	303325_010	0.43	LY
BOM_000003_405	401548	1	EA
BOM_000003_405	441030	1	EA
BOM_000003_405	356206	2	EA
BOM_000003_405	436635	1.3	LY
BOM_000003_648	159415_010	1.51	LY
BOM_000003_648	165858_010	1.51	LY
BOM_000003_648	464399_010	0.29	LY

BOM_000003_648	464400_010	0.15	LY
BOM_000003_648	368545	1	EA
BOM_000003_648	442324	1	EA
BOM_000003_648	303323_010	0.43	LY
BOM_000003_648	303325_010	0.43	LY
BOM_000003_648	401548	1	EA
BOM_000003_648	441030	1	EA
BOM_000003_648	356206	2	EA
BOM_000003_648	436635	1.3	LY
BOM_000005_010	464399_010	0.32	LY
BOM_000005_010	464400_010	0.32	LY
BOM_000005_010	436635	1.7	LY
BOM_000005_010	165858_010	1.56	LY
BOM_000005_010	159415_010	1.56	LY
BOM_000005_010	368545	1	EA
BOM_000005_010	442324	1	EA
BOM_000005_063	464399_010	0.32	LY
BOM_000005_063	464400_010	0.32	LY
BOM_000005_063	436635	1.7	LY
BOM_000005_063	165858_010	1.56	LY
BOM_000005_063	159415_010	1.56	LY
BOM_000005_063	368545	1	EA
BOM_000005_063	442324	1	EA
BOM_000005_071	464399_010	0.32	LY
BOM_000005_071	464400_010	0.32	LY
BOM_000005_071	436635	1.7	LY
BOM_000005_071	165858_010	1.56	LY
BOM_000005_071	159415_010	1.56	LY
BOM_000005_071	368545	1	EA
BOM_000005_071	442324	1	EA
BOM_000005_405	464399_010	0.32	LY
BOM_000005_405	464400_010	0.32	LY
BOM_000005_405	436635	1.7	LY
BOM_000005_405	165858_010	1.56	LY
BOM_000005_405	159415_010	1.56	LY
BOM_000005_405	368545	1	EA
BOM_000005_405	442324	1	EA

12 Appendix C – Apparel Pilot Model Sites Table

(Table broken into segments due to length. Column headers are bolded in the first row of each segment.)

SiteName	SiteCity	SiteState	SiteCountry	SiteZipCode	SiteStatus	SiteType	SiteCapacityBasis
POS					Include	Customer	Quantity
Customer_Demand	Memphis	TN	USA	38125	Include	Existing Facility	Quantity
Nike_DC	Memphis	TN	USA	38125	Include	Existing Facility	Quantity
Finished_Goods_Supplier					Include	Existing Facility	Quantity
Raw_Supplier_2					Include	Existing Facility	Quantity
Raw_Supplier_3					Include	Existing Facility	Quantity
Raw_Supplier_1					Include	Existing Facility	Quantity
Raw_Supplier_4					Include	Existing Facility	Quantity

SiteFixedStartupCost	SiteFixedOperatingCost	CapitalInvestmentBasis	CapitalInvestmentCapCost
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	
<0,0>	<0,0>	Quantity	

SiteClosingCost	SingleSiteSourcing	OrderQueueBasis	BackOrderQueueBasis
0	FALSE	None	None
0	FALSE	None	None
0	FALSE	None	None
0	FALSE	None	None
0	FALSE	None	None
0	FALSE	None	None
0	FALSE	None	None
0	FALSE	None	None

13 Appendix D – Apparel Pilot Model Sourcing Policies Table

(Table broken into segments due to length. Column headers are bolded in the first row of each segment.)

SiteName	ProductName	SourcingPolicy	SourceName	BOMName
Finished_Goods_Supplier	436635	Multiple Sources(Most Inventory)	Raw_Supplier_2	
Raw_Supplier_2	436635	Make		
Nike_DC	000004_010	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
Finished_Goods_Supplier	464400_Greige	Make		
Finished_Goods_Supplier	442324	Multiple Sources(Most Inventory)	Raw_Supplier_3	
POS	000004_010	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	464399_Greige	Make		
Finished_Goods_Supplier	165858_Greige	Make		
Finished_Goods_Supplier	159415_Greige	Make		
Raw_Supplier_3	368545	Make		
Finished_Goods_Supplier	000004_010	Make		BOM_000004_010
Finished_Goods_Supplier	464399_010	Make		BOM_464399
Finished_Goods_Supplier	464400_010	Make		BOM_464400
Finished_Goods_Supplier	159415_010	Make		BOM_159415
Finished_Goods_Supplier	165858_010	Make		BOM_165858
Nike_DC	000004_063	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000004_063	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000004_063	Make		BOM_000004_063
Finished_Goods_Supplier	464399_063	Make		BOM_464399
Finished_Goods_Supplier	464400_063	Make		BOM_464400
Finished_Goods_Supplier	159415_063	Make		BOM_159415
Finished_Goods_Supplier	165858_063	Make		BOM_165858
Nike_DC	000004_071	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000004_071	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000004_071	Make		BOM_000004_071
Finished_Goods_Supplier	464399_071	Make		BOM_464399
Finished_Goods_Supplier	464400_071	Make		BOM_464400
Finished_Goods_Supplier	159415_071	Make		BOM_159415
Finished_Goods_Supplier	165858_071	Make		BOM_165858
Nike_DC	000004_405	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000004_405	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000004_405	Make		BOM_000004_405
Finished_Goods_Supplier	464399_405	Make		BOM_464399
Finished_Goods_Supplier	464400_405	Make		BOM_464400
Finished_Goods_Supplier	159415_405	Make		BOM_159415
Finished_Goods_Supplier	165858_405	Make		BOM_165858
Raw_Supplier_3	442324	Make		
Finished_Goods_Supplier	368545	Multiple Sources(Most Inventory)	Raw_Supplier_3	
Finished_Goods_Supplier	303325_Greige	Make		
Finished_Goods_Supplier	303323_Greige	Make		
Finished_Goods_Supplier	303323_010	Make		BOM_303323
Finished_Goods_Supplier	303325_010	Make		BOM_303325

Finished_Goods_Supplier	303323_063	Make		BOM_303323
Finished_Goods_Supplier	303325_063	Make		BOM_303325
Finished_Goods_Supplier	303323_071	Make		BOM_303323
Finished_Goods_Supplier	303325_071	Make		BOM_303325
Finished_Goods_Supplier	303323_405	Make		BOM_303323
Finished_Goods_Supplier	303325_405	Make		BOM_303325
Finished_Goods_Supplier	303323_100	Make		BOM_303323
Finished_Goods_Supplier	303325_100	Make		BOM_303325
Finished_Goods_Supplier	303323_648	Make		BOM_303323
Finished_Goods_Supplier	303325_648	Make		BOM_303325
Finished_Goods_Supplier	000001_010	Make		BOM_000001_010
Finished_Goods_Supplier	000001_063	Make		BOM_000001_063
Finished_Goods_Supplier	000001_071	Make		BOM_000001_071
Finished_Goods_Supplier	000001_405	Make		BOM_000001_405
Finished_Goods_Supplier	000001_100	Make		BOM_000001_100
Finished_Goods_Supplier	000001_648	Make		BOM_000001_648
Nike_DC	000001_010	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
Nike_DC	000001_063	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
Nike_DC	000001_071	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
Nike_DC	000001_405	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
Nike_DC	000001_100	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
Nike_DC	000001_648	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000001_010	Multiple Sources(Most Inventory)	Nike_DC	
POS	000001_063	Multiple Sources(Most Inventory)	Nike_DC	
POS	000001_071	Multiple Sources(Most Inventory)	Nike_DC	
POS	000001_405	Multiple Sources(Most Inventory)	Nike_DC	
POS	000001_100	Multiple Sources(Most Inventory)	Nike_DC	
POS	000001_648	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000002_010	Make		BOM_000002_010
Nike_DC	000002_010	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000002_010	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000002_063	Make		BOM_000002_063
Nike_DC	000002_063	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000002_063	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	464399_100	Make		BOM_464399
Finished_Goods_Supplier	464399_648	Make		BOM_464399
Finished_Goods_Supplier	464400_100	Make		BOM_464400
Finished_Goods_Supplier	464400_648	Make		BOM_464400
Finished_Goods_Supplier	159415_100	Make		BOM_159415
Finished_Goods_Supplier	159415_648	Make		BOM_159415
Finished_Goods_Supplier	165858_100	Make		BOM_165858
Finished_Goods_Supplier	165858_648	Make		BOM_165858
Finished_Goods_Supplier	000002_071	Make		BOM_000002_071
Nike_DC	000002_071	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000002_071	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000002_100	Make		BOM_000002_100
Nike_DC	000002_100	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000002_100	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000002_405	Make		BOM_000002_405
Nike_DC	000002_405	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000002_405	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000002_648	Make		BOM_000002_648
Nike_DC	000002_648	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000002_648	Multiple Sources(Most Inventory)	Nike_DC	

Finished_Goods_Supplier	000003_010	Make		BOM_000003_010
Nike_DC	000003_010	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000003_010	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000003_063	Make		BOM_000003_063
Nike_DC	000003_063	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000003_063	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000003_071	Make		BOM_000003_071
Nike_DC	000003_071	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000003_071	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000003_100	Make		BOM_000003_100
Nike_DC	000003_100	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000003_100	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000003_405	Make		BOM_000003_405
Nike_DC	000003_405	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000003_405	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000003_648	Make		BOM_000003_648
Nike_DC	000003_648	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000003_648	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	401548	Multiple Sources(Most Inventory)	Raw_Supplier_1	
Raw_Supplier_1	401548	Make		
Finished_Goods_Supplier	356206	Multiple Sources(Most Inventory)	Raw_Supplier_1	
Raw_Supplier_1	356206	Make		
Finished_Goods_Supplier	441030	Multiple Sources(Most Inventory)	Raw_Supplier_4	
Raw_Supplier_4	441030	Make		
Nike_DC	000005_010	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000005_010	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000005_010	Make		BOM_000005_010
Nike_DC	000005_063	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000005_063	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000005_063	Make		BOM_000005_063
Nike_DC	000005_071	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000005_071	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000005_071	Make		BOM_000005_071
Nike_DC	000005_405	Multiple Sources(Most Inventory)	Finished_Goods_Supplier	
POS	000005_405	Multiple Sources(Most Inventory)	Nike_DC	
Finished_Goods_Supplier	000005_405	Make		BOM_000005_405

ProductionTime	SourceLeadTime	OrderProcessingTime	OrderProcessingTimePerUnit	ApplySourcingCostToHorizon
0		0	0	FALSE
N(35,1.758) DAY		0	0	FALSE
0		0	0	FALSE
20		0	0	FALSE
0		0	0	FALSE

0	3 DAY	0	0	FALSE
20		0	0	FALSE
20		0	0	FALSE
20		0	0	FALSE
N(15,.75) DAY		0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(21,1.05) DAY		0	0	FALSE
0		0	0	FALSE
20		0	0	FALSE
20		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(26.7,1.76) DAY		0	0	FALSE
N(26.7,1.76) N(26.7,1.76) DAYDAY		0	0	FALSE
N(26.7,1.76) DAY		0	0	FALSE
N(26.7,1.76) DAY		0	0	FALSE
N(26.7,1.76) DAY		0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE

0		0	0	FALSE
0		0	0	FALSE
0		0	0	FALSE
0		0	0	FALSE
0		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
0	3 DAY	0	0	FALSE
0	3 DAY	0	0	FALSE
0	3 DAY	0	0	FALSE
0	3 DAY	0	0	FALSE
0	3 DAY	0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(33,1.66) DAY		0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(26.3,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(30,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(30,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(30,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(30,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(30,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(30,1.76) DAY		0	0	FALSE

0		0	0	FALSE
0	3 DAY	0	0	FALSE
0		0	0	FALSE
N(30,1.60) DAY		0	0	FALSE
0		0	0	FALSE
N(30,1.60) DAY		0	0	FALSE
0		0	0	FALSE
N(30,1.60) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE
0		0	0	FALSE
0	3 DAY	0	0	FALSE
N(19.6,1.76) DAY		0	0	FALSE

SourcingPolicyStatus	SourcingPolicyType	MinimumOrderQty	AllowBackOrders	ProbabilityOfBalking	DaysBetweenProductions
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		
Include	Existing Link	0	TRUE		

Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE

Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE

Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE
Include	Existing Link	0	TRUE

14 Appendix E – Apparel Pilot Model Transportation Policies Table

(Table broken into segments due to length. Column headers are bolded in the first row of each segment.)

SourceSite	DestinationSite	ProductName	Mode	ModeParameter	TransportationPolicy	TransportTime
Raw_Supplier_3	Finished_Goods_Supplier	368545	1	1	LTL	N(26,1.04) DAY
Nike_DC	POS	000004_010	1	1	LTL	
Raw_Supplier_2	Finished_Goods_Supplier	436635	1	1	LTL	N(28,1.12) DAY
Finished_Goods_Supplier	Nike_DC	000004_010	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000004_063	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000004_063	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000004_071	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000004_071	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000004_405	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000004_405	1	1	LTL	N(42,3) DAY
Raw_Supplier_3	Finished_Goods_Supplier	442324	1	1	LTL	N(26,1.04) DAY
Finished_Goods_Supplier	Nike_DC	000001_010	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000001_063	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000001_071	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000001_405	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000001_100	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000001_648	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000001_010	1	1	LTL	
Nike_DC	POS	000001_063	1	1	LTL	
Nike_DC	POS	000001_071	1	1	LTL	
Nike_DC	POS	000001_405	1	1	LTL	
Nike_DC	POS	000001_100	1	1	LTL	
Nike_DC	POS	000001_648	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000002_010	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000002_063	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000002_071	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000002_405	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000002_100	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000002_648	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000002_010	1	1	LTL	
Nike_DC	POS	000002_063	1	1	LTL	
Nike_DC	POS	000002_071	1	1	LTL	
Nike_DC	POS	000002_405	1	1	LTL	
Nike_DC	POS	000002_100	1	1	LTL	
Nike_DC	POS	000002_648	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000003_010	1	1	LTL	N(42,3) DAY

Finished_Goods_Supplier	Nike_DC	000003_063	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000003_071	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000003_405	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000003_100	1	1	LTL	N(42,3) DAY
Finished_Goods_Supplier	Nike_DC	000003_648	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000003_010	1	1	LTL	
Nike_DC	POS	000003_063	1	1	LTL	
Nike_DC	POS	000003_071	1	1	LTL	
Nike_DC	POS	000003_405	1	1	LTL	
Nike_DC	POS	000003_100	1	1	LTL	
Nike_DC	POS	000003_648	1	1	LTL	
Raw_Supplier_1	Finished_Goods_Supplier	401548	1	1	LTL	N(34,1.36) DAY
Raw_Supplier_1	Finished_Goods_Supplier	356206	1	1	LTL	N(34,1.36) DAY
Raw_Supplier_4	Finished_Goods_Supplier	441030	1	1	LTL	N(34,1.38) DAY
Nike_DC	POS	000005_010	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000005_010	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000005_063	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000005_063	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000005_071	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000005_071	1	1	LTL	N(42,3) DAY
Nike_DC	POS	000005_405	1	1	LTL	
Finished_Goods_Supplier	Nike_DC	000005_405	1	1	LTL	N(42,3) DAY

LaneConsignmentQueueBasis	ModeConsignmentQueueBasis	ReplenishmentFrequency
None	None	0
None	None	0
None	None	0
None	None	15
None	None	0
None	None	15
None	None	0
None	None	15
None	None	0
None	None	15
None	None	0
None	None	0

None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	0
None	None	15
None	None	0
None	None	15
None	None	0
None	None	15
None	None	0
None	None	15

15 Appendix F – Apparel Pilot Model User Defined Customer Demand Profile Table

(Recall from Section 5.2.3.1 that demand and standard deviation quantities must be at a daily level for the User Defined Customer Demand Profile Table.)

SiteName	ProductName	PeriodName	DemandQtyMean	DemandQtyStdDev
POS	000004_010	2011-04	8	482
POS	000004_010	2011-05	1	134
POS	000004_010	2011-06	17	86
POS	000004_010	2011-07	30	2929
POS	000004_010	2011-08	341	2017
POS	000004_010	2011-09	1358	2292
POS	000004_010	2011-10	2085	3397
POS	000004_010	2011-11	1801	4432
POS	000004_010	2011-12	1104	1419
POS	000004_010	2012-01	111	641
POS	000004_010	2012-02	150	126
POS	000004_010	2012-03	99	144
POS	000004_063	2011-04	6	482
POS	000004_063	2011-05	2	134
POS	000004_063	2011-06	23	86
POS	000004_063	2011-07	24	2929
POS	000004_063	2011-08	308	2017
POS	000004_063	2011-09	1003	2292
POS	000004_063	2011-10	1447	3397
POS	000004_063	2011-11	1283	4432
POS	000004_063	2011-12	831	1419
POS	000004_063	2012-01	179	641
POS	000004_063	2012-02	118	126
POS	000004_063	2012-03	74	144
POS	000004_071	2011-04	9	482
POS	000004_071	2011-05	2	134
POS	000004_071	2011-06	25	86
POS	000004_071	2011-07	31	2929
POS	000004_071	2011-08	294	2017
POS	000004_071	2011-09	1479	2292
POS	000004_071	2011-10	1833	3397
POS	000004_071	2011-11	1375	4432
POS	000004_071	2011-12	1052	1419
POS	000004_071	2012-01	81	641
POS	000004_071	2012-02	105	126
POS	000004_071	2012-03	52	144
POS	000004_405	2011-04	5	482
POS	000004_405	2011-05	1	134
POS	000004_405	2011-06	8	86
POS	000004_405	2011-07	13	2929
POS	000004_405	2011-08	359	2017
POS	000004_405	2011-09	618	2292
POS	000004_405	2011-10	857	3397
POS	000004_405	2011-11	1041	4432
POS	000004_405	2011-12	632	1419
POS	000004_405	2012-01	248	641
POS	000004_405	2012-02	93	126

POS	000004_405	2012-03	31	144
POS	000001_010	2011-04	1	3374
POS	000001_010	2011-05	3	2359
POS	000001_010	2011-06	7	1598
POS	000001_010	2011-07	18	1914
POS	000001_010	2011-08	18	107
POS	000001_010	2011-09	81	78
POS	000001_010	2011-10	301	257
POS	000001_010	2011-11	330	620
POS	000001_010	2011-12	105	464
POS	000001_010	2012-01	4	110
POS	000001_010	2012-02	4	5
POS	000001_010	2012-03	1	3
POS	000001_063	2011-04	1	94
POS	000001_063	2011-05	5	32
POS	000001_063	2011-06	5	64
POS	000001_063	2011-07	10	1043
POS	000001_063	2011-08	19	107
POS	000001_063	2011-09	85	78
POS	000001_063	2011-10	210	257
POS	000001_063	2011-11	272	620
POS	000001_063	2011-12	96	464
POS	000001_063	2012-01	6	110
POS	000001_063	2012-02	9	5
POS	000001_063	2012-03	3	3
POS	000001_071	2011-04	9	98
POS	000001_071	2011-05	0	86
POS	000001_071	2011-06	3	114
POS	000001_071	2011-07	7	1457
POS	000001_071	2011-08	22	107
POS	000001_071	2011-09	32	78
POS	000001_071	2011-10	220	257
POS	000001_071	2011-11	98	620
POS	000001_071	2011-12	118	464
POS	000001_071	2012-01	9	110
POS	000001_071	2012-02	4	5
POS	000001_071	2012-03	5	3
POS	000001_100	2011-04	0	1157
POS	000001_100	2011-05	3	802
POS	000001_100	2011-06	3	498
POS	000001_100	2011-07	7	289
POS	000001_100	2011-08	26	107
POS	000001_100	2011-09	57	78
POS	000001_100	2011-10	79	257
POS	000001_100	2011-11	154	620
POS	000001_100	2011-12	91	464
POS	000001_100	2012-01	3	110
POS	000001_100	2012-02	1	5
POS	000001_100	2012-03	1	114
POS	000001_405	2011-04	4	55
POS	000001_405	2011-05	6	105
POS	000001_405	2011-06	10	719
POS	000001_405	2011-07	0	0
POS	000001_405	2011-08	13	107

POS	000001_405	2011-09	72	78
POS	000001_405	2011-10	302	257
POS	000001_405	2011-11	257	620
POS	000001_405	2011-12	121	464
POS	000001_405	2012-01	6	110
POS	000001_405	2012-02	5	5
POS	000001_405	2012-03	9	3
POS	000001_648	2011-04	0	53
POS	000001_648	2011-05	0	20
POS	000001_648	2011-06	4	13
POS	000001_648	2011-07	8	19
POS	000001_648	2011-08	13	107
POS	000001_648	2011-09	72	78
POS	000001_648	2011-10	302	257
POS	000001_648	2011-11	257	620
POS	000001_648	2011-12	121	464
POS	000001_648	2012-01	6	110
POS	000001_648	2012-02	5	5
POS	000001_648	2012-03	9	3
POS	000002_010	2011-01	161	620
POS	000002_010	2011-02	63	288
POS	000002_010	2011-03	46	92
POS	000002_010	2011-04	2	315
POS	000002_010	2011-05	0	177
POS	000002_010	2011-06	8	20
POS	000002_010	2011-07	164	1900
POS	000002_010	2011-08	181	1242
POS	000002_010	2011-09	276	453
POS	000002_010	2011-10	302	1349
POS	000002_010	2011-11	748	708
POS	000002_010	2011-12	374	1143
POS	000002_010	2012-01	161	620
POS	000002_010	2012-02	63	288
POS	000002_010	2012-03	46	92
POS	000002_063	2011-01	116	620
POS	000002_063	2011-02	42	288
POS	000002_063	2011-03	31	92
POS	000002_063	2011-04	0	315
POS	000002_063	2011-05	0	177
POS	000002_063	2011-06	5	20
POS	000002_063	2011-07	134	1900
POS	000002_063	2011-08	66	1242
POS	000002_063	2011-09	247	453
POS	000002_063	2011-10	319	1349
POS	000002_063	2011-11	209	708
POS	000002_063	2011-12	80	1143
POS	000002_063	2012-01	116	620
POS	000002_063	2012-02	42	288
POS	000002_063	2012-03	31	92
POS	000002_071	2011-01	60	620
POS	000002_071	2011-02	33	288
POS	000002_071	2011-03	28	92
POS	000002_071	2011-04	0	315
POS	000002_071	2011-05	2	177

POS	000002_071	2011-06	2	20
POS	000002_071	2011-07	132	1900
POS	000002_071	2011-08	50	1242
POS	000002_071	2011-09	393	453
POS	000002_071	2011-10	530	1349
POS	000002_071	2011-11	534	708
POS	000002_071	2011-12	414	1143
POS	000002_071	2012-01	60	620
POS	000002_071	2012-02	33	288
POS	000002_071	2012-03	28	92
POS	000002_100	2011-01	4	620
POS	000002_100	2011-02	6	288
POS	000002_100	2011-03	26	92
POS	000002_100	2011-04	0	315
POS	000002_100	2011-05	0	177
POS	000002_100	2011-06	0	20
POS	000002_100	2011-07	53	1900
POS	000002_100	2011-08	84	1242
POS	000002_100	2011-09	205	453
POS	000002_100	2011-10	324	1349
POS	000002_100	2011-11	103	708
POS	000002_100	2011-12	36	1143
POS	000002_100	2012-01	4	620
POS	000002_100	2012-02	6	288
POS	000002_100	2012-03	26	92
POS	000002_405	2011-01	62	620
POS	000002_405	2011-02	33	288
POS	000002_405	2011-03	35	92
POS	000002_405	2011-04	1	315
POS	000002_405	2011-05	0	177
POS	000002_405	2011-06	4	20
POS	000002_405	2011-07	127	1900
POS	000002_405	2011-08	65	1242
POS	000002_405	2011-09	107	453
POS	000002_405	2011-10	223	1349
POS	000002_405	2011-11	238	708
POS	000002_405	2011-12	253	1143
POS	000002_405	2012-01	62	620
POS	000002_405	2012-02	33	288
POS	000002_405	2012-03	35	92
POS	000002_648	2011-01	4	620
POS	000002_648	2011-02	3	288
POS	000002_648	2011-03	27	92
POS	000002_648	2011-04	10	315
POS	000002_648	2011-05	19	177
POS	000002_648	2011-06	3	20
POS	000002_648	2011-07	58	1900
POS	000002_648	2011-08	18	1242
POS	000002_648	2011-09	226	453
POS	000002_648	2011-10	178	1349
POS	000002_648	2011-11	99	708
POS	000002_648	2011-12	16	1143
POS	000002_648	2012-01	4	620
POS	000002_648	2012-02	3	288

POS	000002_648	2012-03	27	92
POS	000003_010	2011-01	36	258
POS	000003_010	2011-02	29	141
POS	000003_010	2011-03	31	142
POS	000003_010	2011-04	1	192
POS	000003_010	2011-05	0	109
POS	000003_010	2011-06	7	29
POS	000003_010	2011-07	66	1154
POS	000003_010	2011-08	41	778
POS	000003_010	2011-09	239	398
POS	000003_010	2011-10	347	118
POS	000003_010	2011-11	159	311
POS	000003_010	2011-12	14	435
POS	000003_010	2012-01	36	258
POS	000003_010	2012-02	29	141
POS	000003_010	2012-03	31	142
POS	000003_063	2011-01	59	258
POS	000003_063	2011-02	33	141
POS	000003_063	2011-03	11	142
POS	000003_063	2011-04	3	192
POS	000003_063	2011-05	0	109
POS	000003_063	2011-06	6	29
POS	000003_063	2011-07	65	1154
POS	000003_063	2011-08	33	778
POS	000003_063	2011-09	46	398
POS	000003_063	2011-10	83	118
POS	000003_063	2011-11	39	311
POS	000003_063	2011-12	44	435
POS	000003_063	2012-01	59	258
POS	000003_063	2012-02	33	141
POS	000003_063	2012-03	11	142
POS	000003_071	2011-01	53	258
POS	000003_071	2011-02	36	141
POS	000003_071	2011-03	13	142
POS	000003_071	2011-04	1	192
POS	000003_071	2011-05	0	109
POS	000003_071	2011-06	3	29
POS	000003_071	2011-07	46	1154
POS	000003_071	2011-08	14	778
POS	000003_071	2011-09	231	398
POS	000003_071	2011-10	271	118
POS	000003_071	2011-11	220	311
POS	000003_071	2011-12	141	435
POS	000003_071	2012-01	53	258
POS	000003_071	2012-02	36	141
POS	000003_071	2012-03	13	142
POS	000003_100	2011-01	6	258
POS	000003_100	2011-02	0	141
POS	000003_100	2011-03	1	142
POS	000003_100	2011-04	1	192
POS	000003_100	2011-05	0	109
POS	000003_100	2011-06	2	29
POS	000003_100	2011-07	3	1154
POS	000003_100	2011-08	0	778

POS	000003_100	2011-09	6	398
POS	000003_100	2011-10	10	118
POS	000003_100	2011-11	2	311
POS	000003_100	2011-12	6	435
POS	000003_100	2012-01	6	258
POS	000003_100	2012-02	0	141
POS	000003_100	2012-03	1	142
POS	000003_405	2011-01	42	258
POS	000003_405	2011-02	15	141
POS	000003_405	2011-03	12	142
POS	000003_405	2011-04	1	192
POS	000003_405	2011-05	0	109
POS	000003_405	2011-06	4	29
POS	000003_405	2011-07	55	1154
POS	000003_405	2011-08	24	778
POS	000003_405	2011-09	89	398
POS	000003_405	2011-10	122	118
POS	000003_405	2011-11	135	311
POS	000003_405	2011-12	50	435
POS	000003_405	2012-01	42	258
POS	000003_405	2012-02	15	141
POS	000003_405	2012-03	12	142
POS	000003_648	2011-01	7	258
POS	000003_648	2011-02	10	141
POS	000003_648	2011-03	17	142
POS	000003_648	2011-04	1	192
POS	000003_648	2011-05	0	109
POS	000003_648	2011-06	2	29
POS	000003_648	2011-07	1	1154
POS	000003_648	2011-08	20	778
POS	000003_648	2011-09	74	398
POS	000003_648	2011-10	112	118
POS	000003_648	2011-11	49	311
POS	000003_648	2011-12	16	435
POS	000003_648	2012-01	7	258
POS	000003_648	2012-02	10	141
POS	000003_648	2012-03	17	142
POS	000005_010	2011-01	51	116
POS	000005_010	2011-02	17	82
POS	000005_010	2011-03	1	50
POS	000005_010	2011-04	-	-
POS	000005_010	2011-05	-	-
POS	000005_010	2011-06	-	2
POS	000005_010	2011-07	91	774
POS	000005_010	2011-08	133	274
POS	000005_010	2011-09	312	325
POS	000005_010	2011-10	431	826
POS	000005_010	2011-11	472	808
POS	000005_010	2011-12	140	798
POS	000005_010	2012-01	51	116
POS	000005_010	2012-02	17	82
POS	000005_010	2012-03	1	50
POS	000005_063	2011-01	24	116

POS	000005_063	2011-02	1	82
POS	000005_063	2011-03	-	50
POS	000005_063	2011-04	-	-
POS	000005_063	2011-05	-	-
POS	000005_063	2011-06	-	2
POS	000005_063	2011-07	6	774
POS	000005_063	2011-08	124	274
POS	000005_063	2011-09	305	325
POS	000005_063	2011-10	311	826
POS	000005_063	2011-11	471	808
POS	000005_063	2011-12	68	798
POS	000005_063	2012-01	24	116
POS	000005_063	2012-02	1	82
POS	000005_063	2012-03	-	50
POS	000005_071	2011-01	76	116
POS	000005_071	2011-02	32	82
POS	000005_071	2011-03	2	50
POS	000005_071	2011-04	-	-
POS	000005_071	2011-05	-	-
POS	000005_071	2011-06	1	2
POS	000005_071	2011-07	147	774
POS	000005_071	2011-08	213	274
POS	000005_071	2011-09	321	325
POS	000005_071	2011-10	445	826
POS	000005_071	2011-11	463	808
POS	000005_071	2011-12	179	798
POS	000005_071	2012-01	76	116
POS	000005_071	2012-02	32	82
POS	000005_071	2012-03	2	50
POS	000005_405	2011-01	29	116
POS	000005_405	2011-02	1	82
POS	000005_405	2011-03	-	50
POS	000005_405	2011-04	-	-
POS	000005_405	2011-05	-	-
POS	000005_405	2011-06	-	2
POS	000005_405	2011-07	6	774
POS	000005_405	2011-08	20	274
POS	000005_405	2011-09	268	325
POS	000005_405	2011-10	326	826
POS	000005_405	2011-11	291	808
POS	000005_405	2011-12	129	798
POS	000005_405	2012-01	29	116
POS	000005_405	2012-02	1	82
POS	000005_405	2012-03	-	50

16 Appendix G – Apparel Pilot Model Inventory Policies Table

(The following is representative of the "Baseline" scenario. The input for the "Multi-Echelon" scenario is identical with the exception of the Stocking Site Boolean being set to "True" for all entries.)

SiteName	ProductName	InventoryPolicy	ReorderQty	ReviewPeriod	InitialInventory	ApplyInboundCostToHorizon
Finished_Goods_Supplier	159415_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_Greige	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000004_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464399_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464399_Greige	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464400_010	s,S	0	Continuous	0	FALSE
Nike_DC	000004_010	s,S	0	Continuous	0	FALSE
Raw_Supplier_3	368545	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	368545	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_Greige	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_Greige	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	159415_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000004_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464399_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464400_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_405	s,S	0	Continuous	0	FALSE
Nike_DC	000004_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	159415_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	159415_Greige	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000004_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464399_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303323_648	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	303325_648	s,S	0	Continuous	0	FALSE
Finished_Goods_Suppli	000001_010	s,S	0	Continuous	0	FALSE

er						
Finished_Goods_Supplier	464400_071	s,S	0	Continuous	0	FALSE
Nike_DC	000004_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	159415_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000004_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	442324	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000001_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000001_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000001_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000001_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000001_648	s,S	0	Continuous	0	FALSE
Nike_DC	000001_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	436635	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464399_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464400_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	464400_Greige	s,S	0	Continuous	0	FALSE
Nike_DC	000004_405	s,S	0	Continuous	0	FALSE
Raw_Supplier_3	442324	s,S	0	Continuous	0	FALSE
Raw_Supplier_2	436635	s,S	0	Continuous	0	FALSE
Nike_DC	000001_063	s,S	0	Continuous	0	FALSE
Nike_DC	000001_071	s,S	0	Continuous	0	FALSE
Nike_DC	000001_405	s,S	0	Continuous	0	FALSE
Nike_DC	000001_100	s,S	0	Continuous	0	FALSE
Nike_DC	000001_648	s,S	0	Continuous	0	FALSE
Nike_DC	000002_010	s,S	0	Continuous	0	FALSE
Nike_DC	000002_063	s,S	0	Continuous	0	FALSE
Nike_DC	000002_071	s,S	0	Continuous	0	FALSE
Nike_DC	000002_100	s,S	0	Continuous	0	FALSE
Nike_DC	000002_405	s,S	0	Continuous	0	FALSE
Nike_DC	000002_648	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000002_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000002_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000002_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000002_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000002_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000002_648	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	159415_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	159415_648	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	165858_648	s,S	0	Continuous	0	FALSE
Nike_DC	000003_010	s,S	0	Continuous	0	FALSE
Nike_DC	000003_063	s,S	0	Continuous	0	FALSE
Nike_DC	000003_071	s,S	0	Continuous	0	FALSE
Nike_DC	000003_100	s,S	0	Continuous	0	FALSE

Nike_DC	000003_405	s,S	0	Continuous	0	FALSE
Nike_DC	000003_648	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000003_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000003_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000003_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000003_100	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000003_405	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000003_648	s,S	0	Continuous	0	FALSE
Raw_Supplier_1	401548	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	401548	s,S	0	Continuous	0	FALSE
Raw_Supplier_1	356206	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	356206	s,S	0	Continuous	0	FALSE
Raw_Supplier_4	441030	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	441030	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000005_010	s,S	0	Continuous	0	FALSE
Nike_DC	000005_010	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000005_063	s,S	0	Continuous	0	FALSE
Nike_DC	000005_063	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000005_071	s,S	0	Continuous	0	FALSE
Nike_DC	000005_071	s,S	0	Continuous	0	FALSE
Finished_Goods_Supplier	000005_405	s,S	0	Continuous	0	FALSE
Nike_DC	000005_405	s,S	0	Continuous	0	FALSE

ApplyOutboundCostToHorizon	**CapacityBasis**	**OrderFillPriority**	**FillPartialOrders**	**DOSWindow**	**DOSPlanningLeadTime**	**InventoryTurns**
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		
FALSE	Quantity	First Come First Served	FALSE	25		

FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25

FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25

FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25
FALSE	Quantity	First Come First Served	FALSE	25

InvCarryingCostPercentage	MaxInvQty	MinInvQty	ProductValue	StockingSite	SafetyStockBasis	SafetyStockRule	ServiceRequirement
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12			7.45	FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12			9.06	TRUE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12			7.45	FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12			9.06	TRUE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12			7.45	FALSE	DOS	Multi-Echelon SS	0.95
12				FALSE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon SS	0.95
12				TRUE	DOS	Multi-Echelon	0.95

				SS	
12		TRUE	DOS	Multi-Echelon SS	0.95
12		TRUE	DOS	Multi-Echelon SS	0.95
12		TRUE	DOS	Multi-Echelon SS	0.95
12	6.64	TRUE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	9.06	TRUE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	7.45	FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	6.64	TRUE	DOS	Multi-Echelon SS	0.95
12	6.64	TRUE	DOS	Multi-Echelon SS	0.95
12	6.64	TRUE	DOS	Multi-Echelon SS	0.95
12	6.64	TRUE	DOS	Multi-Echelon SS	0.95
12	6.64	TRUE	DOS	Multi-Echelon SS	0.95
12	8.23	TRUE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	9.06	TRUE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	8.23	TRUE	DOS	Multi-Echelon SS	0.95
12	8.23	TRUE	DOS	Multi-Echelon SS	0.95
12	8.23	TRUE	DOS	Multi-Echelon SS	0.95
12	8.23	TRUE	DOS	Multi-Echelon SS	0.95
12	8.23	TRUE	DOS	Multi-Echelon SS	0.95
12	10.38	TRUE	DOS	Multi-Echelon SS	0.95
12	10.38	TRUE	DOS	Multi-Echelon SS	0.95
12	10.38	TRUE	DOS	Multi-Echelon SS	0.95
12	10.38	TRUE	DOS	Multi-Echelon SS	0.95
12	10.38	TRUE	DOS	Multi-Echelon SS	0.95
12	10.38	TRUE	DOS	Multi-Echelon SS	0.95
12	8.44	TRUE	DOS	Multi-Echelon SS	0.95
12	8.44	TRUE	DOS	Multi-Echelon SS	0.95
12	8.44	TRUE	DOS	Multi-Echelon SS	0.95
12	8.44	TRUE	DOS	Multi-Echelon SS	0.95
12	8.44	TRUE	DOS	Multi-Echelon SS	0.95

12	8.44	TRUE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	11.64	TRUE	DOS	Multi-Echelon SS	0.95
12	11.64	TRUE	DOS	Multi-Echelon SS	0.95
12	11.64	TRUE	DOS	Multi-Echelon SS	0.95
12	11.64	TRUE	DOS	Multi-Echelon SS	0.95
12	11.64	TRUE	DOS	Multi-Echelon SS	0.95
12	11.64	TRUE	DOS	Multi-Echelon SS	0.95
12	9.53	TRUE	DOS	Multi-Echelon SS	0.95
12	9.53	TRUE	DOS	Multi-Echelon SS	0.95
12	9.53	TRUE	DOS	Multi-Echelon SS	0.95
12	9.53	TRUE	DOS	Multi-Echelon SS	0.95
12	9.53	TRUE	DOS	Multi-Echelon SS	0.95
12	9.53	TRUE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12		FALSE	DOS	Multi-Echelon SS	0.95
12	8.47	FALSE	DOS	Multi-Echelon SS	0.95
12	10.39	TRUE	DOS	Multi-Echelon SS	0.95
12	8.47	FALSE	DOS	Multi-Echelon SS	0.95
12	10.39	TRUE	DOS	Multi-Echelon SS	0.95
12	8.47	FALSE	DOS	Multi-Echelon SS	0.95
12	10.39	TRUE	DOS	Multi-Echelon SS	0.95
12	8.47	FALSE	DOS	Multi-Echelon SS	0.95
12	10.39	TRUE	DOS	Multi-Echelon SS	0.95

MinServiceTime	MaxServiceTime	InventoryPolicyStatus	InventoryPolicyNotes
		Include	Multi_echelon
		Include	Multi_echelon
		Include	Multi_echelon
		Include	
		Include	Multi_echelon
		Include	Multi_echelon
		Include	Multi_echelon
		Include	

Include	Multi_echelon
Include	Multi_echelon
Include	
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	Multi_echelon
Include	
Include	
Include	
Include	
Include	
Include	Multi_echelon
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	Multi_echelon
Include	
Include	
Include	
Include	
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	
Include	
Include	
Include	
Include	
Include	

Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	Multi_echelon
Include	
Include	
Include	
Include	
Include	
Include	
Include	
Include	

17 Appendix H – Apparel Pilot Model Optimized Safety Stock Inventories – Baseline Scenario

SiteName	ProductName	PeriodName	SafetyStock	SafetyStockDOS	Type1Service
Nike_DC	000004_010	2011-01	0		
Nike_DC	000004_010	2011-02	0		
Nike_DC	000004_010	2011-03	0		
Nike_DC	000004_010	2011-04	8863.19358	1107.8992	0.95
Nike_DC	000004_010	2011-05	2464.00575	2464.00575	0.95
Nike_DC	000004_010	2011-06	1585.42992	93.26058	0.95
Nike_DC	000004_010	2011-07	53858.92691	1795.29756	0.95
Nike_DC	000004_010	2011-08	37158.32339	108.96869	0.95
Nike_DC	000004_010	2011-09	43107.47812	31.74336	0.95
Nike_DC	000004_010	2011-10	63993.12406	30.69215	0.95
Nike_DC	000004_010	2011-11	82376.11781	45.7391	0.95
Nike_DC	000004_010	2011-12	27111.50204	24.55752	0.95
Nike_DC	000004_010	2012-01	11809.95397	106.39598	0.95
Nike_DC	000004_010	2012-02	2523.6305	16.8242	0.95
Nike_DC	000004_010	2012-03	2728.94976	27.56515	0.95
Nike_DC	000004_010	2012-04	0		
Nike_DC	000004_063	2011-01	0		
Nike_DC	000004_063	2011-02	0		
Nike_DC	000004_063	2011-03	0		
Nike_DC	000004_063	2011-04	8863.12333	1477.18722	0.95
Nike_DC	000004_063	2011-05	2464.03283	1232.01641	0.95
Nike_DC	000004_063	2011-06	1588.79275	69.07795	0.95
Nike_DC	000004_063	2011-07	53858.79313	2244.11638	0.95
Nike_DC	000004_063	2011-08	37145.50369	120.60228	0.95
Nike_DC	000004_063	2011-09	42672.90129	42.54527	0.95
Nike_DC	000004_063	2011-10	63205.1894	43.68016	0.95
Nike_DC	000004_063	2011-11	81943.71917	63.86884	0.95
Nike_DC	000004_063	2011-12	26674.68148	32.0995	0.95
Nike_DC	000004_063	2012-01	11847.02868	66.18452	0.95
Nike_DC	000004_063	2012-02	2446.89207	20.73637	0.95
Nike_DC	000004_063	2012-03	2693.47473	36.39831	0.95
Nike_DC	000004_063	2012-04	0		
Nike_DC	000004_071	2011-01	0		
Nike_DC	000004_071	2011-02	0		
Nike_DC	000004_071	2011-03	0		
Nike_DC	000004_071	2011-04	8863.23623	984.80403	0.95
Nike_DC	000004_071	2011-05	2464.03283	1232.01641	0.95
Nike_DC	000004_071	2011-06	1590.13588	63.60544	0.95
Nike_DC	000004_071	2011-07	53858.9521	1737.38555	0.95
Nike_DC	000004_071	2011-08	37140.45768	126.32809	0.95
Nike_DC	000004_071	2011-09	43284.20514	29.26586	0.95
Nike_DC	000004_071	2011-10	63649.09048	34.724	0.95
Nike_DC	000004_071	2011-11	82010.05552	59.64368	0.95
Nike_DC	000004_071	2011-12	27019.3856	25.68383	0.95
Nike_DC	000004_071	2012-01	11799.10287	145.66794	0.95
Nike_DC	000004_071	2012-02	2420.40152	23.05144	0.95
Nike_DC	000004_071	2012-03	2670.4901	51.35558	0.95
Nike_DC	000004_071	2012-04	0		
Nike_DC	000004_405	2011-01	0		
Nike_DC	000004_405	2011-02	0		

Nike_DC	000004_405	2011-03	0		
Nike_DC	000004_405	2011-04	8863.09573	1772.61915	0.95
Nike_DC	000004_405	2011-05	2464.00575	2464.00575	0.95
Nike_DC	000004_405	2011-06	1582.27079	197.78385	0.95
Nike_DC	000004_405	2011-07	53858.62508	4142.97116	0.95
Nike_DC	000004_405	2011-08	37165.86337	103.52608	0.95
Nike_DC	000004_405	2011-09	42346.42151	68.52172	0.95
Nike_DC	000004_405	2011-10	62725.08629	73.19147	0.95
Nike_DC	000004_405	2011-11	81790.94813	78.56959	0.95
Nike_DC	000004_405	2011-12	26430.8511	41.82097	0.95
Nike_DC	000004_405	2012-01	11902.20561	47.99276	0.95
Nike_DC	000004_405	2012-02	2398.4719	25.79002	0.95
Nike_DC	000004_405	2012-03	2655.93579	85.67535	0.95
Nike_DC	000004_405	2012-04	0		
Nike_DC	000001_010	2011-01	0		
Nike_DC	000001_010	2011-02	0		
Nike_DC	000001_010	2011-03	0		
Nike_DC	000001_010	2011-04	61292.21516	61292.21516	0.95
Nike_DC	000001_010	2011-05	42853.68969	14284.56323	0.95
Nike_DC	000001_010	2011-06	29029.36387	4147.05198	0.95
Nike_DC	000001_010	2011-07	34769.98541	1931.66586	0.95
Nike_DC	000001_010	2011-08	1947.11178	108.17288	0.95
Nike_DC	000001_010	2011-09	1507.101	18.60619	0.95
Nike_DC	000001_010	2011-10	5043.47111	16.75572	0.95
Nike_DC	000001_010	2011-11	11455.5321	34.71373	0.95
Nike_DC	000001_010	2011-12	8455.27667	80.52644	0.95
Nike_DC	000001_010	2012-01	1998.42511	499.60628	0.95
Nike_DC	000001_010	2012-02	94.3025	23.57562	0.95
Nike_DC	000001_010	2012-03	54.86549	54.86549	0.95
Nike_DC	000001_010	2012-04	0		
Nike_DC	000001_063	2011-01	0		
Nike_DC	000001_063	2011-02	0		
Nike_DC	000001_063	2011-03	0		
Nike_DC	000001_063	2011-04	1707.61941	1707.61941	0.95
Nike_DC	000001_063	2011-05	582.17653	116.43531	0.95
Nike_DC	000001_063	2011-06	1163.05837	232.61167	0.95
Nike_DC	000001_063	2011-07	18947.28447	1894.72845	0.95
Nike_DC	000001_063	2011-08	1947.49348	102.49966	0.95
Nike_DC	000001_063	2011-09	1515.92584	17.83442	0.95
Nike_DC	000001_063	2011-10	4854.72106	23.11772	0.95
Nike_DC	000001_063	2011-11	11394.1382	41.89021	0.95
Nike_DC	000001_063	2011-12	8450.97763	88.03102	0.95
Nike_DC	000001_063	2012-01	1998.62614	333.10436	0.95
Nike_DC	000001_063	2012-02	107.25896	11.91766	0.95
Nike_DC	000001_063	2012-03	57.72036	19.24012	0.95
Nike_DC	000001_063	2012-04	0		
Nike_DC	000001_071	2011-01	0		
Nike_DC	000001_071	2011-02	0		
Nike_DC	000001_071	2011-03	0		
Nike_DC	000001_071	2011-04	1781.18557	197.90951	0.95
Nike_DC	000001_071	2011-05	0		
Nike_DC	000001_071	2011-06	2071.01572	690.33857	0.95
Nike_DC	000001_071	2011-07	26467.95569	3781.13653	0.95
Nike_DC	000001_071	2011-08	1948.76183	88.58008	0.95

Nike_DC	000001_071	2011-09	1431.39504	44.73109	0.95
Nike_DC	000001_071	2011-10	4872.4818	22.14764	0.95
Nike_DC	000001_071	2011-11	11280.06078	115.10266	0.95
Nike_DC	000001_071	2011-12	8462.16152	71.71323	0.95
Nike_DC	000001_071	2012-01	1999.0784	222.11982	0.95
Nike_DC	000001_071	2012-02	94.3025	23.57562	0.95
Nike_DC	000001_071	2012-03	63.04345	12.60869	0.95
Nike_DC	000001_071	2012-04	0		
Nike_DC	000001_405	2011-01	0		
Nike_DC	000001_405	2011-02	0		
Nike_DC	000001_405	2011-03	0		
Nike_DC	000001_405	2011-04	999.45378	249.86344	0.95
Nike_DC	000001_405	2011-05	1907.81318	317.96886	0.95
Nike_DC	000001_405	2011-06	13061.53568	1306.15357	0.95
Nike_DC	000001_405	2011-07	0		
Nike_DC	000001_405	2011-08	1945.51196	149.65477	0.95
Nike_DC	000001_405	2011-09	1488.63336	20.67546	0.95
Nike_DC	000001_405	2011-10	5045.87235	16.70819	0.95
Nike_DC	000001_405	2011-11	11380.13965	44.2807	0.95
Nike_DC	000001_405	2011-12	8463.86346	69.94928	0.95
Nike_DC	000001_405	2012-01	1998.62614	333.10436	0.95
Nike_DC	000001_405	2012-02	96.20061	19.24012	0.95
Nike_DC	000001_405	2012-03	78.8949	8.7661	0.95
Nike_DC	000001_405	2012-04	0		
Nike_DC	000001_100	2011-01	0		
Nike_DC	000001_100	2011-02	0		
Nike_DC	000001_100	2011-03	0		
Nike_DC	000001_100	2011-04	0		
Nike_DC	000001_100	2011-05	14569.17551	4856.39184	0.95
Nike_DC	000001_100	2011-06	9046.7073	3015.5691	0.95
Nike_DC	000001_100	2011-07	5250.1727	750.02467	0.95
Nike_DC	000001_100	2011-08	1950.74004	75.02846	0.95
Nike_DC	000001_100	2011-09	1462.28801	25.65418	0.95
Nike_DC	000001_100	2011-10	4695.44933	59.43607	0.95
Nike_DC	000001_100	2011-11	11305.16489	73.41016	0.95
Nike_DC	000001_100	2011-12	8448.75476	92.84346	0.95
Nike_DC	000001_100	2012-01	1998.35474	666.11825	0.95
Nike_DC	000001_100	2012-02	91.05109	91.05109	0.95
Nike_DC	000001_100	2012-03	2070.93812	2070.93812	0.95
Nike_DC	000001_100	2012-04	0		
Nike_DC	000001_648	2011-01	0		
Nike_DC	000001_648	2011-02	0		
Nike_DC	000001_648	2011-03	0		
Nike_DC	000001_648	2011-04	0		
Nike_DC	000001_648	2011-05	0		
Nike_DC	000001_648	2011-06	237.51563	59.37891	0.95
Nike_DC	000001_648	2011-07	348.85977	43.60747	0.95
Nike_DC	000001_648	2011-08	1945.51196	149.65477	0.95
Nike_DC	000001_648	2011-09	1488.63336	20.67546	0.95
Nike_DC	000001_648	2011-10	5045.87235	16.70819	0.95
Nike_DC	000001_648	2011-11	11380.13965	44.2807	0.95
Nike_DC	000001_648	2011-12	8463.86346	69.94928	0.95
Nike_DC	000001_648	2012-01	1998.62614	333.10436	0.95
Nike_DC	000001_648	2012-02	96.20061	19.24012	0.95

Nike_DC	000001_648	2012-03	78.8949	8.7661	0.95
Nike_DC	000001_648	2012-04	0		
Nike_DC	000002_010	2011-01	11808.85101	73.3469	0.95
Nike_DC	000002_010	2011-02	5478.78763	86.96488	0.95
Nike_DC	000002_010	2011-03	1771.85966	38.51869	0.95
Nike_DC	000002_010	2011-04	5974.7231	2987.36155	0.95
Nike_DC	000002_010	2011-05	0		
Nike_DC	000002_010	2011-06	383.09462	47.88683	0.95
Nike_DC	000002_010	2011-07	36054.58051	219.845	0.95
Nike_DC	000002_010	2011-08	23588.44826	130.32292	0.95
Nike_DC	000002_010	2011-09	8787.90342	31.84023	0.95
Nike_DC	000002_010	2011-10	25666.38062	84.98802	0.95
Nike_DC	000002_010	2011-11	14328.88933	19.15627	0.95
Nike_DC	000002_010	2011-12	21823.22382	58.35087	0.95
Nike_DC	000002_010	2012-01	11808.85101	73.3469	0.95
Nike_DC	000002_010	2012-02	5478.78763	86.96488	0.95
Nike_DC	000002_010	2012-03	1771.85966	38.51869	0.95
Nike_DC	000002_010	2012-04	0		
Nike_DC	000002_063	2011-01	11785.2613	101.59708	0.95
Nike_DC	000002_063	2011-02	5469.79504	130.23322	0.95
Nike_DC	000002_063	2011-03	1757.24625	56.68536	0.95
Nike_DC	000002_063	2011-04	8963.7287	8.96373	0.95
Nike_DC	000002_063	2011-05	0		
Nike_DC	000002_063	2011-06	380.81503	76.16301	0.95
Nike_DC	000002_063	2011-07	36049.04427	269.02272	0.95
Nike_DC	000002_063	2011-08	23561.54857	356.99316	0.95
Nike_DC	000002_063	2011-09	8749.28685	35.42221	0.95
Nike_DC	000002_063	2011-10	25675.56188	80.48765	0.95
Nike_DC	000002_063	2011-11	13501.2927	64.59949	0.95
Nike_DC	000002_063	2011-12	21686.24498	271.07806	0.95
Nike_DC	000002_063	2012-01	11785.2613	101.59708	0.95
Nike_DC	000002_063	2012-02	5469.79504	130.23322	0.95
Nike_DC	000002_063	2012-03	1757.24625	56.68536	0.95
Nike_DC	000002_063	2012-04	0		
Nike_DC	000002_071	2011-01	11766.57557	196.10959	0.95
Nike_DC	000002_071	2011-02	5467.03925	165.66786	0.95
Nike_DC	000002_071	2011-03	1754.99604	62.67843	0.95
Nike_DC	000002_071	2011-04	8963.7287	8.96373	0.95
Nike_DC	000002_071	2011-05	3357.24356	1678.62178	0.95
Nike_DC	000002_071	2011-06	379.58189	189.79094	0.95
Nike_DC	000002_071	2011-07	36048.7148	273.09632	0.95
Nike_DC	000002_071	2011-08	23559.78986	471.1958	0.95
Nike_DC	000002_071	2011-09	8984.55549	22.86146	0.95
Nike_DC	000002_071	2011-10	25830.8588	48.73747	0.95
Nike_DC	000002_071	2011-11	13894.8579	26.02033	0.95
Nike_DC	000002_071	2011-12	21855.44569	52.79093	0.95
Nike_DC	000002_071	2012-01	11766.57557	196.10959	0.95
Nike_DC	000002_071	2012-02	5467.03925	165.66786	0.95
Nike_DC	000002_071	2012-03	1754.99604	62.67843	0.95
Nike_DC	000002_071	2012-04	0		
Nike_DC	000002_100	2011-01	11759.7734	2939.94335	0.95
Nike_DC	000002_100	2011-02	5462.73744	910.45624	0.95
Nike_DC	000002_100	2011-03	1753.62162	67.44699	0.95
Nike_DC	000002_100	2011-04	11668.87101	7.77925	0.95

Nike_DC	000002_100	2011-05	0		
Nike_DC	000002_100	2011-06	0		
Nike_DC	000002_100	2011-07	36039.66231	679.99363	0.95
Nike_DC	000002_100	2011-08	23564.10681	280.52508	0.95
Nike_DC	000002_100	2011-09	8700.71032	42.44249	0.95
Nike_DC	000002_100	2011-10	25678.35727	79.25419	0.95
Nike_DC	000002_100	2011-11	13446.49386	130.54848	0.95
Nike_DC	000002_100	2011-12	21680.98986	602.24972	0.95
Nike_DC	000002_100	2012-01	11759.7734	2939.94335	0.95
Nike_DC	000002_100	2012-02	5462.73744	910.45624	0.95
Nike_DC	000002_100	2012-03	1753.62162	67.44699	0.95
Nike_DC	000002_100	2012-04	0		
Nike_DC	000002_405	2011-01	11767.03852	189.79094	0.95
Nike_DC	000002_405	2011-02	5467.03925	165.66786	0.95
Nike_DC	000002_405	2011-03	1760.59715	50.30278	0.95
Nike_DC	000002_405	2011-04	5974.71189	5974.71189	0.95
Nike_DC	000002_405	2011-05	0		
Nike_DC	000002_405	2011-06	380.28703	95.07176	0.95
Nike_DC	000002_405	2011-07	36047.91277	283.84183	0.95
Nike_DC	000002_405	2011-08	23561.42444	362.48345	0.95
Nike_DC	000002_405	2011-09	8621.89667	80.57847	0.95
Nike_DC	000002_405	2011-10	25630.27861	114.93398	0.95
Nike_DC	000002_405	2011-11	13522.71124	56.81811	0.95
Nike_DC	000002_405	2011-12	21745.47167	85.95048	0.95
Nike_DC	000002_405	2012-01	11767.03852	189.79094	0.95
Nike_DC	000002_405	2012-02	5467.03925	165.66786	0.95
Nike_DC	000002_405	2012-03	1760.59715	50.30278	0.95
Nike_DC	000002_405	2012-04	0		
Nike_DC	000002_648	2011-01	11759.7734	2939.94335	0.95
Nike_DC	000002_648	2011-02	5462.62709	1820.8757	0.95
Nike_DC	000002_648	2011-03	1754.29624	64.97393	0.95
Nike_DC	000002_648	2011-04	5975.08181	597.50818	0.95
Nike_DC	000002_648	2011-05	3359.61677	176.82194	0.95
Nike_DC	000002_648	2011-06	379.87586	126.62529	0.95
Nike_DC	000002_648	2011-07	36040.00612	621.37942	0.95
Nike_DC	000002_648	2011-08	23557.72776	1308.76265	0.95
Nike_DC	000002_648	2011-09	8723.90389	38.60134	0.95
Nike_DC	000002_648	2011-10	25614.55542	143.902	0.95
Nike_DC	000002_648	2011-11	13445.15224	135.80962	0.95
Nike_DC	000002_648	2011-12	21679.91891	1354.99493	0.95
Nike_DC	000002_648	2012-01	11759.7734	2939.94335	0.95
Nike_DC	000002_648	2012-02	5462.62709	1820.8757	0.95
Nike_DC	000002_648	2012-03	1754.29624	64.97393	0.95
Nike_DC	000002_648	2012-04	0		
Nike_DC	000003_010	2011-01	4954.297	137.61936	0.95
Nike_DC	000003_010	2011-02	2711.32116	93.49383	0.95
Nike_DC	000003_010	2011-03	2731.43351	88.11076	0.95
Nike_DC	000003_010	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_010	2011-05	0		
Nike_DC	000003_010	2011-06	558.1848	79.74069	0.95
Nike_DC	000003_010	2011-07	22138.1731	335.42687	0.95
Nike_DC	000003_010	2011-08	14924.59511	364.01451	0.95
Nike_DC	000003_010	2011-09	7798.92948	32.6315	0.95
Nike_DC	000003_010	2011-10	3240.16986	9.33767	0.95

Nike_DC	000003_010	2011-11	6058.87844	38.10615	0.95
Nike_DC	000003_010	2011-12	8343.84699	595.98907	0.95
Nike_DC	000003_010	2012-01	4954.297	137.61936	0.95
Nike_DC	000003_010	2012-02	2711.32116	93.49383	0.95
Nike_DC	000003_010	2012-03	2731.43351	88.11076	0.95
Nike_DC	000003_010	2012-04	0		
Nike_DC	000003_063	2011-01	4964.13355	84.13786	0.95
Nike_DC	000003_063	2011-02	2713.36248	82.22311	0.95
Nike_DC	000003_063	2011-03	2724.55904	247.68719	0.95
Nike_DC	000003_063	2011-04	3682.62451	1227.5415	0.95
Nike_DC	000003_063	2011-05	0		
Nike_DC	000003_063	2011-06	557.6646	92.9441	0.95
Nike_DC	000003_063	2011-07	22138.04099	340.58525	0.95
Nike_DC	000003_063	2011-08	14923.70952	452.23362	0.95
Nike_DC	000003_063	2011-09	7639.84663	166.08362	0.95
Nike_DC	000003_063	2011-10	2330.21152	28.07484	0.95
Nike_DC	000003_063	2011-11	5970.68616	153.09452	0.95
Nike_DC	000003_063	2011-12	8348.50141	189.73867	0.95
Nike_DC	000003_063	2012-01	4964.13355	84.13786	0.95
Nike_DC	000003_063	2012-02	2713.36248	82.22311	0.95
Nike_DC	000003_063	2012-03	2724.55904	247.68719	0.95
Nike_DC	000003_063	2012-04	0		
Nike_DC	000003_071	2011-01	4961.11038	93.60586	0.95
Nike_DC	000003_071	2011-02	2715.06515	75.41848	0.95
Nike_DC	000003_071	2011-03	2724.95233	209.61172	0.95
Nike_DC	000003_071	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_071	2011-05	0		
Nike_DC	000003_071	2011-06	556.58263	185.52754	0.95
Nike_DC	000003_071	2011-07	22135.91402	481.21552	0.95
Nike_DC	000003_071	2011-08	14922.37354	1065.88382	0.95
Nike_DC	000003_071	2011-09	7788.15846	33.71497	0.95
Nike_DC	000003_071	2011-10	2898.53734	10.69571	0.95
Nike_DC	000003_071	2011-11	6143.47632	27.92489	0.95
Nike_DC	000003_071	2011-12	8396.35298	59.5486	0.95
Nike_DC	000003_071	2012-01	4961.11038	93.60586	0.95
Nike_DC	000003_071	2012-02	2715.06515	75.41848	0.95
Nike_DC	000003_071	2012-03	2724.95233	209.61172	0.95
Nike_DC	000003_071	2012-04	0		
Nike_DC	000003_100	2011-01	4948.61578	824.7693	0.95
Nike_DC	000003_100	2011-02	2785.7178	27.85718	0.95
Nike_DC	000003_100	2011-03	2723.57555	2723.57555	0.95
Nike_DC	000003_100	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_100	2011-05	0		
Nike_DC	000003_100	2011-06	556.38203	278.19102	0.95
Nike_DC	000003_100	2011-07	22133.78886	7377.92962	0.95
Nike_DC	000003_100	2011-08	15734.81188	21.06401	0.95
Nike_DC	000003_100	2011-09	7633.7659	1272.29432	0.95
Nike_DC	000003_100	2011-10	2264.23234	226.42323	0.95
Nike_DC	000003_100	2011-11	5965.01108	2982.50554	0.95
Nike_DC	000003_100	2011-12	8343.41886	1390.56981	0.95
Nike_DC	000003_100	2012-01	4948.61578	824.7693	0.95
Nike_DC	000003_100	2012-02	0		
Nike_DC	000003_100	2012-03	2723.57555	2723.57555	0.95
Nike_DC	000003_100	2012-04	0		

Nike_DC	000003_405	2011-01	4956.40551	118.00966	0.95
Nike_DC	000003_405	2011-02	2706.24412	180.41627	0.95
Nike_DC	000003_405	2011-03	2724.7475	227.06229	0.95
Nike_DC	000003_405	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_405	2011-05	0		
Nike_DC	000003_405	2011-06	556.86334	139.21584	0.95
Nike_DC	000003_405	2011-07	22136.83079	402.48783	0.95
Nike_DC	000003_405	2011-08	14922.94206	621.78925	0.95
Nike_DC	000003_405	2011-09	7656.79158	86.03137	0.95
Nike_DC	000003_405	2011-10	2405.59199	19.71797	0.95
Nike_DC	000003_405	2011-11	6032.82259	44.68757	0.95
Nike_DC	000003_405	2011-12	8350.00953	167.00019	0.95
Nike_DC	000003_405	2012-01	4956.40551	118.00966	0.95
Nike_DC	000003_405	2012-02	2706.24412	180.41627	0.95
Nike_DC	000003_405	2012-03	2724.7475	227.06229	0.95
Nike_DC	000003_405	2012-04	0		
Nike_DC	000003_648	2011-01	4948.67443	706.95349	0.95
Nike_DC	000003_648	2011-02	2705.21271	270.52127	0.95
Nike_DC	000003_648	2011-03	2725.93532	160.34914	0.95
Nike_DC	000003_648	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_648	2011-05	0		
Nike_DC	000003_648	2011-06	556.38203	278.19102	0.95
Nike_DC	000003_648	2011-07	22133.78079	22133.78079	0.95
Nike_DC	000003_648	2011-08	14922.67875	746.13394	0.95
Nike_DC	000003_648	2011-09	7649.65914	103.37377	0.95
Nike_DC	000003_648	2011-10	2383.77617	21.28372	0.95
Nike_DC	000003_648	2011-11	5973.97576	121.91787	0.95
Nike_DC	000003_648	2011-12	8344.00753	521.50047	0.95
Nike_DC	000003_648	2012-01	4948.67443	706.95349	0.95
Nike_DC	000003_648	2012-02	2705.21271	270.52127	0.95
Nike_DC	000003_648	2012-03	2725.93532	160.34914	0.95
Nike_DC	000003_648	2012-04	0		
Nike_DC	000005_010	2011-01	2159.95922	42.35214	0.95
Nike_DC	000005_010	2011-02	1512.07523	88.9456	0.95
Nike_DC	000005_010	2011-03	919.42595	919.42595	0.95
Nike_DC	000005_010	2011-04	0		
Nike_DC	000005_010	2011-05	0		
Nike_DC	000005_010	2011-06	0		
Nike_DC	000005_010	2011-07	14245.2726	156.54146	0.95
Nike_DC	000005_010	2011-08	5115.80192	38.46468	0.95
Nike_DC	000005_010	2011-09	6327.98739	20.28201	0.95
Nike_DC	000005_010	2011-10	15458.10609	35.86568	0.95
Nike_DC	000005_010	2011-11	15187.32744	32.17654	0.95
Nike_DC	000005_010	2011-12	14703.32635	105.02376	0.95
Nike_DC	000005_010	2012-01	2159.95922	42.35214	0.95
Nike_DC	000005_010	2012-02	1512.07523	88.9456	0.95
Nike_DC	000005_010	2012-03	919.42595	919.42595	0.95
Nike_DC	000005_010	2012-04	0		
Nike_DC	000005_063	2011-01	2139.00889	89.12537	0.95
Nike_DC	000005_063	2011-02	1507.83364	1507.83364	0.95
Nike_DC	000005_063	2011-03	0		
Nike_DC	000005_063	2011-04	0		
Nike_DC	000005_063	2011-05	0		
Nike_DC	000005_063	2011-06	0		

Nike_DC	000005_063	2011-07	14232.39555	2372.06592	0.95
Nike_DC	000005_063	2011-08	5105.73748	41.1753	0.95
Nike_DC	000005_063	2011-09	6312.79103	20.69768	0.95
Nike_DC	000005_063	2011-10	15329.47684	49.29092	0.95
Nike_DC	000005_063	2011-11	15185.94658	32.24192	0.95
Nike_DC	000005_063	2011-12	14680.65824	215.89203	0.95
Nike_DC	000005_063	2012-01	2139.00889	89.12537	0.95
Nike_DC	000005_063	2012-02	1507.83364	1507.83364	0.95
Nike_DC	000005_063	2012-03	1135.80992	11.3581	0.95
Nike_DC	000005_063	2012-04	0		
Nike_DC	000005_071	2011-01	2192.4043	28.84742	0.95
Nike_DC	000005_071	2011-02	1522.84658	47.58896	0.95
Nike_DC	000005_071	2011-03	919.49851	459.74925	0.95
Nike_DC	000005_071	2011-04	0		
Nike_DC	000005_071	2011-05	0		
Nike_DC	000005_071	2011-06	37.37587	37.37587	0.95
Nike_DC	000005_071	2011-07	14266.06371	97.04805	0.95
Nike_DC	000005_071	2011-08	5234.74331	24.57626	0.95
Nike_DC	000005_071	2011-09	6347.97659	19.77563	0.95
Nike_DC	000005_071	2011-10	15475.73918	34.77694	0.95
Nike_DC	000005_071	2011-11	15175.00068	32.77538	0.95
Nike_DC	000005_071	2011-12	14722.13087	82.24654	0.95
Nike_DC	000005_071	2012-01	2192.4043	28.84742	0.95
Nike_DC	000005_071	2012-02	1522.84658	47.58896	0.95
Nike_DC	000005_071	2012-03	919.49851	459.74925	0.95
Nike_DC	000005_071	2012-04	0		
Nike_DC	000005_405	2011-01	2141.76219	73.85387	0.95
Nike_DC	000005_405	2011-02	1507.83364	1507.83364	0.95
Nike_DC	000005_405	2011-03	0		
Nike_DC	000005_405	2011-04	0		
Nike_DC	000005_405	2011-05	0		
Nike_DC	000005_405	2011-06	0		
Nike_DC	000005_405	2011-07	14232.39555	2372.06592	0.95
Nike_DC	000005_405	2011-08	5040.08688	252.00434	0.95
Nike_DC	000005_405	2011-09	6237.65864	23.27485	0.95
Nike_DC	000005_405	2011-10	15343.33186	47.06544	0.95
Nike_DC	000005_405	2011-11	14983.74395	51.49053	0.95
Nike_DC	000005_405	2011-12	14698.85029	113.94458	0.95
Nike_DC	000005_405	2012-01	2141.76219	73.85387	0.95
Nike_DC	000005_405	2012-02	1507.83364	1507.83364	0.95
Nike_DC	000005_405	2012-03	3458.96138	6.91792	0.95
Nike_DC	000005_405	2012-04	0		

18 Appendix I – Apparel Pilot Model Optimized Safety Stock Inventories – Multi-Echelon Scenario

SiteName	ProductName	PeriodName	SafetyStock	SafetyStockDOS	Type1Service
Nike_DC	000004_063	2011-05	2363.41825	1181.70913	0.95
Nike_DC	000004_063	2011-06	1524.078	66.26426	0.95
Nike_DC	000004_063	2011-07	51659.5461	2152.48109	0.95
Nike_DC	000004_063	2011-08	35630.27253	115.6827	0.95
Nike_DC	000004_063	2011-09	40944.7799	40.82231	0.95
Nike_DC	000004_063	2011-10	60640.35844	41.90764	0.95
Nike_DC	000004_063	2011-11	78609.90083	61.27038	0.95
Nike_DC	000004_063	2011-12	25601.23461	30.80774	0.95
Nike_DC	000004_063	2012-01	11364.91955	63.49117	0.95
Nike_DC	000004_063	2012-02	2349.73571	19.91301	0.95
Nike_DC	000004_063	2012-03	2584.72944	34.92878	0.95
Nike_DC	000004_063	2012-04	0		
Nike_DC	000004_071	2011-01	0		
Nike_DC	000004_071	2011-02	0		
Nike_DC	000004_071	2011-03	0		
Nike_DC	000004_071	2011-04	8501.32198	944.59133	0.95
Nike_DC	000004_071	2011-05	2363.41825	1181.70913	0.95
Nike_DC	000004_071	2011-06	1525.44438	61.01778	0.95
Nike_DC	000004_071	2011-07	51659.70294	1666.44203	0.95
Nike_DC	000004_071	2011-08	35625.29444	121.17447	0.95
Nike_DC	000004_071	2011-09	41547.5514	28.09165	0.95
Nike_DC	000004_010	2011-01	0		
Nike_DC	000004_010	2011-02	0		
Nike_DC	000004_010	2011-03	0		
Nike_DC	000004_010	2011-04	8501.28104	1062.66013	0.95
Nike_DC	000004_010	2011-05	2363.39149	2363.39149	0.95
Nike_DC	000004_010	2011-06	1520.80209	89.45895	0.95
Nike_DC	000004_010	2011-07	51659.67809	1721.98927	0.95
Nike_DC	000004_010	2011-08	35642.91961	104.52469	0.95
Nike_DC	000004_010	2011-09	41373.31518	30.46636	0.95
Nike_DC	000004_010	2011-10	61421.45225	29.45873	0.95
Nike_DC	000004_010	2011-11	79036.39972	43.88473	0.95
Nike_DC	000004_010	2011-12	26031.83383	23.57956	0.95
Nike_DC	000004_010	2012-01	11328.34597	102.05717	0.95
Nike_DC	000004_010	2012-02	2426.01108	16.17341	0.95
Nike_DC	000004_010	2012-03	2619.70544	26.46167	0.95
Nike_DC	000004_010	2012-04	0		
Nike_DC	000004_063	2011-01	0		
Nike_DC	000004_063	2011-02	0		
Nike_DC	000004_063	2011-03	0		
Nike_DC	000004_063	2011-04	8501.21173	1416.86862	0.95
Nike_DC	000004_071	2011-10	61082.23858	33.32364	0.95
Nike_DC	000004_071	2011-11	78675.33618	57.21843	0.95
Nike_DC	000004_071	2011-12	25935.9494	24.65394	0.95
Nike_DC	000004_071	2012-01	11317.64091	139.72396	0.95
Nike_DC	000004_071	2012-02	2324.34308	22.1366	0.95
Nike_DC	000004_071	2012-03	2562.06139	49.27041	0.95
Nike_DC	000004_071	2012-04	0		
Nike_DC	000004_405	2011-01	0		

Nike_DC	000004_405	2011-02	0		
Nike_DC	000004_405	2011-03	0		
Nike_DC	000004_405	2011-04	8501.1845	1700.2369	0.95
Nike_DC	000004_405	2011-05	2363.39154	2363.39154	0.95
Nike_DC	000004_405	2011-06	1517.68548	189.71069	0.95
Nike_DC	000004_405	2011-07	51659.38031	3973.79849	0.95
Nike_DC	000004_405	2011-08	35650.35801	99.30462	0.95
Nike_DC	000004_405	2011-09	40622.75909	65.73262	0.95
Nike_DC	000004_405	2011-10	60170.92768	70.21112	0.95
Nike_DC	000004_405	2011-11	78457.54955	75.36748	0.95
Nike_DC	000004_405	2011-12	25360.79376	40.12784	0.95
Nike_DC	000004_405	2012-01	11419.34468	46.04574	0.95
Nike_DC	000004_405	2012-02	2302.73095	24.76055	0.95
Nike_DC	000004_405	2012-03	2547.70471	82.18402	0.95
Nike_DC	000004_405	2012-04	0		
Nike_DC	000001_010	2011-01	0		
Nike_DC	000001_010	2011-02	0		
Nike_DC	000001_010	2011-03	0		
Nike_DC	000001_010	2011-04	61292.21516	61292.21516	0.95
Nike_DC	000001_010	2011-05	42853.68969	14284.56323	0.95
Nike_DC	000001_010	2011-06	29029.36387	4147.05198	0.95
Nike_DC	000001_010	2011-07	34769.98541	1931.66586	0.95
Nike_DC	000001_010	2011-08	1947.11178	108.17288	0.95
Nike_DC	000001_010	2011-09	1507.101	18.60619	0.95
Nike_DC	000001_010	2011-10	5043.47111	16.75572	0.95
Nike_DC	000001_010	2011-11	11455.5321	34.71373	0.95
Nike_DC	000001_010	2011-12	8455.27667	80.52644	0.95
Nike_DC	000001_010	2012-01	1998.42511	499.60628	0.95
Nike_DC	000001_010	2012-02	94.3025	23.57562	0.95
Nike_DC	000001_010	2012-03	54.86549	54.86549	0.95
Nike_DC	000001_010	2012-04	0		
Nike_DC	000001_063	2011-01	0		
Nike_DC	000001_063	2011-02	0		
Nike_DC	000001_063	2011-03	0		
Nike_DC	000001_063	2011-04	1707.61941	1707.61941	0.95
Nike_DC	000001_063	2011-05	582.17653	116.43531	0.95
Nike_DC	000001_063	2011-06	1163.05837	232.61167	0.95
Nike_DC	000001_063	2011-07	18947.28447	1894.72845	0.95
Nike_DC	000001_063	2011-08	1947.49348	102.49966	0.95
Nike_DC	000001_063	2011-09	1515.92584	17.83442	0.95
Nike_DC	000001_063	2011-10	4854.72106	23.11772	0.95
Nike_DC	000001_063	2011-11	11394.1382	41.89021	0.95
Nike_DC	000001_063	2011-12	8450.97763	88.03102	0.95
Nike_DC	000001_063	2012-01	1998.62614	333.10436	0.95
Nike_DC	000001_063	2012-02	107.25896	11.91766	0.95
Nike_DC	000001_063	2012-03	57.72036	19.24012	0.95
Nike_DC	000001_063	2012-04	0		
Nike_DC	000001_071	2011-01	0		
Nike_DC	000001_071	2011-02	0		
Nike_DC	000001_071	2011-03	0		
Nike_DC	000001_071	2011-04	1781.18557	197.90951	0.95
Nike_DC	000001_071	2011-05	0		
Nike_DC	000001_071	2011-06	2071.01572	690.33857	0.95
Nike_DC	000001_071	2011-07	26467.95569	3781.13653	0.95

Nike_DC	000001_071	2011-08	1948.76183	88.58008	0.95
Nike_DC	000001_071	2011-09	1431.39504	44.73109	0.95
Nike_DC	000001_071	2011-10	4872.4818	22.14764	0.95
Nike_DC	000001_071	2011-11	11280.06078	115.10266	0.95
Nike_DC	000001_071	2011-12	8462.16152	71.71323	0.95
Nike_DC	000001_071	2012-01	1999.0784	222.11982	0.95
Nike_DC	000001_071	2012-02	94.3025	23.57562	0.95
Nike_DC	000001_071	2012-03	63.04345	12.60869	0.95
Nike_DC	000001_071	2012-04	0		
Nike_DC	000001_405	2011-01	0		
Nike_DC	000001_405	2011-02	0		
Nike_DC	000001_405	2011-03	0		
Nike_DC	000001_405	2011-04	999.45378	249.86344	0.95
Nike_DC	000001_405	2011-05	1907.81318	317.96886	0.95
Nike_DC	000001_405	2011-06	13061.53568	1306.15357	0.95
Nike_DC	000001_405	2011-07	0		
Nike_DC	000001_405	2011-08	1945.51196	149.65477	0.95
Nike_DC	000001_405	2011-09	1488.63336	20.67546	0.95
Nike_DC	000001_405	2011-10	5045.87235	16.70819	0.95
Nike_DC	000001_405	2011-11	11380.13965	44.2807	0.95
Nike_DC	000001_405	2011-12	8463.86346	69.94928	0.95
Nike_DC	000001_405	2012-01	1998.62614	333.10436	0.95
Nike_DC	000001_405	2012-02	96.20061	19.24012	0.95
Nike_DC	000001_405	2012-03	78.8949	8.7661	0.95
Nike_DC	000001_405	2012-04	0		
Nike_DC	000001_100	2011-01	0		
Nike_DC	000001_100	2011-02	0		
Nike_DC	000001_100	2011-03	0		
Nike_DC	000001_100	2011-04	0		
Nike_DC	000001_100	2011-05	14569.17551	4856.39184	0.95
Nike_DC	000001_100	2011-06	9046.7073	3015.5691	0.95
Nike_DC	000001_100	2011-07	5250.1727	750.02467	0.95
Nike_DC	000001_100	2011-08	1950.74004	75.02846	0.95
Nike_DC	000001_100	2011-09	1462.28801	25.65418	0.95
Nike_DC	000001_100	2011-10	4695.44933	59.43607	0.95
Nike_DC	000001_100	2011-11	11305.16489	73.41016	0.95
Nike_DC	000001_100	2011-12	8448.75476	92.84346	0.95
Nike_DC	000001_100	2012-01	1998.35474	666.11825	0.95
Nike_DC	000001_100	2012-02	91.05109	91.05109	0.95
Nike_DC	000001_100	2012-03	2070.93812	2070.93812	0.95
Nike_DC	000001_100	2012-04	0		
Nike_DC	000001_648	2011-01	0		
Nike_DC	000001_648	2011-02	0		
Nike_DC	000001_648	2011-03	0		
Nike_DC	000001_648	2011-04	0		
Nike_DC	000001_648	2011-05	0		
Nike_DC	000001_648	2011-06	237.51563	59.37891	0.95
Nike_DC	000001_648	2011-07	348.85964	43.60745	0.95
Nike_DC	000001_648	2011-08	1945.51196	149.65477	0.95
Nike_DC	000001_648	2011-09	1488.63336	20.67546	0.95
Nike_DC	000001_648	2011-10	5045.87235	16.70819	0.95
Nike_DC	000001_648	2011-11	11380.13965	44.2807	0.95
Nike_DC	000001_648	2011-12	8463.86346	69.94928	0.95
Nike_DC	000001_648	2012-01	1998.62614	333.10436	0.95

Nike_DC	000001_648	2012-02	96.20061	19.24012	0.95
Nike_DC	000001_648	2012-03	78.8949	8.7661	0.95
Nike_DC	000001_648	2012-04	0		
Nike_DC	000002_010	2011-01	11311.29965	70.25652	0.95
Nike_DC	000002_010	2011-02	5247.68131	83.29653	0.95
Nike_DC	000002_010	2011-03	1697.7254	36.90707	0.95
Nike_DC	000002_010	2011-04	5722.31693	2861.15847	0.95
Nike_DC	000002_010	2011-05	0		
Nike_DC	000002_010	2011-06	366.991	45.87388	0.95
Nike_DC	000002_010	2011-07	34531.87765	210.56023	0.95
Finished_Goods_Supplier	165858_100	2011-06	0	0	
Finished_Goods_Supplier	165858_100	2011-07	0	0	
Finished_Goods_Supplier	165858_100	2011-08	0	0	
Finished_Goods_Supplier	165858_100	2011-09	0	0	
Finished_Goods_Supplier	165858_100	2011-10	0	0	
Finished_Goods_Supplier	165858_100	2011-11	0.00059	0	0.95
Finished_Goods_Supplier	165858_100	2011-12	0	0	
Finished_Goods_Supplier	165858_100	2012-01	0	0	
Finished_Goods_Supplier	165858_100	2012-02	0	0	
Finished_Goods_Supplier	165858_100	2012-03	0	0	
Finished_Goods_Supplier	165858_100	2012-04	0		
Finished_Goods_Supplier	165858_648	2011-01	0		
Finished_Goods_Supplier	165858_648	2011-02	0		
Finished_Goods_Supplier	165858_648	2011-03	0		
Finished_Goods_Supplier	165858_648	2011-04	0		
Finished_Goods_Supplier	165858_648	2011-05	0		
Finished_Goods_Supplier	165858_648	2011-06	0	0	
Finished_Goods_Supplier	165858_648	2011-07	0	0	
Finished_Goods_Supplier	165858_648	2011-08	0	0	
Finished_Goods_Supplier	165858_648	2011-09	0	0	
Finished_Goods_Supplier	165858_648	2011-10	0	0	
Finished_Goods_Supplier	165858_648	2011-11	0	0	
Finished_Goods_Supplier	165858_648	2011-12	0	0	
Finished_Goods_Supplier	165858_648	2012-01	0	0	
Finished_Goods_Supplier	165858_648	2012-02	0	0	
Finished_Goods_Supplier	165858_648	2012-03	0	0	
Finished_Goods_Supplier	165858_648	2012-04	0		
Finished_Goods_Supplier	000002_010	2011-01	0	0	
Finished_Goods_Supplier	000002_010	2011-02	0	0	
Finished_Goods_Supplier	000002_010	2011-03	0	0	
Finished_Goods_Supplier	000002_010	2011-04	0	0	
Finished_Goods_Supplier	000002_010	2011-05	0		
Finished_Goods_Supplier	000002_010	2011-06	0	0	
Finished_Goods_Supplier	000002_010	2011-07	0	0	
Finished_Goods_Supplier	000002_010	2011-08	0	0	
Finished_Goods_Supplier	000002_010	2011-09	0	0	
Finished_Goods_Supplier	000002_010	2011-10	0	0	
Finished_Goods_Supplier	000002_010	2011-11	0	0	
Finished_Goods_Supplier	000002_010	2011-12	0	0	
Finished_Goods_Supplier	000002_010	2012-01	0	0	
Finished_Goods_Supplier	000002_010	2012-02	0	0	
Finished_Goods_Supplier	000002_010	2012-03	0	0	
Finished_Goods_Supplier	000002_010	2012-04	0		
Finished_Goods_Supplier	000002_063	2011-01	0	0	

Finished_Goods_Supplier	000002_063	2011-02	0	0
Finished_Goods_Supplier	000002_063	2011-03	0	0
Finished_Goods_Supplier	000002_063	2011-04	0	0
Finished_Goods_Supplier	000002_063	2011-05	0	
Finished_Goods_Supplier	000002_063	2011-06	0	0
Finished_Goods_Supplier	000002_063	2011-07	0	0
Finished_Goods_Supplier	000002_063	2011-08	0	0
Finished_Goods_Supplier	000002_063	2011-09	0	0
Finished_Goods_Supplier	000002_063	2011-10	0	0
Finished_Goods_Supplier	000002_063	2011-11	0	0
Finished_Goods_Supplier	000002_063	2011-12	0	0
Finished_Goods_Supplier	000002_063	2012-01	0	0
Finished_Goods_Supplier	000002_063	2012-02	0	0
Finished_Goods_Supplier	000002_063	2012-03	0	0
Finished_Goods_Supplier	000002_063	2012-04	0	
Finished_Goods_Supplier	000002_071	2011-01	0	0
Finished_Goods_Supplier	000002_071	2011-02	0	0
Finished_Goods_Supplier	000002_071	2011-03	0	0
Finished_Goods_Supplier	000002_071	2011-04	0	0
Finished_Goods_Supplier	000002_071	2011-05	0	0
Finished_Goods_Supplier	000002_071	2011-06	0	0
Finished_Goods_Supplier	000002_071	2011-07	0	0
Finished_Goods_Supplier	000002_071	2011-08	0	0
Finished_Goods_Supplier	000002_071	2011-09	0	0
Finished_Goods_Supplier	000002_071	2011-10	0	0
Finished_Goods_Supplier	000002_071	2011-11	0	0
Finished_Goods_Supplier	000002_071	2011-12	0	0
Finished_Goods_Supplier	000002_071	2012-01	0	0
Finished_Goods_Supplier	000002_071	2012-02	0	0
Finished_Goods_Supplier	000002_071	2012-03	0	0
Finished_Goods_Supplier	000002_071	2012-04	0	
Finished_Goods_Supplier	000002_100	2011-01	0	0
Finished_Goods_Supplier	000002_100	2011-02	0	0
Finished_Goods_Supplier	000002_100	2011-03	0	0
Finished_Goods_Supplier	000002_100	2011-04	0	0
Finished_Goods_Supplier	000002_100	2011-05	0	
Finished_Goods_Supplier	000002_100	2011-06	0	
Finished_Goods_Supplier	000002_100	2011-07	0	0
Finished_Goods_Supplier	000002_100	2011-08	0	0
Finished_Goods_Supplier	000002_100	2011-09	0	0
Finished_Goods_Supplier	000002_100	2011-10	0	0
Finished_Goods_Supplier	000002_100	2011-11	0	0
Finished_Goods_Supplier	000002_100	2011-12	0	0
Finished_Goods_Supplier	000002_100	2012-01	0	0
Finished_Goods_Supplier	000002_100	2012-02	0	0
Finished_Goods_Supplier	000002_100	2012-03	0	0
Finished_Goods_Supplier	000002_100	2012-04	0	
Finished_Goods_Supplier	000002_405	2011-01	0	0
Finished_Goods_Supplier	000002_405	2011-02	0	0
Finished_Goods_Supplier	000002_405	2011-03	0	0
Finished_Goods_Supplier	000002_405	2011-04	0	0
Finished_Goods_Supplier	000002_405	2011-05	0	
Finished_Goods_Supplier	000002_405	2011-06	0	0
Finished_Goods_Supplier	000002_405	2011-07	0	0

Finished_Goods_Supplier	000002_405	2011-08	0	0	
Finished_Goods_Supplier	000002_405	2011-09	0	0	
Finished_Goods_Supplier	000002_405	2011-10	0	0	
Finished_Goods_Supplier	000002_405	2011-11	0	0	
Finished_Goods_Supplier	000002_405	2011-12	0	0	
Finished_Goods_Supplier	000002_405	2012-01	0	0	
Finished_Goods_Supplier	000002_405	2012-02	0	0	
Finished_Goods_Supplier	000002_405	2012-03	0	0	
Finished_Goods_Supplier	000002_405	2012-04	0		
Finished_Goods_Supplier	000002_648	2011-01	0	0	
Finished_Goods_Supplier	000002_648	2011-02	0	0	
Finished_Goods_Supplier	000002_648	2011-03	0	0	
Finished_Goods_Supplier	000002_648	2011-04	0	0	
Finished_Goods_Supplier	000002_648	2011-05	0	0	
Finished_Goods_Supplier	000002_648	2011-06	0	0	
Finished_Goods_Supplier	000002_648	2011-07	0	0	
Finished_Goods_Supplier	000002_648	2011-08	0	0	
Finished_Goods_Supplier	000002_648	2011-09	0	0	
Finished_Goods_Supplier	000002_648	2011-10	0	0	
Finished_Goods_Supplier	000002_648	2011-11	0	0	
Finished_Goods_Supplier	000002_648	2011-12	0	0	
Finished_Goods_Supplier	000002_648	2012-01	0	0	
Finished_Goods_Supplier	000002_648	2012-02	0	0	
Finished_Goods_Supplier	000002_648	2012-03	0	0	
Finished_Goods_Supplier	000002_648	2012-04	0		
Finished_Goods_Supplier	000003_010	2011-01	0	0	
Finished_Goods_Supplier	000003_010	2011-02	0	0	
Finished_Goods_Supplier	000003_010	2011-03	0	0	
Finished_Goods_Supplier	000003_010	2011-04	0	0	
Finished_Goods_Supplier	000003_010	2011-05	0		
Finished_Goods_Supplier	000003_010	2011-06	0	0	
Finished_Goods_Supplier	000003_010	2011-07	0	0	
Finished_Goods_Supplier	000003_010	2011-08	0	0	
Finished_Goods_Supplier	000003_010	2011-09	0	0	
Finished_Goods_Supplier	000003_010	2011-10	0	0	
Finished_Goods_Supplier	000003_010	2011-11	0	0	
Finished_Goods_Supplier	000003_010	2011-12	0	0	
Finished_Goods_Supplier	000003_010	2012-01	0	0	
Finished_Goods_Supplier	000003_010	2012-02	0	0	
Finished_Goods_Supplier	000003_010	2012-03	0	0	
Finished_Goods_Supplier	000003_010	2012-04	0		
Finished_Goods_Supplier	000003_063	2011-01	0	0	
Finished_Goods_Supplier	000003_063	2011-02	0	0	
Finished_Goods_Supplier	000003_063	2011-03	0	0	
Finished_Goods_Supplier	000003_063	2011-04	0	0	
Finished_Goods_Supplier	000003_063	2011-05	0		
Nike_DC	000002_010	2011-08	22592.77357	124.82195	0.95
Nike_DC	000002_010	2011-09	8421.87217	30.51403	0.95
Nike_DC	000002_010	2011-10	24584.22604	81.40472	0.95
Nike_DC	000002_010	2011-11	13742.35893	18.37214	0.95
Nike_DC	000002_010	2011-12	20905.14645	55.89611	0.95
Nike_DC	000002_010	2012-01	11311.29965	70.25652	0.95
Nike_DC	000002_010	2012-02	5247.7686	83.29791	0.95
Nike_DC	000002_010	2012-03	1697.7254	36.90707	0.95

Nike_DC	000002_010	2012-04	0		
Nike_DC	000002_063	2011-01	11288.07206	97.31097	0.95
Nike_DC	000002_063	2011-02	5238.9138	124.73604	0.95
Nike_DC	000002_063	2011-03	1683.27362	54.29915	0.95
Nike_DC	000002_063	2011-04	8651.99299	8.65199	0.95
Nike_DC	000002_063	2011-05	0		
Nike_DC	000002_063	2011-06	364.76676	72.95335	0.95
Nike_DC	000002_063	2011-07	34526.42597	257.6599	0.95
Nike_DC	000002_063	2011-08	22566.28502	341.91341	0.95
Nike_DC	000002_063	2011-09	8383.86632	33.94278	0.95
Nike_DC	000002_063	2011-10	24593.26633	77.09488	0.95
Nike_DC	000002_063	2011-11	12932.8695	61.87976	0.95
Nike_DC	000002_063	2011-12	20770.27142	259.62839	0.95
Nike_DC	000002_063	2012-01	11287.93448	97.30978	0.95
Nike_DC	000002_063	2012-02	5238.9138	124.73604	0.95
Nike_DC	000002_063	2012-03	1683.3395	54.30127	0.95
Nike_DC	000002_063	2012-04	0		
Nike_DC	000002_071	2011-01	11269.67225	187.82787	0.95
Nike_DC	000002_071	2011-02	5236.20015	158.67273	0.95
Nike_DC	000002_071	2011-03	1681.12403	60.04014	0.95
Nike_DC	000002_071	2011-04	8651.99299	8.65199	0.95
Nike_DC	000002_071	2011-05	3215.41506	1607.70753	0.95
Nike_DC	000002_071	2011-06	363.55252	181.77626	0.95
Nike_DC	000002_071	2011-07	34526.10153	261.56138	0.95
Nike_DC	000002_071	2011-08	22564.54037	451.29081	0.95
Nike_DC	000002_071	2011-09	8615.34574	21.922	0.95
Nike_DC	000002_071	2011-10	24744.85512	46.68841	0.95
Nike_DC	000002_071	2011-11	13320.21646	24.94423	0.95
Nike_DC	000002_071	2011-12	20936.87001	50.57215	0.95
Nike_DC	000002_071	2012-01	11269.67225	187.82787	0.95
Nike_DC	000002_071	2012-02	5236.17615	158.672	0.95
Nike_DC	000002_071	2012-03	1681.12403	60.04014	0.95
Nike_DC	000002_071	2012-04	0		
Nike_DC	000002_100	2011-01	11262.97395	2815.74349	0.95
Nike_DC	000002_100	2011-02	5231.96405	871.99401	0.95
Nike_DC	000002_100	2011-03	1679.77079	64.60657	0.95
Nike_DC	000002_100	2011-04	11291.46948	7.52765	0.95
Nike_DC	000002_100	2011-05	0		
Nike_DC	000002_100	2011-06	0		
Nike_DC	000002_100	2011-07	34517.18726	651.26768	0.95
Nike_DC	000002_100	2011-08	22568.80419	268.67624	0.95
Nike_DC	000002_100	2011-09	8335.46972	40.66083	0.95
Nike_DC	000002_100	2011-10	24595.52619	75.91212	0.95
Nike_DC	000002_100	2011-11	12878.91212	125.03798	0.95
Nike_DC	000002_100	2011-12	20765.08932	576.80804	0.95
Nike_DC	000002_100	2012-01	11262.97395	2815.74349	0.95
Nike_DC	000002_100	2012-02	5231.96405	871.99401	0.95
Nike_DC	000002_100	2012-03	1679.77079	64.60657	0.95
Nike_DC	000002_100	2012-04	0		
Nike_DC	000002_405	2011-01	11270.08876	181.77563	0.95
Nike_DC	000002_405	2011-02	5236.20015	158.67273	0.95
Nike_DC	000002_405	2011-03	1686.63853	48.18967	0.95
Nike_DC	000002_405	2011-04	5722.30589	5722.30589	0.95
Nike_DC	000002_405	2011-05	0		

Nike_DC	000002_405	2011-06	364.24687	91.06172	0.95
Nike_DC	000002_405	2011-07	34525.25783	271.85242	0.95
Nike_DC	000002_405	2011-08	22566.16278	347.17174	0.95
Nike_DC	000002_405	2011-09	8258.4582	77.18185	0.95
Nike_DC	000002_405	2011-10	24548.67745	110.08376	0.95
Nike_DC	000002_405	2011-11	12953.95748	54.42839	0.95
Nike_DC	000002_405	2011-12	20828.59138	82.32645	0.95
Nike_DC	000002_405	2012-01	11270.12812	181.77626	0.95
Nike_DC	000002_405	2012-02	5236.20015	158.67273	0.95
Nike_DC	000002_405	2012-03	1686.63853	48.18967	0.95
Nike_DC	000002_405	2012-04	0		
Nike_DC	000002_648	2011-01	11262.97395	2815.74349	0.95
Nike_DC	000002_648	2011-02	5231.85519	1743.95173	0.95
Nike_DC	000002_648	2011-03	1680.43502	62.23833	0.95
Nike_DC	000002_648	2011-04	5722.67017	572.26702	0.95
Nike_DC	000002_648	2011-05	3217.75202	169.35537	0.95
Nike_DC	000002_648	2011-06	363.84199	121.28066	0.95
Nike_DC	000002_648	2011-07	34517.52582	595.12976	0.95
Nike_DC	000002_648	2011-08	22562.52253	1253.47347	0.95
Nike_DC	000002_648	2011-09	8358.88232	36.9862	0.95
Nike_DC	000002_648	2011-10	24533.19484	137.82694	0.95
Nike_DC	000002_648	2011-11	12877.59103	130.07668	0.95
Nike_DC	000002_648	2011-12	20764.04193	1297.75262	0.95
Nike_DC	000002_648	2012-01	11262.97395	2815.74349	0.95
Nike_DC	000002_648	2012-02	5231.85519	1743.95173	0.95
Nike_DC	000002_648	2012-03	1680.43502	62.23833	0.95
Nike_DC	000002_648	2012-04	0		
Nike_DC	000003_010	2011-01	4954.297	137.61936	0.95
Nike_DC	000003_010	2011-02	2711.28536	93.4926	0.95
Nike_DC	000003_010	2011-03	2731.43351	88.11076	0.95
Nike_DC	000003_010	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_010	2011-05	0		
Nike_DC	000003_010	2011-06	558.1848	79.74069	0.95
Nike_DC	000003_010	2011-07	22138.1731	335.42687	0.95
Nike_DC	000003_010	2011-08	14924.59511	364.01451	0.95
Nike_DC	000003_010	2011-09	7798.92948	32.6315	0.95
Nike_DC	000003_010	2011-10	3235.87817	9.3253	0.95
Nike_DC	000003_010	2011-11	6058.87844	38.10615	0.95
Nike_DC	000003_010	2011-12	8343.84699	595.98907	0.95
Nike_DC	000003_010	2012-01	4954.297	137.61936	0.95
Nike_DC	000003_010	2012-02	2711.32116	93.49383	0.95
Nike_DC	000003_010	2012-03	2731.43351	88.11076	0.95
Nike_DC	000003_010	2012-04	0		
Nike_DC	000003_063	2011-01	4964.13355	84.13786	0.95
Nike_DC	000003_063	2011-02	2713.36248	82.22311	0.95
Nike_DC	000003_063	2011-03	2724.55904	247.68719	0.95
Nike_DC	000003_063	2011-04	3682.62451	1227.5415	0.95
Nike_DC	000003_063	2011-05	0		
Nike_DC	000003_063	2011-06	557.6646	92.9441	0.95
Nike_DC	000003_063	2011-07	22138.04099	340.58525	0.95
Nike_DC	000003_063	2011-08	14923.70952	452.23362	0.95
Nike_DC	000003_063	2011-09	7639.84663	166.08362	0.95
Nike_DC	000003_063	2011-10	2330.21152	28.07484	0.95
Nike_DC	000003_063	2011-11	5970.68616	153.09452	0.95

Nike_DC	000003_063	2011-12	8348.50141	189.73867	0.95
Nike_DC	000003_063	2012-01	4964.13355	84.13786	0.95
Nike_DC	000003_063	2012-02	2713.36248	82.22311	0.95
Nike_DC	000003_063	2012-03	2724.55904	247.68719	0.95
Nike_DC	000003_063	2012-04	0		
Nike_DC	000003_071	2011-01	4961.11038	93.60586	0.95
Nike_DC	000003_071	2011-02	2715.06515	75.41848	0.95
Nike_DC	000003_071	2011-03	2724.95233	209.61172	0.95
Nike_DC	000003_071	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_071	2011-05	0		
Nike_DC	000003_071	2011-06	556.58263	185.52754	0.95
Nike_DC	000003_071	2011-07	22135.91402	481.21552	0.95
Nike_DC	000003_071	2011-08	14922.37354	1065.88382	0.95
Nike_DC	000003_071	2011-09	7788.15846	33.71497	0.95
Nike_DC	000003_071	2011-10	2898.53734	10.69571	0.95
Nike_DC	000003_071	2011-11	6143.47632	27.92489	0.95
Nike_DC	000003_071	2011-12	8396.35298	59.5486	0.95
Nike_DC	000003_071	2012-01	4961.04503	93.60462	0.95
Nike_DC	000003_071	2012-02	2715.06515	75.41848	0.95
Nike_DC	000003_071	2012-03	2724.95233	209.61172	0.95
Nike_DC	000003_071	2012-04	0		
Nike_DC	000003_100	2011-01	4948.61578	824.7693	0.95
Nike_DC	000003_100	2011-02	2785.7178	27.85718	0.95
Nike_DC	000003_100	2011-03	2723.57555	2723.57555	0.95
Nike_DC	000003_100	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_100	2011-05	0		
Nike_DC	000003_100	2011-06	556.3812	278.1906	0.95
Nike_DC	000003_100	2011-07	22133.78886	7377.92962	0.95
Nike_DC	000003_100	2011-08	15734.81188	21.06401	0.95
Nike_DC	000003_100	2011-09	7633.76536	1272.29423	0.95
Nike_DC	000003_100	2011-10	2264.23234	226.42323	0.95
Nike_DC	000003_100	2011-11	5965.01108	2982.50554	0.95
Nike_DC	000003_100	2011-12	8343.41886	1390.56981	0.95
Nike_DC	000003_100	2012-01	4948.61578	824.7693	0.95
Nike_DC	000003_100	2012-02	0		
Nike_DC	000003_100	2012-03	2723.57555	2723.57555	0.95
Nike_DC	000003_100	2012-04	0		
Nike_DC	000003_405	2011-01	4956.40551	118.00966	0.95
Nike_DC	000003_405	2011-02	2706.24412	180.41627	0.95
Nike_DC	000003_405	2011-03	2724.7475	227.06229	0.95
Nike_DC	000003_405	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_405	2011-05	0		
Nike_DC	000003_405	2011-06	556.86334	139.21584	0.95
Nike_DC	000003_405	2011-07	22136.81502	402.48755	0.95
Nike_DC	000003_405	2011-08	14922.94206	621.78925	0.95
Nike_DC	000003_405	2011-09	7656.79158	86.03137	0.95
Nike_DC	000003_405	2011-10	2405.59199	19.71797	0.95
Nike_DC	000003_405	2011-11	6032.82259	44.68757	0.95
Nike_DC	000003_405	2011-12	8350.00953	167.00019	0.95
Nike_DC	000003_405	2012-01	4956.40551	118.00966	0.95
Nike_DC	000003_405	2012-02	2706.23452	180.41563	0.95
Nike_DC	000003_405	2012-03	2724.7475	227.06229	0.95
Nike_DC	000003_405	2012-04	0		
Nike_DC	000003_648	2011-01	4948.67443	706.95349	0.95

Nike_DC	000003_648	2011-02	2705.21271	270.52127	0.95
Nike_DC	000003_648	2011-03	2725.93532	160.34914	0.95
Nike_DC	000003_648	2011-04	3682.57601	3682.57601	0.95
Nike_DC	000003_648	2011-05	0		
Nike_DC	000003_648	2011-06	556.38203	278.19102	0.95
Nike_DC	000003_648	2011-07	22133.78079	22133.78079	0.95
Nike_DC	000003_648	2011-08	14922.67875	746.13394	0.95
Nike_DC	000003_648	2011-09	7649.65914	103.37377	0.95
Nike_DC	000003_648	2011-10	2383.77617	21.28372	0.95
Nike_DC	000003_648	2011-11	5973.97576	121.91787	0.95
Nike_DC	000003_648	2011-12	8344.00753	521.50047	0.95
Nike_DC	000003_648	2012-01	4948.67443	706.95349	0.95
Nike_DC	000003_648	2012-02	2705.21271	270.52127	0.95
Nike_DC	000003_648	2012-03	2725.92308	160.34842	0.95
Nike_DC	000003_648	2012-04	0		
Nike_DC	000005_010	2011-01	2072.49416	40.63714	0.95
Nike_DC	000005_010	2011-02	1450.42434	85.31908	0.95
Nike_DC	000005_010	2011-03	881.88305	881.88305	0.95
Nike_DC	000005_010	2011-04	0		
Nike_DC	000005_010	2011-05	0		
Nike_DC	000005_010	2011-06	0		
Nike_DC	000005_010	2011-07	13663.9399	150.15319	0.95
Nike_DC	000005_010	2011-08	4909.0125	36.90987	0.95
Nike_DC	000005_010	2011-09	6078.96397	19.48386	0.95
Nike_DC	000005_010	2011-10	14834.21937	34.41814	0.95
Nike_DC	000005_010	2011-11	14574.28814	30.87773	0.95
Nike_DC	000005_010	2011-12	14103.74792	100.74106	0.95
Nike_DC	000005_010	2012-01	2072.34427	40.6342	0.95
Nike_DC	000005_010	2012-02	1450.42417	85.31907	0.95
Nike_DC	000005_010	2012-03	881.88292	881.88292	0.95
Nike_DC	000005_010	2012-04	0		
Nike_DC	000005_063	2011-01	2051.7959	85.4915	0.95
Nike_DC	000005_063	2011-02	1446.26363	1446.26363	0.95
Nike_DC	000005_063	2011-03	0		
Nike_DC	000005_063	2011-04	0		
Nike_DC	000005_063	2011-05	0		
Nike_DC	000005_063	2011-06	0		
Nike_DC	000005_063	2011-07	13651.23579	2275.20596	0.95
Nike_DC	000005_063	2011-08	4899.0871	39.50877	0.95
Nike_DC	000005_063	2011-09	6063.99416	19.88195	0.95
Nike_DC	000005_063	2011-10	14707.36397	47.29056	0.95
Nike_DC	000005_063	2011-11	14574.75209	30.94427	0.95
Nike_DC	000005_063	2011-12	14081.38475	207.07919	0.95
Nike_DC	000005_063	2012-01	2051.82942	85.49289	0.95
Nike_DC	000005_063	2012-02	1446.26363	1446.26363	0.95
Nike_DC	000005_063	2012-03	1094.78533	10.94785	0.95
Nike_DC	000005_063	2012-04	0		
Nike_DC	000005_071	2011-01	2104.48597	27.6906	0.95
Nike_DC	000005_071	2011-02	1461.07304	45.65853	0.95
Nike_DC	000005_071	2011-03	881.95464	440.97732	0.95
Nike_DC	000005_071	2011-04	0		
Nike_DC	000005_071	2011-05	0		
Nike_DC	000005_071	2011-06	35.86599	35.86599	0.95
Nike_DC	000005_071	2011-07	13684.45108	93.0915	0.95

Nike_DC	000005_071	2011-08	5026.27075	23.59752	0.95
Nike_DC	000005_071	2011-09	6096.63553	18.99263	0.95
Nike_DC	000005_071	2011-10	14851.607	33.3744	0.95
Nike_DC	000005_071	2011-11	14563.95954	31.45564	0.95
Nike_DC	000005_071	2011-12	14122.29872	78.89552	0.95
Nike_DC	000005_071	2012-01	2104.48597	27.6906	0.95
Nike_DC	000005_071	2012-02	1461.07304	45.65853	0.95
Nike_DC	000005_071	2012-03	881.95464	440.97732	0.95
Nike_DC	000005_071	2012-04	0		
Nike_DC	000005_405	2011-01	2054.54552	70.8464	0.95
Nike_DC	000005_405	2011-02	1446.26363	1446.26363	0.95
Nike_DC	000005_405	2011-03	0		
Nike_DC	000005_405	2011-04	0		
Nike_DC	000005_405	2011-05	0		
Nike_DC	000005_405	2011-06	0		
Nike_DC	000005_405	2011-07	13651.23579	2275.20596	0.95
Nike_DC	000005_405	2011-08	4834.32001	241.716	0.95
Nike_DC	000005_405	2011-09	5988.53601	22.34528	0.95
Nike_DC	000005_405	2011-10	14720.16715	45.15389	0.95
Nike_DC	000005_405	2011-11	14375.34758	49.39982	0.95
Nike_DC	000005_405	2011-12	14099.33215	109.29715	0.95
Nike_DC	000005_405	2012-01	2054.54552	70.8464	0.95
Nike_DC	000005_405	2012-02	1446.26363	1446.26363	0.95
Nike_DC	000005_405	2012-03	3148.08398	6.29617	0.95
Nike_DC	000005_405	2012-04	0		
Finished_Goods_Supplier	000004_010	2011-01	0		
Finished_Goods_Supplier	000004_010	2011-02	0		
Finished_Goods_Supplier	000004_010	2011-03	0		
Finished_Goods_Supplier	000004_010	2011-04	0	0	
Finished_Goods_Supplier	000004_010	2011-05	0	0	
Finished_Goods_Supplier	000004_010	2011-06	0	0	
Finished_Goods_Supplier	000004_010	2011-07	0	0	
Finished_Goods_Supplier	000004_010	2011-08	0	0	
Finished_Goods_Supplier	000004_010	2011-09	0	0	
Finished_Goods_Supplier	000004_010	2011-10	0	0	
Finished_Goods_Supplier	000004_010	2011-11	0	0	
Finished_Goods_Supplier	000004_010	2011-12	0	0	
Finished_Goods_Supplier	000004_010	2012-01	0	0	
Finished_Goods_Supplier	000004_010	2012-02	0	0	
Finished_Goods_Supplier	000004_010	2012-03	0	0	
Finished_Goods_Supplier	000004_010	2012-04	0		
Finished_Goods_Supplier	464399_010	2011-01	0.00003	0	
Finished_Goods_Supplier	464399_010	2011-02	0	0	
Finished_Goods_Supplier	464399_010	2011-03	0.00001	0	0.05588
Finished_Goods_Supplier	464399_010	2011-04	0	0	
Finished_Goods_Supplier	464399_010	2011-05	0	0	
Finished_Goods_Supplier	464399_010	2011-06	0	0	
Finished_Goods_Supplier	464399_010	2011-07	0	0	
Finished_Goods_Supplier	464399_010	2011-08	0	0	
Finished_Goods_Supplier	464399_010	2011-09	0.00003	0	0.05588
Finished_Goods_Supplier	464399_010	2011-10	0	0	
Finished_Goods_Supplier	464399_010	2011-11	0	0	
Finished_Goods_Supplier	464399_010	2011-12	0.00001	0	
Finished_Goods_Supplier	464399_010	2012-01	0.00003	0	0.05588

Finished_Goods_Supplier	464399_010	2012-02	0	0	
Finished_Goods_Supplier	464399_010	2012-03	0	0	
Finished_Goods_Supplier	464399_010	2012-04	0		
Finished_Goods_Supplier	436635	2011-01	7354.85592	6.69232	0.475
Finished_Goods_Supplier	436635	2011-02	3446.61157	5.64463	0.475
Finished_Goods_Supplier	436635	2011-03	1085.49153	2.96178	0.38
Finished_Goods_Supplier	436635	2011-04	10248.43599	2.21593	0.475
Finished_Goods_Supplier	436635	2011-05	1464.6252	39.05667	0.285
Finished_Goods_Supplier	436635	2011-06	924.58927	4.98162	0.475
Finished_Goods_Supplier	436635	2011-07	42062.717	23.80729	0.665
Finished_Goods_Supplier	436635	2011-08	28143.82152	5.87272	0.665
Finished_Goods_Supplier	436635	2011-09	31019.45547	2.49965	0.665
Finished_Goods_Supplier	436635	2011-10	53155.41377	3.16085	0.665
Finished_Goods_Supplier	436635	2011-11	60834.04281	3.91709	0.665
Finished_Goods_Supplier	436635	2011-12	27101.85256	3.04286	0.665
Finished_Goods_Supplier	436635	2012-01	11120.53521	5.16922	0.665
Finished_Goods_Supplier	436635	2012-02	4277.53518	3.36073	0.665
Finished_Goods_Supplier	436635	2012-03	3913.6951	2.14838	0.665
Finished_Goods_Supplier	436635	2012-04	0		
Finished_Goods_Supplier	464400_010	2011-01	0	0	
Finished_Goods_Supplier	464400_010	2011-02	0	0	
Finished_Goods_Supplier	464400_010	2011-03	0	0	
Finished_Goods_Supplier	464400_010	2011-04	0	0	
Finished_Goods_Supplier	464400_010	2011-05	0.0004	0.00009	0.05278
Finished_Goods_Supplier	464400_010	2011-06	0	0	
Finished_Goods_Supplier	464400_010	2011-07	0	0	
Finished_Goods_Supplier	464400_010	2011-08	0	0	
Finished_Goods_Supplier	464400_010	2011-09	0.2214	0.0002	0.05278
Finished_Goods_Supplier	464400_010	2011-10	0	0	
Finished_Goods_Supplier	464400_010	2011-11	0.00001	0	
Finished_Goods_Supplier	464400_010	2011-12	0	0	
Finished_Goods_Supplier	464400_010	2012-01	0	0	
Finished_Goods_Supplier	464400_010	2012-02	0	0	
Finished_Goods_Supplier	464400_010	2012-03	0	0	
Finished_Goods_Supplier	464400_010	2012-04	0		
Finished_Goods_Supplier	159415_010	2011-01	0	0	
Finished_Goods_Supplier	159415_010	2011-02	0	0	
Finished_Goods_Supplier	159415_010	2011-03	0	0	
Finished_Goods_Supplier	159415_010	2011-04	0.00001	0	
Finished_Goods_Supplier	159415_010	2011-05	0	0	
Finished_Goods_Supplier	159415_010	2011-06	0	0	
Finished_Goods_Supplier	159415_010	2011-07	0	0	
Finished_Goods_Supplier	159415_010	2011-08	0	0	
Finished_Goods_Supplier	159415_010	2011-09	0.46772	0.00006	0.05278
Finished_Goods_Supplier	159415_010	2011-10	0	0	
Finished_Goods_Supplier	159415_010	2011-11	0	0	
Finished_Goods_Supplier	159415_010	2011-12	0.00007	0	
Finished_Goods_Supplier	159415_010	2012-01	0	0	
Finished_Goods_Supplier	159415_010	2012-02	0	0	
Finished_Goods_Supplier	159415_010	2012-03	0.00002	0	0.05278
Finished_Goods_Supplier	159415_010	2012-04	0		
Finished_Goods_Supplier	165858_010	2011-01	0	0	
Finished_Goods_Supplier	165858_010	2011-02	0	0	
Finished_Goods_Supplier	165858_010	2011-03	0	0	

Finished_Goods_Supplier	165858_010	2011-04	0	0	
Finished_Goods_Supplier	165858_010	2011-05	0	0	
Finished_Goods_Supplier	165858_010	2011-06	0	0	
Finished_Goods_Supplier	165858_010	2011-07	0.00002	0	
Finished_Goods_Supplier	165858_010	2011-08	0	0	
Finished_Goods_Supplier	165858_010	2011-09	0.46772	0.00006	0.05278
Finished_Goods_Supplier	165858_010	2011-10	0	0	
Finished_Goods_Supplier	165858_010	2011-11	0.00008	0	
Finished_Goods_Supplier	165858_010	2011-12	0	0	
Finished_Goods_Supplier	165858_010	2012-01	0.00007	0	0.05278
Finished_Goods_Supplier	165858_010	2012-02	0.00002	0	0.05278
Finished_Goods_Supplier	165858_010	2012-03	0	0	
Finished_Goods_Supplier	165858_010	2012-04	0		
Finished_Goods_Supplier	368545	2011-01	0	0	
Finished_Goods_Supplier	368545	2011-02	0	0	
Finished_Goods_Supplier	368545	2011-03	0	0	
Finished_Goods_Supplier	368545	2011-04	0	0	
Finished_Goods_Supplier	368545	2011-05	0	0	
Finished_Goods_Supplier	368545	2011-06	0	0	
Finished_Goods_Supplier	368545	2011-07	0	0	
Finished_Goods_Supplier	368545	2011-08	0	0	
Finished_Goods_Supplier	368545	2011-09	1.39682	0.00017	0.03654
Finished_Goods_Supplier	368545	2011-10	0.00003	0	
Finished_Goods_Supplier	368545	2011-11	0.00001	0	
Finished_Goods_Supplier	368545	2011-12	0	0	
Finished_Goods_Supplier	368545	2012-01	0	0	
Finished_Goods_Supplier	368545	2012-02	0	0	
Finished_Goods_Supplier	368545	2012-03	0	0	
Finished_Goods_Supplier	368545	2012-04	0		
Finished_Goods_Supplier	464399_Greige	2011-01	0.00004	0	0.0475
Finished_Goods_Supplier	464399_Greige	2011-02	0	0	
Finished_Goods_Supplier	464399_Greige	2011-03	0	0	
Finished_Goods_Supplier	464399_Greige	2011-04	0.00003	0	
Finished_Goods_Supplier	464399_Greige	2011-05	0	0	
Finished_Goods_Supplier	464399_Greige	2011-06	0	0	
Finished_Goods_Supplier	464399_Greige	2011-07	0	0	
Finished_Goods_Supplier	464399_Greige	2011-08	0	0	
Finished_Goods_Supplier	464399_Greige	2011-09	0.20562	0.00011	0.0475
Finished_Goods_Supplier	464399_Greige	2011-10	0.00007	0	
Finished_Goods_Supplier	464399_Greige	2011-11	0.00027	0	
Finished_Goods_Supplier	464399_Greige	2011-12	0.00005	0	
Finished_Goods_Supplier	464399_Greige	2012-01	0.00002	0	0.0475
Finished_Goods_Supplier	464399_Greige	2012-02	0	0	
Finished_Goods_Supplier	464399_Greige	2012-03	49.49631	0.15677	0.0475
Finished_Goods_Supplier	464399_Greige	2012-04	0		
Finished_Goods_Supplier	165858_Greige	2011-01	0.00003	0	
Finished_Goods_Supplier	165858_Greige	2011-02	0.00003	0	
Finished_Goods_Supplier	165858_Greige	2011-03	0.00003	0	0.03654
Finished_Goods_Supplier	165858_Greige	2011-04	0	0	
Finished_Goods_Supplier	165858_Greige	2011-05	0	0	
Finished_Goods_Supplier	165858_Greige	2011-06	0.00001	0	
Finished_Goods_Supplier	165858_Greige	2011-07	0	0	
Finished_Goods_Supplier	165858_Greige	2011-08	0.00002	0	
Finished_Goods_Supplier	165858_Greige	2011-09	0.00004	0	

Finished_Goods_Supplier	165858_Greige	2011-10	0.00024	0	
Finished_Goods_Supplier	165858_Greige	2011-11	0.00022	0	
Finished_Goods_Supplier	165858_Greige	2011-12	0.00011	0	
Finished_Goods_Supplier	165858_Greige	2012-01	0.00002	0	
Finished_Goods_Supplier	165858_Greige	2012-02	0	0	0.07308
Finished_Goods_Supplier	165858_Greige	2012-03	104.90624	0.05913	0.03654
Finished_Goods_Supplier	165858_Greige	2012-04	0		
Finished_Goods_Supplier	159415_Greige	2011-01	0.00001	0	
Finished_Goods_Supplier	159415_Greige	2011-02	0.00003	0	
Finished_Goods_Supplier	159415_Greige	2011-03	0.00002	0	0.03654
Finished_Goods_Supplier	159415_Greige	2011-04	0.00004	0	
Finished_Goods_Supplier	159415_Greige	2011-05	0	0	
Finished_Goods_Supplier	159415_Greige	2011-06	0.00001	0	
Finished_Goods_Supplier	159415_Greige	2011-07	0	0	
Finished_Goods_Supplier	159415_Greige	2011-08	0.00002	0	
Finished_Goods_Supplier	159415_Greige	2011-09	0.00016	0	0.03654
Finished_Goods_Supplier	159415_Greige	2011-10	0.00023	0	
Finished_Goods_Supplier	159415_Greige	2011-11	0.00022	0	0.03654
Finished_Goods_Supplier	159415_Greige	2011-12	0.00001	0	
Finished_Goods_Supplier	159415_Greige	2012-01	0.00008	0	0.03654
Finished_Goods_Supplier	159415_Greige	2012-02	0.00003	0	0.03654
Finished_Goods_Supplier	159415_Greige	2012-03	104.90624	0.05913	0.03654
Finished_Goods_Supplier	159415_Greige	2012-04	0		
Finished_Goods_Supplier	464400_Greige	2011-01	0.00003	0	
Finished_Goods_Supplier	464400_Greige	2011-02	0.00001	0	
Finished_Goods_Supplier	464400_Greige	2011-03	0.00001	0	0.03958
Finished_Goods_Supplier	464400_Greige	2011-04	0	0	
Finished_Goods_Supplier	464400_Greige	2011-05	0	0	
Finished_Goods_Supplier	464400_Greige	2011-06	0	0	
Finished_Goods_Supplier	464400_Greige	2011-07	0.00008	0	
Finished_Goods_Supplier	464400_Greige	2011-08	0.00003	0	
Finished_Goods_Supplier	464400_Greige	2011-09	0.00004	0	
Finished_Goods_Supplier	464400_Greige	2011-10	0.00015	0	
Finished_Goods_Supplier	464400_Greige	2011-11	0.00027	0	
Finished_Goods_Supplier	464400_Greige	2011-12	0.00005	0	
Finished_Goods_Supplier	464400_Greige	2012-01	0.00003	0	0.03958
Finished_Goods_Supplier	464400_Greige	2012-02	0	0	
Finished_Goods_Supplier	464400_Greige	2012-03	48.41446	0.15851	0.03958
Finished_Goods_Supplier	464400_Greige	2012-04	0		
Finished_Goods_Supplier	000004_063	2011-01	0		
Finished_Goods_Supplier	000004_063	2011-02	0		
Finished_Goods_Supplier	000004_063	2011-03	0		
Finished_Goods_Supplier	000004_063	2011-04	0	0	
Finished_Goods_Supplier	000004_063	2011-05	0	0	
Finished_Goods_Supplier	000004_063	2011-06	0	0	
Finished_Goods_Supplier	000004_063	2011-07	0	0	
Finished_Goods_Supplier	000004_063	2011-08	0	0	
Finished_Goods_Supplier	000004_063	2011-09	0	0	
Finished_Goods_Supplier	000004_063	2011-10	0	0	
Finished_Goods_Supplier	000004_063	2011-11	0	0	
Finished_Goods_Supplier	000004_063	2011-12	0	0	
Finished_Goods_Supplier	000004_063	2012-01	0	0	
Finished_Goods_Supplier	000004_063	2012-02	0	0	
Finished_Goods_Supplier	000004_063	2012-03	0	0	

Finished_Goods_Supplier	000004_063	2012-04	0	
Finished_Goods_Supplier	464399_063	2011-01	0	
Finished_Goods_Supplier	464399_063	2011-02	0	
Finished_Goods_Supplier	464399_063	2011-03	0	
Finished_Goods_Supplier	464399_063	2011-04	0	0
Finished_Goods_Supplier	464399_063	2011-05	0	0
Finished_Goods_Supplier	464399_063	2011-06	0	0
Finished_Goods_Supplier	464399_063	2011-07	0	0
Finished_Goods_Supplier	464399_063	2011-08	0	0
Finished_Goods_Supplier	464399_063	2011-09	0	0
Finished_Goods_Supplier	464399_063	2011-10	0	0
Finished_Goods_Supplier	464399_063	2011-11	0	0
Finished_Goods_Supplier	464399_063	2011-12	0	0
Finished_Goods_Supplier	464399_063	2012-01	0	0
Finished_Goods_Supplier	464399_063	2012-02	0	0
Finished_Goods_Supplier	464399_063	2012-03	0	0
Finished_Goods_Supplier	464399_063	2012-04	0	
Finished_Goods_Supplier	464400_063	2011-01	0	
Finished_Goods_Supplier	464400_063	2011-02	0	
Finished_Goods_Supplier	464400_063	2011-03	0	
Finished_Goods_Supplier	464400_063	2011-04	0	0
Finished_Goods_Supplier	464400_063	2011-05	0	0
Finished_Goods_Supplier	464400_063	2011-06	0	0
Finished_Goods_Supplier	464400_063	2011-07	0	0
Finished_Goods_Supplier	464400_063	2011-08	0	0
Finished_Goods_Supplier	464400_063	2011-09	0	0
Finished_Goods_Supplier	464400_063	2011-10	0	0
Finished_Goods_Supplier	464400_063	2011-11	0	0
Finished_Goods_Supplier	464400_063	2011-12	0	0
Finished_Goods_Supplier	464400_063	2012-01	0	0
Finished_Goods_Supplier	464400_063	2012-02	0	0
Finished_Goods_Supplier	464400_063	2012-03	0	0
Finished_Goods_Supplier	464400_063	2012-04	0	
Finished_Goods_Supplier	159415_063	2011-01	0	
Finished_Goods_Supplier	159415_063	2011-02	0	
Finished_Goods_Supplier	159415_063	2011-03	0	
Finished_Goods_Supplier	159415_063	2011-04	0	0
Finished_Goods_Supplier	159415_063	2011-05	0	0
Finished_Goods_Supplier	159415_063	2011-06	0	0
Finished_Goods_Supplier	159415_063	2011-07	0	0
Finished_Goods_Supplier	159415_063	2011-08	0	0
Finished_Goods_Supplier	159415_063	2011-09	0	0
Finished_Goods_Supplier	159415_063	2011-10	0	0
Finished_Goods_Supplier	159415_063	2011-11	0.00017	0
Finished_Goods_Supplier	159415_063	2011-12	0	0
Finished_Goods_Supplier	159415_063	2012-01	0	0
Finished_Goods_Supplier	159415_063	2012-02	0	0
Finished_Goods_Supplier	159415_063	2012-03	0	0
Finished_Goods_Supplier	159415_063	2012-04	0	
Finished_Goods_Supplier	165858_063	2011-01	0	
Finished_Goods_Supplier	165858_063	2011-02	0	
Finished_Goods_Supplier	165858_063	2011-03	0	
Finished_Goods_Supplier	165858_063	2011-04	0	0
Finished_Goods_Supplier	165858_063	2011-05	0	0

Finished_Goods_Supplier	165858_063	2011-06	0	0
Finished_Goods_Supplier	165858_063	2011-07	0	0
Finished_Goods_Supplier	165858_063	2011-08	0	0
Finished_Goods_Supplier	165858_063	2011-09	0	0
Finished_Goods_Supplier	165858_063	2011-10	0	0
Finished_Goods_Supplier	165858_063	2011-11	0	0
Finished_Goods_Supplier	165858_063	2011-12	0	0
Finished_Goods_Supplier	165858_063	2012-01	0	0
Finished_Goods_Supplier	165858_063	2012-02	0	0
Finished_Goods_Supplier	165858_063	2012-03	0	0
Finished_Goods_Supplier	165858_063	2012-04	0	
Finished_Goods_Supplier	000004_071	2011-01	0	
Finished_Goods_Supplier	000004_071	2011-02	0	
Finished_Goods_Supplier	000004_071	2011-03	0	
Finished_Goods_Supplier	000004_071	2011-04	0	0
Finished_Goods_Supplier	000004_071	2011-05	0	0
Finished_Goods_Supplier	000004_071	2011-06	0	0
Finished_Goods_Supplier	000004_071	2011-07	0	0
Finished_Goods_Supplier	000004_071	2011-08	0	0
Finished_Goods_Supplier	000004_071	2011-09	0	0
Finished_Goods_Supplier	000004_071	2011-10	0	0
Finished_Goods_Supplier	000004_071	2011-11	0	0
Finished_Goods_Supplier	000004_071	2011-12	0	0
Finished_Goods_Supplier	000004_071	2012-01	0	0
Finished_Goods_Supplier	000004_071	2012-02	0	0
Finished_Goods_Supplier	000004_071	2012-03	0	0
Finished_Goods_Supplier	000004_071	2012-04	0	
Finished_Goods_Supplier	464399_071	2011-01	0	
Finished_Goods_Supplier	464399_071	2011-02	0	
Finished_Goods_Supplier	464399_071	2011-03	0	
Finished_Goods_Supplier	464399_071	2011-04	0	0
Finished_Goods_Supplier	464399_071	2011-05	0	0
Finished_Goods_Supplier	464399_071	2011-06	0	0
Finished_Goods_Supplier	464399_071	2011-07	0	0
Finished_Goods_Supplier	464399_071	2011-08	0	0
Finished_Goods_Supplier	464399_071	2011-09	0	0
Finished_Goods_Supplier	464399_071	2011-10	0	0
Finished_Goods_Supplier	464399_071	2011-11	0	0
Finished_Goods_Supplier	464399_071	2011-12	0	0
Finished_Goods_Supplier	464399_071	2012-01	0	0
Finished_Goods_Supplier	464399_071	2012-02	0	0
Finished_Goods_Supplier	464399_071	2012-03	0	0
Finished_Goods_Supplier	464399_071	2012-04	0	
Finished_Goods_Supplier	464400_071	2011-01	0	
Finished_Goods_Supplier	464400_071	2011-02	0	
Finished_Goods_Supplier	464400_071	2011-03	0	
Finished_Goods_Supplier	464400_071	2011-04	0	0
Finished_Goods_Supplier	464400_071	2011-05	0	0
Finished_Goods_Supplier	464400_071	2011-06	0	0
Finished_Goods_Supplier	464400_071	2011-07	0	0
Finished_Goods_Supplier	464400_071	2011-08	0	0
Finished_Goods_Supplier	464400_071	2011-09	0	0
Finished_Goods_Supplier	464400_071	2011-10	0	0
Finished_Goods_Supplier	464400_071	2011-11	0	0

Finished_Goods_Supplier	464400_071	2011-12	0	0
Finished_Goods_Supplier	464400_071	2012-01	0	0
Finished_Goods_Supplier	464400_071	2012-02	0	0
Finished_Goods_Supplier	464400_071	2012-03	0	0
Finished_Goods_Supplier	464400_071	2012-04	0	
Finished_Goods_Supplier	159415_071	2011-01	0	
Finished_Goods_Supplier	159415_071	2011-02	0	
Finished_Goods_Supplier	159415_071	2011-03	0	
Finished_Goods_Supplier	159415_071	2011-04	0	0
Finished_Goods_Supplier	159415_071	2011-05	0	0
Finished_Goods_Supplier	159415_071	2011-06	0	0
Finished_Goods_Supplier	159415_071	2011-07	0	0
Finished_Goods_Supplier	159415_071	2011-08	0	0
Finished_Goods_Supplier	159415_071	2011-09	0	0
Finished_Goods_Supplier	159415_071	2011-10	0	0
Finished_Goods_Supplier	159415_071	2011-11	0	0
Finished_Goods_Supplier	159415_071	2011-12	0	0
Finished_Goods_Supplier	159415_071	2012-01	0	0
Finished_Goods_Supplier	159415_071	2012-02	0	0
Finished_Goods_Supplier	159415_071	2012-03	0	0
Finished_Goods_Supplier	159415_071	2012-04	0	
Finished_Goods_Supplier	165858_071	2011-01	0	
Finished_Goods_Supplier	165858_071	2011-02	0	
Finished_Goods_Supplier	165858_071	2011-03	0	
Finished_Goods_Supplier	165858_071	2011-04	0	0
Finished_Goods_Supplier	165858_071	2011-05	0	0
Finished_Goods_Supplier	165858_071	2011-06	0	0
Finished_Goods_Supplier	165858_071	2011-07	0	0
Finished_Goods_Supplier	165858_071	2011-08	0	0
Finished_Goods_Supplier	165858_071	2011-09	0	0
Finished_Goods_Supplier	165858_071	2011-10	0	0
Finished_Goods_Supplier	165858_071	2011-11	0	0
Finished_Goods_Supplier	165858_071	2011-12	0	0
Finished_Goods_Supplier	165858_071	2012-01	0	0
Finished_Goods_Supplier	165858_071	2012-02	0	0
Finished_Goods_Supplier	165858_071	2012-03	0	0
Finished_Goods_Supplier	165858_071	2012-04	0	
Finished_Goods_Supplier	000004_405	2011-01	0	
Finished_Goods_Supplier	000004_405	2011-02	0	
Finished_Goods_Supplier	000004_405	2011-03	0	
Finished_Goods_Supplier	000004_405	2011-04	0	0
Finished_Goods_Supplier	000004_405	2011-05	0	0
Finished_Goods_Supplier	000004_405	2011-06	0	0
Finished_Goods_Supplier	000004_405	2011-07	0	0
Finished_Goods_Supplier	000004_405	2011-08	0	0
Finished_Goods_Supplier	000004_405	2011-09	0	0
Finished_Goods_Supplier	000004_405	2011-10	0	0
Finished_Goods_Supplier	000004_405	2011-11	0	0
Finished_Goods_Supplier	000004_405	2011-12	0	0
Finished_Goods_Supplier	000004_405	2012-01	0	0
Finished_Goods_Supplier	000004_405	2012-02	0	0
Finished_Goods_Supplier	000004_405	2012-03	0	0
Finished_Goods_Supplier	000004_405	2012-04	0	
Finished_Goods_Supplier	464399_405	2011-01	0	

Finished_Goods_Supplier	464399_405	2011-02	0	
Finished_Goods_Supplier	464399_405	2011-03	0	
Finished_Goods_Supplier	464399_405	2011-04	0	0
Finished_Goods_Supplier	464399_405	2011-05	0	0
Finished_Goods_Supplier	464399_405	2011-06	0	0
Finished_Goods_Supplier	464399_405	2011-07	0	0
Finished_Goods_Supplier	464399_405	2011-08	0	0
Finished_Goods_Supplier	464399_405	2011-09	0	0
Finished_Goods_Supplier	464399_405	2011-10	0	0
Finished_Goods_Supplier	464399_405	2011-11	0.0001	0
Finished_Goods_Supplier	464399_405	2011-12	0	0
Finished_Goods_Supplier	464399_405	2012-01	0	0
Finished_Goods_Supplier	464399_405	2012-02	0	0
Finished_Goods_Supplier	464399_405	2012-03	0	0
Finished_Goods_Supplier	464399_405	2012-04	0	
Finished_Goods_Supplier	464400_405	2011-01	0	
Finished_Goods_Supplier	464400_405	2011-02	0	
Finished_Goods_Supplier	464400_405	2011-03	0	
Finished_Goods_Supplier	464400_405	2011-04	0	0
Finished_Goods_Supplier	464400_405	2011-05	0	0
Finished_Goods_Supplier	464400_405	2011-06	0	0
Finished_Goods_Supplier	464400_405	2011-07	0	0
Finished_Goods_Supplier	464400_405	2011-08	0	0
Finished_Goods_Supplier	464400_405	2011-09	0	0
Finished_Goods_Supplier	464400_405	2011-10	0	0
Finished_Goods_Supplier	464400_405	2011-11	0	0
Finished_Goods_Supplier	464400_405	2011-12	0	0
Finished_Goods_Supplier	464400_405	2012-01	0	0
Finished_Goods_Supplier	464400_405	2012-02	0	0
Finished_Goods_Supplier	464400_405	2012-03	0	0
Finished_Goods_Supplier	464400_405	2012-04	0	
Finished_Goods_Supplier	159415_405	2011-01	0	
Finished_Goods_Supplier	159415_405	2011-02	0	
Finished_Goods_Supplier	159415_405	2011-03	0	
Finished_Goods_Supplier	159415_405	2011-04	0	0
Finished_Goods_Supplier	159415_405	2011-05	0	0
Finished_Goods_Supplier	159415_405	2011-06	0	0
Finished_Goods_Supplier	159415_405	2011-07	0	0
Finished_Goods_Supplier	159415_405	2011-08	0	0
Finished_Goods_Supplier	159415_405	2011-09	0	0
Finished_Goods_Supplier	159415_405	2011-10	0	0
Finished_Goods_Supplier	159415_405	2011-11	0	0
Finished_Goods_Supplier	159415_405	2011-12	0	0
Finished_Goods_Supplier	159415_405	2012-01	0	0
Finished_Goods_Supplier	159415_405	2012-02	0	0
Finished_Goods_Supplier	159415_405	2012-03	0	0
Finished_Goods_Supplier	159415_405	2012-04	0	
Finished_Goods_Supplier	165858_405	2011-01	0	
Finished_Goods_Supplier	165858_405	2011-02	0	
Finished_Goods_Supplier	165858_405	2011-03	0	
Finished_Goods_Supplier	165858_405	2011-04	0	0
Finished_Goods_Supplier	165858_405	2011-05	0	0
Finished_Goods_Supplier	165858_405	2011-06	0	0
Finished_Goods_Supplier	165858_405	2011-07	0	0

Finished_Goods_Supplier	165858_405	2011-08	0	0	
Finished_Goods_Supplier	165858_405	2011-09	0	0	
Finished_Goods_Supplier	165858_405	2011-10	0	0	
Finished_Goods_Supplier	165858_405	2011-11	0	0	
Finished_Goods_Supplier	165858_405	2011-12	0	0	
Finished_Goods_Supplier	165858_405	2012-01	0	0	
Finished_Goods_Supplier	165858_405	2012-02	0	0	
Finished_Goods_Supplier	165858_405	2012-03	0	0	
Finished_Goods_Supplier	165858_405	2012-04	0		
Finished_Goods_Supplier	303325_Greige	2011-01	0.00004	0	
Finished_Goods_Supplier	303325_Greige	2011-02	0	0	
Finished_Goods_Supplier	303325_Greige	2011-03	0.00001	0	0.05278
Finished_Goods_Supplier	303325_Greige	2011-04	0	0	
Finished_Goods_Supplier	303325_Greige	2011-05	0	0	
Finished_Goods_Supplier	303325_Greige	2011-06	0	0	
Finished_Goods_Supplier	303325_Greige	2011-07	0.0001	0	
Finished_Goods_Supplier	303325_Greige	2011-08	0.00004	0	
Finished_Goods_Supplier	303325_Greige	2011-09	0.00015	0	0.05278
Finished_Goods_Supplier	303325_Greige	2011-10	0.00011	0	
Finished_Goods_Supplier	303325_Greige	2011-11	0.00014	0	0.05278
Finished_Goods_Supplier	303325_Greige	2011-12	0.00001	0	
Finished_Goods_Supplier	303325_Greige	2012-01	0.00007	0	0.05278
Finished_Goods_Supplier	303325_Greige	2012-02	0.00001	0	0.10556
Finished_Goods_Supplier	303325_Greige	2012-03	0	0	
Finished_Goods_Supplier	303325_Greige	2012-04	0		
Finished_Goods_Supplier	303323_Greige	2011-01	0	0	
Finished_Goods_Supplier	303323_Greige	2011-02	0.00001	0	
Finished_Goods_Supplier	303323_Greige	2011-03	0.00001	0	0.05278
Finished_Goods_Supplier	303323_Greige	2011-04	0	0	
Finished_Goods_Supplier	303323_Greige	2011-05	0.00001	0	
Finished_Goods_Supplier	303323_Greige	2011-06	0	0	
Finished_Goods_Supplier	303323_Greige	2011-07	0.00009	0	
Finished_Goods_Supplier	303323_Greige	2011-08	0.00004	0	
Finished_Goods_Supplier	303323_Greige	2011-09	0.00001	0	
Finished_Goods_Supplier	303323_Greige	2011-10	0.00011	0	
Finished_Goods_Supplier	303323_Greige	2011-11	0.0001	0	0.05278
Finished_Goods_Supplier	303323_Greige	2011-12	0	0	
Finished_Goods_Supplier	303323_Greige	2012-01	0	0	
Finished_Goods_Supplier	303323_Greige	2012-02	0.00001	0	0.10556
Finished_Goods_Supplier	303323_Greige	2012-03	0	0	
Finished_Goods_Supplier	303323_Greige	2012-04	0		
Finished_Goods_Supplier	303323_010	2011-01	0	0	
Finished_Goods_Supplier	303323_010	2011-02	0.00001	0	
Finished_Goods_Supplier	303323_010	2011-03	0	0	
Finished_Goods_Supplier	303323_010	2011-04	0	0	
Finished_Goods_Supplier	303323_010	2011-05	0	0	
Finished_Goods_Supplier	303323_010	2011-06	0	0	
Finished_Goods_Supplier	303323_010	2011-07	0.00005	0	
Finished_Goods_Supplier	303323_010	2011-08	0	0	
Finished_Goods_Supplier	303323_010	2011-09	0	0	
Finished_Goods_Supplier	303323_010	2011-10	0.00004	0	
Finished_Goods_Supplier	303323_010	2011-11	0	0	
Finished_Goods_Supplier	303323_010	2011-12	0.00001	0	
Finished_Goods_Supplier	303323_010	2012-01	0	0	

Finished_Goods_Supplier	303323_010	2012-02	0	0
Finished_Goods_Supplier	303323_010	2012-03	0	0
Finished_Goods_Supplier	303323_010	2012-04	0	
Finished_Goods_Supplier	303325_010	2011-01	0	0
Finished_Goods_Supplier	303325_010	2011-02	0	0
Finished_Goods_Supplier	303325_010	2011-03	0	0
Finished_Goods_Supplier	303325_010	2011-04	0	0
Finished_Goods_Supplier	303325_010	2011-05	0	0
Finished_Goods_Supplier	303325_010	2011-06	0	0
Finished_Goods_Supplier	303325_010	2011-07	0	0
Finished_Goods_Supplier	303325_010	2011-08	0	0
Finished_Goods_Supplier	303325_010	2011-09	0	0
Finished_Goods_Supplier	303325_010	2011-10	0	0
Finished_Goods_Supplier	303325_010	2011-11	0.00001	0
Finished_Goods_Supplier	303325_010	2011-12	0.00001	0
Finished_Goods_Supplier	303325_010	2012-01	0	0
Finished_Goods_Supplier	303325_010	2012-02	0	0
Finished_Goods_Supplier	303325_010	2012-03	0	0
Finished_Goods_Supplier	303325_010	2012-04	0	
Finished_Goods_Supplier	303323_063	2011-01	0	
Finished_Goods_Supplier	303323_063	2011-02	0	
Finished_Goods_Supplier	303323_063	2011-03	0	
Finished_Goods_Supplier	303323_063	2011-04	0	0
Finished_Goods_Supplier	303323_063	2011-05	0	0
Finished_Goods_Supplier	303323_063	2011-06	0	0
Finished_Goods_Supplier	303323_063	2011-07	0	0
Finished_Goods_Supplier	303323_063	2011-08	0	0
Finished_Goods_Supplier	303323_063	2011-09	0	0
Finished_Goods_Supplier	303323_063	2011-10	0	0
Finished_Goods_Supplier	303323_063	2011-11	0	0
Finished_Goods_Supplier	303323_063	2011-12	0	0
Finished_Goods_Supplier	303323_063	2012-01	0	0
Finished_Goods_Supplier	303323_063	2012-02	0	0
Finished_Goods_Supplier	303323_063	2012-03	0	0
Finished_Goods_Supplier	303323_063	2012-04	0	
Finished_Goods_Supplier	303325_063	2011-01	0	
Finished_Goods_Supplier	303325_063	2011-02	0	
Finished_Goods_Supplier	303325_063	2011-03	0	
Finished_Goods_Supplier	303325_063	2011-04	0	0
Finished_Goods_Supplier	303325_063	2011-05	0	0
Finished_Goods_Supplier	303325_063	2011-06	0	0
Finished_Goods_Supplier	303325_063	2011-07	0	0
Finished_Goods_Supplier	303325_063	2011-08	0	0
Finished_Goods_Supplier	303325_063	2011-09	0	0
Finished_Goods_Supplier	303325_063	2011-10	0	0
Finished_Goods_Supplier	303325_063	2011-11	0	0
Finished_Goods_Supplier	303325_063	2011-12	0	0
Finished_Goods_Supplier	303325_063	2012-01	0	0
Finished_Goods_Supplier	303325_063	2012-02	0	0
Finished_Goods_Supplier	303325_063	2012-03	0	0
Finished_Goods_Supplier	303325_063	2012-04	0	
Finished_Goods_Supplier	303323_071	2011-01	0	
Finished_Goods_Supplier	303323_071	2011-02	0	
Finished_Goods_Supplier	303323_071	2011-03	0	

Finished_Goods_Supplier	303323_071	2011-04	0	0	
Finished_Goods_Supplier	303323_071	2011-05	0		
Finished_Goods_Supplier	303323_071	2011-06	0	0	
Finished_Goods_Supplier	303323_071	2011-07	0	0	
Finished_Goods_Supplier	303323_071	2011-08	0	0	
Finished_Goods_Supplier	303323_071	2011-09	0	0	
Finished_Goods_Supplier	303323_071	2011-10	0	0	
Finished_Goods_Supplier	303323_071	2011-11	0	0	
Finished_Goods_Supplier	303323_071	2011-12	0	0	
Finished_Goods_Supplier	303323_071	2012-01	0	0	
Finished_Goods_Supplier	303323_071	2012-02	0	0	
Finished_Goods_Supplier	303323_071	2012-03	0	0	
Finished_Goods_Supplier	303323_071	2012-04	0		
Finished_Goods_Supplier	303325_071	2011-01	0		
Finished_Goods_Supplier	303325_071	2011-02	0		
Finished_Goods_Supplier	303325_071	2011-03	0		
Finished_Goods_Supplier	303325_071	2011-04	0	0	
Finished_Goods_Supplier	303325_071	2011-05	0		
Finished_Goods_Supplier	303325_071	2011-06	0	0	
Finished_Goods_Supplier	303325_071	2011-07	0	0	
Finished_Goods_Supplier	303325_071	2011-08	0	0	
Finished_Goods_Supplier	303325_071	2011-09	0	0	
Finished_Goods_Supplier	303325_071	2011-10	0	0	
Finished_Goods_Supplier	303325_071	2011-11	0	0	
Finished_Goods_Supplier	303325_071	2011-12	0	0	
Finished_Goods_Supplier	303325_071	2012-01	0	0	
Finished_Goods_Supplier	303325_071	2012-02	0	0	
Finished_Goods_Supplier	303325_071	2012-03	0	0	
Finished_Goods_Supplier	303325_071	2012-04	0		
Finished_Goods_Supplier	303323_405	2011-01	0		
Finished_Goods_Supplier	303323_405	2011-02	0		
Finished_Goods_Supplier	303323_405	2011-03	0		
Finished_Goods_Supplier	303323_405	2011-04	0	0	
Finished_Goods_Supplier	303323_405	2011-05	0	0	
Finished_Goods_Supplier	303323_405	2011-06	0	0	
Finished_Goods_Supplier	303323_405	2011-07	0		
Finished_Goods_Supplier	303323_405	2011-08	0	0	
Finished_Goods_Supplier	303323_405	2011-09	0	0	
Finished_Goods_Supplier	303323_405	2011-10	0	0	
Finished_Goods_Supplier	303323_405	2011-11	0	0	
Finished_Goods_Supplier	303323_405	2011-12	0	0	
Finished_Goods_Supplier	303323_405	2012-01	0	0	
Finished_Goods_Supplier	303323_405	2012-02	0	0	0.95
Finished_Goods_Supplier	303323_405	2012-03	0	0	
Finished_Goods_Supplier	303323_405	2012-04	0		
Finished_Goods_Supplier	303325_405	2011-01	0		
Finished_Goods_Supplier	303325_405	2011-02	0		
Finished_Goods_Supplier	303325_405	2011-03	0		
Finished_Goods_Supplier	303325_405	2011-04	0	0	
Finished_Goods_Supplier	303325_405	2011-05	0	0	
Finished_Goods_Supplier	303325_405	2011-06	0	0	
Finished_Goods_Supplier	303325_405	2011-07	0		
Finished_Goods_Supplier	303325_405	2011-08	0	0	
Finished_Goods_Supplier	303325_405	2011-09	0	0	

Finished_Goods_Supplier	303325_405	2011-10	0.00001	0	
Finished_Goods_Supplier	303325_405	2011-11	0	0	
Finished_Goods_Supplier	303325_405	2011-12	0	0	
Finished_Goods_Supplier	303325_405	2012-01	0	0	
Finished_Goods_Supplier	303325_405	2012-02	0	0	0.95
Finished_Goods_Supplier	303325_405	2012-03	0	0	
Finished_Goods_Supplier	303325_405	2012-04	0		
Finished_Goods_Supplier	303323_100	2011-01	0		
Finished_Goods_Supplier	303323_100	2011-02	0		
Finished_Goods_Supplier	303323_100	2011-03	0		
Finished_Goods_Supplier	303323_100	2011-04	0		
Finished_Goods_Supplier	303323_100	2011-05	0	0	
Finished_Goods_Supplier	303323_100	2011-06	0	0	
Finished_Goods_Supplier	303323_100	2011-07	0	0	
Finished_Goods_Supplier	303323_100	2011-08	0	0	
Finished_Goods_Supplier	303323_100	2011-09	0	0	
Finished_Goods_Supplier	303323_100	2011-10	0	0	
Finished_Goods_Supplier	303323_100	2011-11	0	0	
Finished_Goods_Supplier	303323_100	2011-12	0	0	
Finished_Goods_Supplier	303323_100	2012-01	0	0	
Finished_Goods_Supplier	303323_100	2012-02	0	0	
Finished_Goods_Supplier	303323_100	2012-03	0	0	
Finished_Goods_Supplier	303323_100	2012-04	0		
Finished_Goods_Supplier	303325_100	2011-01	0		
Finished_Goods_Supplier	303325_100	2011-02	0		
Finished_Goods_Supplier	303325_100	2011-03	0		
Finished_Goods_Supplier	303325_100	2011-04	0		
Finished_Goods_Supplier	303325_100	2011-05	0	0	
Finished_Goods_Supplier	303325_100	2011-06	0	0	
Finished_Goods_Supplier	303325_100	2011-07	0	0	
Finished_Goods_Supplier	303325_100	2011-08	0	0	
Finished_Goods_Supplier	303325_100	2011-09	0	0	
Finished_Goods_Supplier	303325_100	2011-10	0	0	
Finished_Goods_Supplier	303325_100	2011-11	0	0	
Finished_Goods_Supplier	303325_100	2011-12	0	0	
Finished_Goods_Supplier	303325_100	2012-01	0	0	
Finished_Goods_Supplier	303325_100	2012-02	0	0	
Finished_Goods_Supplier	303325_100	2012-03	0	0	
Finished_Goods_Supplier	303325_100	2012-04	0		
Finished_Goods_Supplier	303323_648	2011-01	0		
Finished_Goods_Supplier	303323_648	2011-02	0		
Finished_Goods_Supplier	303323_648	2011-03	0		
Finished_Goods_Supplier	303323_648	2011-04	0		
Finished_Goods_Supplier	303323_648	2011-05	0		
Finished_Goods_Supplier	303323_648	2011-06	0	0	
Finished_Goods_Supplier	303323_648	2011-07	0	0	
Finished_Goods_Supplier	303323_648	2011-08	0	0	
Finished_Goods_Supplier	303323_648	2011-09	0	0	
Finished_Goods_Supplier	303323_648	2011-10	0	0	
Finished_Goods_Supplier	303323_648	2011-11	0	0	
Finished_Goods_Supplier	303323_648	2011-12	0	0	
Finished_Goods_Supplier	303323_648	2012-01	0	0	
Finished_Goods_Supplier	303323_648	2012-02	0	0	
Finished_Goods_Supplier	303323_648	2012-03	0	0	

Finished_Goods_Supplier	303323_648	2012-04	0		
Finished_Goods_Supplier	303325_648	2011-01	0		
Finished_Goods_Supplier	303325_648	2011-02	0		
Finished_Goods_Supplier	303325_648	2011-03	0		
Finished_Goods_Supplier	303325_648	2011-04	0		
Finished_Goods_Supplier	303325_648	2011-05	0		
Finished_Goods_Supplier	303325_648	2011-06	0	0	
Finished_Goods_Supplier	303325_648	2011-07	0	0	
Finished_Goods_Supplier	303325_648	2011-08	0	0	
Finished_Goods_Supplier	303325_648	2011-09	0	0	
Finished_Goods_Supplier	303325_648	2011-10	0	0	
Finished_Goods_Supplier	303325_648	2011-11	0	0	
Finished_Goods_Supplier	303325_648	2011-12	0	0	
Finished_Goods_Supplier	303325_648	2012-01	0	0	
Finished_Goods_Supplier	303325_648	2012-02	0	0	
Finished_Goods_Supplier	303325_648	2012-03	0	0	
Finished_Goods_Supplier	303325_648	2012-04	0		
Finished_Goods_Supplier	000001_010	2011-01	0		
Finished_Goods_Supplier	000001_010	2011-02	0		
Finished_Goods_Supplier	000001_010	2011-03	0		
Finished_Goods_Supplier	000001_010	2011-04	0	0	
Finished_Goods_Supplier	000001_010	2011-05	0	0	
Finished_Goods_Supplier	000001_010	2011-06	0	0	
Finished_Goods_Supplier	000001_010	2011-07	0	0	
Finished_Goods_Supplier	000001_010	2011-08	0	0	
Finished_Goods_Supplier	000001_010	2011-09	0	0	
Finished_Goods_Supplier	000001_010	2011-10	0	0	
Finished_Goods_Supplier	000001_010	2011-11	0	0	
Finished_Goods_Supplier	000001_010	2011-12	0.00038	0	0.95
Finished_Goods_Supplier	000001_010	2012-01	0	0	
Finished_Goods_Supplier	000001_010	2012-02	0	0	0.95
Finished_Goods_Supplier	000001_010	2012-03	0	0	
Finished_Goods_Supplier	000001_010	2012-04	0		
Finished_Goods_Supplier	000001_063	2011-01	0		
Finished_Goods_Supplier	000001_063	2011-02	0		
Finished_Goods_Supplier	000001_063	2011-03	0		
Finished_Goods_Supplier	000001_063	2011-04	0	0	
Finished_Goods_Supplier	000001_063	2011-05	0	0	
Finished_Goods_Supplier	000001_063	2011-06	0	0	
Finished_Goods_Supplier	000001_063	2011-07	0	0	
Finished_Goods_Supplier	000001_063	2011-08	0	0	
Finished_Goods_Supplier	000001_063	2011-09	0	0	
Finished_Goods_Supplier	000001_063	2011-10	0	0	
Finished_Goods_Supplier	000001_063	2011-11	0	0	
Finished_Goods_Supplier	000001_063	2011-12	0	0	
Finished_Goods_Supplier	000001_063	2012-01	0	0	
Finished_Goods_Supplier	000001_063	2012-02	0	0	
Finished_Goods_Supplier	000001_063	2012-03	0	0	
Finished_Goods_Supplier	000001_063	2012-04	0		
Finished_Goods_Supplier	000001_071	2011-01	0		
Finished_Goods_Supplier	000001_071	2011-02	0		
Finished_Goods_Supplier	000001_071	2011-03	0		
Finished_Goods_Supplier	000001_071	2011-04	0	0	
Finished_Goods_Supplier	000001_071	2011-05	0		

Finished_Goods_Supplier	000001_071	2011-06	0	0	
Finished_Goods_Supplier	000001_071	2011-07	0	0	
Finished_Goods_Supplier	000001_071	2011-08	0	0	
Finished_Goods_Supplier	000001_071	2011-09	0	0	
Finished_Goods_Supplier	000001_071	2011-10	0	0	
Finished_Goods_Supplier	000001_071	2011-11	0.0008	0.00001	0.95
Finished_Goods_Supplier	000001_071	2011-12	0	0	
Finished_Goods_Supplier	000001_071	2012-01	0	0	
Finished_Goods_Supplier	000001_071	2012-02	0	0	
Finished_Goods_Supplier	000001_071	2012-03	0	0	
Finished_Goods_Supplier	000001_071	2012-04	0		
Finished_Goods_Supplier	000001_405	2011-01	0		
Finished_Goods_Supplier	000001_405	2011-02	0		
Finished_Goods_Supplier	000001_405	2011-03	0		
Finished_Goods_Supplier	000001_405	2011-04	0	0	
Finished_Goods_Supplier	000001_405	2011-05	0	0	
Finished_Goods_Supplier	000001_405	2011-06	0	0	
Finished_Goods_Supplier	000001_405	2011-07	0		
Finished_Goods_Supplier	000001_405	2011-08	0	0	
Finished_Goods_Supplier	000001_405	2011-09	0	0	
Finished_Goods_Supplier	000001_405	2011-10	0	0	
Finished_Goods_Supplier	000001_405	2011-11	0	0	
Finished_Goods_Supplier	000001_405	2011-12	0	0	
Finished_Goods_Supplier	000001_405	2012-01	0	0	
Finished_Goods_Supplier	000001_405	2012-02	0	0	
Finished_Goods_Supplier	000001_405	2012-03	0	0	
Finished_Goods_Supplier	000001_405	2012-04	0		
Finished_Goods_Supplier	000001_100	2011-01	0		
Finished_Goods_Supplier	000001_100	2011-02	0		
Finished_Goods_Supplier	000001_100	2011-03	0		
Finished_Goods_Supplier	000001_100	2011-04	0		
Finished_Goods_Supplier	000001_100	2011-05	0	0	
Finished_Goods_Supplier	000001_100	2011-06	0	0	
Finished_Goods_Supplier	000001_100	2011-07	0	0	
Finished_Goods_Supplier	000001_100	2011-08	0	0	
Finished_Goods_Supplier	000001_100	2011-09	0	0	
Finished_Goods_Supplier	000001_100	2011-10	0	0	
Finished_Goods_Supplier	000001_100	2011-11	0	0	
Finished_Goods_Supplier	000001_100	2011-12	0	0	
Finished_Goods_Supplier	000001_100	2012-01	0	0	
Finished_Goods_Supplier	000001_100	2012-02	0	0	
Finished_Goods_Supplier	000001_100	2012-03	0	0	
Finished_Goods_Supplier	000001_100	2012-04	0		
Finished_Goods_Supplier	000001_648	2011-01	0		
Finished_Goods_Supplier	000001_648	2011-02	0		
Finished_Goods_Supplier	000001_648	2011-03	0		
Finished_Goods_Supplier	000001_648	2011-04	0		
Finished_Goods_Supplier	000001_648	2011-05	0		
Finished_Goods_Supplier	000001_648	2011-06	0	0	
Finished_Goods_Supplier	000001_648	2011-07	0.30479	0.0381	0.95
Finished_Goods_Supplier	000001_648	2011-08	0	0	
Finished_Goods_Supplier	000001_648	2011-09	0	0	
Finished_Goods_Supplier	000001_648	2011-10	0	0	
Finished_Goods_Supplier	000001_648	2011-11	0	0	

Finished_Goods_Supplier	000001_648	2011-12	0	0	
Finished_Goods_Supplier	000001_648	2012-01	0	0	
Finished_Goods_Supplier	000001_648	2012-02	0	0	
Finished_Goods_Supplier	000001_648	2012-03	0	0	
Finished_Goods_Supplier	000001_648	2012-04	0		
Finished_Goods_Supplier	442324	2011-01	0.00001	0	
Finished_Goods_Supplier	442324	2011-02	0	0	
Finished_Goods_Supplier	442324	2011-03	0.00002	0	0.03654
Finished_Goods_Supplier	442324	2011-04	0	0	
Finished_Goods_Supplier	442324	2011-05	0	0	
Finished_Goods_Supplier	442324	2011-06	0	0	
Finished_Goods_Supplier	442324	2011-07	0.00004	0	
Finished_Goods_Supplier	442324	2011-08	0.00004	0	
Finished_Goods_Supplier	442324	2011-09	0.00002	0	
Finished_Goods_Supplier	442324	2011-10	0.00001	0	
Finished_Goods_Supplier	442324	2011-11	0.00002	0	
Finished_Goods_Supplier	442324	2011-12	0.00001	0	
Finished_Goods_Supplier	442324	2012-01	0	0	
Finished_Goods_Supplier	442324	2012-02	0	0	
Finished_Goods_Supplier	442324	2012-03	608.80424	0.52258	0.03654
Finished_Goods_Supplier	442324	2012-04	0		
Finished_Goods_Supplier	159415_100	2011-01	0		
Finished_Goods_Supplier	159415_100	2011-02	0		
Finished_Goods_Supplier	159415_100	2011-03	0		
Finished_Goods_Supplier	159415_100	2011-04	0		
Finished_Goods_Supplier	159415_100	2011-05	0	0	
Finished_Goods_Supplier	159415_100	2011-06	0	0	
Finished_Goods_Supplier	159415_100	2011-07	0	0	
Finished_Goods_Supplier	159415_100	2011-08	0	0	
Finished_Goods_Supplier	159415_100	2011-09	0	0	
Finished_Goods_Supplier	159415_100	2011-10	0	0	
Finished_Goods_Supplier	159415_100	2011-11	0	0	
Finished_Goods_Supplier	159415_100	2011-12	0	0	
Finished_Goods_Supplier	159415_100	2012-01	0	0	
Finished_Goods_Supplier	159415_100	2012-02	0	0	
Finished_Goods_Supplier	159415_100	2012-03	0	0	
Finished_Goods_Supplier	159415_100	2012-04	0		
Finished_Goods_Supplier	159415_648	2011-01	0		
Finished_Goods_Supplier	159415_648	2011-02	0		
Finished_Goods_Supplier	159415_648	2011-03	0		
Finished_Goods_Supplier	159415_648	2011-04	0		
Finished_Goods_Supplier	159415_648	2011-05	0		
Finished_Goods_Supplier	159415_648	2011-06	0	0	
Finished_Goods_Supplier	159415_648	2011-07	0	0	
Finished_Goods_Supplier	159415_648	2011-08	0	0	
Finished_Goods_Supplier	159415_648	2011-09	0	0	
Finished_Goods_Supplier	159415_648	2011-10	0	0	
Finished_Goods_Supplier	159415_648	2011-11	0	0	
Finished_Goods_Supplier	159415_648	2011-12	0	0	
Finished_Goods_Supplier	159415_648	2012-01	0	0	
Finished_Goods_Supplier	159415_648	2012-02	0	0	0.95
Finished_Goods_Supplier	159415_648	2012-03	0	0	
Finished_Goods_Supplier	159415_648	2012-04	0		
Finished_Goods_Supplier	165858_100	2011-01	0		

Finished_Goods_Supplier	165858_100	2011-02	0	
Finished_Goods_Supplier	165858_100	2011-03	0	
Finished_Goods_Supplier	165858_100	2011-04	0	
Finished_Goods_Supplier	165858_100	2011-05	0	0
Finished_Goods_Supplier	000003_063	2011-06	0	0
Finished_Goods_Supplier	000003_063	2011-07	0	0
Finished_Goods_Supplier	000003_063	2011-08	0	0
Finished_Goods_Supplier	000003_063	2011-09	0	0
Finished_Goods_Supplier	000003_063	2011-10	0	0
Finished_Goods_Supplier	000003_063	2011-11	0	0
Finished_Goods_Supplier	000003_063	2011-12	0	0
Finished_Goods_Supplier	000003_063	2012-01	0	0
Finished_Goods_Supplier	000003_063	2012-02	0	0
Finished_Goods_Supplier	000003_063	2012-03	0	0
Finished_Goods_Supplier	000003_063	2012-04	0	
Finished_Goods_Supplier	000003_071	2011-01	0	0
Finished_Goods_Supplier	000003_071	2011-02	0	0
Finished_Goods_Supplier	000003_071	2011-03	0	0
Finished_Goods_Supplier	000003_071	2011-04	0	0
Finished_Goods_Supplier	000003_071	2011-05	0	
Finished_Goods_Supplier	000003_071	2011-06	0	0
Finished_Goods_Supplier	000003_071	2011-07	0	0
Finished_Goods_Supplier	000003_071	2011-08	0	0
Finished_Goods_Supplier	000003_071	2011-09	0	0
Finished_Goods_Supplier	000003_071	2011-10	0	0
Finished_Goods_Supplier	000003_071	2011-11	0	0
Finished_Goods_Supplier	000003_071	2011-12	0	0
Finished_Goods_Supplier	000003_071	2012-01	0	0
Finished_Goods_Supplier	000003_071	2012-02	0	0
Finished_Goods_Supplier	000003_071	2012-03	0	0
Finished_Goods_Supplier	000003_071	2012-04	0	
Finished_Goods_Supplier	000003_100	2011-01	0	0
Finished_Goods_Supplier	000003_100	2011-02	0	0
Finished_Goods_Supplier	000003_100	2011-03	0	0
Finished_Goods_Supplier	000003_100	2011-04	0	0
Finished_Goods_Supplier	000003_100	2011-05	0	
Finished_Goods_Supplier	000003_100	2011-06	0	0
Finished_Goods_Supplier	000003_100	2011-07	0	0
Finished_Goods_Supplier	000003_100	2011-08	0	0
Finished_Goods_Supplier	000003_100	2011-09	0	0
Finished_Goods_Supplier	000003_100	2011-10	0	0
Finished_Goods_Supplier	000003_100	2011-11	0	0
Finished_Goods_Supplier	000003_100	2011-12	0	0
Finished_Goods_Supplier	000003_100	2012-01	0	0
Finished_Goods_Supplier	000003_100	2012-02	0	
Finished_Goods_Supplier	000003_100	2012-03	0	0
Finished_Goods_Supplier	000003_100	2012-04	0	
Finished_Goods_Supplier	000003_405	2011-01	0	0
Finished_Goods_Supplier	000003_405	2011-02	0	0
Finished_Goods_Supplier	000003_405	2011-03	0	0
Finished_Goods_Supplier	000003_405	2011-04	0	0
Finished_Goods_Supplier	000003_405	2011-05	0	
Finished_Goods_Supplier	000003_405	2011-06	0	0
Finished_Goods_Supplier	000003_405	2011-07	0	0

Finished_Goods_Supplier	000003_405	2011-08	0	0	
Finished_Goods_Supplier	000003_405	2011-09	0	0	
Finished_Goods_Supplier	000003_405	2011-10	0	0	
Finished_Goods_Supplier	000003_405	2011-11	0	0	
Finished_Goods_Supplier	000003_405	2011-12	0	0	
Finished_Goods_Supplier	000003_405	2012-01	0	0	
Finished_Goods_Supplier	000003_405	2012-02	0	0	
Finished_Goods_Supplier	000003_405	2012-03	0	0	
Finished_Goods_Supplier	000003_405	2012-04	0		
Finished_Goods_Supplier	000003_648	2011-01	0	0	
Finished_Goods_Supplier	000003_648	2011-02	0	0	
Finished_Goods_Supplier	000003_648	2011-03	0	0	
Finished_Goods_Supplier	000003_648	2011-04	0	0	
Finished_Goods_Supplier	000003_648	2011-05	0		
Finished_Goods_Supplier	000003_648	2011-06	0	0	
Finished_Goods_Supplier	000003_648	2011-07	0	0	
Finished_Goods_Supplier	000003_648	2011-08	0	0	
Finished_Goods_Supplier	000003_648	2011-09	0	0	
Finished_Goods_Supplier	000003_648	2011-10	0	0	
Finished_Goods_Supplier	000003_648	2011-11	0	0	
Finished_Goods_Supplier	000003_648	2011-12	0	0	
Finished_Goods_Supplier	000003_648	2012-01	0	0	
Finished_Goods_Supplier	000003_648	2012-02	0	0	
Finished_Goods_Supplier	000003_648	2012-03	0	0	
Finished_Goods_Supplier	000003_648	2012-04	0		
Finished_Goods_Supplier	000005_010	2011-01	0	0	
Finished_Goods_Supplier	000005_010	2011-02	0	0	
Finished_Goods_Supplier	000005_010	2011-03	0	0	
Finished_Goods_Supplier	000005_010	2011-04	0		
Finished_Goods_Supplier	000005_010	2011-05	0		
Finished_Goods_Supplier	000005_010	2011-06	0		
Finished_Goods_Supplier	000005_010	2011-07	0	0	
Finished_Goods_Supplier	000005_010	2011-08	0	0	
Finished_Goods_Supplier	000005_010	2011-09	0	0	
Finished_Goods_Supplier	000005_010	2011-10	0	0	
Finished_Goods_Supplier	000005_010	2011-11	0	0	
Finished_Goods_Supplier	000005_010	2011-12	0	0	
Finished_Goods_Supplier	000005_010	2012-01	0	0	
Finished_Goods_Supplier	000005_010	2012-02	0.71244	0.04191	0.95
Finished_Goods_Supplier	000005_010	2012-03	0	0	
Finished_Goods_Supplier	000005_010	2012-04	0		
Finished_Goods_Supplier	000005_063	2011-01	0	0	
Finished_Goods_Supplier	000005_063	2011-02	0	0	
Finished_Goods_Supplier	000005_063	2011-03	0		
Finished_Goods_Supplier	000005_063	2011-04	0		
Finished_Goods_Supplier	000005_063	2011-05	0		
Finished_Goods_Supplier	000005_063	2011-06	0		
Finished_Goods_Supplier	000005_063	2011-07	0	0	
Finished_Goods_Supplier	000005_063	2011-08	0	0	
Finished_Goods_Supplier	000005_063	2011-09	0	0	
Finished_Goods_Supplier	000005_063	2011-10	0	0	
Finished_Goods_Supplier	000005_063	2011-11	0	0	
Finished_Goods_Supplier	000005_063	2011-12	0	0	
Finished_Goods_Supplier	000005_063	2012-01	0	0	

Finished_Goods_Supplier	000005_063	2012-02	0	0	
Finished_Goods_Supplier	000005_063	2012-03	0	0	
Finished_Goods_Supplier	000005_063	2012-04	0		
Finished_Goods_Supplier	000005_071	2011-01	0	0	
Finished_Goods_Supplier	000005_071	2011-02	0	0	
Finished_Goods_Supplier	000005_071	2011-03	0	0	
Finished_Goods_Supplier	000005_071	2011-04	0		
Finished_Goods_Supplier	000005_071	2011-05	0		
Finished_Goods_Supplier	000005_071	2011-06	0	0	
Finished_Goods_Supplier	000005_071	2011-07	0	0	
Finished_Goods_Supplier	000005_071	2011-08	0	0	
Finished_Goods_Supplier	000005_071	2011-09	0	0	
Finished_Goods_Supplier	000005_071	2011-10	0	0	
Finished_Goods_Supplier	000005_071	2011-11	0	0	
Finished_Goods_Supplier	000005_071	2011-12	0	0	
Finished_Goods_Supplier	000005_071	2012-01	0	0	
Finished_Goods_Supplier	000005_071	2012-02	0	0	
Finished_Goods_Supplier	000005_071	2012-03	0	0	
Finished_Goods_Supplier	000005_071	2012-04	0		
Finished_Goods_Supplier	000005_405	2011-01	0	0	
Finished_Goods_Supplier	000005_405	2011-02	0	0	
Finished_Goods_Supplier	000005_405	2011-03	0		
Finished_Goods_Supplier	000005_405	2011-04	0		
Finished_Goods_Supplier	000005_405	2011-05	0		
Finished_Goods_Supplier	000005_405	2011-06	0		
Finished_Goods_Supplier	000005_405	2011-07	0	0	
Finished_Goods_Supplier	000005_405	2011-08	0	0	
Finished_Goods_Supplier	000005_405	2011-09	0	0	
Finished_Goods_Supplier	000005_405	2011-10	0	0	
Finished_Goods_Supplier	000005_405	2011-11	0	0	
Finished_Goods_Supplier	000005_405	2011-12	0	0	
Finished_Goods_Supplier	000005_405	2012-01	0	0	
Finished_Goods_Supplier	000005_405	2012-02	0	0	
Finished_Goods_Supplier	000005_405	2012-03	0	0	
Finished_Goods_Supplier	000005_405	2012-04	0		
Finished_Goods_Supplier	356206	2011-01	9057.47673	7.42416	0.475
Finished_Goods_Supplier	356206	2011-02	4105.36899	5.09351	0.475
Finished_Goods_Supplier	356206	2011-03	1350.32943	2.42865	0.475
Finished_Goods_Supplier	356206	2011-04	11226.50556	1.59422	0.475
Finished_Goods_Supplier	356206	2011-05	813.20256	19.36197	0.15833
Finished_Goods_Supplier	356206	2011-06	234.37297	2.54753	0.39583
Finished_Goods_Supplier	356206	2011-07	26194.22417	14.48796	0.55417
Finished_Goods_Supplier	356206	2011-08	17084.48312	6.36057	0.475
Finished_Goods_Supplier	356206	2011-09	7162.45818	1.67425	0.55417
Finished_Goods_Supplier	356206	2011-10	24057.94169	4.26408	0.475
Finished_Goods_Supplier	356206	2011-11	11697.84934	2.30727	0.475
Finished_Goods_Supplier	356206	2011-12	17164.85204	5.94351	0.475
Finished_Goods_Supplier	356206	2012-01	9058.18265	7.42474	0.475
Finished_Goods_Supplier	356206	2012-02	4103.67469	6.77174	0.55417
Finished_Goods_Supplier	356206	2012-03	1350.98599	2.42983	0.475
Finished_Goods_Supplier	356206	2012-04	0		
Finished_Goods_Supplier	401548	2011-01	6370.56308	10.44355	0.475
Finished_Goods_Supplier	401548	2011-02	2889.68694	7.17044	0.475
Finished_Goods_Supplier	401548	2011-03	923.48353	3.32188	0.475

Finished_Goods_Supplier	401548	2011-04	6248.49903	1.77464	0.475
Finished_Goods_Supplier	401548	2011-05	573.90394	27.32876	0.15833
Finished_Goods_Supplier	401548	2011-06	162.97743	3.54299	0.39583
Finished_Goods_Supplier	401548	2011-07	18500.51611	20.46517	0.475
Finished_Goods_Supplier	401548	2011-08	12060.55088	8.98031	0.475
Finished_Goods_Supplier	401548	2011-09	4697.92421	2.19632	0.475
Finished_Goods_Supplier	401548	2011-10	16826.35024	5.96468	0.475
Finished_Goods_Supplier	401548	2011-11	7767.91586	3.06427	0.475
Finished_Goods_Supplier	401548	2011-12	11984.97287	8.29984	0.475
Finished_Goods_Supplier	401548	2012-01	6371.74216	10.44548	0.475
Finished_Goods_Supplier	401548	2012-02	2889.08023	9.53492	0.475
Finished_Goods_Supplier	401548	2012-03	922.77647	3.31934	0.55417
Finished_Goods_Supplier	401548	2012-04	0		
Finished_Goods_Supplier	441030	2011-01	0	0	
Finished_Goods_Supplier	441030	2011-02	0.00002	0	
Finished_Goods_Supplier	441030	2011-03	0.00001	0	
Finished_Goods_Supplier	441030	2011-04	0	0	
Finished_Goods_Supplier	441030	2011-05	0		
Finished_Goods_Supplier	441030	2011-06	0	0	
Finished_Goods_Supplier	441030	2011-07	0.00075	0	0.15833
Finished_Goods_Supplier	441030	2011-08	0	0	
Finished_Goods_Supplier	441030	2011-09	0.00003	0	
Finished_Goods_Supplier	441030	2011-10	0	0	
Finished_Goods_Supplier	441030	2011-11	0	0	
Finished_Goods_Supplier	441030	2011-12	0	0	
Finished_Goods_Supplier	441030	2012-01	0.00003	0	
Finished_Goods_Supplier	441030	2012-02	0.00003	0	
Finished_Goods_Supplier	441030	2012-03	0.00006	0	0.15833
Finished_Goods_Supplier	441030	2012-04	0		
Raw_Supplier_2	436635	2011-01	0	0	
Raw_Supplier_2	436635	2011-02	0.00007	0	0.095
Raw_Supplier_2	436635	2011-03	0	0	
Raw_Supplier_2	436635	2011-04	0.00006	0	
Raw_Supplier_2	436635	2011-05	0	0	
Raw_Supplier_2	436635	2011-06	0	0	
Raw_Supplier_2	436635	2011-07	0	0	
Raw_Supplier_2	436635	2011-08	0	0	
Raw_Supplier_2	436635	2011-09	0.00002	0	
Raw_Supplier_2	436635	2011-10	0.00051	0	
Raw_Supplier_2	436635	2011-11	0.00003	0	
Raw_Supplier_2	436635	2011-12	0.00005	0	
Raw_Supplier_2	436635	2012-01	0.00008	0	
Raw_Supplier_2	436635	2012-02	0	0	
Raw_Supplier_2	436635	2012-03	0.00001	0	
Raw_Supplier_2	436635	2012-04	0		
Raw_Supplier_3	368545	2011-01	0	0	
Raw_Supplier_3	368545	2011-02	0	0	
Raw_Supplier_3	368545	2011-03	0	0	
Raw_Supplier_3	368545	2011-04	0	0	
Raw_Supplier_3	368545	2011-05	0	0	
Raw_Supplier_3	368545	2011-06	0	0	
Raw_Supplier_3	368545	2011-07	0	0	
Raw_Supplier_3	368545	2011-08	0	0	
Raw_Supplier_3	368545	2011-09	0	0	

Raw_Supplier_3	368545	2011-10	0.00007	0	
Raw_Supplier_3	368545	2011-11	0.00013	0	
Raw_Supplier_3	368545	2011-12	0.00003	0	
Raw_Supplier_3	368545	2012-01	0	0	
Raw_Supplier_3	368545	2012-02	0	0	
Raw_Supplier_3	368545	2012-03	453.53092	0.3893	0.03654
Raw_Supplier_3	368545	2012-04	0		
Raw_Supplier_3	442324	2011-01	0	0	
Raw_Supplier_3	442324	2011-02	0	0	
Raw_Supplier_3	442324	2011-03	0	0	
Raw_Supplier_3	442324	2011-04	0	0	
Raw_Supplier_3	442324	2011-05	0	0	
Raw_Supplier_3	442324	2011-06	0	0	
Raw_Supplier_3	442324	2011-07	0	0	
Raw_Supplier_3	442324	2011-08	0	0	
Raw_Supplier_3	442324	2011-09	0.00004	0	
Raw_Supplier_3	442324	2011-10	0.00001	0	
Raw_Supplier_3	442324	2011-11	0.00008	0	
Raw_Supplier_3	442324	2011-12	0	0	
Raw_Supplier_3	442324	2012-01	0	0	
Raw_Supplier_3	442324	2012-02	0	0	
Raw_Supplier_3	442324	2012-03	0.00001	0	0.03654
Raw_Supplier_3	442324	2012-04	0		
Raw_Supplier_1	356206	2011-01	0.00005	0	
Raw_Supplier_1	356206	2011-02	0.00001	0	
Raw_Supplier_1	356206	2011-03	0.00001	0	
Raw_Supplier_1	356206	2011-04	0.00003	0	
Raw_Supplier_1	356206	2011-05	0	0	
Raw_Supplier_1	356206	2011-06	0	0	
Raw_Supplier_1	356206	2011-07	0.00017	0	
Raw_Supplier_1	356206	2011-08	0	0	
Raw_Supplier_1	356206	2011-09	0	0	
Raw_Supplier_1	356206	2011-10	0.00059	0	0.07917
Raw_Supplier_1	356206	2011-11	0.00002	0	
Raw_Supplier_1	356206	2011-12	0.00007	0	
Raw_Supplier_1	356206	2012-01	0.00008	0	
Raw_Supplier_1	356206	2012-02	0.00003	0	
Raw_Supplier_1	356206	2012-03	0.00001	0	
Raw_Supplier_1	356206	2012-04	0		
Raw_Supplier_1	401548	2011-01	0.00012	0	0.07917
Raw_Supplier_1	401548	2011-02	0	0	
Raw_Supplier_1	401548	2011-03	0	0	
Raw_Supplier_1	401548	2011-04	0	0	
Raw_Supplier_1	401548	2011-05	0.00002	0	
Raw_Supplier_1	401548	2011-06	0	0	
Raw_Supplier_1	401548	2011-07	0.00105	0	0.07917
Raw_Supplier_1	401548	2011-08	0.00015	0	
Raw_Supplier_1	401548	2011-09	0	0	
Raw_Supplier_1	401548	2011-10	0	0	
Raw_Supplier_1	401548	2011-11	0.00003	0	
Raw_Supplier_1	401548	2011-12	0	0	
Raw_Supplier_1	401548	2012-01	0	0	
Raw_Supplier_1	401548	2012-02	0	0	
Raw_Supplier_1	401548	2012-03	0	0	

Raw_Supplier_1	401548	2012-04	0		
Raw_Supplier_4	441030	2011-01	0	0	
Raw_Supplier_4	441030	2011-02	0.00001	0	
Raw_Supplier_4	441030	2011-03	0	0	
Raw_Supplier_4	441030	2011-04	0	0	
Raw_Supplier_4	441030	2011-05	0		
Raw_Supplier_4	441030	2011-06	0	0	
Raw_Supplier_4	441030	2011-07	0.00039	0	0.15833
Raw_Supplier_4	441030	2011-08	0	0	
Raw_Supplier_4	441030	2011-09	0.00013	0	
Raw_Supplier_4	441030	2011-10	0.00001	0	
Raw_Supplier_4	441030	2011-11	0	0	
Raw_Supplier_4	441030	2011-12	0	0	
Raw_Supplier_4	441030	2012-01	0.00001	0	
Raw_Supplier_4	441030	2012-02	0	0	
Raw_Supplier_4	441030	2012-03	0	0	
Raw_Supplier_4	441030	2012-04	0		