



GimbalLogic™

Spend less, and get more. Deliver quickly, and embrace change.

AccountingSeed ERP Inventory

January 20, 2015

A GENERAL LEDGER (GL) system keeps track of all of the financial aspects of a business.

One of the GL accounts that is used by many companies is the **INVENTORY** account. This gl account records the value of all products that are 'on the shelf', so to speak. These are products that are waiting to either be **SOLD** to customers (i.e. a finished good), or **CONSUMED** in the **MANUFACTURING** of other products (i.e. a raw material).

Generally speaking, a GL system is designed to keep track of **DOLLAR** amounts. For example, the GL system will record 'we have \$1,000 worth of widgets'.

An INVENTORY system keeps track of the **QUANTITY** and **LOCATION** of inventory. For example, the inventory system will record 'we have 100 widgets in Warehouse #1, and we have 200 widgets in Warehouse #2'.

One of the functions of an ERP system is to provide the combined functionality of a General Ledger and an Inventory system, so that the **VALUE** of inventory on the balance sheet is inseparable from (and often calculated from) the **QUANTITY** of inventory that is on-hand at all locations.

The following business processes are included in the AccountingSeedERP package, and they are often customized by Gimbal Logic:

PURCHASE ORDER: Buy products from a vendor, and receive them into inventory.
Example: I purchased 2 cans of paint, and I put them on the shelf in my warehouse.

WORK ORDER: Consume products from inventory, and use them to either...

1) Produce a new Product, that will subsequently be placed in inventory
example: I took 2 wheels out of inventory to build a bicycle, and then I put the bicycle back into inventory.

2) Deliver a service to a customer

example: I took 2 cans of paint out of inventory, and I used them to paint my customer's car.

SALES ORDER: Sell products to a customer from inventory.

Example: I took 1 bicycle off the shelf in my warehouse, and sold it to a customer.

TRANSFER: Move inventory between warehouses.

Example: I took 5 bicycles, and I moved them from Warehouse #1 to Warehouse #2.

Typical reporting requirements for customers that have an inventory system include the following:

How much inventory of each product do I have in-stock, at each warehouse?

What is the value of the inventory that I have in stock?

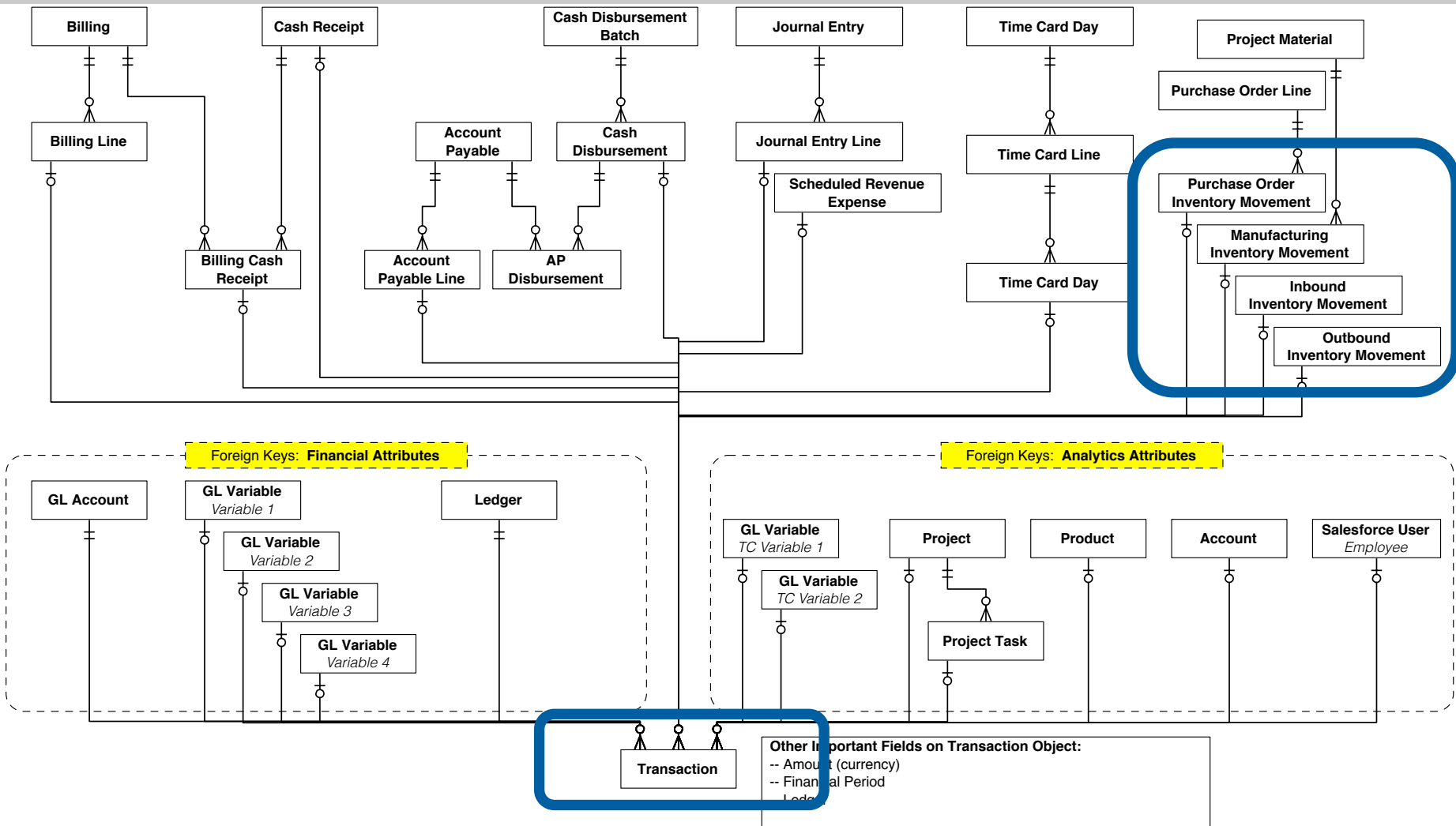
Do I have enough finished goods inventory to fill the orders that I will receive, or should I buy (or make) more?

Do I have enough raw materials inventory to complete the projects that I have, or should I buy (or make) more.

What is the average price that I have paid for blue paint this year?

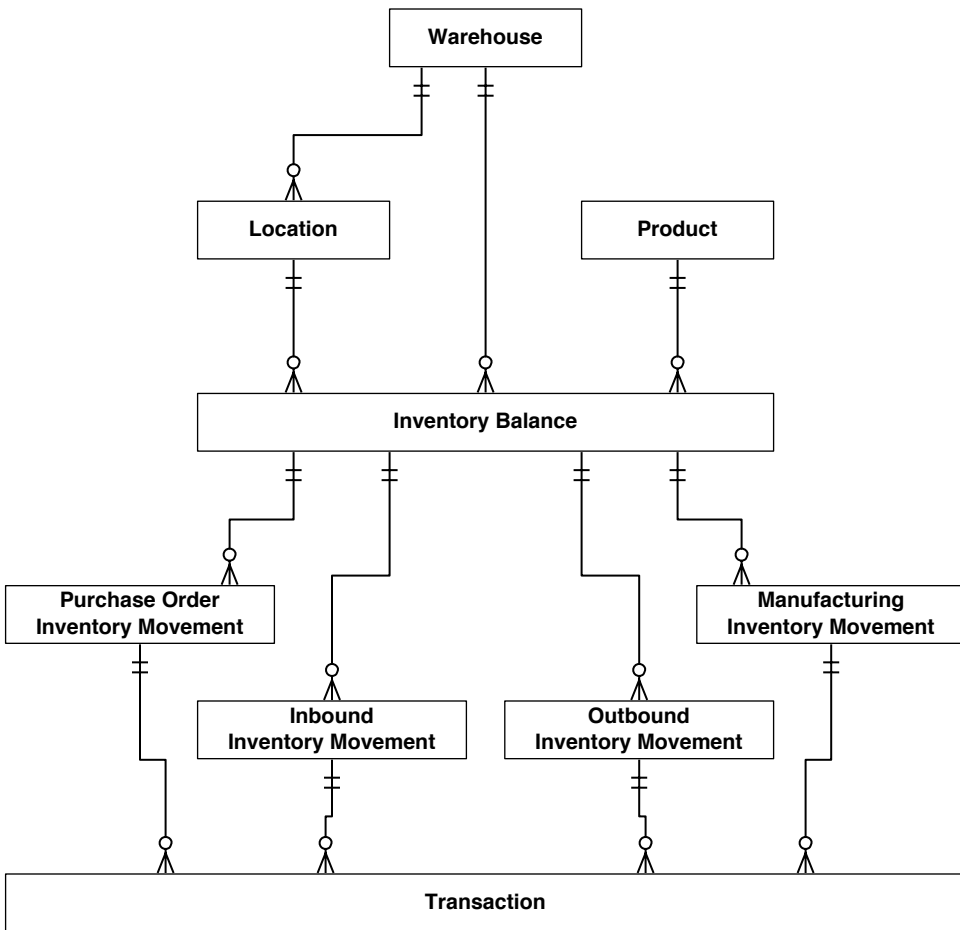
What is the average price that I have sold blue paint for this year?

AccountingSeed ERP Inventory Objects



In the AccountingSeed general ledger, inventory transactions (i.e. transactions that reference the inventory gl account) originate from one of the four types of Inventory Movements. The Inventory Movements record the quantities of movements, and the destination or origin of the movement. In this way, the QUANTITY and LOCATION of inventory are derived from the same dataset as the VALUE of inventory on the balance sheet.

AccountingSeed ERP Inventory Objects



Warehouse: a building.

Location: a storage location within a warehouse.

Product: a standard Salesforce product.

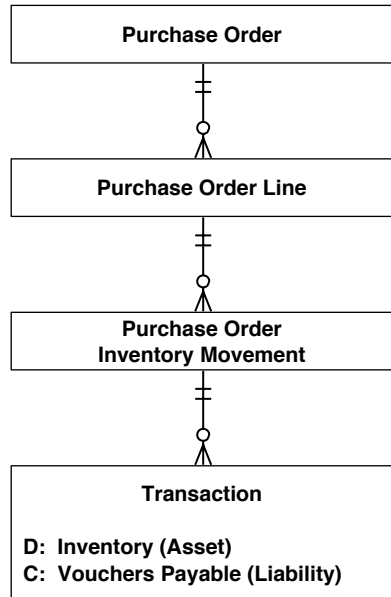
The Inventory Balance record is central to the AccountingSeed ERP system. For each DISTINCT combination of Warehouse-Location-Product there is at most ONE Inventory Balance record.

The Inventory Movement records are each in a **Master-Detail** relationship with the Inventory Balance record. That is, an inventory movement record **MUST** reference an Inventory Balance.

Each inventory movement record has a 'Quantity' field. There are roll-up summary fields on the Inventory Balance that aggregate the quantity of all underlying inventory movements, in order to answer the question 'how many widgets of type X are in location A in warehouse 4?'

Whenever an inventory movement record is created, two transactions are automatically created under the inventory movement (one debit, one credit). The transactions are created automatically when the movement is created, and the transactions are deleted automatically when the movement is deleted. In this way, the **VALUE** of the inventory transaction is synchronized with the **QUANTITY** of the inventory movement.

Purchase Order Inventory Movement



Companies use 'Purchase Orders' as the record that 'our company has agreed to purchase these products at these prices from your company'.

The Purchase Order records the name of the vendor, and the date of the agreement to purchase.

A single Purchase Order can be for MULTIPLE different products. There will be at least one Purchase Order Line for each distinct Product. For example, if you are buying paint from a paint vendor, there can be one Purchase Order Line for the 'Blue Paint' product, one for the 'Red Paint' product, and one line for the 'Paint Brush' product.

Sometimes, it can be many days, weeks, or months between the time that the Purchase Order is issued (i.e. the products are ORDERED), and the time that the items on the order are RECEIVED. When the order is issued, all that exists is a Purchase Order and Purchase Order Lines.

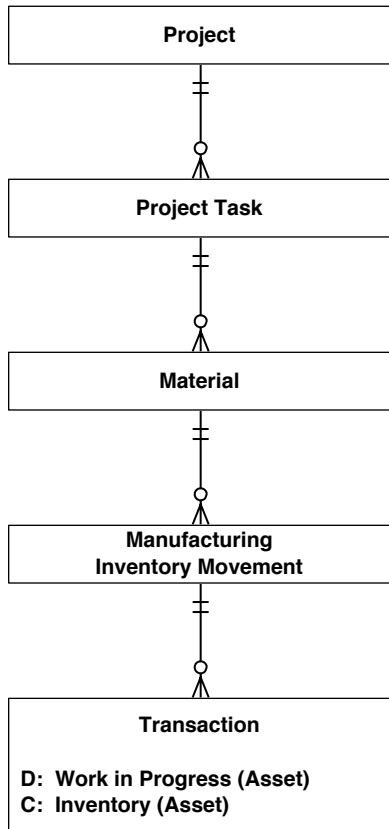
A **Purchase Order Inventory Movement** records the fact that the inventory was RECEIVED, that is, 'the paint has arrived.'

A Purchase Order Inventory Movement is in a Master-Detail relationship with a Purchase Order Line.

The creation of a Purchase Order Inventory Movement results in the creation of two Transactions:

- **DEBIT** to Inventory (i.e. inventory goes up)
- **CREDIT** to Vouchers Payable (i.e. we owe someone money for this, but we have not yet received the invoice.)

Manufacturing Inventory Movement



Companies use '**Projects**' (also known as 'Work Orders') as a point of collection for costs and revenue for a particular business endeavor.

Within a single **Project**, there are sometimes multiple '**Project Tasks**' for which it is necessary to isolate costs and revenue. For example, if the project is 'build a home', one project task might be 'install roof'.

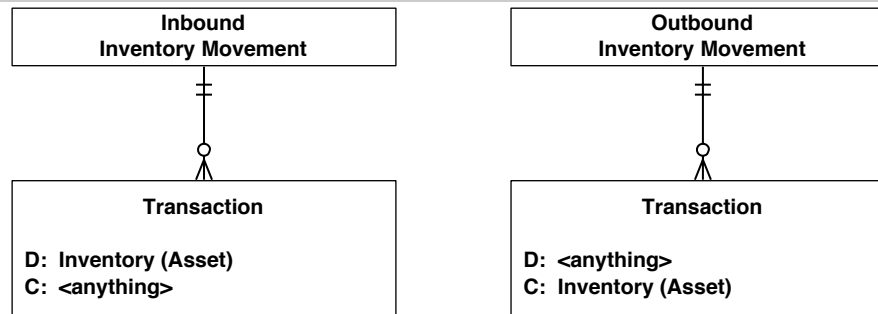
For each distinct Product (e.g. roof, nails, wood, etc.) there will be a distinct **MATERIAL** record.

A Manufacturing Inventory Movement records that a specific quantity of a particular material was taken out of inventory, and used for a particular project.

The Manufacturing Inventory Movement is in a Master-Detail relationship with Material.

The creation of a Manufacturing Inventory Movement results in two Transactions:
DEBIT: the Work in Progress asset account (AccountingSettings.WorkInProgressGLAccount)
CREDIT: the inventory account for the product(Material.Product.InventoryGLAccount).

Inbound / Outbound Inventory Movements



The INBOUND and OUTBOUND inventory movement records are general-purpose inventory movement records that are used for procedures such as:

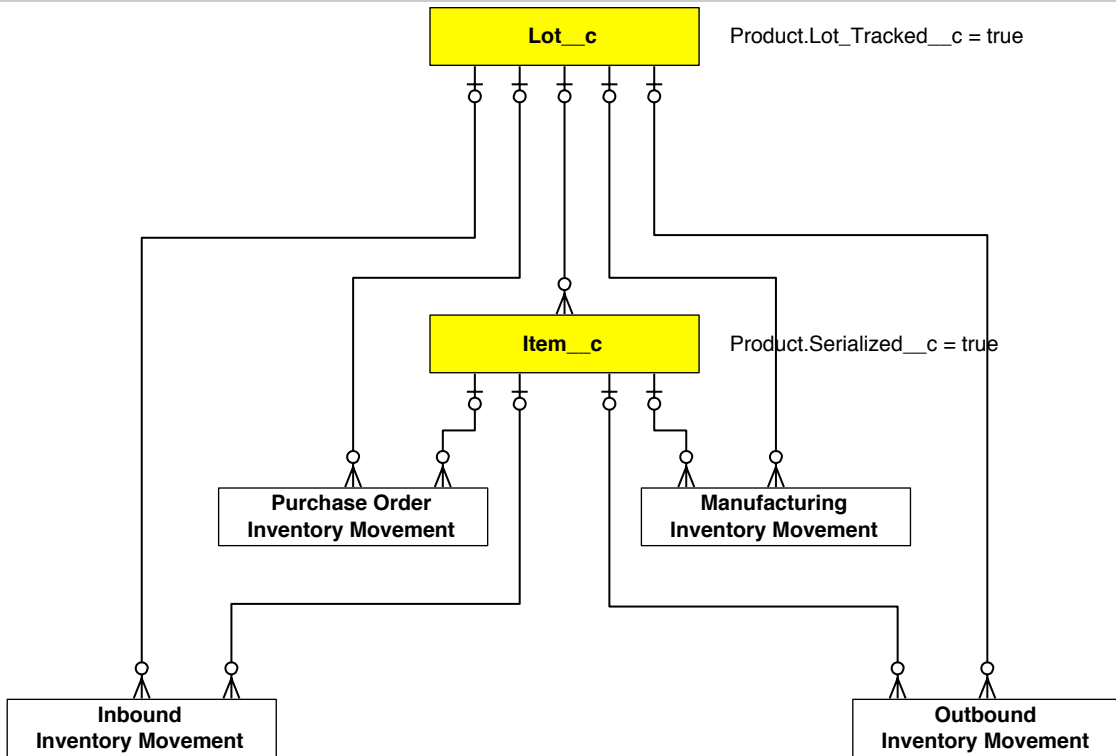
INVENTORY TRANSFER: Move inventory out of warehouse A, and into warehouse B.

INVENTORY ADJUSTMENT: After performing a physical count of inventory, adjust the inventory in the ERP system to match the physical count.

For an Inbound Inventory Movement, the DEBIT account is determined by the Product. (i.e. Product.InventoryGLAccount). For an Outbound Inventory Movement, the CREDIT account is determined by the Product.

It is possible for any type of inventory movement to have a POSITIVE quantity, or a NEGATIVE quantity. It is therefore reasonable to ask: why are there two objects, inbound and outbound? Why not use just one object, and make the quantity POSITIVE for inbound, and NEGATIVE for outbound. There is not a good answer to this question; indeed, probably all four objects could be collapsed into one object that would handle Purchasing, Manufacturing, Inbound, and Outbound.

Lot-Tracking and Serialization



Two customizations that are commonly requested by customers of Gimbal Logic are:

SERIALIZATION OF INVENTORY

For some Products (i.e. products for which `Product.Serialized__c = true`), there is a need to record the movements of an individual INSTANCE of a Product. For example, if bicycles are 'serialized', that means that there will be a 'serial number' that is physically affixed to each bicycle, and when I sell bicycle #123 from inventory, I don't just want to reduce inventory by quantity of 1, I want to specify that the specific bicycle that was removed from inventory was bicycle #123.

LOT-TRACKING OF INVENTORY

For some Products (i.e. products for which `Product.Lot-Tracked__c = true`), there are different 'versions' of the product, and it is desirable to know how many of each 'version' are in-stock. It is not necessary to distinguish between two instances of the same version (i.e. it is not necessary to distinguish between bicycle #123 and bicycle #124) but it is necessary to distinguish between the 2013 version of the blue bicycle, and the 2014 version of the blue bicycle, WITHOUT creating a separate PRODUCT for each version. This becomes particularly important for manufactured products that have a large number of component parts, with minor changes from one year to the next.

GL Sequence: Receive and Pay for Inventory

SEQUENCE #1: RECEIVE AND PAY FOR INVENTORY

STEP #1.1: RECEIVE INVENTORY

INVENTORY	ASSET	\$1,000		PURCHASE ORDER INVENTORY MOVEMENT
VOUCHERS PAYABLE	LIABILITY		\$1,000	

STEP #1.2: CREATE ACCOUNT PAYABLE (i.e. invoice from vendor)

VOUCHERS PAYABLE	LIABILITY	\$1,000		ACCOUNT PAYABLE LINE
ACCOUNTS PAYABLE	LIABILITY		\$1,000	

STEP #1.3: DISBURSE CASH (i.e. issue payment to vendor)

CASH	ASSET	\$1,000		CASH DISBURSEMENT
ACCOUNTS PAYABLE	LIABILITY		\$1,000	

SUMMARY OF STEPS 1.1 - 1.3 NOTE: NO P&L EFFECT, ONLY BALANCE SHEET

GL ACCOUNT	TYPE	BEFORE	DEBIT	CREDIT	AFTER
INVENTORY	ASSET	\$100,000	\$1,000	\$0	\$101,000
CASH	ASSET	\$20,000	\$0	\$1,000	\$19,000
VOUCHERS PAYABLE	LIABILITY	\$0	\$1000	\$1000	\$0
ACCOUNTS PAYABLE	LIABILITY	\$0	\$1000	\$1000	\$0
EQUITY:		\$120,000			\$120,000

GL Sequence: Sell Inventory and Make Profit

SEQUENCE #2: SELL INVENTORY AND MAKE PROFIT

STEP #2.1: SELL INVENTORY

COST OF GOODS SOLD	EXPENSE	\$5000		OUTBOUND INVENTORY MOVEMENT
INVENTORY	ASSET		\$5000	
ACCOUNTS RECEIVABLE	ASSET	\$7500		BILLING LINE
REVENUE	REVENUE		\$7500	

STEP #2.2: RECEIVE CASH

CASH	ASSET	\$7500		CASH RECEIPT
UNAPPLIED CASH	ASSET		\$7500	

STEP #2.3: APPLY CASH AGAINST A BILLING

UNAPPLIED CASH	ASSET	\$7500		BILLING CASH RECEIPT
ACCOUNTS RECEIVABLE	ASSET		\$7500	

SUMMARY OF STEPS 2.1-2.3 NOTE: PROFIT IS GENERATED

GL ACCOUNT	TYPE	BEFORE	DEBIT	CREDIT	AFTER
INVENTORY	ASSET	\$101,000	\$0	\$5,000	\$96,000
CASH	ASSET	\$19,000	\$7,500	\$0	\$26,500
UNAPPLIED CASH	ASSET	\$0	\$7,500	\$7,500	\$0
ACCOUNTS RECEIVABLE	ASSET	\$0	\$7,500	\$7,500	\$0
EQUITY:		\$120,000			\$122,500
REVENUE	REVENUE	\$0	\$0	\$7,500	\$7,500
COST OF GOODS SOLD	EXPENSE	\$0	\$5,000	\$0	\$(5000)
PROFIT:		\$0			\$2,500

GL Sequence: Build and Sell Manufactured Item

SEQUENCE #3: BUILD AND SELL A MANUFACTURED ITEM

STEP #3.1: ALLOCATE INVENTORY TO MANUFACTURING PROJECT

WORK IN PROGRESS	ASSET	\$3000		MANUFACTURING INVENTORY MOVEMENT
INVENTORY (RAW MATERIALS)	ASSET		\$3000	

STEP #3.2: BUILD FINISHED GOODS

INVENTORY (FINISHED GOODS)	ASSET	\$3000		INBOUND INVENTORY MOVEMENT
WORK IN PROGRESS	ASSET		\$3000	

STEP #3.3: SELL INVENTORY

COST OF GOODS SOLD	EXPENSE	\$3000		OUTBOUND INVENTORY MOVEMENT
INVENTORY (FINISHED GOODS)	ASSET		\$3000	
ACCOUNTS RECEIVABLE	ASSET	\$4500		BILLING LINE
REVENUE	REVENUE		\$4500	

STEP #3.4: RECEIVE CASH

CASH	ASSET	\$4500		CASH RECEIPT
UNAPPLIED CASH	ASSET		\$4500	

STEP #3.5: APPLY CASH AGAINST A BILLING

UNAPPLIED CASH	ASSET	\$4500		BILLING CASH RECEIPT
ACCOUNTS RECEIVABLE	ASSET		\$4500	

SUMMARY OF STEPS 3.1-3.5 NOTE: PROFIT IS GENERATED

GL ACCOUNT	TYPE	BEFORE	DEBIT	CREDIT	AFTER
INVENTORY (RAW MATERIALS)	ASSET	\$96,000	\$0	\$3000	\$93,000
WORK IN PROGRESS	ASSET	\$0	\$3000	\$3000	\$0
INVENTORY (FINISHED GOODS)	ASSET	\$0	\$3000	\$3000	\$0

CASH	ASSET	\$26,500	\$4500	\$0	\$31,000
UNAPPLIED CASH	ASSET	\$0	\$4500	\$4500	\$0
ACCOUNTS RECEIVABLE	ASSET	\$0	\$4500	\$4500	\$0
EQUITY:		\$122,500			\$124,000

REVENUE	REVENUE	\$7500	\$0	\$4500	\$12000
COST OF GOODS SOLD	EXPENSE	\$(5000)	\$3,000	\$0	\$(8000)
PROFIT:		\$2500			\$4,000