A Customized Approach for Zone Based Cycle Counting

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Abstract

Since Oracle Applications 11.03, little has changed in Oracle Inventory regarding cycle counting and physical inventory. After the first attempt at using standard Oracle OPM cycle counting and physical inventory, NCH Corporation realized that many process changes and customizations would be required to maintain the current inventory accuracy. Oracle Applications would be modified to utilize the NCH approach: counting product by zone and sequence. This presentation reviews the zone-based counting approach and customizations implemented by NCH in their R11.5.10 OPM inventory organizations.

Introduction

NCH Corporation is a privately held chemical company started in 1919. NCH manufactures and markets an extensive line of maintenance, repair and supply products to customers in over 50 countries worldwide. Although NCH's primary manufacturing and distribution focus is chemicals, the company has diversified into fasteners, welding alloys and plumbing parts as well as pet supplies and maintenance supply products. With over 8500 employees worldwide and a long prosperous history, in early 2004 NCH realized that its legacy systems needed to be replaced. NCH is in the process of implementing Oracle Applications 11.5.10.CU2 in all of their locations worldwide. Because of the nature of NCH's manufacturing, Oracle Process Manufacturing (OPM) was selected as the manufacturing, inventory and costing platform.

Canada Goes Live and Their First Physical

NCH's first major OPM go-live was the Canadian operation: sales, manufacturing and distribution. The go-live, in May 2006, was a major change for the Canadian warehouse associates. Six months later, after the warehouse associates were finally comfortable with their "new" system, the semi-annual physical inventory count was to be executed. The Oracle software was a major change for the warehouse associates and because of that, prior to the first physical inventory, no cycle counting was performed. The plan for cycle counting and physical inventory was to use the out-of-the-box OPM screens, processes and reports.

Out-of-the-Box Counting

When you perform OPM inventory counting, you count your stock and you update your balances based upon what you counted:
- ➢ matched count (system count = physical count),
- ➢ missing (system count greater than physical count)
- ➢ found (system count less than physical count).

The OPM out of the box cycle counting process is very straightforward and simple:
1. Initialize the cycle count
2. Generate the reports
3. Count the stock
4. Enter the counts
5. Post the counts
6. Manage errors
7. Purge the count

The OPM out of the box physical inventory counting process is basically the same process. It is also very straightforward and simple:
1. Initialize the physical
2. Generate the reports
3. Count the stock
4. Enter the counts
5. Post the counts
6. Manage errors
7. Purge the count

In OPM Inventory, the system differences between the two counting processes are minimal.
1. <u>Cycle counting has additional setups:</u> Identify ABC classes, assign items to those ABC classes, initiate count schedule.
2. <u>How much inventory to count:</u> When you cycle count your inventory, you count a limited amount of stock periodically. When you perform physical inventory counting, you count your <u>entire</u> inventory.
3. <u>When to count:</u> Physical inventory is typically performed annually (or semi-annually like at NCH). Cycle counting is performed frequently and randomly.

One thing for certain, although the processes for physical inventory and cycle counting are slightly different, in both cases the standard reports in OPM inventory lack warehouse usability.

Counting at NCH

Years before the Oracle go-live, in NCH's legacy inventory system ABC cycle counting was attempted but inventory accuracy fell. During the legacy system days, a different approach for cycle counting was implemented at NCH: "count by zone". Because of the historical success with zone counting, prior to go-live with Oracle Applications the Canadian warehouse associates were concerned with the change back to ABC cycle counting. After the warehouse associates used the Oracle out-of-the-box counting process for their first physical inventory, several major issues were uncovered with the standard processes. The number one issue with the counting process was that the physical inventory took four (4) times longer to perform in Oracle than it did using the legacy system. Due to inventory accuracy concerns and failures with the initial process, a decision to customize "counting" at NCH was made and the result was a return to Zone Based Counting.

ABC Counting vs Zone Based Counting

With traditional ABC cycle counting, you determine what items to count and the frequency of counting for each item. Therefore, every item must be categorized or classified into a "type" of item. Classifications of items could be on value/cost of the item, transaction volume of the item or percent of sales of the item. A typical ABC ranking of items could be "A" items are the top 75% of sales and they are counted six times a year, "B" items are the next 20% of sales and they are counted three times a year and "C" items are the last 5% of sales and they are counted once a year.

ABC counting works well for high moving items, but does not consider items that may not have been initially classified or classification changes due to seasonality of stock.

Zone Based Counting is a hybrid of cycle counting and physical inventory. The warehouse is divided into zones and the stock locators are sequenced within the zone. Therefore, the process is to start in one logical stock location, count all the stock within that location and move on to the next location within the zone. The count is complete when all the stock locators within the zone have been counted. This method of counting assures that all items are counted in a given period of time regardless of their classification (or incorrect classification) or seasonality. Zone Based Counting requires minimum activity within the zone whilst being counted.

At NCH, Zone Based Counting allows for the frequent "discovery" of high volume inventory that has been pushed into a nearby stock locator (back or side) or that has fallen to a stock locator below. With traditional ABC counting, the nearby stock locator would not have been counted unless it was supposed to contain the item being counted.

A Customized Approach For Zone Based Counting

After the decision to create Zone Based Counting in OPM was made, a complete process for stock counting was created. In addition to outlining the details of the counting process, each issue uncovered with the first standard count was addressed. The major issues were:

1. OPM inventory does not have any concept of "zones" or counting sequences. What stock locator logically should be counted after 123-3-03? The stock locator 123-03-03 can only be access via a fork lift, should the next stock locator counted be alphanumerically sequence, or should it be the next logical stock locator to be counted due to equipment required?
2. New reports are required. Count sheets must be usable with or without the usage of handheld devices in the warehouse.
3. Count sheets and answer sheets should page break identically so that an inventory control clerk can have the two reports side-by-side to check values.
4. What happens when count sheets are misplaced? How can tighter controls be placed on each inventory tag?
5. The inventory can not be posted if the count is not validated. Each count should be validated—a null value does not equal a zero count!
6. Items have different tolerance values for accuracy. Items stocked by the EACH have a more definitive tolerance than items stock by the LITER or POUND.
7. A recount process is necessary. What was the first count, who did it, was there a second or third count?
8. Only authorized users should be able to override a recounted or a non-validated tag.

The Setup

The key to Zone Based Counting is the systematic creation of zones and the logical sequencing of stock locators. At NCH we used context sensitive descriptive flexfields (DFFs) values on the stock locator to represent zones and zone sequences. We also created a field on the stock locator called "zone group" to allow for grouping of zones during report requests. Outside of the system every portion of the warehouse has been given a "zone"; in the system each stock locator is assigned to a zone and given a sequence within the zone. Examples of typical zones at NCH include: all items within row 14, or Row 20-third level (requiring a fork lift). Due to DFF limitations and security reasons, tolerance values and item seasonality indexes are being maintained on a custom table with a custom screen to maintain the data.

Figure of DFF on the Stock Locator
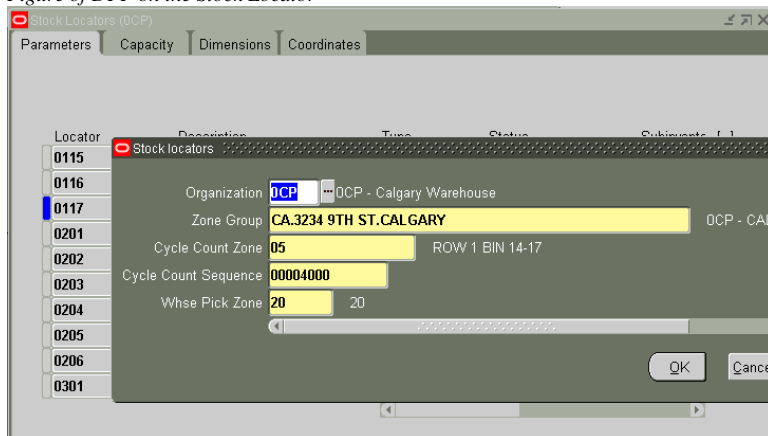
The Customizations – Create/Initiate

To achieve resolution of the issues discovered with the out-of-the-box OPM physical inventory process, the standard OPM screens were customized in the following manner. The screens (and tables) to create and initialize a physical

count were changed to add the count zone group and the count zone. Now a warehouse associate could specify the entire warehouse to be counted (a physical inventory) or a specific count zone (a Zone Based cycle count).

Figure of Create NCH Physical Inventory

Figure of Initiate NCH Physical Inventory

Another important feature of the NCH customization was to allow for multiple zones to be opened at a single time. This aspect of the customization would allow for two or more individual cycle counts to occur at the same time within the same warehouse.

The initialization process included modifying the tag number generation into the proper sequence for reporting.

New Reports

New reports for counting were created by NCH using XML Publisher. The new reports – the count sheet and answer sheet include bar coding of data points if the warehouse was to use hand held hardware. The NCH reports also included better sorting and grouping parameters. Now, an inventory clerk could manage and distribute the count sheets based upon a specific zone. If a series of count sheets came up missing, a clerk can reprint a single zone within the count.

Figure of Parameters for Count Sheet, Answer Sheet and Recount Sheets

An important, but minor, requirement to the reports was from the inventory control clerks: the reports – count sheets and answer sheets when printed must match by page number and by spacing so that when checking counts a clerk would be able to put both reports side-by-side and they would match.

Figure of NCH Physical Inventory Count Sheet   *Figure of NCH Physical Inventory Answer Sheet*

The Customizations –Data Entry, Tag Status and Tag Validation

While the counting is occurring, the data entry for the count can begin. Each tag's quantity will be entered. The standard OPM count entry screen and "find" screen was modified by NCH to include the zone group, the count zone and a new field called tag status. A change made to the NCH count entry screen is the ability to "arrow down" to the next count which would match the next value on the count sheet.

Figure of NCH Find Physical Count Entry


An important change was made to the "tag entry" table; a status field was added to the table. To understand the difference between a null quantity and a zero quantity, a distinction was made using the status.

Each tag upon creation now has a status value of *NULL* – nothing has yet happened with the tag. A new process was created by NCH to validate the tags.

Figure of NCH Physical Count Entry screen – Run Validation Process
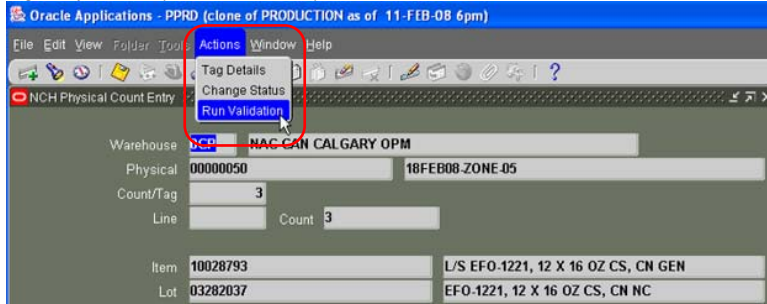
The validation process determined if the enter quantity is valid for the unique item/warehouse tolerance for the item. If the entered count is within the defined warehouse's tolerance of the item, the status of the specific tag changes to *VALIDATED*. If the entered count of the tag fell outside of the defined warehouse tolerance of the item, the tag's status changes to *RECOUNT*. A tag's status may change to recount three times. To maintain a history of tag entry and to allow for blind counting, each time a tag is recounted, the previous quantity is moved into the last value and the "current" tag quantity is changed back to NULL. Anytime during the counting process, a tag's status may be overridden to *APPROVED*. This status indicates that the tag fell out of tolerance, was recounted at least once and was approved.

Because many inventory control clerks manage counting, the validation process can be submitted throughout the counting process without impacting each other's work. The validation process can be submitted for the entire warehouse or for a specific zone.

Figure of NCH Validate Tag Parameters
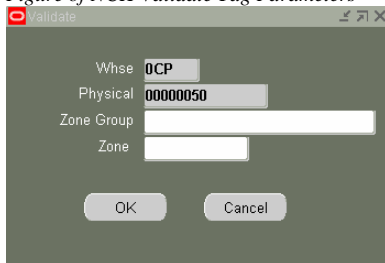
For those tags that have been counted, validated and recounted, the individual users who entered the count (and subsequent recounted values) will be stored. This was another important customization added to the standard OPM count entry screen: the ability to view the tag's status, the ability to view the current count and the previous counts, along with the user name of the counter.

Figure of NCH Tag Details – Uncounted Tag
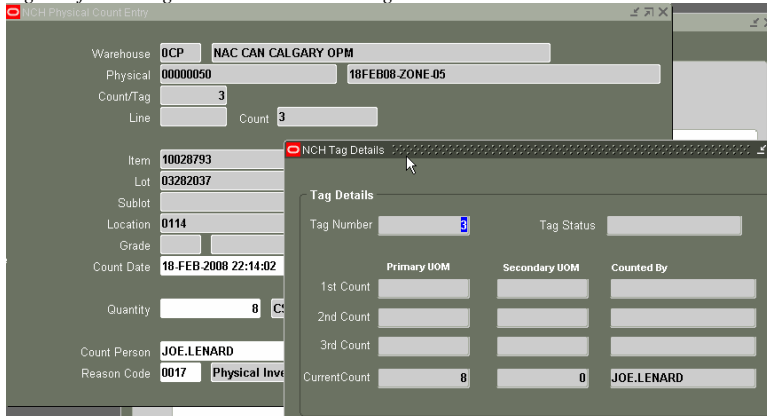
The same counting reports spawn automatically for recounted tags. As in all of the NCH custom counting reports, the recount sheets can be reprinted by zone.

Figure of NCH Physical Inventory Recount Sheet

For "found" inventory and recounted inventory, the status of the tag may be changed to APPROVED, if allowed by security.

Figure of NCH Change Status screen

The Customizations –Posting

All tags in a physical inventory must have a status of either APPROVED or VALIDATED before the counts can be posted. The status field provides an important tool to the inventory control clerks – they can make sure that every tag was considered and that a NULL count does not equal a ZERO count.

If someone tries to prematurely post a count without all of the tags being validated, an error will occur. The error message below indicates that 56 tags are either in a status of NULL (no action yet taken) or RECOUNT (need to be recounted and/or approved).

Figure of NCH Physical Inventory – Posting Errors

Once all the tags have been VALIDATED or APPROVED, the count can be posted. *No change was made to the standard OPM posting process.*

The Customizations –Inventory Valuation Reports

The final component of the Zone Base Counting customization was the inventory valuation reports. After the first physical inventory with the standard Oracle OPM Physical Inventory valuation reports, the end users (inventory clerks, operations management and cost accountants) determined that new reports were required. The inventory valuation reports (or inventory extension reports) were created to be executed while the counting was still being performed. The process to create the report was split into a data extract into a custom table (that would calculate hit/miss counts based upon item/warehouse tolerances) and the actual XML Publisher report.

Figure of NCH Physical Inventory Extension Report Parameters

A key requirement for the new inventory valuation report was that the report could be submitted only for count "misses" (i.e., where the system count did not equal the actual count), for a given monetary variance (e.g., where the difference between the system value of inventory and the actual value of inventory was greater than $400) or for a given break/category of item (e.g., raw materials).
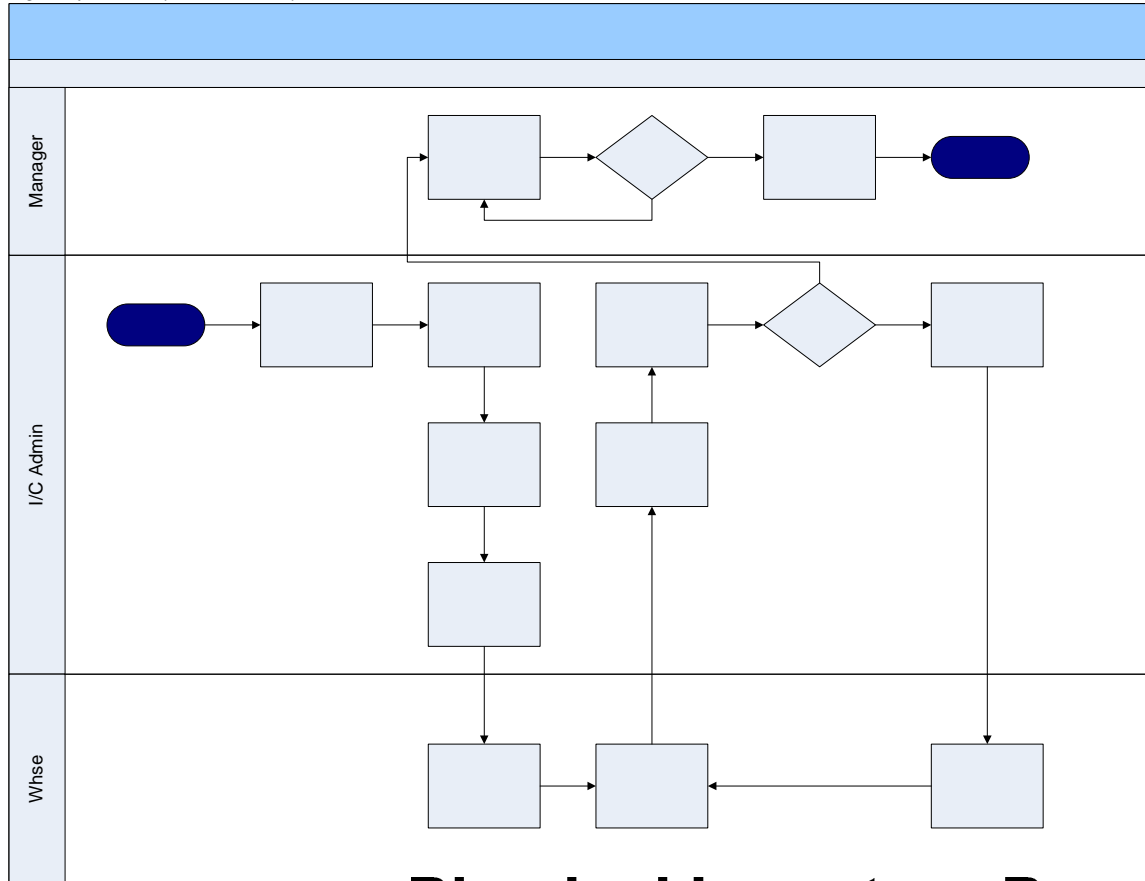
Figure of NCH Physical Inventory Extension Report

The Process

The examination of the cycle counting and physical inventory tasks resulted in the documented process and procedures that were required by operations management, inventory control administration and the warehouse associates.

Figure of NCH Physical Inventory Process

Physical Inventory Process

Summary

Over the years the standard with implementers and users of Oracle Applications has always been: "customizations are bad" and "just say no!" The day-to-day operations of Oracle Applications, however, make the need for customizations a reality. Six months after the first out-of-the-box physical inventory occurred, the new NCH Zone Based physical inventory happened. During that single day, the count was performed more efficiently and in less time then ever before! The implementation of Zone Based Counting at NCH has allowed for inventory accuracy to remain high, the systematic validation of every count, a recount process that allows each org/item to have different tolerances, reports that are usable and flexible, and a faster more accurate process.

About the Author

Joseph Lenard is Manager of Enterprise Reporting and Strategy at NCH Corporation. For more than twelve years, he has participated in and managed implementations of the Oracle Financial and Projects modules, Oracle Manufacturing modules (Discrete, Project and Process), as well as the Oracle Distribution modules.