Internal Audit Report \#2018-004
Public Works Warehouses - Inventory
Draft Date: May 16, 2018
Final Date: June 26, 2018


Tara Hazelbaker, CPA

## BACKGROUND

Public Works consists of many departments such as Capital Projects, Drainage, Engineering, Environmental, Floodplain Management, Parkways, Sewerage, Streets, and Water. These departments oftentimes share common supplies, as such, they order items in bulk to store at various locations throughout the parish. The items are then issued to various departments as needed, including non-Public Works departments such as the Animal Shelter and Parks \& Recreation.

The Department of Engineering has been designated to manage over 11,000 different inventory items for all Public Works and other departments. The value of which approximated $\$ 9.2$ million as of the timing of this report. The Oracle software system is used to track inventory data. The Warehouse Superintendent is responsible for receiving, issuing and transferring, and accounting for all inventory items located in the following locations.

| East Bank Warehouse | 4901 Jefferson Highway, Jefferson |
| :--- | :--- |
| West Bank Warehouse | 6250 Lapalco Boulevard, Marrero |
| Streets Warehouse | 5701 Belle Terre Road, Marrero |
| East Bank Pipe Stockroom | 3600 Jefferson Highway, Jefferson |
| West Bank Plant Stockroom | 4500 Westbank Expressway, Marrero |

During this review, it became known that inventory is also stored at other locations not tracked by the Department of Engineering or any other Public Works department. (See Finding \#7.) The following locations were also included in this review:

| Bridge City Yards | $1450 / 1561$ River Park Boulevard, Bridge City |
| :--- | :--- |
| Shrewsbury Yard | 200 Shrewsbury Road, Jefferson |

## OBJECTIVES

The following were the objectives of this review:

1. Ensure the accuracy and completeness of Public Works inventory records.
2. Ensure accountability for inventory records.
3. Confirm that inventory is properly safeguarded.

## SCOPE

Current policies and procedures regarding the tracking of physical inventory from receipt of products to use of products were obtained, along with a listing of all inventory on hand at December 31, 2016, and 2017, including type of inventory, physical quantity, dollar value and associated general ledger account numbers. Select financial data was obtained from the AS/400 Financial Management System such as general ledger activity, contract payables listings, and journal entries. The U.S. General Accounting Office's (GAO) Executive Guide titled "Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property" was used as a reference in this review. The review covered the fiscal year 2016 and 2017, along with current day operations as of the timing of this report. This review includes only Public Works inventory stored at the above locations, not other inventory held by other departments.

## FINDING \#1

## CRITERIA

Formal written policies and procedures (P\&P) act as the standards for an organization's operations. Good written P\&P are visible to and clearly understood by the entire department/entity. P\&P should be established, followed, monitored and reviewed.

## FINDING

Written policies and procedures are not comprehensive and organized in a logical fashion.

## OBSERVATIONS

The current written P\&P provided by the Warehouse Superintendent include two pages of procedures that were already in place and two more pages that were created as a result of the request for information regarding this review by the Department of Internal Audit. Additionally, a process mapping was created by Grainger, an industrial supply, and equipment provider, during the latter part of 2013 and into early 2014 which was affixed to a wall in a conference room at 4901 Jefferson Highway and appeared not to be in active use. Due to the size of the mapping, only an excerpt is included in this report. (See Attachment B.)

Each of the inventory storage areas/warehouses contain different items and are counted at different frequencies (weekly, monthly, quarterly). Some items lend to being physically counted like small tools, janitorial supplies, nuts and bolts, and other supplies while others like sand, gravel, and limestone are estimated by visual inspection.

## SUGGESTION

Written P\&P should be formalized and organized in a fashion that is logical and provides a clear understanding of what should be done, how it should be done, who should do it and when it should be done. P\&P should be tailored to represent the operations of each inventory storage area/warehouse and should document the entire process, including tasks necessary before, during, and after the physical count. Such formalized, written P\&P will establish controls that can deter theft and other losses, ensure that employees at each location are consistent in taking inventory counts, help to cross-train staff, and hold staff accountable for their actions. The P\&P should be reviewed and updated regularly.

[^0]
*Credit to GAO-02-447G Best Practices in Inventory Counts. See Attachment A for full guide.
Refer to Attachment A, Page 25.17, for an example of a table of contents of Policies and Procedures identified as Best Practices by the GAO.

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

The Warehouse Division will review existing policies and procedures then revise the documents as follows:

1. Ensure that policies are standardized.
2. Ensure that procedures are comprehensive and specific to the tasks of each individual location.
3. Ensure that the documents are clear and easy to understand.

A Documentation Coordinator will be assigned from within the Engineering Department to develop and draft a policies and procedure manual for each warehouse location with input from warehouse supervisors working with their employees. The draft documents will be forwarded to the Warehouse Superintendent, the Director of Engineering and the Internal Auditor for review and comments. The goal is to have all policies and procedures in place by December 1, 2018; then all warehouse employees will be trained to properly follow the policies and procedures by the warehouse supervisors.

Finally, the Documentation Coordinator will perform an annual review of the policies and procedures for each location, obtaining input from warehouse supervisors working with their employees, then present proposed revisions to the Warehouse Superintendent for review and approval. Revised documents will be identified with the appropriate revision number and warehouse employees will be trained to follow the revised procedures.
${ }^{* * *}$ The remainder of the page was intentionally left blank. Please continue to the next page. ${ }^{* * *}$

## CRITERIA

Accurate and reliable recordkeeping is vital and enables parish leaders to have confidence in financial data and inventory levels used in decision-making.

## FINDING

Two different systems are used to track inventory and maintain parish financial data. The systems are not integrated which creates the need for manual input and increases the likelihood of errors and omissions of data.

## OBSERVATIONS

The Oracle software system has been used since 1999 to track the details of inventory items maintained by the Department of Public Works. The AS/400 Financial System is used by the Department of Finance to maintain data for overall financial reporting. When physical inventory counts are taken and differences are noted, or when inventory is transferred between parish departments, a manual entry needs to be made into the AS/400 Financial System.

Additionally, the Oracle software provides notification when inventory items need to be ordered; however, the system does not calculate a lead time or a recommended order amount based on the history of usage.

According to the Warehouse Superintendent, Jerry Zeringue, the Department of Public Works has been communicating with the Department of Information Technology about the idea of implementing a new inventory system which will interface with the parish's AS/400 Financial System.

## SUGGESTION

The parish should continue evaluating the need to implement an inventory software system that will interface with the parish's Financial System so as to increase efficiencies in processes and increase the accuracy and validity of inventory data.

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

The Warehouse Division will continue to work with Electronic Information Systems (EIS) to find compatible software that can track inventory electronically, provide order alerts based upon review time, lead time, usage, safety stock, and interface with current AS/400 Financial System. Suggested features of new software and possible updates for the current Oracle System from an inventory and warehousing perspective are being finalized and will be submitted to EIS. Information Systems has committed to Warehouse Supervision that we will be included in any discussions or demonstrations of new software to replace or upgrade the Oracle System. My understanding is that a tentative target date of late 2019 or early 2020 has been identified by EIS to install a new warehouse software system.

[^1]
## CRITERIA

Accurate and reliable recordkeeping is vital and enables parish leaders to have confidence in financial data and inventory levels used in decision-making.

## FINDING

Physical inventory conducted by staff was not "blind." A "blind" count is a physical inventory taken by personnel who count the number of items on-hand without knowing the quantities in the system.

Reasons for the discrepancies noted on the count sheets were not indicated either on the count sheets or within the Oracle system.

## OBSERVATIONS

The Internal Control - Inventory Warehouse and Plants procedures located at Attachment B indicate that the "parish conducts a physical inventory for each location at the end of each year. Current inventory records are distributed by Warehouse Inventory Control to employees at each location. These reports indicate location, quantity on hand, and some cost information for each inventory section.... If the count does not agree with the amount on the inventory report, the employee includes the correct number, have the items recounted independently and conducts a further investigation if there is still a discrepancy."

Upon review of a sample of the count sheets used (Attachment C), the quantity of each inventory item was confirmed as being included on the sheets. This process lends to the staff member not actually counting the inventory but instead making an assumption that the number in the warehouse is the same as that listed on the count sheets.

There were not any notations of the reasons for the discrepancies indicated on the sheet nor was there a sign-off or indication of the staff member who took the physical inventory. Due to the lack of sign-off, Internal Audit was not able to assess whether or not there was adequate segregation of duties regarding the person who counts inventory is responsible for warehouse management and who is responsible for making inventory adjustments. If there is lack of segregation of duties between these functions then a risk exists for the staff to misappropriate and make adjustments in the inventory system so as to hide a theft.

According to the GAO Best Practices in Inventory Counts guide, "Blind counts offer the greatest degree of assurance of accurate and reliable counts."

[^2]
*Credit to GAO-02-447G Best Practices in Inventory Counts. See Attachment A for full guide.

## SUGGESTION

Inventory should be taken using the "blind" count technique to ensure the accuracy of the data in the Oracle system. Reasons for discrepancies should be noted on the count sheets and/or in the Oracle system. Documentation should include who is taking the actual counts and who is making the adjustment in the Oracle system.

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

Electronic Information Systems has made the change to the count sheets (removed the on hand quantity) to ensure a "blind" count and has been implemented (see count sheet below $4^{\text {th }}$ copy). Each counter's name or initial is to be noted on the count book and entered on the adjustment screen in the COUNTED BY field (see screen copy one below). The initials were not clearly noted on some count sheets, but were entered electronically on the adjustment screen. Supervisors will be advised to thoroughly explain proper count procedures to all employees prior to a count being performed. The Utility Inventory Supervisor is the only employee authorized to make an adjustment using the inventory program. The reason for the adjustment is to be entered in the COMMENT field (see screen copies below $2^{\text {nd }}$ and $3^{\text {rd }}$ ) when recording the adjustment. These procedures will be reviewed, revised if necessary, and included in the manual developed by December 1, 2018.

[^3]
## Screens below displays fields:




## CRITERIA

Accurate and reliable recordkeeping is paramount and enables parish leaders to have confidence in financial data and inventory levels used in decision-making.

## FINDING

The overall inventory record accuracy rate for sample counts at three different locations were $50 \%, 83 \%$, and $0 \%$.

## OBSERVATIONS

Internal Audit performed sample counts at three locations: 4901 Jefferson Highway, 6250 Lapalco Boulevard, and 5701 Belle Terre Road. Warehouse staff did not know which items were to be counted prior to the visit, and the counts were "blind" meaning the quantity per the Oracle system was unknown at the time of the count. Four different items were evaluated as part of the count.

1. Quantity On Hand
2. Unit of Measure
3. Location of Item
4. Description of Item

If any of the above items was incorrect then the set of information for an individual item was considered inaccurate. The accuracy rate was calculated by using the following formula:

Number of Accurate Records divided by Total Number of Records equals Accuracy Rate


According to the GAO Best Practices in Inventory Counts guide, the inventory records accuracy goal should be set at 95 percent or higher. Setting high goals for inventory record accuracy rates is one way of establishing accountability for the physical inventory count. High goals "stretch" the organization and personnel to perform inventory counts with increasingly superior precision.

*Credit to GAO-02-447G Best Practices in Inventory Counts. See Attachment A for full guide.
Results of the samples are shown on the next pages. More details can be found at Attachment D.

| Location: | East Bank: 4901 Jefferson Highway |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sample Size Cou | ed by IA | 8\% | \$ 536,131 |  |  |  |  |
| Population Size | Oracle |  | \$ 6,858,329 |  |  |  |  |
| Accuracy Rate | 50\% |  |  |  |  |  |  |
| Date of Count: | 24-Apr-18 |  |  |  |  |  |  |
| Stock \# | Actual | Oracle | Quantity Difference | Unit of Measure | Location of Item | Description of Item | Accurate? |
| 00-0140070 | 4,300 | 4,144 | 156 | Note A |  |  | No |
| 00-014005A | 1,500 | 3,014 | $(1,514)$ | Note A |  |  | No |
| 00-0382190 | 1,124 | 1,130 | (6) |  |  |  | No |
| 00-0383320 | 15 | 15 | - |  |  |  | Yes |
| 00-0383330 | 10 | 10 | - |  |  |  | Yes |
| 00-0383180 | 20 | 22 | (2) |  |  |  | No |
| 00-0530400 | 5 | 5 | - |  |  |  | Yes |
| 00-0676030 | 12 | 12 | - |  |  |  | Yes |
| 00-0181400 | 5 | 5 | - |  |  |  | Yes |
| 00-0951340 | 9 | 10 | (1) |  | Note B |  | No |

[^4]| Location: | West Bank: 6250 Lapalco Boulevard |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sample Size Counted by IA |  | 5\% | \$ 108,725 |  |  |  |  |
| Population Size per Oracle |  |  | \$ 2,138,640 |  |  |  |  |
| Accuracy Rate | 83\% |  |  |  |  |  |  |
| Date of Count: | 2-May-18 |  |  |  |  |  |  |
| Stock \# | Actual | Oracle | Quantity Difference | Unit of Measure | Location of Item | Description of Item | Accurate? |
| 00-0380820 | 595 | 595 | - |  |  |  | Yes |
| 00-0501000 | 544 | 569 | (25) |  |  |  | No |
| 00-0689000 | 4 | 4 | - |  |  |  | Yes |
| 00-0181510 | 54 | 54 | - |  |  |  | Yes |
| 00-0688990 | 5 | 5 | - |  |  |  | Yes |
| 00-068954」 | 4 | 4 | - |  |  |  | Yes |
| 00-0688200 | 14 | 14 | - |  |  |  | Yes |
| 00-0892400 | 4 | 4 | - |  |  | Note C | No |
| 00-0852120 | 16 | 16 | - |  |  |  | Yes |
| 00-0856560 | 25 | 25 | - |  |  |  | Yes |
| 00-0330720 | 3 | 3 | - |  |  |  | Yes |
| 00-0342210 | 2 | 2 | - |  |  |  | Yes |



Note A: Sand and limestone is ordered in tons and recorded in the Oracle system in tons; however, the products are issued and counted by the yard. The differences noted above are due in part to the conversion of the units of measure. Additionally, quantity on hand is estimated and not specifically measured. See Finding \#5 for more details.

Note B: These items were not in the stockroom location and had been issued without an issue ticket created and the quantity on hand updated.

Note C: This stock item is described as a 15 horse-power shaft and there were four items in the stock number location. However, there were not four of the same item in that location. They were of various lengths and diameters. (See Attachment E.)

## SUGGESTION

The department should set goals for those who count inventory to achieve the $95 \%$ level of accuracy as suggested by GAO. Other goals such as an accurate physical count of the inventory items versus the accuracy of the count agreeing to the records can be also be set.

RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS
The Warehouse Division will establish our current level of accuracy and use it as a benchmark to set a goal to achieve and track our progress accordingly. Required quantity calculations for items that cannot be counted but must be estimated, will be developed and be part of our procedures. Our challenges for a significant level of accuracy improvement deal with the fact that all issue tickets are handwritten, the receiving of material in many cases requires additional product knowledge, and there is rarely advanced notice or lists of material that is to be pulled from stock. Any new software tracking system should include bar coding which will help with inventory accuracy, in the meantime, we will attempt to identify and improve the processes that contribute to inventory discrepancies by recording the reason for incorrect balances. Developing detailed formalized procedures and training should result in improvement. In many cases, vendors offer training for handling their products. We will schedule these in-house training sessions during the year.

## FINDING \#5

## CRITERIA

Accurate and reliable recordkeeping is paramount and enables parish leaders to have confidence in financial data and inventory levels used in decision-making.

## FINDING

Sand, gravel, and limestone (aggregate) quantities are not verified when received, or measured when issued. Aggregate levels are not specifically measured, they are visually estimated when taking physical inventory.

## OBSERVATIONS

The Department of Public Works uses aggregate for various projects throughout the parish. When aggregate is ordered and delivered to stockpile sites in the parish, the quantity received is not specifically measured. That is, the parish does not utilize scales to verify the quantity received; however, a delivery ticket with the quantity is obtained and the aggregate is visually inspected to verify amounts received.

During the course of projects, the departments are issued aggregate for use. Sometimes all the aggregate issued is used while sometimes aggregate needs to be returned. Issued and returned aggregate is also not specifically measured. For example, when aggregate is loaded the amount of aggregate in the bucket can vary depending on the amount lifted from the pile and the type of loader used.

When the inventory of aggregate is taken, quantity on hand is based on visual inspection and estimated as to the number of cubic yards on hand.

A report is generated showing a picture of the aggregate and amount estimated (shown below). Amounts in the Oracle System are updated.


Aggregate is not stored within retaining walls where levels can be gaged, quantities are not calculated by taking actual measurements of the dimensions of the stockpiles, or satellite imaging is not used to calculate the actual mass of the piles. According to an article published by Firmatek, an organization that specializes in stockpile measurements, there are three mistakes in stockpile inventory measurement:

1. Having a poorly defined base - survey methods that use a fixed elevation for the base of the stockpile, or that use a small amount of data around the perimeter of the pile will fail to provide accurate and/or reproducible results.
2. Having insufficient data on the top of the stockpile - from the ground, it is impossible to know what it looks like on top. Irregularities of the shape at the top can lend to an erroneous calculation.
3. Including extra material - sometimes material below the base level is included and adds to inaccurate calculations.

Not all aggregate kept in inventory by the parish is tracked. There are six locations where aggregate is stored. Physical inventory is taken for two of the six locations. See Finding \#7 for more details.

## SUGGESTION

Aggregate that is purchased and delivered to the parish needs to be verified as to quantity received. The Department of Public works should determine if purchasing a scale is cost-effective or determine a viable method of verification. Similarly, aggregate that is issued from and subsequently returned to inventory needs to be accurately measured as to quantity in order to maintain accurate inventory levels data.

The Department should explore more sophisticated methods of determining aggregate levels when taking physical inventory. Stockpile measurements can be taken via lasers then the volume can be calculated. This could possibly be performed by one of the parish's engineers. Additionally, service providers exist who will take a drone-based aerial shot of the pile and will calculate the volume. The following websites contain examples:
http://www.lasertech.com/Stockpile-Volumes.aspx and https://www.stockpilereports.com

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

A meeting will be held within the next six months with all Public Works Directors after an initial investigation is performed to determine current recording procedures at all the sites where stockpile materials, such as aggregate are delivered, stored and issued. A short-term solution for recording the issuance of material and measuring remaining quantities will be established by the end of 2018 by the PW Warehouse Division.

A long-term solution involving a more sophisticated process verifying delivered quantities and recording issued quantities will be determined along with identifying the funds necessary for recommended physical site improvements prior to the 2020 Budget submittals in 2019.

Implementation of a long-term solution will be scheduled for 2020.

## FINDING \#6

## CRITERIA

Inventory levels should be maintained at a level that allows the parish to operate efficiently and effectively while being good stewards of parish funds.

## FINDING

The Jefferson Parish warehouses and stockyards have a significant amount of items that are obsolete, not needed, or infrequently used.

## OBSERVATIONS

Per inventory records from the Oracle system, the total inventory on hand as of April 13, 2018, was $\$ 9,189,270$. Internal Audit obtained data indicating the last time each inventory item was used. Usage dates for all locations ranged from January 1, 1999, to April 13, 2018. The oldest items on hand are twenty (20) years old. ^ (See Attachment H for details.) Fifty-three percent (53\%) of the inventory has been used within the last six months, while the remaining forty-seven percent (47\%) has not been used for more than six months.

Inventory that has not been used in six months or more may indicate that the parish is spending more money than necessary for inventory that is not needed. Additionally, items that are not used oftentimes become obsolete and take up valuable space to store. As an example of obsolete items, paint cans stored at 4901 Jefferson Highway appeared to be rusted or

## Inventory On-Hand as of April 13, 2018


corroded. Once the paint cans were moved, the handles broke and paint flowed down the side. Other items in the warehouse appeared to be damaged or in poor condition based on a visual inspection.

PAINT, PURE WHITE
Last Used: Dec. 27, 2016
East Bank Value: \$1,394


SLEEVE TAPPING
Last Used: Aug. 17, 1999
East Bank Value: \$2,171


BOX, METER, CAST IRON
Last Used: Jan. 17, 2017
East Bank Value: \$13,778


[^5]A further breakdown of inventory usage and an aging by location is shown below.
Timeframe in which inventory items were last used


Aging of inventory item usage by location

| $\begin{array}{c}\text { Timeframe } \\ \text { Inventory Item was } \\ \text { Issued/Used }\end{array}$ | $\begin{array}{c}\text { East } \\ \text { Bank }\end{array}$ | $\begin{array}{c}\text { West } \\ \text { Bank }\end{array}$ | $\begin{array}{c}\text { Streets } \\ \text { Warehouse }\end{array}$ | TOTAL | $\begin{array}{c}\text { Percent of } \\ \text { Total } \\ \text { Inventory }\end{array}$ |
| :--- | ---: | ---: | ---: | ---: | :---: |
| Within last 6 months | $\$ 3,728,390$ | $\$ 1,000,187$ | $\$ 125,963$ | $\$ 4,854,540$ | $53 \%$ |
| $>6$ months to 1 year | 585,046 | 177,337 | 24,572 | 786,955 | $8 \%$ |
| $>1$ year to 2 years | 614,711 | 182,856 | 8,586 | 806,153 | $9 \%$ |
| $>2$ years to 3 years | 335,396 | 108,407 | 4,997 | 448,800 | $5 \%$ |$\}$

Twenty-two percent (22\%) of the total inventory, or $\$ 2,052,281$, has not been used in four (4) years or more, with approximately seventy percent (70\%) of those items located at the 4901 Jefferson Highway location. Another seventeen percent (17\%) of total inventory, or $\$ 1,495,494$, has not been used in one to four years.

In discussions with the Warehouse Superintendent, there are plans to surplus or otherwise remove some of the obsolete items and other items that are not needed. However, current data indicates that such plans need to be accelerated into action.

While there should be a consideration to stocking items in case of emergency situations, this data suggests that the parish has inventory items on hand that are obsolete (at the end of its life cycle and has not been used), stale (not needed), or otherwise stockpiled (overstock). The parish could reduce the space needed to house inventory, reduce the time needed to manage and take physical inventory, and reduce cost outlay for carrying inventory items. A full listing of inventory items obtained as part of this review is on hand in Internal Audit.

## SUGGESTION

Written policies and procedures should incorporate inventory management roles and responsibilities regarding inventory levels, along with management of obsolete, stale, or stockpiled items.

Current inventory levels need to be evaluated and a determination made as to what items can be surplused or disposed of safely. Funds may be recouped if these items can be sold at auction.

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

Inventory Control will be incorporated into the Policies and Procedures. In 2017, the Warehouse Division scrapped or sent to surplus property over $\$ 80,000.00$ of obsolete inventory and year to date 2018 is $\$ 34,384.22$ We will continue to accelerate this process understanding that the majority of inventory stocked is owned by the individual Public Works Departments and before items can be sent to surplus, a review by a superintendent from the appropriate Public Works Department must take place. It is at their discretion based on need that this material is removed from surplus. Many older items are maintained in stock based on the potential emergency need in the field at the request of Public Works Departments regardless of usage history. For example, older pump station motor parts continue to be stocked since these motors are in service and must be repaired immediately to prevent flooding during a significant rain event.

In an effort to reduce surplus, new items that are requested will be identified and appropriate Public Works Departments will be contacted when these materials have not been issued in one (1) year for disposition.

Stock is to be reviewed constantly and adjusted based on usage, but because of the service nature of the inventory, there is a tendency to order as much as one (1) year of inventory to account for lead times, spikes in usage, lack of communication, stock requests, hurricane season, review time, etc.

The current ordering process is being evaluated and efforts to make improvement are being made.
${ }^{* * *}$ The remainder of the page was intentionally left blank. Please continue to the next page. ${ }^{* * *}$

## CRITERIA

Formal written policies and procedures (P\&P) act as the standards for an organization's operations. Good written $P \& P$ are visible to and clearly understood by the entire department/entity. P\&P should be established, followed, monitored and reviewed.

## FINDING

The Department of Public Works as a whole has not implemented policies and procedures on a department-wide basis, thusly does not have sufficient inventory management controls. Not all Public Works inventory is maintained by the Warehouse Superintendent.

## OBSERVATIONS

The Warehouse Superintendent and his team are responsible for ordering Public Works inventory items, and fulfilling requests for items from various departments. When items are requested by Sewerage, Streets, Drainage, and Water, they are typically transferred from 4901 Jefferson Highway or 6250 Lapalco for use as necessary by the requesting department. Those same departments also order their own supplies and either use or store them at one of the locations listed below.

| East Bank Warehouse | 4901 Jefferson Highway, Jefferson |
| :--- | :--- |
| West Bank Warehouse | 6250 Lapalco Boulevard, Marrero |
| Streets Warehouse | 5701 Belle Terre Road, Marrero |
| East Bank Pipe Stockroom | 3600 Jefferson Highway, Jefferson |
| West Bank Plant Stockroom | 4500 Westbank Expressway, Marrero |
| Bridge City Yards | 1450/1561 River Park Boulevard, Bridge City |
| Shrewsbury Yard | 200 Shrewsbury Road, Jefferson |

Upon inquiry of the respective directors of those departments, inventory records are not maintained. That is to say, a list of the items and value of such items could not be produced. The Department of Engineering tracks inventory items valued at approximately $\$ 9.2$ million while Sewerage, Streets, Drainage, and Water do not track their inventory of a value that cannot be determined at this time.

Internal Audit utilized Google Maps and clipped a satellite view for each location listed above. Each location map was then color coded with yellow outlines indicating areas where inventory is tracked, and red outlines indicating where inventory is stored but not tracked. An example is shown on the next page. Full-sized maps along with a general description of items located in each area are located at Attachment F.
*** The remainder of the page was intentionally left blank. Please continue to the next page. ***


Since the overall value of inventory that is not tracked cannot be determined at this time, Internal Audit focused on sand, gravel, and limestone (aggregate) as an example. The Warehouse Superintendent was asked to estimate aggregate stored at locations that he does not maintain as part of the inventory counts. Thirty-nine percent ( $39 \%$ ) of total aggregate or $\$ 126,699$, was not tracked by the parish inventory management system as of May 14, 2018. See below for results. "Map Ref \#" refers to the maps located at Attachment F .

| Location / Description | Map Ref \# | Tracked | Not Tracked | Total |
| :---: | :---: | :---: | :---: | :---: |
| 4901 Jefferson Highway, Jefferson |  |  |  |  |
| River Sand | 6 | 42,444 |  | 42,444 |
| Limestone \#610 (red) | 6 | 119,565 |  | 119,565 |
| 6250 Lapalco Boulevard, Marrero |  |  |  |  |
| River Sand | 2 |  | 1,112 | 1,112 |
| Limestone \#610 | 3 |  | 13,885 | 13,885 |
| Limestone \#57 | 3 |  | 15,932 | 15,932 |
| 5701 Belle Terre Road, Marrero |  |  |  |  |
| River Sand | 7 | 1,466 |  | 1,466 |
| Limestone \#610 (red) | 7 | 28,880 |  | 28,880 |
| Batture dirt | 7 | 3,660 |  | 3,660 |
| 3600 Jefferson Highway, Jefferson |  |  |  |  |
| River Sand | 3 |  | 1,390 | 1,390 |
| Limestone \#610 (red) | 3 |  | 4,760 | 4,760 |
| 4500 Westbank Expressway, Marrero | n/a |  |  |  |
| 1450/1561 River Park Boulevard, Bridge City |  |  |  |  |
| River Sand | 2 |  | 1,390 | 1,390 |
| Limestone \#610 (red) | 1 |  | 9,918 | 9,918 |
| Limestone \#57 | 1 |  | 39,830 | 39,830 |
| River Sand | 3 |  | 695 | 695 |
| Limestone \#610 (red) | 3 |  | 3,967 | 3,967 |
| 211 Arnoult Road, Jefferson |  |  |  |  |
| River Sand | 2 |  | 2,085 | 2,085 |
| Limestone \#610 (red) | 2 |  | 31,736 | 31,736 |
| TOTALS |  | \$ 196,015 | \$ 126,699 | \$ 322,714 |
| PERCENT OF TOTAL |  | 61\% | 39\% | 100\% |

These results may or may not be accurate since aggregate levels are estimated based on visual inspections of the stockpiles. (See Finding \#5 for more details.)

Tracking all Public Works inventory increases transparency to the public, reduces the opportunity and likelihood of misappropriation, increases operational efficiencies, and increases the accuracy of financial reporting. The Department of Public Works as a whole has not implemented policies and procedures on a department-wide basis, thusly does not have sufficient inventory management controls.

## SUGGESTION

A Parishwide system needs to be put in place to properly account for all public works inventory items at all locations.

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

The development of a Parish-wide system should be incorporated with the development of a new or modified inventory system which would also interface with a work order system deducting materials as they are used. EIS has projected implementation of a new or upgraded warehouse software inventory system by a target date of late 2019 or 2020 as stated in Finding \# 2.

Prior to this implementation, the Warehouse Division will work with the individual Public Works Departments to develop policies and procedures to track all material ordered, stored and managed by the individual departments.

With regard to the individual Public Works Departments' current inventory management of supplies/equipment/material as detailed in Attachment "F," please be advised of the following:

Drainage Department - The department stockpiles concrete pipe (4901 Jefferson Hwy Ref \#1, \#2, \#3; 1450 River Park Blvd Ref \# 4) that is salvaged from in-house work or is donated from contractors working on capital projects. We do not store purchased concrete pipe. If we need to purchase concrete pipe for a project, we purchase the exact length needed and have it delivered to the project site. All the pipe we have stored is essentially free and is used where applicable for our in-house construction. There is no transaction process that documents the salvaging of pipe; however the Department maintains a count of what is physically in our yards, but no log of where it was salvaged from.

Our sand and limestone stockpiles (6520 Lapalco Blvd Ref \#3; 1450 River Park Blvd Ref \# 4) are based off of a standard order that is made at the beginning of each year. The order is added to whatever remains from the previous year. Material that is removed from the piles is tracked in our work order system, but there is no measurement taken of the amount in the stockpile at any given time as we do not have the exact starting amount.

## Sewerage Department -

1) 4901 Jefferson Highway, Rheem Building (Ref \#9): The Sewerage Department stock at this location is mostly old salvaged pumps, valves, piping, motors, etc. from old or rebuilt pumps. It is kept due to the nature of our business dealing with old infrastructure whereby parts may not be available today. If new parts or materials are needed, they are either checked out of the PW Warehouse or ordered thru Parish Purchasing Procedures so there would be an accurate inventory.
2) 1450 River Park Road - Sewerage Mechanic/Electric/Machine Shop - (Ref \#3): The Sewerage Department stock at this location is mostly old salvaged pumps, valves, piping, motors, etc. from old or rebuilt pumps. It is kept due to the nature of our business, dealing with old infrastructure whereby parts may not be available today. If new parts or materials are needed at this location they are either checked out of the PW Warehouse or ordered thru Parish Purchasing Procedures so there would be an accurate inventory. In addition, at this location portable pumps and generators are stored. These are inventoried thru Fleet Management.

Streets Department - Streets Department has records of items ordered from the Engineering Warehouse and outside suppliers for Department use. The Maintenance Division Superintendents work with Streets Administrative staff to evaluate and re-order the tools, equipment and material needs on an on-going basis. They re-order when material stockpiles are low and when tools or equipment have reached the end of their useful life.

Water Department - The Department tracks the inventory of all of the treatment chemicals used on a daily basis by recording usage on spreadsheets, copies of which can be forwarded to the Internal Auditor upon request. The daily usage is then transferred monthly to a spreadsheet which can be reviewed to determine usage rates for purposes of managing treatment chemical inventory.

## FINDING \#8

## CRITERIA

Safeguarding assets against theft, unauthorized use, acquisition, or disposal is a key component of internal controls.

## FINDING

Physical security over inventory needs to be reviewed.

## OBSERVATIONS

When visiting each of the seven locations, the overall areas were located within gated parcels. Conversations with employees indicated that gates do not always operate properly and are not always closed in the evenings. Thusly they do not consistently safeguard the area where inventory is stored.

Buildings were generally locked or attended by parish personnel. Some areas had security cameras throughout while others did not.

## SUGGESTION

Consult with Director of Security to determine how to appropriately and consistently secure areas where inventory is stored, and proper locations for security cameras.

The quality of the cameras should be evaluated, along with appropriate location and surveillance capabilities of the cameras. The cameras should be strategically placed in accordance with the size and layout of the building are outside area such that high traffic and unguarded areas are monitored.

## RESPONSE FROM JP DEPARTMENT OF PUBLIC WORKS

Public Works will consult with the Director of Security and evaluate the necessity of additional surveillance requirements for areas where material is stored that is currently not under surveillance.

Currently, the East Bank Warehouse at the Rheem building, 4901 Jefferson Highway has cameras in place for surveillance both inside and outside of the warehouse area. The new West Bank Warehouse at 1500 River Park, Bridge City, currently under construction with a scheduled operational date of mid-July 2018, will have surveillance cameras. A representative of the Security Department approved and participated in the design of the security system and a purchase order has been issued for the installation.

Once the additional areas for surveillance are identified and the necessary funds required are established and requested in the 2019 budget, pending the availability of funds, implementation should be completed in 2020.

## SUMMARY

In summary, the review highlighted the need for formalized and comprehensive written policies and procedures that include all public works locations throughout the parish. There is an opportunity to increase efficiencies in accounting practices, along with accuracy and accountability in taking physical inventory counts.

Public Works should improve controls to ensure accuracy and completeness of inventory records, accountability for inventory transactions, and safeguarding of inventory. In addition, the department should promote and enforce parish-wide inventory management standards and continually improve processes using an inventory system that is integrated with the parish financial accounting system.

The Jefferson Parish warehouses and stock-yards have a significant amount of items that are obsolete, not needed, or infrequently used. As a first step, if the inventory items that have not been used in four or more years were removed then the value of inventory would be reduced by $22 \%$ or $\$ 2,052,281$. Funds may be recaptured if any of these items can be sold at auction.

The Department of Public Works should review and take appropriate actions as noted in Findings \#1 through 8 .

Internal audit would like to thank the directors within the Department of Public Works for their assistance and cooperation during this audit process. A special thank you is extended to Jerry Zeringue and his team for the time, assistance, and professionalism throughout the review process.

## REPORT WRAP UP

Internal Audit obtained responses from the Department of Public Works which are noted in the "Response From..." sections of each Finding. Additionally, a response from the Parish Administration and Parish Attorney's Office can be found in Attachment 2, immediately following this report.
****END****

## ATTACHMENT 1

## AUDITOR INDEPENDENCE STATEMENT

According to Ordinance No. 25549 (April 4, 2018), Sec.2-162.2(a) and (d), the Director of Internal Audit "shall engage in audit activities and complete audits in an independent manner, free of any organizational or personal impairment. The Director shall attest in writing that all audit activity was concluded with independence, free from organizational or personal impairment."

Sec. 2-162.2- Independence and Objectivity; Professional Standards.
(a) The Department function must be independent to retain objectivity, and the Department's independence allows the Director to make assessments impartially and without bias while avoiding conflicts of interest. In furtherance of the operation of an independent and objective Department, the Department shall use the following standards in the completion of all audits and in the conduct of all activity:
(1) The Standards and Code of Ethics produced by the Institute of Internal Auditors and published in the Professional Practices Framework;
(2) The Standards and Principles produced by the Government Accountability Office and published in the Government Auditing Standards; and
(3) the professional and ethical standards issued by the American Institute of Certified Public Accountants.
(d) The Director shall engage in audit activities and complete audits in an independent manner, free of any organizational or personal impairment. The Director shall attest in writing that all audit activity was concluded with independence, free from organizational or personal impairment. Any impairment to independence, organizational or personal, shall be reported in writing to the Council and copied to the Parish President and the Inspector General within seven (7) days of discovering the impairment, organizational or personal.

The following is the required attestation meant to comply with both professional standards and Jefferson Parish Ordinance No. 25549.

## ATTESTATION:

Internal Audit Report \#2018-004 was conducted with independence and free from organizational or personal impairment.


## RESPONSE FROM PARISH ADMINISTRATION

The Administration concurs with the findings and recommendations of the Internal Audit and is encouraged by the responsiveness of the Department. The Administration asks the Department to immediately start drafting their policies and procedures as suggested by the audit findings and work with EIS for fiscal oversight and organization as well as inventory controls.

The Administration will ask the Director of Public Works to establish a reasonable timeline to put forth and complete corrective action plans.

Response received via email on June 19, 2018, from Keith Conley, Jefferson Parish Chief Operating Officer.

## RESPONSE FROM THE PARISH ATTORNEY'S OFFICE

The Parish Attorney's Office has reviewed Internal Audit Report \#2018-004 (Public Works Warehouses - Inventory) and concurs with the recommendations of the Internal Audit Department based upon the facts detailed in the Report. The Parish Attorney's Office suggests that the Public Works Departments expeditiously adopt all corrective measures outlined in the Report. We further concur that implementation of these corrective steps should ensure better accuracy and completeness of inventory records, improved internal controls, and the improved management and accountability for inventory records in the future.

Response received via email on June 20, 2018, from Marc Dougherty, Jefferson Parish Senior Assistant Parish Attorney.

| GAO |  |
| :---: | :---: |
| \#nerr ione | EXECUTIVE GUIDE |
|  | Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property |
|  | \#GAO |

## Preface

Creating an effective and cost-efficient government has long been a public expectation. Achieving this goal will require federal agencies to produce useful, reliable, and timely information that can be used daily by the Congress, federal managers, and other decisionmakers. Inventory is one of the major areas in the federal government where useful, reliable, and prompt data are still generally not available.

To provide a framework and guide that federal managers can use to improve the accuracy and reliability of the government's inventory and related property data, we studied the inventory count processes and procedures of seven leading-edge private sector companies to identify the key factors and practices they use to achieve accurate and reliable physical counts. Physical counts of inventory are only one aspect of inventory control that contribute to accurate and reliable inventory records. This Executive Guide, while intended to assist federal agencies in achieving the objectives of the Chief Financial Officers (CFO) Act of 1990 and subsequent related legislation, is also applicable to any governmental and nongovernmental entity holding inventory or property and equipment. This Executive Guide describes the fundamental practices and procedures used in the private sector to achieve consistent and accurate physical counts. It summarizes the fundamental principles that have been successfully implemented by companies recognized for their outstanding record of inventory management. ${ }^{1}$ Also, it explains and describes leading practices from which the federal government may be able to draw lessons and ideas. This guide applies to most forms of federal inventory, but certain of the discussed practices may not be applicable to various types of bulk, natural resource, and nonturning inventories, such as the Department of Energy's strategic petroleum reserve. Many of the concepts and controls for conducting physical counts discussed in this guide could also be applied to property, plant, and equipment, an area in which many federal agencies also face data reliability challenges.

This guide was prepared under the direction of Gregory D. Kutz, Director, Financial Management and Assurance. Other GAO contacts and key contributors are listed in appendix VI. Please address any questions or comments to me at (202) 512-2600, steinhoffj@gao.gov, or Paul D. Kinney, Assistant Director, by phone, e-mail, or regular mail at the following:

[^6]Mail: $\quad$ Paul D. Kinney, Assistant Director
U.S. General Accounting Office

1244 Speer Blvd., Suite 800
Denver, CO 80204
Phone: (303) 572-7388
Email: kinneyp@gao.gov


Jeffrey C. Steinhoff
Managing Director, Financial Management and Assurance

## Contents

Background

## Identification and Characteristics of Leading-edge Companies <br> 8

Key Factors in Achieving Consistent and Accurate Counts of ..... 10
Physical Inventories
Key Factor 1: Establish Accountability
Performance Goals
Level of Accountability
Strategies to Consider
Key Factor 2: Establish Written Policies ..... 16
Strategies to Consider
Key Factor 3: Select an Approach ..... 20
Strategies to Consider
Key Factor 4: Determine Frequency of Counts ..... 24
Frequency of Counts
Method of Selecting Items
Strategies to Consider
Key Factor 5: Maintain Segregation of Duties ..... 28
Physical Custody of Assets
Transaction Processing and Recording Approval of Transactions
Strategies to Consider
Key Factor 6: Enlist Knowledgeable Staff ..... 32
Counters Are Knowledgeable about the Inventory Items Counters Are Knowledgeable about the Count Process Count Personnel Are Well-Trained
Strategies to Consider
Key Factor 7: Provide Adequate Supervision ..... 36
Strategies to Consider
Key Factor 8: Perform Blind Counts ..... 39
Strategies to Consider
Key Factor 9: Ensure Completeness of the Count ..... 42
Cutoff Procedures
Preinventory Activities
Control Methods for Count Completion
Strategies to ConsiderKey Factor 10: Execute Physical Count $\square$47Communicate Information to the CounterVerify Item Data and QuantityCapture and Compare the CountPerform Requisite Number of CountsComplete Counts in a Timely MannerStrategies to Consider
Key Factor 11: Perform Research $\square$ ..... 51
Required Research
Timely Research
Approval and Referral of Adjustments Strategies to Consider
Key Factor 12: Evaluate Count Results $\square$ ..... 55
Performance Measures
Communication of Results
Modification of Policies and Procedures
Strategies to Consider
Appendixes
Appendix I: Implementation Checklist ..... 60
Appendix II: Objectives, Scope, and Methodology ..... 71
Appendix III: Bibliography ..... 73
Appendix IV: Other Related Publications ..... 74
Appendix V: Acknowledgment of Best Practice Participants ..... 75
Appendix VI: GAO Contacts and Staff Acknowledgments ..... 76

## Background

Accurate and reliable data are essential to an efficient and effective operating environment in the private sector as well as in the federal government. Inventory represents a significant portion of assets in the federal government and private sector. Therefore, managers and other decisionmakers need to know how much inventory there is and where it is located in order to make effective budgeting, operating, and financial decisions and to create a government that works better and costs less.

In the 1990s, the Congress passed the Chief Financial Officers Act of 1990 and subsequent related legislation, the Government Management Reform Act of 1994, the Government Performance and Results Act of 1993, and the Federal Financial Management Improvement Act of 1996. The intent of these acts is to (1) improve financial management, (2) promote accountability and reduce costs, and (3) emphasize results-oriented management. For the government's major departments and agencies, these laws (1) established chief financial officer positions, (2) required annual audited financial statements, and (3) set expectations for agencies to develop and deploy modern financial management systems, produce sound cost and operating performance information, and design results-oriented reports on the government's financial position by integrating budget, accounting, and program information. Federal departments and agencies work hard to address the requirements of these laws but are challenged to provide useful, reliable, and timely inventory data, which is still not available for daily management needs.

Managing the acquisition, production, storage, and distribution of inventory is critical to controlling cost, operational efficiency, and mission readiness. Proper inventory accountability requires that detailed records of produced or acquired inventory be maintained, and that this inventory be properly reported in the entity's financial management records and reports. For example, detailed asset records are necessary to help provide for the physical accountability of inventory and the efficiency and effectiveness of operations. Additionally, the cost of inventory items should be charged to operations during the period in which they are used. Physical controls and accountability reduce the risk of (1) undetected theft and loss, (2) unexpected shortages of critical items, and (3) unnecessary purchases of items already on hand. These controls improve visibility and accountability over the inventory, which help ensure continuation of operations, increased productivity, and improved storage and control of excess or obsolete stock.

Producing and maintaining accurate inventory data is a multifaceted issue. The ability to accurately count physical inventories is only one factor that must be considered in improving the reliability of inventory records. The ability to accurately count physical inventories is critical in verifying that inventory actually exists and that on-hand balances agree with financial and logistical records. This Executive Guide is intended to assist federal agencies and other governmental and nongovernmental entities in establishing and implementing inventory counting procedures that will contribute to the accuracy and reliability of inventory data.

In the private sector, the term inventory generally refers to items of property that are (1) held for sale as finished goods, (2) in the process of being produced or assembled for sale (i.e., work in process), or (3) raw materials and supplies used in producing goods, offering services, and accomplishing operational missions. The practices discussed in this guide are based on private sector inventories that are comparable in type, activity, and volume to inventories in the federal government, as listed in the following table.

## Examples of Inventory Types Common to the Private Sector and the Federal Government

- Aircraft engines and turbines
- Aircraft repair parts
- Nuts and bolts
- Electronics
- Industrial tapes, adhesives, textiles, and fabrics
- Medical supplies, equipment, and cosmetics
- Office products
- Packaging
- Refrigerators, dishwashers, ovens
- Sparkplugs, oil filters, fuels, and oils
- Hydrofluoric acid, dyes, and gases
- Insecticides and chemicals
- Vehicle assembly parts
- Aviation and vehicle electronic components and infrared devices

At the beginning of fiscal year 2001 the federal government reported $\$ 185$ billion in inventory and related property consisting of a variety of finished goods, work in process, stockpile materials, commodities, seized and forfeited property, and other operating materials and supplies.

GAO and other auditors have repeatedly found that the federal government lacks complete and reliable information for reported inventory and other property and equipment, and can not determine that all assets are reported, verify the existence of inventory, or substantiate the amount of reported inventory and property. These longstanding problems with visibility and accountability are a major impediment to the federal government achieving the goals of legislation for financial reporting and accountability. Further, the lack of reliable information impairs the government's ability to (1) know the quantity, location, condition, and value of assets it owns, (2) safeguard its assets from physical deterioration, theft, loss, or mismanagement, (3) prevent unnecessary storage and maintenance costs or purchase of assets already on hand, and (4) determine the full costs of government programs that use these assets. Consequently, the risk is high that the Congress, managers of federal agencies, and other decisionmakers are not receiving accurate information for making informed decisions about future funding, oversight of federal programs involving inventory, and operational readiness.

An improved physical count process is only one of many corrective actions that will be required to resolve all of these deficiencies. Although conducting a physical inventory, comparing the count results to recorded quantities, researching differences, and determining and posting an accurate adjustment to the on-hand balance seems like a fairly simple, straight forward exercise, in reality it is not. There are many factors that can cause the record of on-hand inventory to differ from the physical quantity counted, including omission of items from the count, incorrect counts, errors in cutoff, and improper recording or reconciliation of count results.

This Executive Guide presents processes and controls used by private sector companies recognized as excelling in their ability to manage inventory and achieve consistent and accurate counts of physical inventories. Federal agencies effectively implementing these practices can resolve significant weaknesses in the federal government's property and inventory accountability and financial reporting by improving the accuracy of data being used for budgeting, financial, and logistical and operational management decision-making purposes. The practices presented are widely adaptable to a variety of inventory types, volumes, and dollar values. Management should determine the extent to which the practices are applied based on their assessment of the objectives of the count, characteristics of the inventory, capabilities of the inventory system, effectiveness of the system of internal controls, and availability of the organization's resources. The conceptual issues discussed in this guide are focused on inventory and related property, and under certain circumstances may be applied to property, plant, and equipment. Appendix IV lists other related publications that provide further guidance and information on related topics of financial management, human capital management, and system controls and requirements.

# Identification and Characteristics of Leading-edge Companies 

To help improve the accuracy and reliability of the federal government's inventory and related property data, we studied seven companies having leading-edge inventory count process and procedures to identify the key factors and practices in achieving consistent and accurate physical counts. The seven companies we studied were recognized by leading professional service experts, consultants, and academic and business/trade publications as having best practices in inventory management. For more information on the criteria we used to select these companies, see appendix II.

## Leading-edge Companies

Boeing
Daimler Chrysler
DuPont
FedEx
General Electric
Honeywell
3M

Some of the seven leading-edge companies used more than one counting approach and allowed us to review their practices and processes at more than one operating location. A total of 12 separate locations (from the seven companies) were reviewed.

All 12 locations used one or both of the two primary approaches to counting inventory-cycle counting, in which a portion of the inventory is counted either daily, weekly, or monthly until the entire inventory has been counted over a period of time, and wall to wall counting, in which the entire inventory is counted at a point in time. Further discussion of these approaches may be found on page 20, key factor 3. In just one location, and for only a very small portion of its inventory, was sampling (in which merely a portion rather than the whole of the inventory was subject to count) used as a counting approach. At this location, a progressive approach was used where the location started with wall to wall and then moved to cycle counting once there was a proven track record of high accuracy and then moved to sampling. A location was only allowed to implement sampling after management had proven a strong control environment evidenced by multiple years of highly accurate cycle counts in which management could be assured of an accurate system. Once the location had moved to cycle counts or sampling, the high accuracy rates had to be maintained or the location was required to return to a wall to wall approach. However, because sampling was not predominately used by this or the other leading-edge
companies, the key factors contained in this report are discussed as they relate to cycle and wall to wall methodologies.

This Executive Guide discusses common characteristics and practices used by leading-edge companies to ensure that the development, execution, completion, and evaluation of a physical count of their inventories provides management with useful, reliable, and timely information for decision making and financial reporting. Specifically, we have identified 12 key factors common to these leading-edge companies-regardless of the inventory count methodology or combination of practices they used-which collectively ensure consistent and accurate count results. In addition, this guide presents comparative summaries of the goals, practices, and results of certain key factors, and provides case studies of leading-edge companies.

# Key Factors in Achieving Consistent and $\square$ Accurate Counts of Physical Inventories $\square$ 

The 12 key factors, presented in the following table are essential to leading-edge companies achieving consistent and accurate counts of physical inventories. Overarching all of these factors is top management's commitment to an environment that promotes sound inventory control.


The inventory count process is an integral component of an organization's internal control environment and management's commitment is critical to establishing effective and reliable internal controls. We observed management's commitment at every leading-edge company where attitude and leadership had created unique corporate cultures. A disciplined and structured culture, which fosters integrity, corporate values, and commitment to competence, begins with top management and is seeded throughout the organization at all levels of staff and supervisory personnel. Characteristics of strong management commitment include:

Top management advocates change and empowers employees to make changes.
Performance measures are aligned with corporate goals.
Technology and systems are invested in and realize a return.
Human capital is developed and retained.
Goals and results are communicated.
These characteristics were not just words in the mission statements of the leading-edge companies, but were in fact tools and practices employed by each of the companies to strategically manage change to enhance quality and profitability. In fact, few, if any, business practices remain static, including inventory count procedures. Senior representatives of each of the leading-edge companies discussed the need for and drive to improve cycle times, reduce costs, and reduce capital requirements by systematically reviewing their operations and processes. All seven leading-edge companies used fundamental methodologies to review their
practices: three were active participants in Six Sigma ${ }^{2}$ and five developed other internal initiatives, including participative management improvement groups, benchmarking of practices to industry standards, and "accelerated work groups" to develop, test, and implement process improvements. As a result, the 12 key factors are an accumulation of continuously improved practices and controls for counting inventory and related property.

[^7]
## Key Factor 1: Establish Accountability



One of the key factors in developing and implementing an accurate physical count process is to establish accountability. Establishing accountability for the inventory physical count process requires setting performance goals and holding the appropriate level of personnel responsible for the overall physical inventory process.

## Performance Goals

Performance goals establish targets for achieving management's objectives and contribute to the overall mission of the organization. Leading-edge companies set performance goals for the physical count process either through the establishment of inventory record accuracy goals (i.e., to measure the degree to which the physical on-hand balance agrees with inventory records), or other measurable, results-oriented performance expectations.

Setting high goals for inventory record accuracy rates is one way of establishing accountability for the physical inventory count. High goals "stretch" the organization and personnel to perform inventory counts with increasingly superior precision. Experts agree that inventory record accuracy goals should be set at 95 percent or higher. ${ }^{3}$ Six of the eight leading-edge locations performing cycle counts set performance goals by establishing inventory record accuracy goals that ranged from 95 percent to 98 percent.

[^8]The other two locations performing cycle counts and all four locations performing wall to wall counts did not establish inventory record accuracy goals, but instead established other measurable performance expectations. Other performance expectations, as set forth by management, can also be used to establish high levels of accountability and measure the results of the physical count without explicitly setting inventory record accuracy goals. These other performance expectations measure aspects of the count, such as adjustments and the number of accurate counts. Targets for these other performance expectations are established by management and are typically based on impact to operations, including financial significance, effect on production or services, and compliance with policies and procedures. The four leading-edge locations performing wall to wall physical counts and the two cycle count locations that were not setting goals for inventory record accuracy established accountability through other performance expectations, such as dollar value and quantity of adjustments and number of accurate counts. For example, one leading-edge location set an expectation that net adjustments resulting from the count would not exceed 2 percent of the dollar value of the items counted.

Additionally, many of these expectations were also used by the locations that set goals for inventory record accuracy. Table 1 illustrates the range of performance goals and expectations used by the 12 leading-edge locations in establishing accountability.

| Table 1: Performance Goals Used |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Performance goals | Cycle count locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Inventory record accuracy goals | 98\% | 95\% | 98\% | 98\% | 95\% | 98\% | a | a | a | a | a | a |
| Other goals |  |  |  |  |  |  |  |  |  |  |  |  |
| Dollar value of adjustments | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| Quantity of adjustments | $\bullet$ |  | $\bullet$ | - | $\bullet$ |  | - |  |  |  |  |  |
| Number of accurate counts | $\bullet$ |  | - | - |  |  |  |  |  |  |  |  |
| Note: - Indicates applicability to the 12 locations studied from the 7 companies selected. <br> a These locations did not establish inventory record accuracy goals. |  |  |  |  |  |  |  |  |  |  |  |  |

## Level of Accountability

Holding the appropriate level of management responsible and answerable for the overall inventory process establishes accountability for the physical inventory and is essential to achieving consistently accurate counts. Accountability within an organization should exist from the top of the organization to the lowest level. However, primary responsibility for the overall physical inventory counts should be specifically designated and assigned. Accountability for achieving performance goals should be established in job descriptions and expectations and
enforced through periodic performance evaluations and a reward system that measures the achievement of performance goals.

Direct accountability for the overall physical inventory count process was established by the leading-edge companies at the level responsible for managing the physical count process. The person or persons at this level were typically supervisors or managers of an inventory group that performed all counts and research, or a materials area supervisor/manager responsible for the inventory within his/her area. These individuals had specific responsibility for (1) planning the count, (2) organizing the count teams, (3) reviewing counts, (4) reviewing research, and (5) approving adjustments within established tolerances. The accountable person(s) were held responsible for achieving the company's performance goals, including inventory record accuracy, through personnel performance expectations and evaluations, which affected bonus and pay decisions.

## Case Study

One of the leading-edge locations, a 700,000 square foot distribution facility, used a separate inventory group that performed all physical counts and researched all variances. The group consisted of a supervisor, inventory group leads, and counters/researchers. The supervisor of the inventory group was responsible for the overall physical count process, including organizing and supervising the count, performing research, reviewing and approving adjustments, and evaluating the results of the counts. The company had established accountability and responsibility for the overall physical count with the inventory group supervisor and the inventory shipping and receiving supervisor was responsible and accountable for receiving, storing, and shipping the inventory. These two supervisors were collectively held accountable for achieving the company's established inventory record accuracy goal of 98 percent based on an accurate physical count and the accuracy of the inventory records. This goal was included as part of the supervisors' expectations and evaluations and was used as a tool in determining merit raises and bonuses.

In addition to holding appropriate management levels responsible and answerable for the quality of the inventory count process, leading-edge companies often push accountability to the floorlevel personnel performing the count. Personnel performing the count were held accountable for performing an accurate physical count of the inventory items, but not the accuracy of the count agreeing to the inventory records. For example, when a subsequent recount (discussed in key factor 10) revealed an error in the first count results, one leading-edge location used this information as an indicator that the first count team may have performed an inaccurate physical count, indicating the need for additional training.

## Strategies to Consider

To establish accountability for the physical count process, senior executives could consider the following:

- Establish performance goals for the physical count that are aligned with the organization's mission, strategic goals, and objectives.
- Establish high measurement goals and continuously assess the organization's progress in achieving and maintaining those goals.
- Identify the line of authority and responsibility from top management to the level of the organization responsible for accomplishing a consistent, accurate physical count of inventory and related property.
- Develop employee/supervisor performance measurement systems to hold appropriate personnel accountable for achieving the organization's performance goals.


## Key Factor 2: Establish Written Policies



Establishing and documenting policies and procedures are essential to an effective and reliable physical count. Policies and procedures demonstrate management's commitment to the inventory physical count process and provide to all personnel clear communication and comprehensive instructions and guidelines for the count. Establishing written policies and procedures helps ensure consistent and accurate compliance and application needed to achieve high levels of integrity and accuracy in the physical count process. Policies and procedures also become the basis for training and informing employees.

Well-documented physical count policies and procedures typically pertain to all aspects of the physical count process, including the activities or tasks that take place before, during, and after the physical count. Documented policies and procedures generally include everything an employee needs to know to complete the requirements of a specific task for the physical count.

Leading-edge locations established written policies and procedures addressing their physical inventory process. These policies and procedures include all aspects of the physical count including objectives of the count, types and timing of counts, instructions for counting and recording, and researching and adjusting variances. The policies and procedures at the leadingedge locations were written in sufficient yet succinct detail to explain the specific procedures and tasks to be performed. A table of contents from one leading-edge location's written policies and procedures manual, presented in figure 1, demonstrates the breadth of the location's policies and procedures. Detailed written, specific instructions on all the tasks involved in the physical count process were included within each of its sections.

Figure 1: Excerpt from A Leading-Edge Company's Policies and Procedures Manual I. Why
A. Objective of the Physical Inventory Process
II. Planning
A. Inventory Methods
B. Record Definitions
C. Timing of Inventory
D. Review of Inventory Procedures
E. Physical Location Preparation
F. Cutoff Data Arrangements
G. Use of Specialists
H. Planning Meetings
III. Observing/Taking
A. Segregation of Duties
B. Forms
C. Recording Information
D. Inventory Movement During Taking
E. Obsolete, Damaged, and Slow-Moving Items
F. Inventories in Off-Site Locations
G. Preliminary Inventories
H. Review and Accountability
I. Bar Coding System
IV. Reconciliation
A. Summarization
B. Reconciliation
C. Timing and Approval of Adjustments
D. Recording of Inventory Adjustments
V. Computer Access and Security
A. System Security
B. Segregation of Duties
C. Processing Controls
D. Disaster Recovery
E. Documentation
F. Master File Changes
VI. Special Situations
A. Consigned Stock, Company Owned
B. Consigned Stock, Vendor Owned
C. Theft Sensitivity
D. Returnable Items
E. Special Materials
VII. Frequency
A. Inventory Type
B. Period

## Appendix A Cycle Counts

A. Inventory Classification
B. Inventory Count Process
C. Inventory Accuracy
D. Inventory Tolerance
E. Cycle Count Inventory Adjustments
F. Management Reporting
G. Certification
H. Definitions
I. Checklist

Once policies and procedures have been established and documented, they must be regularly reviewed and updated. Policies and procedures that are regularly reviewed and revised to reflect changes in the process and tasks of the physical count reinforce management's commitment. Up-to-date policies and procedures provide a reliable and credible resource to employees, encourage compliance with management's directions, and form the basis for a reliable physical count process.

All the leading-edge locations regularly reviewed and updated their policies and procedures. The majority of the locations reviewed and revised their policies every 1 to 2 years, while others revised their policies any time there was a change in the process or specific tasks of the physical count.

## Strategies to Consider

To establish effective written policies and procedures for the physical count process, senior executives should consider the following:

- Develop broad policies affecting inventories that are designed to attain management's goals.
- Develop written procedures for all aspects of the physical count processes, including
- defining the current process and the individual tasks associated with the process and
- procedures for and examples of filing and completing required paper work.
- Regularly review and revise policies and procedures for changes in the process and individual tasks.


## Key Factor 3: Select an Approach $\square$



## Characteristics

- Cycle counting supports operational and financial needs of the organization
- A wall to wall physical count supports financial reporting at a point in time
- In selecting the best physical count approach management should consider

1) the objective or purpose of the count and the timing issues involved,
2) the capabilities of the inventory system,
3) the existing control environment over the inventory system and processes, and
4) the characteristics of the inventory

The process of counting physical inventory is an essential control for operational efficiency and financial reporting. A physical count, when properly executed, verifies the existence of physical assets and the completeness and accuracy of records. Accurate inventory records are key to management's confidence in financial and other information used in decisionmaking.

The two predominant approaches used by the leading-edge companies to physically count inventory are cycle counting and wall to wall. Each approach offers distinct advantages and serves some purposes better than others. As a result, organizations may choose to use only one approach or a combination of approaches.

Cycle counting is a method by which a portion of the inventory is counted either daily, weekly, or monthly until the entire inventory has been counted over a period of time. Cycle counting serves two purposes: (1) it supports the reliability of the on-hand inventory quantities used in management decisions and financial reporting and (2) it normally results in increased operational efficiency. Cycle counts are used as a control mechanism to reduce the risk that the inventory process and systems are functioning incorrectly.

In the wall to wall approach the entire inventory is counted at a point in time, usually as of the end of an annual or interim period. This method is primarily used for financial reporting purposes in order to validate the amount of reported inventory.

Determining which approach or combination of approaches is the most appropriate for an organization is a key management decision. When selecting an approach, management should consider the objective and timing of the count, capabilities of the inventory system, the existing control environment, and the characteristics of the inventory.

The type of count performed is determined by management based on the reason for the count. Physical counts can be used to establish a balance on or as of a certain date for financial reporting, to monitor the accuracy of records in an inventory system, and to ensure that the proper inventory is available for operational needs. In determining the objective of the count, management should consider the time and resources available or needed to conduct and complete the count. We found that cycle counts were used to ensure that the balances in the inventory system were continuously correct for management decisions and financial reporting and to determine that recorded items were present to meet operational needs for production or distribution. We found that wall to wall counts were primarily used to establish a balance on or as of a certain date for financial reporting. In one instance, the wall to wall approach was used monthly to monitor the inventory system and meet operational needs.

Another primary consideration is the capability of the inventory system. There are two general types of inventory systems-perpetual and periodic. A perpetual inventory system maintains current item balances by recording receipts and shipments. In contrast, a periodic inventory system tracks receipts and shipments in a purchases account, and infrequently updates item balances. For cycle counting, a perpetual system is needed to provide current balances for reconciliation of the system and physical count quantities. We found that all of the leading-edge companies had perpetual inventory systems. Additionally, we found that five of the seven leading-edge companies used a perpetual inventory system with locator capability, commonly referred to as a locator system, which identifies the specific physical location of each individual item in inventory.

The existing control environment over the inventory system and related processes is also a consideration in selecting the type of count to conduct. Internal controls over the inventory system and processes should be effective in providing reliable information for conducting the physical count. Controls must exist to provide reasonable assurance that all transactions affecting the inventory balances are properly executed and recorded in the inventory system. Unless this is the case, balances in the inventory system do not provide a reasonable basis to compare to the physical count quantities. Inventory record accuracy rates, based on results of prior counts, may be an indicator of the strength of the control environment. A pattern of low accuracy rates or known control weaknesses may suggest that (1) the recorded balances in the inventory system are not reliable for conducting cycle counts and (2) a wall to wall count may be more appropriate to reestablish accurate inventory balances.

Characteristics of the inventory should be considered in selecting an approach. Management should consider if there are identifiable and distinct segments of the inventory that may lend themselves better to cycle counting, wall to wall counting, or a combination of both. Identification of distinct segments should include considerations of the size, dollar value, turnover, criticality to operations, and susceptibility to misappropriation, including theft, of the inventory.

All of the leading-edge companies use cycle counting or wall to wall or both to count inventory. A majority of these companies used the cycle count approach. However, some companies used a combination of wall to wall and cycle for separate identifiable segments of their inventory. Three companies varied their approach for separate segments of their inventory based on either the type of material (raw material, work in process, or finished goods), or by a division's or location's operations (distribution, warehousing, and manufacturing). For example, one company conducted wall to wall counts until such time as the accuracy of the balances was sufficient to support cycle counting. Another leading-edge company conducted cycle counts on work in process materials that were critical to operations and conducted monthly wall to wall counts on finished products that were a material portion of the plant's inventory and were subject to strong logistical and process controls.

## Case Study

One leading-edge company had approximately 80 different facilities within the United States and manufactured and distributed a wide range of products from small units to large reels and bundles. This company used a combination of cycle counting and wall to wall counts based on the existing control environment and historical accuracy rates at its facilities. Facilities were allowed to move to cycle counting once the location had completed a wall to wall annual physical count and had demonstrated the ability to perform cycle counts by maintaining record accuracy rates above 95 percent and good inventory process controls for receiving, manufacturing, moving, and shipping of items. The facility also had to demonstrate adequate training procedures, processes, and a good system that would support cycle counts before a cycle count program would be approved. The facility would begin by cycling through its entire inventory four times per year. As the facility demonstrated its ability to maintain accurate inventory records by achieving high record accuracy rates and reliable systems and processes, it could reduce the number of cycles down to one per year. However, the reduction from four cycles to one cycle per year took approximately 6 years. Additionally, if the facility's inventory record accuracy fell below 95 percent it was required to submit a corrective action plan to address the causes of the low accuracy and conduct an annual wall to wall physical count, in addition to the regular cycle counts, until a 95 percent accuracy rate was once again achieved and maintained.

## Strategies to Consider

To select a physical inventory counting approach, senior executives should consider the following:

- Determine the objectives of performing the physical count
- to establish a balance as of a specific date for financial reporting,
- to monitor the accuracy of the inventory records for financial reporting and management decisions,
- to ensure the availability of inventory to meet operational needs including mission readiness,
- to identify excess or obsolete inventory.
- Assess the resources and timing needed to conduct the count.
- Evaluate the capability of the inventory system to
- maintain item balances on a current or periodic basis, and
- maintain balances by item location.
- Evaluate the existing control environment over the inventory system and processes
- to ensure transactions are properly executed and recorded in the inventory system,
- to determine that the inventory system provides a reasonable basis for comparison to the physical count, and
- by considering existing or historical accuracy rates to support the assessment.



## Characteristics

Determine which items to count and how frequently
Choose a method of selecting individual items or locations for count

Counting an appropriate amount of the total inventory at a point in time or over a period of time with regular frequency helps to provide accurate inventory records for operational decisions and financial reporting. Management should count an appropriate amount of the total inventory by determining the desired frequency of counts and selecting a method of choosing individual items or locations to count.

## Frequency of Counts

In order to count an appropriate amount of the total inventory, management must decide which inventory items to count and how frequently those items should be counted. The most desirable goal would be to count all of the inventory items at least once a year. However, maintaining accurate inventory records by counting items takes time and costs money. Since there are typically limits on these resources, the best way to balance control of the inventory and cost of the count is to focus on the items determined to be more important or of higher risk to the organization. Accordingly, it is not always practical to give the same treatment to each item; it may be desirable to segment the inventory into identifiable classes and assess the risk for each segment or class to determine the frequency of counts. For instance, management may determine that items critical to the production process, resulting in a high risk to the organization, should be counted every day, week, or month. In other instances, a segment of inventory that has little or no movement and does not represent a significant portion of the inventory, and thus has low risk, may be counted less frequently. The purpose of classifying items into groups or segments is to establish an appropriate degree of control over each item. Management should exert the highest degree of control (frequent counts) on the most important items, and the least control on less important items. Management may determine that there are
many degrees of control and importance depending upon the organization's needs and inventory characteristics. Management should consider the dollar amount, criticality to operations, and susceptibility to theft or fraud when segmenting the inventory and determining the frequency of counts for each segment.

Leading-edge locations used a variety of frequencies for various segments of their inventory. Locations performing cycle counts segmented their inventory by dollar value, activity or turnover, sensitivity or criticality, historical accuracy rates, or a combination of these elements in determining how often they would count. The frequency ranged from segments that were not counted at all, or less than once a year, to segments that were counted daily, monthly, quarterly, semi-annually, or annually, as shown in table 2. Locations that segmented their inventory by dollar value counted higher dollar value items more frequently than lower value items. In other instances, locations used a combination of dollar value and activity or turnover of items to segment their inventory, in which the higher dollar items by activity were counted more frequently, usually four times per year, than those that had low dollar value by activity, which were counted once a year. On the other hand, we found that locations performing wall to wall physical counts typically counted their entire inventory at least once a year at a point in time. However, we did note that one location performed a wall to wall physical inventory on one segment of its inventory every month, due to the dollar value significance of these items to the company's total inventory. Table 2 illustrates the frequency of counts for separate inventory segments at the 12 leading-edge locations.

| Table 2: Frequency of Counts by Inventory Segments |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Frequencies | Cycle counts locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| More than 4 times per year |  |  |  | - | - |  | - |  |  |  |  | $\bullet$ |
| 3-4 times per year |  | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  | $\bullet$ |  |  |  |  |
| 2-3 times per year |  | $\bullet$ |  |  |  |  |  | $\bullet$ |  |  |  |  |
| 1-2 times per year | $\bullet$ | $\bullet$ | $\bullet$ |  |  | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |
| Less than once a year | $\bullet$ |  |  |  |  |  | $\bullet$ |  |  |  |  |  |
| Note: - Indicates applicability to the 12 locations studied from the 7 companies selected. For example location 1 segments its inventory by dollar value and counts one segment with items over $\$ 250$ once per year and another segment with items less than $\$ 250$ less than once a year. |  |  |  |  |  |  |  |  |  |  |  |  |

## Case Study

One leading-edge location (location 8 in table 2), manufacturing over 11 million electronic components each year, segmented its work in process inventory and varied the frequency of counts for each segment in order to achieve greater coverage of the material segments of the inventory. The work in process inventory was segmented based on the dollar value multiplied by activity or turnover, and placed in one of four separate segments. Segment A represented those items that were in the top 10 percent, segment B were items in the next 20 percent, segment C were items in the next 30 percent, and segment D was the remaining 40 percent. Each segment was counted with either greater or lesser frequency to achieve more coverage of the higher dollar activity items and less coverage of the lower dollar activity items each year. Segment A was counted four times, segment B was counted three times, segment C was counted two times, and segment D was counted once per year.

## Method of Selecting Items

Once management has determined which items to count and how frequently, a method of choosing individual items or locations must be determined. The method should ensure that all items within the identified segments are chosen to achieve the desired frequency and an accurate count. Leading-edge locations used various methods to select items for count within an identified inventory segment. The most common method among leading-edge locations performing cycle counts was to select items sequentially by rows or geographic area within the warehouse or plant and work their way through the facility over a period of time. For example, one of the leading-edge locations divided its warehouse into geographic areas (shipping, receiving, and warehouse rows) and then selected an area to count each day.

Other methods used by the leading-edge locations to select individual items or locations for count included a random selection, weighted selection toward higher dollar volume or value items, and selection based on management's discretion. One of the leading-edge locations used a random method by which the inventory system tracked which items had been counted and which items still needed to be counted in order to ensure that all items were counted each year. The inventory supervisor manually entered how many items to select for count each month, and the inventory system randomly selected the desired number of items from those not counted. In another instance, one of the leading-edge locations selected the top 25 items by dollar value each day from a list of items that had not been counted. Locations performing wall to wall physical counts counted all inventory at a point in time by splitting the warehouse or facility into geographic areas and assigning count teams to each area to ensure that all inventory was counted.

## Strategies to Consider

To determine the frequency of the physical counts, senior executives should consider the following:

- Assess the resources and timing needed to conduct the count.
- Identify segments or classes of the inventory and assess each segments risk to determine the degree of control needed based on
- activity or turnover,
- dollar value,
- sensitive or classified items,
- items critical to production or mission readiness, and
- items susceptible to misappropriation, including theft.
- Select a frequency to count each segment based on the assessed risk and degree of control needed such as
- daily,
- weekly,
- monthly,
- semi-annually, or
- annually.
- Determine a method of selecting individual items for count such as
- sequentially by row or area within the warehouse or facility,
- random selection, or
- weighted selection towards higher dollar, higher activity items.


## Key Factor 5: Maintain Segregation of Duties



Segregation of duties, a commonly used and widely accepted internal control and business practice, entails dividing or segregating key duties and responsibilities among different people. Implemented effectively, this type of control reduces risk of error and fraud so that no single individual can adversely affect the accuracy and integrity of the count.

The key areas of segregation are (1) physical custody of assets, (2) processing and recording of transactions, and (3) approval of transactions. Ideally personnel performing any one of the above functions would not also have responsibilities in either of the other two functions. Thus, where practical, adequate segregation of duties for the physical count process includes using personnel who do not have overlapping responsibilities in (1) custody or access to the inventory items for count, (2) recording transactions resulting from the count, and (3) authority for approving adjustments resulting from the count. In situations where segregation of duties is not practical or cost-effective, other controls should be employed to mitigate the recognized risk. Such mitigating control procedures include blind counts (meaning that the counter does not know how many items are supposed to be there before or during the count process), increased supervision, and applying dual control by having activities performed by two or more people.

## Physical Custody of Assets

To best accomplish segregation of duties, the normal job activities of the person performing the physical count should not include custodial activities such as receiving, shipping, and storing physical assets. We found that the strongest control employed by leading-edge locations was to
exclude those with asset custody from the counting activity. Five out of the eight leading-edge locations performing cycle counts accomplished segregation of duties by using a separate inventory group of dedicated counters with no other warehouse responsibilities to perform the physical count. The other three locations use warehouse personnel with normal warehouse responsibilities, such as shipping, receiving, and storing, to perform the count. These three locations implemented mitigating controls to reduce the risk of using warehouse personnel by performing counts in which the counters did not have knowledge of or access to the on-hand quantity. This is referred to as a blind count.

The leading-edge locations performing wall to wall physical counts used warehouse personnel or a combination of warehouse and nonwarehouse personnel to perform the physical count. This is normal procedure for companies performing wall to wall inventories, since it is usually an enormous task to count the entire inventory in a short time, such as a weekend. All four of these locations had implemented mitigating or dual controls to ensure proper counts and to reduce the risk caused by the lack of segregation of duties. These mitigating and dual controls included (1) performing blind counts, (2) increasing supervision, and (3) using two-member count teams.

| Table 3: Segregation of Duties |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Cycle count locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Personnel performing counts |  |  |  |  |  |  |  |  |  |  |  |  |
| Inventory group of dedicated counters not having custodial duties | $\bullet$ | $\bullet$ |  | $\bullet$ |  |  | $\bullet$ | $\bullet$ |  |  |  |  |
| Warehouse personnel having custodial duties |  |  | ${ }^{\text {a }}$ |  | $\bullet$ | - |  |  | $\bullet$ | - | $\bullet$ | - |
| Mitigating controls |  |  |  |  |  |  |  |  |  |  |  |  |
| Blind counts |  |  | - | $\bullet$ | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| Increased supervision |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| Two member count teams |  |  |  |  |  |  |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| Note: - Indicates applicability to the 12 locations studied from the 7 companies selected. <br> a This location used warehouse personnel to perform 1st and 2nd counts and utilized a separate inventory group to perform any necessary 3rd counts and research variances. |  |  |  |  |  |  |  |  |  |  |  |  |

## Transaction Processing and Recording

Personnel recording transactions that affect the on-hand quantities should not be responsible for the physical custody of the inventory or approval of adjustments. Segregation between the duties of recording transactions that result from the physical count and duties of custody or approval is essential to provide for the integrity of the physical count process. Personnel recording inventory adjustments to the on-hand balances at leading-edge locations did not have custodial responsibilities, such as shipping, receiving, and storing, and did not have to approve significant adjustments to the records.

## Approval of Transactions

Personnel approving transactions that affect on-hand inventory balances should not be responsible for the physical custody of the inventory or recording transactions. Leading-edge locations have controls in place to manage and limit who has the authority to approve adjustments resulting from the count. Most locations assigned approval limits to different levels of management. As the dollar-value of the adjustment increased, the approval level moved up the management chain to a higher level of management.


#### Abstract

\section*{Case Study}

One leading-edge location, a distributor of prepackaged parts, accomplished segregation of duties by using a separate inventory group to conduct physical counts of inventory. In assembling this group and assigning responsibilities, management implemented the key areas of segregation, separating the duties of personnel responsible for the custody of the inventory (warehouse personnel), counting the inventory (cycle counters), and posting adjustments to the records (cycle count leads). The inventory group consisted of an inventory control supervisor, six cycle counters and one cycle count lead for the first shift, four cycle counters and one cycle count lead on the second shift, and three cycle counters and one cycle count lead on the third shift. Each counter was responsible for performing approximately 200 inventory item location counts per day and any necessary recounts. Responsibilities of the cycle count leads included preparing daily workload assignments for the counters, posting and monitoring adjustments to the record on-hand balances, and researching variances. The inventory control supervisor along with the leads determined the cause of variances between counted quantities and record on-hand quantities and implemented solutions to rectify underlying problems causing the variances.


## Strategies to Consider

To implement and maintain effective segregation of duties in the physical count process, senior executives should consider:

- Determine there are available resources to conduct the count and whether they have the appropriate knowledge and experience of the inventory and counting.
- Analyze the normal job duties of personnel performing the physical count, considering who has responsibility for
- custody or physical control of the inventory,
- processing and recording of inventory transactions, and
- approval of transactions and adjustments.
- Determine whether controls may be impaired if any one person has been given responsibility for more than one activity noted in the previous strategy.
- Perform a risk versus cost analysis of any apparent control risks, and determine whether
- duties may be reassigned, or
- mitigating controls can be implemented, or
- risk is at an acceptable level.


## Key Factor 6: Enlist Knowledgeable Staff



## Characteristics

- Counters are knowledgeable about the inventory items
- Counters are knowledgeable about the count process
- Counters are well-trained

Inventory counters who are knowledgeable about the inventory items being counted and the inventory counting procedures are critical to performing effective and accurate physical counts. It is important for inventory counters to be adequately trained; experienced, knowledgeable inventory counters increase the accuracy and efficiency of the physical count. In addition, counters most familiar with the plant layout and daily operations are more likely to conduct the counts quickly and resolve count discrepancies without having to conduct excessive research.

## Counters Are Knowledgeable about the Inventory Items

Leading-edge companies normally use in-house personnel-whether a dedicated group or warehouse personnel-who have been chosen expressly because of their prior experience with and knowledge of inventory items. One major advantage of this approach is that experienced warehouse personnel are better able to distinguish between items that look similar but have different technical specifications. They are also more likely to correctly identify the items they are counting and provide accurate item descriptions and count quantities, decreasing the likelihood of needing second or third counts.

Additionally, experienced personnel are more familiar with the layout of plant and warehouse facilities and the movement of items within and between these facilities. They are aware of areas where items may be placed, either intentionally or unintentionally, and thus can more easily locate all the items that should be counted and potentially reduce misstatements in the quantities counted. They are knowledgeable about how items are packaged and stored as well as how items are used in a production line, so they can quickly and accurately count assigned items.

Eleven of the twelve leading-edge locations use personnel who have prior work experience and knowledge about the inventory items being counted. A promotion from the warehouse to the position of cycle counter within a dedicated count team of one organization was one way in which a leading-edge location trained, developed, and retained high-performing counters. Another location, which experienced high turnover and used personnel with varying degrees of experience, enhanced the knowledge of counters by providing on-the-job training and teaming new counters with experienced counters.

## Counters Are Knowledgeable about the Count Process

Inventory counters should be knowledgeable about the count process to perform efficient and accurate physical counts. Leading-edge locations performing cycle counts typically use individuals whose sole function is conducting physical inventories. These dedicated counters, often designated as the inventory audit group, usually have considerable experience working in the warehouse before being promoted to an inventory counter position. Cycle counters normally have significant prior inventory experience, are well trained, are dedicated to only counting inventory, and perform counts routinely. Leading-edge locations performing wall to wall counts typically use warehouse personnel to perform the counts using effective mitigating procedures to compensate for the lack of segregation of duties, such as blind counts and two member count teams. Warehouse personnel may be less experienced in the count process because wall to wall counts are often performed only once a year. If personnel with lesser knowledge of the inventory perform the count, then increased supervision, training, and instructions are commonly required. One leading-edge location used administrative or other staff to supplement its count teams, teaming these employees with experienced warehouse inventory personnel.

## Count Personnel Are Well-Trained

Training all counters and supervisors involved in the physical count reduces the risk of error in performing the count and communicates a consistent way to perform counts. Counters, supervisors, and individuals involved in research and adjustment of variances in the leading-edge locations all received appropriate training. At leading-edge locations this was typically accomplished through formal classroom training, on-the-job training, or a mix of the two.

The scope of training is generally dependent on the type of counts conducted, wall to wall and/or cycle counts. Leading-edge locations typically train counters on types of inventory, warehouse layout, unit of measure, recording of counts, computer systems, and use of radio frequency devices, if applicable. Leading-edge locations that use a separate inventory group to perform research and/or record adjustments typically provide training on researching variances, posting adjustments, and operating computerized inventory systems.

## Case Study

The dedicated inventory counter occupation in the inventory audit group of one leading-edge location is a well-paid, prestigious position. Candidates for this position are selected primarily from warehouse personnel with years of experience and an in-depth knowledge of the inventory items. The inventory audit group's commitment to excellence is such that newly recruited counters receive several weeks of formalized on-the-job training. New counters shadow experienced counters, who supervise hands-on training in specific areas, in accordance with a formal list of tasks and functions. The progress of each new counter is monitored by the group's supervisor and, before being allowed to conduct counts on their own, they must demonstrate mastery of the required tasks and functions. Once the new counter is on his/her own, their work is subject to increased supervisory review, including follow-up test counts by more experienced counters, until the employee meets required performance standards.

## Strategies to Consider

To enlist knowledgeable staff in the physical count process, senior executives should consider:

- The amount of resources available to conduct the count.
- Experience and knowledge of the inventory and count process of the count team.
- Frequency of counts or time necessary to complete the count.
- Establishing a separate inventory group of dedicated counters.
- Assigning or promote personnel with prior experience in the warehouse and knowledge of the inventory a counting position.
- Providing on-the-job and classroom training of the count process to counters, supervisors, and personnel researching variances on aspects such as
- types of inventory,
- warehouse layout,
- unit of measure,
- RF devices,
- computer system,
- research (if applicable), and
- supervision (if applicable).


## Key Factor 7: Provide Adequate Supervision



Supervision, a key factor of the count process, includes directing the efforts of personnel and determining that the objectives of the inventory count have been accomplished. Elements of supervision include providing instructions and training, solving problems, and reviewing the work performed. Adequate supervision increases the likelihood of accurate and consistent counts and reduces the overall risk of incorrect or unreliable counts. Supervisor responsibilities include: (1) ensuring that counters are available to count, (2) selecting count team members, (3) assigning count team responsibilities, and (4) ensuring that the count is completed on time. Counters also make sure that needed supplies and equipment, such as count sheets, calculators, tape measures, scales for weighing, and forklifts are available. Supervision includes providing instructions and guidance to counters prior to and during the count and making sure that counters are following instructions. Supervisors also ensure that all inventory items are counted and that counters record counts on count sheets or other control devices.

Supervision can be applied at different levels and degrees depending upon the experience of the inventory counters and other controls that are in place. The level of supervision is typically either direct, on-the-floor supervision during the count, or indirect supervision in which the supervisor is not on the floor during the count, but instead uses controls that are in place to monitor count performance. Increased supervision in the form of direct supervision may be used as a mitigating control in instances where (1) the counts are infrequent, (2) there is a lack of segregation of duties, and/or (3) the counters are less experienced and knowledgeable about the inventory or count process.

The use of direct or indirect supervision at the leading-edge locations was generally dependent upon management's determination of the adequacy of segregation of duties. (See key factor 5.)

All leading-edge locations performing wall to wall physical counts used direct, on-the-floor supervision as one of their controls to reduce the risks discussed above. On the other hand, all leading-edge locations performing cycle counts used indirect supervision, some also using additional control mechanisms to monitor performance.

For example, as discussed in key factor 5, the strongest of controls for segregation of duties, found at five locations, was accomplished by using a separate inventory group of dedicated counters. These separate, dedicated counters were highly specialized and independent of routine inventory responsibilities. Because of their years of experience and knowledge of counting, their performance was not directly monitored by the supervisors. Supervisors monitored the number of counts being performed and the number of variances. They also concentrated on identifying the causes of variances between the counts and recorded on-hand quantities in order to identify solutions to correct the causes of the errors. The remaining three locations performing cycle counts used warehouse personnel to perform cycle counts without direct supervision. These locations reduced their risk of impaired segregation of duties by using personnel who were experienced and knowledgeable about the inventory and count process and by performing blind counts.

## Case Study

One leading-edge location, an electronic component manufacturer producing 49,000 units per day with two warehouses totaling over 1 million square feet, performed daily cycle counts on the raw materials used on the production line and performed monthly wall to wall counts on the finished goods. The location used a dedicated inventory group to conduct its daily cycle counts, which included an inventory group supervisor and 14 dedicated counters. These dedicated counters attained their position through prior warehouse experience and as a result, were highly knowledgeable about the inventory and count process. Because of the experience and knowledge of these counters, the inventory group supervisor did not directly supervise the performance of the counts, but instead monitored the cycle counts by reviewing count cards for accuracy and completeness, to ensure that all items were counted.

Once a month, the location performed a wall to wall count on its entire inventory of finished goods. The location used the dedicated inventory group that performs cycle counts as well as warehouse employees to conduct the wall to wall count. There were a total of 24 counters and each warehouse person was teamed with one of the dedicated cycle counters. There were three supervisors on the floor during the wall to wall physical count to directly monitor the count to ensure that the count teams were following instructions and that all items were properly and promptly counted. The degree of supervision was significantly increased for the monthly wall to wall counts because of the increase in the number of counters and to mitigate segregation of duties problems due to the use of warehouse personnel as members of the count team.

## Strategies to Consider

To provide adequate supervision over the physical count process, senior executives should consider the following:

- The number of resources or teams performing the physical count.
- Frequency of the counts or the time necessary to complete the count.
- Knowledge and experience of the personnel performing the count.
- Whether there is adequate segregation of duties from responsibilities of asset custody.
- The assigned responsibilities of the supervisor such as
- the availability of count personnel,
- selection of count team members,
- assignment of count responsibilities,
- monitoring of performance, and
- ensuring counters are following procedure and complete counts in a timely manner.
- Size of the warehouse or area subject to count.
- The number and complexity of items to be counted.
- Other controls that may be in place during the count, such as the performance of blind counts.


## Key Factor 8: Perform Blind Counts



A blind count refers to the performance of a physical inventory count without the knowledge of, or access to, the on-hand quantity balance in the inventory records. Counters are provided the part number, description, location, and other information necessary to perform the count but not the item quantity information. Inventory items are counted and compared to the on-hand balance in the inventory records. If the blind count agrees with the record on-hand balance, there is a high level of confidence that both the count and the record on-hand balance are accurate.

Blind counts offer the greatest degree of assurance of accurate and reliable counts. If the record on-hand quantity is provided to the counters, there is a risk that the counters will not actually perform the count. They may visually look at the inventory, conclude that it agrees with the record on-hand quantity, and record the on-hand balance amount as the physical count. The counters may be influenced by the record on-hand quantity provided to them and make assumptions that are incorrect. For example, if there is a box of 20 items and the record onhand shows the quantity as 1 , the counters may be influenced to record the count as 1 instead of recording the correct unit measure count as 20 .

We found that blind counts were one of the strongest control measures used at leading-edge locations. Counters did not have access to record quantity during the count at 10 of the 12 leading-edge locations. Specifically, six of the eight locations performing cycle counts and all four of the locations performing wall to wall counts performed blind counts.

An important consideration in deciding whether or not to perform blind counts is the strength of control provided by segregation of duties, as discussed in key factor 5. Counts at all locations performing wall to wall inventory were completed by warehouse personnel having potentially
conflicting custodial duties. However, management at these locations mitigated that increased risk by using blind counts and other controls. Conversely, the two locations performing cycle counts, in which the quantity was provided to the counters before or during the count, used a dedicated count team whose members had no other conflicting custodial duties. Management at these two locations asserted that this approach added to their efficiency by allowing counters the opportunity to solve variances often while they were at the inventory item location. They stressed, however, that the combination of segregated duties along with other control measures, such as maintaining a history of who performed counts by item and location and supervisory review, balanced the increased risk of providing the counters with quantity information.

| Table 4: Blind Counts |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Cycle count locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Blind counts |  |  |  |  |  |  |  |  |  |  |  |  |
| Record quantity not accessed during the count |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | $\bullet$ | - | - |
| Personnel performing counts |  |  |  |  |  |  |  |  |  |  |  |  |
| Inventory group of dedicated counters not having custodial duties | $\bullet$ | $\bullet$ |  | - |  |  | $\bullet$ | $\bullet$ |  |  |  |  |
| Warehouse personnel having custodial duties count |  |  | $\bullet$ |  | $\bullet$ | $\bullet$ |  |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |

## Case Study

One leading-edge company with over 700 warehouse and distribution centers performed daily cycle counts. The company used warehouse personnel with normal warehouse responsibilities, including asset custody, to perform all first and second counts. A separate inventory control group was responsible for coordinating and overseeing their physical count(s), performing any third counts, and researching and reconciling variances. To reduce the risk of error or fraud increased by the counters having asset custody responsibilities, the company strengthened controls by using blind counts, and by restricting access to on-hand balances prior to and during the count.

## Strategies to Consider

To effectively use blind counts during the physical count, senior executives should consider the following:

- Tools used to perform the count (count cards, count sheets, or RF Guns).
- Capability of the inventory system to not provide quantities on count cards or sheets, and restrict access to on-hand balances prior to and during the performance of the count, except for authorized personnel.
- Personnel performing the physical count and whether there is segregation of duties between the responsibilities of asset custody and physical counts.
- Personnel's experience and knowledge of the inventory items and the count process.


## Key Factor 9: Ensure Completeness of the Count



A complete count requires that (1) the inventory being counted include all the items that should be present and not include items that are not part of the inventory and (2) control of the count process is maintained so that all inventory items that should get counted do in fact get counted. To facilitate the inventory being completely accounted for and accurately counted, there are a number of considerations that need to be made before the actual count begins. These considerations fall into three major categories:

- Cutoff procedures,
- Preinventory count activities, and
- Control methods for count completion.


## Cutoff Procedures

Cutoff is the process of (1) controlling the movement of items between locations, such as in shipping, receiving, production, and rewarehousing and (2) coordinating the timing and verifying the movement of items with the related quantity changes in the inventory system. Cutoff is an essential procedure to ensure the existence and ownership of inventory. Cutoff can be achieved in a variety of ways, but the easiest way, in addition to verifying and coordinating the movement of items and the inventory records, is to conduct the count when operations are shut down or during a period when there is limited movement of inventory, such as the graveyard shift or weekends. All leading-edge locations performing wall to wall counts shut down their warehouse operations during the physical count.

One of the advantages of performing cycle counts is that companies do not have to shut down their entire operation, as is normally the case for wall to wall physical counts. The leading-edge
locations performing cycle counts typically do not stop the movement of inventory but instead use other controls to ensure that items are not erroneously omitted, included, or counted twice. These controls include (1) counting during a slow period of operations when there is little movement, (2) preventing any movement of the inventory items to be counted on the day the items are selected for counting, and (3) using system-generated transaction histories to trace the movement of items and reconcile the count.

## Case Study

One leading-edge location addressed cutoff issues in its distribution center inventory by using a perpetual inventory system with locator capability. The difficulties of getting an accurate location count without shutting down operations were significantly reduced by stopping movement into and out of locations for the specific items selected for count that day. When the inventory system selected the items for that day's count, a "HOLD" indicator was placed by the system in the record for those items. Warehouse personnel were thus notified that, with certain exceptions, they were not to pick items from or store items in those locations until the "HOLD" is released. Inventory counters are required to complete all counts on the day scheduled and release "HOLDs" as the counts are completed, including any necessary recounts and research for variances between the quantity counted and record on-hand balances.

## Preinventory Activities

Preinventory activities, primarily physical location preparation, are accomplished prior to the physical count in order to increase the efficiency and effectiveness of the count. Physical location preparation typically includes (1) organizing work areas and storage locations, (2) identifying and segregating items, (3) ensuring that all inventory items have labels or identification, (4) verifying that items are in the correct location, (5) precounting slow moving items, and (6) identifying excess/obsolete inventories. In the well run warehouses of the leadingedge locations we visited, most of these activities were part of their daily routine. Other preinventory activities needing consideration include the timing of the inventory, staffing and equipment requirements, review of inventory procedures, and instructions to and training of counters.

## Control Methods for Count Completion

There should be a system to ensure that all inventory items are considered for count, including items on the receiving dock, in the warehouse, in the shipping area, in tractor-trailers, and at outside locations, such as owned or leased warehouses, public storage, or any other locations having inventory owned by the organization. For inventory outside the direct control of the organization, management may consider making arrangements to have the inventory counted by its own employees or by the people responsible for safeguarding the inventory. If its own employees are not used to count the inventory, management should consider making arrangements to have its personnel at the site to observe and verify that the count is preformed
accurately and completely. Leading-edge locations used three primary methods for determining the quantities of inventory items stored at outside locations: (1) they count the inventory as part of their physical count program, (2) they obtain written confirmation and/or monthly statements from the parties responsible for storing the inventory, or (3) they send representatives to observe the physical counting of the inventory.

## Case Study

One leading-edge location with 20 distribution centers and 80 manufacturing facilities maintained inventory items in several different locations. Raw materials, work in process, and finished goods were stored in tank cars, trucks, pipelines, drums, bins, and racks. Additionally, inventory was stored at off-site locations controlled by the company and public warehouses outside the control of the company. To maintain the integrity of the inventory records, this location counted all inventory items within the company's control at least twice a year, and all inventory outside of its control was physically verified once a year. To verify completeness, inventory items within the company's manufacturing, distribution, and off-site locations were physically counted through regular cycle counts using prenumbered count sheets that were reviewed by supervisors. In addition, a company representative was sent to observe and verify the annual physical count of inventory items held at a public warehouse, and thus outside the control of the company.

As shown in table 5, control tools are used to determine that every inventory item gets counted. A manual system, such as count tags or count sheets, or a computerized inventory locator system that tracks an item's location, may be used to verify that every inventory item gets counted once and only once. Operations without inventory locator systems commonly use prenumbered count tags, sheets, or cards to ensure that all items are counted. For example, during a typical wall to wall physical inventory, personnel count the inventory item, record the count on the upper and lower part of the tag, and attach one part of the tag to the inventory item and give the other part to the control desk. The control desk accounts for all the prenumbered tags and compares the count to the record on-hand quantities. At the end of and during the inventory count process, the supervisor walks through the warehouse and visually inspects that a count tag is attached to every inventory item, which offers some assurance that all inventory items have been counted. The count tags attached to the inventory items also ensure that the inventory is not counted twice. A second check is done by the control desk crosschecking that all the inventory items recorded on the books have a physical inventory count recorded. Operations with inventory locator systems rely heavily on their systems to report any inventory items not counted and where the items are located.

Leading-edge locations rely on their computerized inventory systems to ensure that all recorded inventory items are counted. Those performing cycle counts generally have their computer systems generate a list of items (count sheets) to be counted each day. The system keeps track of all items counted and entered into the system. If an item is not counted, the system carries the item forward and repeatedly lists the item until it is counted. Supervisors can generate a report
(aging list) to list all items scheduled for a count but not counted. Some companies have their systems generate locations to be counted, and again the system tracks all locations that have not been counted. Nine of the twelve leading-edge locations also test the completeness of their systems by performing location counts ${ }^{4}$ in addition to their regular cycle and wall to wall counts. In other words, they test for the possibility of inventory items existing on the floor that are not reflected in the records. They perform these procedures by selecting inventory items in the warehouse and tracing those items back to the record on-hand balances in the system.

| Table 5: Control Methods to Ensure Completeness of Count |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Cycle count locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Controls to monitor count completeness |  |  |  |  |  |  |  |  |  |  |  |  |
| System tracks inventory items and/or locations counted | - | - | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | - | $\bullet$ | $\bullet$ |
| Location counts from floor to record | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | - |
| Counted areas are physically marked and walk-throughs are performed |  |  |  |  |  |  |  |  |  | $\bullet$ |  | $\bullet$ |
| Supervisors account for all count sheets and/or count tags | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |

[^9]
## Strategies to Consider

To ensure completeness of the physical count, senior executives should consider:

- The organization's operating environment, time of operations, and it's ability to
- suspend operations during the physical count,
- perform counts when there is limited movement of the inventory, such as nights or weekends, and
- prevent movement of items subject to count on the day of count only.
- Reliability of the inventory system to accurately capture and track transactions affecting the on-hand balances.
- Existence of slow moving or excess obsolete inventory items that could be segregated and precounted.
- Existence of inventory stored at outside locations and the personnel or organization responsible for verifying its physical existence.
- Use of prenumbered count sheets or tags and reconciliation of the numbers issued to the numbers returned.
- Reconciliation of items selected for count to actual items counted.
- Performance of additional counts where items are selected from the floor and compared to the inventory system.


## Key Factor 10: Execute Physical Count



Practices discussed in earlier key factors lay the foundation for completion of physical count procedures. Properly executing the count provides accurate results for (1) comparison of the count to the recorded balances and (2) the posting of adjustments to the inventory records for financial and operational decision making. There are five key areas of consideration when executing the physical count including (1) communication of proper information to the counters, (2) verification of correct item information, (3) appropriate method to capture and compare the physical count to the inventory records, (4) determination of the number of requisite counts to perform before a count is accepted as final, and (5) timely completion of the count.

## Communicate Information to the Counter

Communication of appropriate information ensures that counters have the necessary information to perform the count (i.e., items to be counted). Leading-edge location's communication to counters is usually in the form of a list of items to count, such as count sheets, or assigned zones to count, usually including stock location, stock number, description, and unit of measure. In instances where blind counts are not being performed, the quantity to be counted would also be included. This information is normally provided to the counters on count lists, sheets, cards, or on RF Guns (radio frequency devices). ${ }^{5}$

[^10]
## Verify Item Data and Quantity

Verification of data supplied to the counter ensures that the significant information in the inventory record is consistent with the physical information about the item. The data verified by counters at leading-edge locations typically included stock location, stock number, description, and quantity in instances where nonblind counts are being performed.

## Capture and Compare the Count

The physical count includes the instrument or method used by the counter to record the results of the physical count for comparison to the on-hand balance in the inventory system. The leadingedge locations used a number of techniques to record the results of the physical count-some used traditional methods, such as manual count sheets or cards, while others used technical tools, such as RF Guns. When count sheets or cards are used, the actual physical count is recorded on the sheet or card and is then manually input into the computer system for comparison to the inventory record. When RF Guns are used, information is automatically uploaded into the computer system to capture the count for comparison to the inventory record on-hand quantities. The comparison of the actual count to the record on-hand balance determines the variance between the two and the need for recounts or research. The inventory record on-hand balances are typically not adjusted until recounts and research are complete. See key factor 11 for a discussion of adjustments to the record on-hand balance. The majority of the locations (cycle and wall to wall) used count sheets to record the physical count.

## Perform Requisite Number of Counts

Number of counts refers to the number of times an item will be counted before a final count is accepted. The number of counts by leading-edge locations ranged from as few as one to any number determined by management to be appropriate. Counts performed past the first count can be based on any of the following: a difference between the count and record on-hand balance (variance), judgment of supervisors or management, variances exceeding established tolerances, and until two counts agree. There was no minimum number of counts required past the first count by the leading-edge locations. The maximum number of required counts varied from two counts up to the necessary number of counts until two counts agreed. Typically, two or three counts were performed.

If there is a variance between the count and the record on-hand balance, a second count is required. Segregation of duties should be reconsidered in assigning the personnel performing any additional counts. One of the leading-edge locations used a different count team to perform the second count. In this leading-edge location, the second count was accepted as the final, accurate count, after which personnel responsible for recording transactions, research variances and adjust the record on-hand quantity with the appropriate approval. Some leading-edge locations perform multiple, subsequent counts until such time as two counts conclude with the same quantities.
enters the physical count quantity directly into the RF Gun and the count is automatically transmitted and captured in the inventory system for comparison to the on-hand balance.

## Complete Counts in a Timely Manner

Timely counts are important due to management's reliance on the information in the inventory system for making operational decisions. Whether completing a single count or multiple counts, the leading-edge locations expected their count teams to complete their assignments as quickly as possible. The majority of the leading-edge locations expected the initial count and any necessary recounts to be completed within 24 hours.

## Case Study

One leading-edge location, a 710,000 square foot distribution facility maintaining over 20 million finished products, performed its counting procedures with the precision of a well-trained military exercise. Its "army" of over a dozen dedicated counters cycled through the warehouse performing counts daily. Warehouse locations were mapped on an Excel spreadsheet, and the inventory group supervisor assigned zones (warehouse aisles) to each counter. Counters were provided via RF Gun (radio frequency device) data on individual items in his/her zone including stock location, part number, and unit of measure and description. An item's quantity was not obtainable by the counter. By scanning the bar-coded location number contained on a preprinted location marker and entering the item number from the container, the counter verifies the accuracy of item data contained in the perpetual record. Once the counter verified that the description was correct, he/she performed the count and enters the quantity into the RF Gun. These data are automatically uploaded into the inventory system to capture the count, at which time a real-time comparison of the counted quantity and the system balance was made. Any variance is reported to the supervisor via an on-screen or printed variance report. For inventory items having variances, second counts are required to be performed within 8 hours by a different counter. If after the second count, the variance remains greater than $\$ 400$, then all locations in the warehouse containing that inventory item are counted on the next shift to ensure location and total item quantity accuracy.

## Strategies to Consider

To effectively execute the physical count, senior executives should:

- Determine the data to be verified by the count by considering
- knowledge and experience of the personnel performing the count,
- the item data maintained in the inventory system or on location labels, and
- whether blind counts are to be performed, requiring the restriction of access to on-hand balances.
- Determine the method to be used to capture and compare the count, such as count cards, sheets, or RF Guns, by considering
- the capability of the inventory system, and
- ability to use RF devices.
- Determine number of counts to perform by considering
- resources necessary to perform additional counts,
- personnel performing additional counts and their segregation of duties from asset custody and their knowledge and experience of the inventory and count process,
- time necessary to complete additional counts promptly, and
- characteristics of the inventory (unit of measure, size, dollar value, classification, and size of variance in quantity and dollar value) to establish tolerances for additional counts.


## Key Factor 11: Perform Research



Even with a strong control environment and sound physical count procedures, it is not unusual for there to be differences in quantities between the physical count and the record. Research of the cause, sometimes referred to as "root cause analysis," and reconciliation of the difference is an essential element of an effective physical count process. Research, when properly conducted, provides support for adjustment to the inventory records, identifies the causes of variances between the physical count and the inventory records, and provides management with information with which to implement corrective actions. The process of research includes performing the required analysis, promptly completing research, and referring variances to management for approval and/or security for investigation.

## Required Research

Research is the process of investigating a discrepancy, often referred to as a variance, between the physical count and the on-hand balance. Variances may indicate that something is wrong with the inventory system or the warehouse operations that affect inventory balances. In order to reduce the potential for future errors in the inventory records, it is important to identify and correct the causes of variances. Management determines which variances to research and the extent of research necessary to identify the causes of the variances.

Management's determination of which variances to research includes consideration of dollar value, type of item, and the effect of the variance on the operations of the organization. As the impact of variances on the financial records or on the operation of the organization increases, it becomes more important to conduct extensive research. Management may also determine that the impact of certain variances is insignificant by establishing a low dollar or quantity tolerance
and allowing adjustment to the on-hand balance in the inventory system without requiring research. Leading-edge locations researched variances based on criteria established by management. The criteria established by management usually included setting quantity or dollar value tolerances. Tolerances ranged from zero, in which all variances were researched, to 5 percent, in which only those variances exceeding the established dollar value or quantity tolerance were researched. Others relied on the judgment of the researcher. Some locations used a combination of tolerances and researcher judgment depending upon the type of inventory or its impact to operations. Three of the eight leading-edge locations performing cycle counts had a zero tolerance for error for all inventory items and researched all variances. The remaining five locations researched variances that exceeded established dollar value or quantity variances by type of item, and/or on the basis of the researcher's assessment of the impact to operations. Two of these five locations had established tolerances ranging from zero to five percent based on product type. Locations performing wall to wall physical counts researched variances based on established dollar and quantity tolerances, as well as the judgment of the researcher. If a variance did not meet management's criteria for research, the on-hand balance in the inventory system was usually adjusted to reflect the actual physical count. Table 6 shows the established criteria for researching variances at leading-edge locations.

| Table 6: Criteria For Variances Researched |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Established criteria | Cycle count locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Zero tolerance (all variances researched) | $\bullet$ |  | $\bullet$ | - | $\bullet$ | $\bullet$ |  |  |  |  |  |  |
| Variances > \$100 |  | - |  |  |  |  |  |  | $\bullet$ |  |  |  |
| Variances > \$1000 |  |  |  |  |  |  | $\bullet$ |  |  |  |  |  |
| Variances $>3-5$ percent quantity variance |  |  | $\bullet$ |  | $\bullet$ |  |  |  |  |  | $\bullet$ |  |
| Judgment of researcher (based on impact on operations) |  |  |  |  | $\bullet$ |  | $\bullet$ | $\bullet$ |  | $\bullet$ |  | $\bullet$ |

Once management determines which variances to research, it is essential to (1) correctly adjust the change in inventory balances to accurately reflect the physical on-hand quantity and (2) identify the cause of the variance. The extent of research may include reviewing (1) transaction histories, (2) shipping and receiving records, and (3) production usage records. We found that all of the leading-edge locations researched transaction histories, movement of items during the count, and shipping and receiving documents to ensure proper adjustment of the inventory records and identify causes of variances. After research was completed on the selected variances, an adjustment was posted to the on-hand balance in the inventory system to reflect the actual physical count.

Identifying the causes of variances is useful in detecting weaknesses in the underlying controls and individual processes that affect the inventory system record. Grouping and tracking the nature or type of errors into assigned codes is an effective tool for analyzing causes of variances and implementing corrective actions to reduce future errors. For example, a leading-edge location's assignment of error codes enabled the company to implement corrective actions and process improvements, which increased the location's inventory record accuracy and decreased operating costs. We found that four of the locations performing cycle counts assigned and tracked error codes. The number of error codes used by the leading-edge locations to identify causes of variances averaged 22 and included codes for incorrect entries, leaks or spills, wrong location, receipt error, stock picking error, and shipping error.

## Case Study

One leading-edge location with over 113,000 stock numbers and approximately $\$ 222$ million in inventory used a separate inventory group to research variances. Its research included reviewing transaction histories, shipping and receiving records, and documenting in-transit items to identify causes of variances. Also, management at the location had established criteria to determine what level of research was required for each type of item. The inventory was segmented into two primary types of items-type "A" and "B." A zero tolerance was established for type "A" items, for which all variances were researched. A 3 percent quantity tolerance for type " $B$ " items was established for which only quantity variances in excess of 3 percent of the record on-hand balance were researched.

## Timely Research

Prompt completion of required research is key to identifying and correcting the causes of variances. As the amount of time between the discovery of an error in the inventory records and research increases, the more difficult it is to identify the cause of the error. Adjustments posted promptly to the inventory and financial records provide reliable information for use by management. We found that the majority of the leading-edge locations performed and completed research either the same day as the original count or by the end of the following day. This allowed for timely adjustments to the inventory records and immediate corrective action to prevent future errors.

## Approval and Referral of Adjustments

Approval of adjustments by management and referral of potential fraud or theft to investigators helps ensure reliable counts and research. We found that all of the leading-edge locations routinely referred adjustments to management for approval. As the dollar amount of the adjustment increased, the approval level within the company increased. The approval levels progressed from the lead or supervisor of the researcher up to the location or plant manager. Although the leading-edge locations indicated that they did not have significant problems with fraud or theft, some locations regularly reviewed adjustments and trends on items susceptible to fraud or theft in case referral to security or law enforcement was necessary.

## Strategies to Consider

To effectively research variances arising from the physical count, senior executives could:

- Establish tolerances or criteria for selection of variances to research such as
- effect on operations or mission readiness,
- quantity and dollar value, and
- characteristics of the items with the variance, such as sensitive, classified, or items susceptible to fraud or theft.
- Develop processes for how to perform research, such as procedures for reviewing movement of items during the count, transaction histories, and shipping and receiving documents, by considering
- reliability of the inventory system to accurately capture transactions affecting the on-hand balance,
- time necessary to complete the research promptly, and
- knowledge of the personnel performing the research.
- Establish error codes that would identify the cause of variances.
- Set approval levels for adjustments that move up the chain of management as the dollar value increases or the nature of the item requires a higher level of approval.
- Define responsibility for reviewing adjustments and trends on sensitive and classified items and items susceptible to fraud or theft, and notify security or law enforcement.


## Key Factor 12: Evaluate Count Results



Evaluating the results of the physical count is essential to an accurate and effective physical count process. The evaluation of the results gives management the necessary information for measuring the effectiveness of (1) the physical count and (2) corrective actions or improvements to the inventory process and system. Evaluation includes measuring the results of the count, communicating the results, and modifying existing policies and procedures.

## Performance Measures

The results of the physical count can be measured several ways. Calculating an inventory record accuracy rate, summarizing the number and dollar value of adjustments, errors, or items counted, and tracking and analyzing error code frequencies are three ways to measure results.

A common method of measuring the results of the physical count is the calculation of an inventory record accuracy rate. Inventory record accuracy rates measure the degree of agreement between the balance in the inventory records and the physical count. When calculating inventory record accuracy, it is necessary to define what will be considered an error. An error can be defined in various ways, including (1) any error in the item record, such as location, description, and quantity or (2) quantity errors exceeding established tolerances. Tolerance is a range within which an actual value or quantity can disagree with the inventory record and still be considered accurate for the purposes of calculating inventory record accuracy. Tolerances are typically based on an item's or a segment of item's usage or volume, dollar value, lead-time, and criticality to production or operations. The range of tolerance may be as low as zero, in which all quantity differences are considered errors, upward to " X " percent, in which quantity differences only in excess of that amount are considered errors. Once the definition of
what constitutes an error has been established, the inventory record accuracy rate can be calculated. There are multiple ways of calculating inventory record accuracy; however, the common method is:

Number of accurate items or records $\quad x \quad 100 \%=$ record accuracy rate Number of items or records counted

Leading-edge locations evaluated the results of physical counts using various performance measures, including inventory record accuracy calculations. Six of the eight leading-edge locations performing cycle counts measured inventory record accuracy. Locations measuring inventory record accuracy defined an error as either (1) any error in the inventory record (quantity and location) or (2) any quantity error exceeding established tolerances. Established tolerances ranged from 0 to 5 percent; however, four of the six locations had a zero quantity tolerance for all items or segments of items. Three locations performing cycle counts had established separate tolerances for identifiable segments of their inventory based on type of item, dollar value, activity, or criticality of an item to operations. For example, one location (shown as location 3 in table 7) segmented its inventory by type of items (type "A" and "B"). It established a zero tolerance for the "A" segment, in which any difference in the inventory record counted as an error. It established a 3 percent tolerance for any quantity differences exceeding 3 percent of the on-hand balance for the "B" segment of inventory. Table 7 illustrates leading-edge locations' measurement of inventory record accuracy, definition of errors, and tolerances established by management for use in calculating inventory record accuracy.

| Table 7: Performance Measures |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Performance measures | Cycle count locations |  |  |  |  |  |  |  | Wall to wall count locations |  |  |  |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Inventory record accuracy | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |  |  |  |
| Other performance measures | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
| Error definition |  |  |  |  |  |  |  |  |  |  |  |  |
| Any error in the inventory record (location, quantity, stock number) | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  |  |  |  |
| Quantity errors |  |  |  |  |  |  |  |  |  |  |  |  |
| Zero tolerance (all quantity differences are errors) |  |  | $\bullet$ | $\bullet$ | - | $\bullet$ |  |  |  |  |  |  |
| Greater than 0 but less than 5 - percent tolerance (quantity differences exceeding the tolerance are errors) |  |  | $\bullet$ | $\bullet$ | $\bullet$ |  |  |  |  |  |  |  |

The leading-edge locations performing wall to wall counts and two of the companies performing cycle counts did not calculate inventory record accuracy rates but instead measured the results of the physical count using other methods. These other methods included (1) total quantity adjustments, (2) total dollar value of adjustments, and (3) number of errors by error code. Quantity and dollar values of adjustments were measured in both gross (sum of the absolute value of adjustments) and net (mathematical sum of the adjustments). These other performance measures were also used by locations calculating inventory record accuracy rates in evaluating their physical count, as shown in table 7.

## Communication of Results

Communicating the results of each physical count is essential to achieving and maintaining accurate, reliable counts and records and improving the results of future physical counts. The results of a count should be communicated to the people doing the work, including counters and warehouse employees, and to management. Communication of results to the counters reinforces the results of their work and the importance of reliable counts. Likewise, communication to warehouse employees makes them aware of the effect they have on the results of the count as they perform their daily activities and the importance of doing their jobs correctly. Communicating the results of the count conveys the importance of accurate records to all personnel and enforces management's dependence on personnel to achieve accurate records. Communicating the results to management ensures that management is informed and can then assess the impact on operations and implement corrective action.

All of the leading-edge locations communicated the results of the physical counts to management, counters, and/or warehouse personnel. Management was forwarded the results of the physical count in the form of reports containing inventory record accuracy, amount of adjustments, and trend analysis of error codes. Weekly and monthly meetings were held with the managers responsible for the physical count, warehouse operations, and other areas affecting the inventory. The meetings were used to discuss the results of the count, including inventory record accuracy, amount of adjustments, and trends or error codes in order to identify the impact to the company's operations and address problems. The results of the physical counts were communicated to counters and warehouse employees in the form of display boards or scorecards published for areas of the warehouse, which were displayed around the warehouse in highly visible locations. At one of the leading-edge locations, the results of the physical count and the impact each employee had on the accuracy of inventory records was discussed during a quarterly meeting with all employees.

## Modification of Policies and Procedures

Once the results of the physical count have been evaluated and communicated, it is useful to "close the loop" of the physical count by considering indicated changes to the inventory count and management process and making appropriate modifications to policies and procedures. Management's assessment of the results of the physical count and employee feedback is useful in determining the effectiveness of the physical count. The results may indicate the need to count a particular item more frequently due to high errors. Conversely, an item that has not had any errors and little activity may be counted less frequently. In other instances, the makeup of the
inventory or the operations of the organization may have changed, in which case management may need to reconsider the significance of items and the frequency with which they should be counted. It is important that lessons learned from each physical count result in changes that improve the physical count process and inventory management process. We found that the leading-edge locations routinely updated policies and procedures for the physical count process as a result of changes to processes or systems, and at a minimum reviewed the adequacy of documented and performed procedures every 1 to 2 years.

## Case Study

One leading-edge location, a 710,000 -square foot distribution center with over 380 employees, used a variety of methods to evaluate and communicate the results of its physical count. Results were measured with a combination of an inventory record accuracy rate, dollar value and quantity of adjustments, number of accurate counts, and analysis of error codes assigned to variances. A daily report was sent to the inventory managers and supervisors summarizing the number of items counted, accuracy rate, and dollar value of adjustments. Once a week the results of the count were published and posted in the warehouse summarizing the current accuracy rate and trends, as well as successes and problem areas. The location also held weekly and biweekly meetings with operation managers, the inventory group supervisor, inventory managers for material returns and receiving, quality control, engineering, and the director of operations to discuss the results of the count and causes of the variances-the purpose of which was to correct problems and improve operations on a "real-time" basis.

## Strategies to Consider

To evaluate the results of the physical count process, senior executives should consider the following:

- Establish performance measures that are aligned with organizational objectives and strategies and that are useful in evaluating the results of the physical count.
- Determine the methods to be used to measure performance of the count by
- defining an error for purposes of measuring performance, and
- establishing tolerances based on characteristics of the inventory and the quantity or dollar value of the variances to be considered in error.
- Establish mechanisms to communicate results and performance measures to counters, warehouse personnel, and managers.
- Establish routine meetings with managers from all aspects of the inventory process including the physical count, receiving, shipping, ordering, stocking, and production, to discuss results and measures and evaluate the causes of the errors to identify corrective actions and assign responsibility for those actions.
- Use results and performance measures as a basis to make changes to the process and modify existing policies and procedures to reflect changes in the processes.


## Appendix I: Implementation Checklist

> Planning, Conducting, Researching, and Evaluating a Count of Physical Inventory

## (An Implementation Checklist)

This checklist is provided as an aid to making and documenting decisions in the planning, conducting, and/or auditing of the inventory count process and researching and evaluating its results. It is presented in the chronological order of the major steps of the process. References are provided to the $\mathbf{1 2}$ key factors in the body of the report, which provide guidance in considering the issues and factors involved in the decision-making processes.

The checklist is segregated into the following four major sections, with eleven steps to consider categorized in the numbered subtitles, as follows:

| Planning | 1) Select an approach to the count |
| :--- | :--- |
|  | 2) Determine count frequency |
| Counting | 3) Organize the count team(s) |
|  | 1) Accomplish appropriate cutoff |
|  | 2) Perform pre-inventory activities |
| Research and | 3) Count the inventory |
| Adjustments | 1) Perform research |
|  | 2) Adjust the record |
| Evaluation of | 1) Determine the record accuracy rate |
| Results | 2) Consider other performance measures |
|  | 3) Communicate the results of the count |

## 1) Select an approach to the count <br> Planning <br> 2) Determine count frequency <br> 3) Organize the count team(s)

1) Select an approach-The two basic approaches most used by leading-edge companies to count inventory are (a) cycle counting a portion of items over time or (b) a physical wall to wall count. The approach or combination of approaches that is best for your inventory will depend on specific circumstances. Management should consider the following major issues when making this decision.

2) Determine count frequency-Selecting how many, how often, and which items to count may not be as straightforward as it seems. Risk factors of mission and operational criticality, dollar values, quantity significance, rate of turn-over and pilferability, along with the following, should play a part in management's decisions.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)/, <br> N/A | Notes/Comments |
| :--- | :---: | :---: | :---: |
| a)the frequency with which all <br> or certain items or segments <br> should be counted? | Determine frequency of <br> counts |  |  |
| b)if the frequency of counts <br> should be weighted to certain <br> items or segments? | Determine frequency of <br> counts |  |  |
| c)if items to be counted should <br> be selected randomly or <br> otherwise? | Determine frequency of <br> counts |  |  |

Document your conclusions for determining count frequency below. (e.g., Items in inventory segment(s) (ABC) will be randomly selected from a diminishing pool and counted, or cycled through, 4 times a year; segment(s) (XYZ) will all be counted once a month during the midnight shift.)
3) Organize the count team(s)—The selection and organization of appropriate count team(s) is critical to controlling the count process and achieving accurate results. Considerations of who is going to perform, supervise, record, evaluate, and analyze the results of the count should be made by management after considering the following issues.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)/o, <br> N/A | Notes/Comments |
| :--- | :---: | :---: | :---: |
| a)whether adequate segregation <br> of duties can be <br> accomplished? | Maintain segregation of <br> duties |  |  |
| b)whether the degree and level <br> of supervision is appropriate? | Provide adequate <br> supervision |  |  |
| c)whether blind counts should <br> be required? | Maintain segregation of <br> duties \& perform blind <br> counts |  |  |


|  | Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)o, <br> N/A | Notes/Comments |
| :--- | :--- | :--- | :--- | :--- |
| d)who should do counts <br> subsequent to the first count? | Execute physical count |  |  |  |
| e)how many people should be <br> on a count team? | Maintain segregation of <br> duties |  |  |  |
| f)how many count teams are <br> needed? | Execute physical count |  |  |  |
| g)whether count team members <br> are knowledgeable of the <br> inventory and count process? | Enlist knowledgeable <br> staff |  |  |  |
| h)whether the necessary <br> training has been provided to <br> team members? | Enlist knowledgeable <br> staff |  |  |  |
| Document your conclusions for organizing the count teams below. (e.g., All cycle counting of the (ABC) and wall to <br> wall counting of the (XYZ) segment(s) will be accomplished and/or supervised by individual members of the <br> independent inventory audit group. Six two-person wall to wall count teams will be supplemented by shift <br> warehousemen. All counts will be blind counts.) |  |  |  |  |

## Counting

1) Accomplish appropriate cutoff
2) Perform preinventory activities
3) Count the inventory
4) Accomplish appropriate cutoff-The difficulties in achieving an accurate physical count of quantities on hand increase when items are moving into and out of, as well as between warehouse locations during the count. The risks to be concerned about include (1) not counting items that are moving, (2) counting items more than once that have moved, (3) counting items not yet recorded in the inventory records, or (4) counting items that have been removed from the inventory records. These risks exist for inventory movement at primary inventory locations, off-site storage, contract warehouses, consignment, and other locations. Management should weigh these risks and consider the following issues when deciding how to control them.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (No), <br> N/A | Notes/Comments |
| :--- | :--- | :--- | :--- |
| a)suspending shipping, <br> receiving, production, etc., <br> during the count? | Ensure completeness of <br> the count |  |  |
| b)the risk of relying on your <br> system for control of cutoff <br> issues? | Ensure completeness of <br> the count |  |  |
| c)other methods of reducing the <br> risk of improper cutoff? | Ensure completeness of <br> the count |  |  |
| d)the risk of cutoff at the <br> contractor warehouse and <br> other inventory locations? | Ensure completeness of <br> the count |  |  |

Document your conclusions for accomplishing cutoff below. (e.g., Temporary HOLDS, restricting movement into and out of item locations, will be placed on the daily cycle count items. Holds will be released as counts are completed, no later than the end of the day. All movement of all wall to wall count items will be suspended during the count.)
2) Preinventory preparation-Prior preparation of the inventory, and the warehouse area housing it, can greatly increase the efficiency and accuracy of accomplishing the physical count of inventory on hand. Management should include the following in its consideration of preinventory issues.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)/, <br> N/A | Notes/Comments |
| :--- | :---: | :---: | :---: |
| a)organizing the inventory and <br> warehouse to facilitate the <br> count process? | Ensure completeness of <br> the count |  |  |
| b)identifying and segregating <br> certain slow moving, excess, <br> obsolete, and reserved items <br> from other items? | Ensure completeness of <br> the count |  |  |
| c)precounting and increasing <br> control of segregated, slow <br> moving, excess, obsolete, and <br> reserved items? | Ensure completeness of <br> the count |  |  |

Document your conclusion for preinventory preparation below (e.g., Warehouse routine is expected to maintain (ABC) inventory segments in a count-ready condition. The day prior to wall to wall counts, warehouse personnel will be detailed, under the supervision of the inventory audit group, to label, straighten, and precount as necessary.)

|  |
| :--- |
|  |

3) Count the inventory-Actually counting the inventory is a critical step and deserves an appropriate level of attention and control. There are a number of options available in the process of the count and decisions in one area will affect decisions in another area. The following are issues that management should include in making those decisions.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)o, <br> N/A | Notes/Comments |
| :--- | :--- | :--- | :--- |
| a)how information about the <br> item to be counted will be <br> communicated to the <br> counter? | Execute physical count |  |  |
| b)what record data elements <br> (e.g., , quantities, description, <br> location) should be provided <br> to the counter? | Execute physical count |  |  |


| Have You Considered | Report Section Providing Guidance | $\begin{aligned} & \text { (Y)es, } \\ & \text { (N)o, } \\ & \text { N/A } \end{aligned}$ | Notes/Comments |
| :---: | :---: | :---: | :---: |
| c) the pros and cons of requiring blind counts? | Perform blind counts |  |  |
| d) what record data elements the counter(s) are to verify? | Execute physical count |  |  |
| e) the total lapse of time allowable to complete counting (including appropriate research) before requiring an adjustment? | Execute physical count \& perform research |  |  |
| f) when to require recounts (e.g., if first count does not equal record amount)? | Execute physical count |  |  |
| g) how many recounts to require (e.g., until two counts equal)? | Execute physical count |  |  |
| h) how the count supervisor will verify that the count is complete? | Provide adequate supervision \& ensure completeness of the count |  |  |
| i) how data elements verified for each item will be captured during the count (e.g., count sheets)? | Execute physical count \& perform research |  |  |
| j) how and by whom will the count's actual results be posted to the inventory system? | Execute physical count \& maintain segregation of duties |  |  |
| k) who should conduct recounts or verification of completed counts (e.g., someone other than the first counter)? | Execute physical count |  |  |
| 1) how to verify that all items selected for counting have been counted? | Ensure completeness of the count |  |  |
| Document your conclusions for counting the inventory below. (e.g., Item description, number, and location only will be provided to and verified by cycle and wall to wall counters on sheets generated by the inventory locator system. Quantities counted will be recorded on the count sheet and compared to record on-hand balances maintained by the inventory audit group supervisor. Recounts, until two counts agree, will be conducted by an inventory audit group individual other than the original counter. The original counter will conduct and document research and propose needed adjustments to the group supervisor.) |  |  |  |

## Research and Adjustments

## 1) Perform research

2) Adjust the record
3) Perform research-In the event of a discrepancy between the actual physical count and the recorded data element, appropriate research designed to determine the reason for the difference should be performed. The following are issues management should include in its considerations when making decisions of when to and who should conduct such an investigation.

| Have You Considered | Report Section Providing Guidance | $\begin{aligned} & \text { (Y)es, } \\ & \text { (N)o, } \\ & \text { N/A } \\ & \hline \end{aligned}$ | Notes/Comments |
| :---: | :---: | :---: | :---: |
| a) when and where it may be appropriate to establish acceptable variances not requiring research? | Perform research |  |  |
| b) the extent to which research should be performed? | Perform research |  |  |
| c) using error codes to track the trends and frequency of the causes of discrepancies? | Perform research |  |  |
| d) the required documentation and retention period for the research and adjustment of the records? | Perform research |  |  |
| e) when discrepancies should be referred to management and/or security for investigation? | Perform research |  |  |
| f) whether there should be a limit on the amount of time allowed to research a discrepancy before requiring an adjustment? | Perform research |  |  |
| g) whether persons performing root cause analysis have responsibilities in areas of conflicting interest? | Perform research \& segregation of duties |  |  |

Document your final conclusions for research and adjustments below (e.g., All variances between physical count and record amounts are to be researched, or variances of less than X percent are to be adjusted without research, etc. ).
2) Adjust the record-Adjustments to the record are most critical when they affect on-hand quantities. Such adjustments will likely directly affect information used to make managerial decisions. They will also establish new quantity levels for effective internal controls designed to safeguard assets from unauthorized use or disposition. The following are issues management should include in its consideration when making decisions on who should make adjustments and how adjustments to onhand quantities should be made.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)o, <br> N/A | Notes/Comments |
| :--- | :---: | :---: | :---: |
| a)what levels of authorization to <br> require for adjustments to on- <br> hand balances? | Perform research |  |  |
| b)how to allow for and control <br> exceptions to authorization <br> requirements? | Perform research |  |  |
| c)whether there should be a <br> limit on the amount of time <br> allowed to elapse before an <br> adjustment is required? | Perform research |  |  |
| d)whether persons making <br> adjustments to on-hand <br> balances have responsibilities <br> in areas of conflicting <br> interest? | Maintain segregation of <br> duties | ( |  |

Document your conclusions for adjusting the records below (e.g., Adjustments to on-hand balances exceeding $\$ X X X$ required documented approval by (middle management position), those exceeding $\$ X X, X X X$ require documented approval by (senior management position), etc.).

## Evaluation of Results

1) Determine the record accuracy rate
2) Consider other performance measures
3) Communicate the results of the count
4) Determine the record accuracy rate-Inventory systems usually provide management information upon which potentially critical mission readiness and financial resource decisions are based. An appropriately calculated record accuracy rate is a telling measure of how dependable your inventory system is at maintaining accurate information. The following are issues management should include in its considerations when making decisions for calculating an inventory accuracy rate.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)/, <br> N/A | Notes/Comments |
| :--- | :--- | :--- | :--- |
| a)what discrepancies in the <br> record will be considered <br> errors in the accuracy rate <br> calculation? | Evaluate count results |  |  |
| b)the actual mathematical <br> calculation to be used in <br> determining the accuracy <br> rate? | Evaluate count results |  |  |
| c)how you will use the results <br> of the accuracy rate <br> calculation? | Evaluate count results <br> \& establish <br> accountability |  |  |

Document your conclusions for evaluation of results below. (e.g., Discrepancies between any elements (e.g., number, description, location, quantity) verified by counters are considered errors. Or, quantity differences exceeding established tolerances are considered errors, etc.)
2) Consider other performance measures-The results of physical counts may be measured by methods other than record accuracy rates. The following are issues management should include in its considerations when making decisions for calculating an inventory accuracy rate.

| Have You Considered | Report Section <br> Providing Guidance | (Y)es, <br> (N)/o, <br> N/A | Notes/Comments |
| :--- | :--- | :--- | :--- |
| a)what other <br> results/measurements are <br> appropriate to your needs? | Evaluate count results |  |  |
| b)how other measures can be <br> expressed in relevant terms? | Evaluate count results |  |  |

Document your conclusions for consideration of other performance measures below (e.g., Total net and total gross
(quantity and/or value) adjustments to inventory over a period of time shall be considered to determine the (quantity and/or value) adjustments to inventory over a period of time shall be considered to determine the effectiveness of the count and root cause analysis process, etc.).
3) Communicate the results of the count-To maximize the usefulness of the physical inventory count, the results should be communicated to management and lessons learned should be incorporated in planning for subsequent physical counts. The following are issues management should include in its considerations when making decisions in communicating the results of the physical count.


## Appendix II: Objectives, Scope, and Methodology

To determine the principles fundamental to achieving consistent, accurate counts of physical inventories, our objectives were to (1) identify inventory counting procedures that have been successfully implemented by private sector companies recognized as leaders in inventory accuracy and (2) provide examples (case studies) of counting procedures used by these companies that might help federal agencies improve the accuracy and reliability of their inventory and property records.

To fulfill our objectives, we identified 80 companies, 77 of which were Fortune 500 companies, with large inventories that are considered to be leaders in inventory management. In order to identify these companies, we consulted with experts in the field of inventory management. Our contacts included professionals from the major accounting firms of KPMG Peat Marwick and Ernst and Young, LLP, and professors at the Massachusetts Institute of Technology and Ohio State University. We also researched publications issued by CIO 100, Industry Week, and the American Productivity and Quality Center (APQC), and we considered companies that were winners of the prestigious Malcolm Baldridge National Quality Award.

From these 80 companies, we identified 22 companies having best practices in inventory management. Our selection was based on the company receiving recognition for outstanding inventory management practices by at least three of the above named sources. In order to confirm our selections as best practice companies, we sent a survey to each company to obtain information on inventory record accuracy rates, policies and procedures, physical count methods, research, training, and willingness to participate in our study.

Eleven of the twenty-two companies returned the survey; from the pool of eleven we selected seven companies willing to participate in our study. Our selection was based on (1) reported accuracy rates, (2) size and types of inventory, and (3) existing count procedures and controls. Based on these criteria, we selected the following companies:

## Leading-edge Companies

Boeing
Daimler Chrysler
DuPont
FedEx
General Electric
Honeywell
3M

Some of the selected companies employed more than one counting methodology and allowed us to review their practices and processes at more than one operating location. A total of 12 separate locations from the seven companies were studied.

To gather the data needed from each company, we developed a structured interview checklist to cover the following areas: planning, execution, research, evaluation, training, and policies and procedures for the physical inventory count process. We consulted professional guidance issued by the American Institute of Certified Public Accountants and an accounting firm in designing the structured interview.

During each site visit, we completed our structured interview checklist through interviews with officials responsible for inventory management and record accuracy. We also toured the companies' warehouses, distribution centers, and production and assembly plants to obtain an understanding of how inventory counting procedures were implemented at these locations. We relied on company officials to describe their processes to us. We did not verify the accuracy of their statements or any information provided to us, but, wherever possible, we obtained and reviewed company documents describing the inventory counting and verification processes. The documentation we obtained was consistent with the information we reported. Based on the information we obtained from each of our site visits, we consolidated and refined the inventory counting principles and practices to those presented in this guide. We asked officials at each of the seven private sector companies we studied to confirm the accuracy and completeness of the information presented in the report and incorporated their comments as appropriate. However, we did not independently verify the accuracy of the information the officials provided.

## Appendix III: Bibliography

Brooks, Roger B., and Wilson, Larry W. Inventory Record Accuracy: Unleashing the Power of Cycle Counting. Essex Junction: Oliver Wight Publications, Inc., 1993.

Edwards, Douglas J. "The Best 100." Industry Week (August 16, 1999)
Taninecz, George. "IW’s Ninth-Annual Honor Roll." Industry Week (October 19, 1998)
"Practicing Judgment." CIO Magazine, August 1, 1995.

## Appendix IV: Other Related Publications

## Financial Management

U.S. General Accounting Office. Executive Guide: Creating Value Through World-class Financial Management. AIMD-00-134. Washington, D.C.: April, 2000.
U.S. General Accounting Office. Standards for Internal Control in the Federal Government. GAO/AIMD-00-21.3.1. Washington, D.C.: November, 1999.
U.S. General Accounting Office. Managing for Results: Strengthening Regulatory Agencies' Performance Management Practices. GGD-00-10. Washington, D.C.: October, 1999
U.S. General Accounting Office. Program Measurement and Evaluation: Definitions and Relationships. GAO/GGD-98-26. Washington, D.C.: April, 1998.
U.S. General Accounting Office. Executive Guide: Effectively Implementing the Government Performance and Results Act. GAO/GGD-96-118. Washington, D.C.: June, 1996

## Human Capital Management

U.S. General Accounting Office. Human Capital: Key Principles From Nine Private Sector Organizations. GAO/GGD-00-28. Washington, D.C.: May, 1998.

## Systems Requirements and Checklists

U.S. General Accounting Office. Property Management Systems Requirements: Checklist for Reviewing Systems Under the Federal Financial Management Improvement Act. GAO-02-171G. Washington, D.C.: December, 2001.
U.S. General Accounting Office. Core Financial System Requirements: Checklist for Reviewing Systems Under the Federal Financial Management Improvement Act. AIMD-00-21.2.2.
Washington, D.C.: February, 2000.
U.S. General Accounting Office. System Requirements for Managerial Cost Accounting Checklist: Systems Reviewed Under the Federal Financial Management Improvement Act of 1996. AIMD-9921.2.9. Washington, D.C.: January, 1999.
U.S. General Accounting Office. Inventory System Checklist: Systems Reviewed Under the Federal Financial Management Improvement Act of 1996. Exposure Draft, AIMD-98-21.2.4. Washington, D.C.: May, 1998.
U.S. General Accounting Office. Business Process Reengineering Assessment Guide. GAO/AIMD10.1.15. Washington, D.C.: April, 1997.
U.S. General Accounting Office. Framework for Implementation: Job Process Reengineering. GAO/OIMC-95-8. Washington, D.C.: May, 1995.

# Appendix V: Acknowledgment of Best Practice Participants and Advisors 

We would like to acknowledge and thank the following companies whose management and staff provided advice and assistance throughout this project.

Leading-edge Companies
The Boeing Company
Seattle, Washington
DaimlerChrysler AG
Stuttgart, Germany
E. I. DuPont De Nemours and Company

Wilmington, Delaware
FedEx Corporation
Memphis, Tennessee
General Electric Company
Fairfield, Connecticut
Honeywell International Inc.
Morristown, New Jersey
Minnesota Mining \& Manufacturing Company
St. Paul, Minnesota

## Project Advisors

The Gillette Company
Boston, Massachusetts
Private Sector Council
Washington, DC
Raytheon Company
Lexington, Massachusetts
Samsonite Corporation
Denver, Colorado

## Appendix VI: GAO Contacts and Staff Acknowledgments

## GAO Contacts

Paul D. Kinney<br>(303) 572-7388<br>Stephen W. Lipscomb<br>(303) 572-7328

## Acknowledgments

In addition to those named above, Letha C. Angelo and Robert A. Sharpe made key contributions to this report.

## GAO's Mission

The General Accounting Office, the investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

The fastest and easiest way to obtain copies of GAO documents is through the Internet. GAO's Web site (www.gao.gov) contains abstracts and full-text files of current reports and testimony and an expanding archive of older products. The Web site features a search engine to help you locate documents using key words and phrases. You can print these documents in their entirety, including charts and other graphics.
Each day, GAO issues a list of newly released reports, testimony, and correspondence. GAO posts this list, known as "Today's Reports," on its Web site daily. The list contains links to the full-text document files. To have GAO E-mail this list to you every afternoon, go to www.gao.gov and select "Subscribe to daily e-mail alert for newly released products" under the GAO Reports heading.

## Order by Mail or Phone

Obtaining Copies of GAO Reports and Testimony

The first copy of each printed report is free. Additional copies are $\$ 2$ each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:
U.S. General Accounting Office
P.O. Box 37050

Washington, D.C. 20013
To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

## Visit GAO's Document Distribution Center

GAO Building
Room 1100, 700 4th Street, NW (corner of 4th and G Streets, NW)
Washington, D.C. 20013

## To Report Fraud, Waste, and Abuse in Federal Programs

## Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm, E-mail: fraudnet@gao.gov, or 1-800-424-5454 or (202) 512-7470 (automated answering system).

## Public Affairs

Jeff Nelligan, Managing Director, NelliganJ@gao.gov (202) 512-4800
U.S. General Accounting Office, 441 G. Street NW, Room 7149, Washington, D.C. 20548

United States
General Accounting Office
Washington, D.C. 20548-0001
Official Business
Penalty for Private Use $\$ 300$
Address Correction Requested


## ATTACHMENT B

## PW INVENTORY POLICIES \& PROCEDURES

## Jefferson Parish Internal Control-Inventory Warehouse and Plants

Jefferson Parish's Public Works warehouses and plants are divided by east and west bank locations. The West Bank warehouses and pipe yards are located at 6250 Lapalco Blvd and 5701 Belle Terre Blvd. The Water Treatment Plant is located at 4500 West Bank Expressway. The East Bank warehouse is located at 4901 Jefferson Hwy and the Water Treatment Plant and pipe yard are located at 3600 Jefferson Hwy. The pipe yards inventory numbers are included in the warehouse numbers for both locations.

The Parish conducts a physical inventory for each location at the end of the year. Current inventory records are distributed by Warehouse Inventory Control to employees at each location. These reports indicate the location, quantity on hand, and some cost information for each inventory section. The Inventory Control employee, and sometimes with the assistance of a warehouse employee, will review the list and perform a physical count of each item. If the count does not agree with the amount on the inventory report the employee includes the correct number, has the item recounted independently and conducts a further investigation if there is still a discrepancy. Once verified, the amount is then posted. After the physical inventory is completed and adjusted, the reports are sent to Jerry Zeringue, Warehouse Superintendent. Records are compiled; yearend reports are generated and sent to Jeannine Ureta in accounting for adjustments in the FMS.

The plants and the Belle Terre Blvd (Streets) Warehouse are inventoried in the last quarter of the year; the other warehouses are inventoried using a cycle count method. All items are counted at least twice per year with the faster moving items counted four times each year.

## Warehouse Policies and Procedures Summary

## Receiving:

Material is checked for accuracy, stored and received into the warehouse module, updating the on hand quantity. The vendor packing slip is forwarded to the Clerk Typist III to be matched to the vendor invoice to be received/posted in AS400 and forwarded to accounting for payment.

## Issuance of Material:

Material is issued/entered by the Shipping and Receiving Clerk from inventory, to Public Works Departments and other JP Departments from the warehouse issue counter utilizing the Truck Requisition Form (issue ticket) listing all items and quantities, part numbers, descriptions and other required information (truck number, employee number, date, signatures, department, etc. The truck number is attached to a specific cost center and account. Returns are handled in the same manner using the Credit Return Form. Issue tickets and credit tickets are entered into the Warehouse Module and inventory on hand quantities are updated. Issue tickets (original) are forwarded to the Inventory Supervisor to be checked for accuracy and filed.

## Adjustments:

Inventory adjustments are made as a result of the physical inventory count as conducted by the Inventory Supervisor based on the count sheet on hand and the actual on hand count. See the Internal Control Documents describing those procedures. Other adjustments are made by Warehouse Superintendent based on documentation from the Warehouse Supervisors or the Inventory Supervisors. These are usually for damaged goods, items sent to Surplus Property, items to be reclassified to another items. A detail file is kept in the warehouse office of these adjustments.

## Recordation - Cost Center, Account Number, General Ledger:

Material Orders are created by the Warehouse Supervisors in the Warehouse Module and forwarded to the Clerk Typist III to be entered into the AS400 System. Each inventory item is assigned a cost center and account number (GL Number), only when it is entered in AS400 is it applied to the general ledger.

When a department is issued and item from inventory and the item is assigned to a different cost center, then that item appears on a Material Transfer Report. A spreadsheet is created and sent to account each month for these accounts to be adjusted. The owner of the account is credited and the receiver of the material is charged.

Document created on March 21, 2018 as a result of IA request for information dated March 9, 2018.

## System Used to Track Inventory Balance

The Warehouse Module (Oracle Software) is used to track inventory balances.

Balances are updated daily as material is issued and received. A usage screen will display the on hand start and on hand end balance by month.

Items can be viewed by entering the item number in the system and selecting a variety of prompts such as monthly usage and balances, transaction detail, receipts, cost, annual usage, total quantity on hand, quantity in a particular warehouse, etc.

For physical inventory, current on hand quantities are displayed on the count sheets when printed. A Final Reconciliation Report displayed the count variance and cost variance after adjustments are made.

## Processing - Accounting Transfer - Issue/Return Brief

Request Material Transfer Report from Gwen Baker in MIS in an excel spreadsheet format from the Warehouse Module under Options for:

## EB1 WB1 ST1 ST2

Review the report and make the following changes:

All items coded with account numbers
7232.7 (Small Tools)
7232.8 (Shop Supplies)
7237.1 (Janitorial Supplies)

All above change to account (expense) -7312.6
Note: Traffic was charged to 63810-2957-129 is now 22200-3005 (Streets)
Departments are to be charged for supplies as follows:

| Drainage | 22320-3270-114-7312.6 |
| :---: | :---: |
| Sewerage | 53000-3850-114-7312.6 |
| Streets | 22200-3000-7312.8 (includes Parkways) |
| Water | 53010-3900-7312.6 (Admin, Water Plants, Dist-Outside Maint \& Grand Isle) |
|  | 53010-3903-7312.6 (Water Lab) |
|  | 53010-3907-126-7312.6 (East Bank Utility Billing) |
|  | 53010-3907-127-7312.6 (West Bank Utility Billing) |
| Engineering | 63810-....-. . - 7312.6 |
| Fleet | 63500-3950-7312.6 (all charges) |
| IRS | 63830-3976-7312.6 (all charges) |
| Library | 21790-2453-7312.6 (all charges -formerly charged to 2450-089) |
| Recreation | 21830-2531-...... |
| SCADA | 63810-3960-7312.6 (all charges) |
| Traffic | 22200-3005-7312.6 (all charges) |

Capital Expenses Credit Items must have an Account number (expense) in the Charge Costcenter code Note: Delete all Capital expense charges to the Water Dept (53010)

| Credit Costcenter | Charge Costcenter |
| :---: | :---: |
| Example: 45400-4045-2454-54016.002 | $53000-3851-7231.4$ (not 54016.002) |

Capital Expense Charge Items must have a Capital Expense Account number in the Credit Costcenter Note: Delete (ignore) Capital Expense Transfer Charges to Water Account (ex: 45400-4045-2454-54016.01 to 53010-...-...-.....)

| Credit Costcenter | Charge Costcenter |
| :---: | :---: |
| Example: $22320-3301-100-7231.4$ | $44680-4015-7331-54016.002$ |
| Change to: | Change account to: Account \#, such as |
| 45400-4045-2454-54016.002 | $\mathbf{7 2 3 1 . 4}$ or the opposite also applies. |

After completing spreadsheet forward to accounting to:

Quiana Brown and cc: Jeannine Ureta

Date: 6/2/2017 iz

## GRAINGER PROCESS MAPPING (EXCERPT)



The Grainger Process Mapping is only viewable, in practical terms, via electronic format or its original large size. An electronic format is on file in the Department of Internal Audit.

## ATTACHMENT C

## INVENTORY COUNT SHEETS

10/13/16
Page 1

## 00-048435 <br> PUBLIC WORKS WAREHOUSE FINAL RECONCILIATION REPORT

## COUNT BOOK CB16-23749 at WESTBANK \#1

| Stock No. - Description | Unit Price | Date <br> Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count <br> Variance | Cost * <br> Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0483500 | 0.65 LB | 10/07/16 | 140 | 10/07/16 | 100 | 10/10/16 | -40 |  |
| RAGS, WHITE, 10 LB BOXES, $100 \%$ COTTON \#2 SWEATSHIRT (FLEECE) MATERIAL, LINE ITEM 0010 |  |  |  |  |  |  |  |  |
| 00-0483510 | 3.65 PACK | 10/07/16 | 380 | 10/07/16 | 402 | 10/10/16 | 22 | \$80.3 |
| TOWEL, SHOP, HYDROKNIT WORKHORSE, KIMBERLY-CLARK \#41200, LINE ITEM 0070 |  |  |  |  |  |  |  |  |
| 00-0483530 | 8.39 EACH | 10/07/16 | 304 | 10/07/16 | 305 |  | 1 | \$8.39 |
| WIPES, HAND, PREMOISTENED HEAVY DUTY, NON-ABRASIVE PUMICE, ORANGE DLIMONENE, CITRUS SCENT, 72 SHEETS PER DISPENSER, SIZE 9.50 IN X 12.50 IN , SELIG \#J79706, LINE ITEM 2070 |  |  |  |  |  |  |  |  |
| 00-0483790 | 3.20 EACH | 10/07/16 | 269 | 10/07/16 | 267 | 10/10/16 | -2 | -S6.4 |
| SOLVENT, SAFETY, SPRAY, DEGREASER, LEAVES NO RESIDUE, 36000KV <br> DIELECTRIC FOR USE ON ELECTRICAL COMPONENTS, NON-FLAMABLE, NO PERCHLORETHYLENE OR METHYLENE CHLORIDE, 1802 CAN, WECHEM FORCE 100 |  |  |  |  |  |  |  |  |
| 00-0484050 | 11.19 EACH | 10/07/16 | 64 | 10/07/16 | 60 |  | -4 | -S44.76 |
| HEADGEAR, FOR FACE SHIELDS, FIBRE-METAL \#F-300 (NO SUBSTITUTION, MUST FIT EXISTING FIBRE-METAL FACESHIELDS IN USE) |  |  |  |  |  |  |  |  |
| 00-048405B | 12.94 EACH | 10/07/16 | 19 | 10/07/16 | 23 |  | 4 | \$51.76 |
| HEADGEAR, FOR FACE SHIELDS, FIBRE-METAL \#F-400 (NO SUBSTITUTION, MUST FIT EXISTING FIBRE-METAL FACESHIELDS IN USE) |  |  |  |  |  |  |  |  |
| 00-0484260 | 19.50 EACH | 10/07/16 | 472 | 10/07/16 | 474 | 10/10/16 | 2 | \$39 |
| CLEANER, WECHEM PINE PLUS DISINFECTANT, 1 GALLON BOTTLE, STATE CONTRACT \#4400004956, T \#90721, LINE \#2,CATALOG\# 983026, COMMODITY CODE \#485-25-002417, WECHEM PRODUCT \#D3504 |  |  |  |  |  |  |  |  |
| -484300 | 0.82 EACH | 10/07/16 | 2,410 | 10/07/16 | 2,458 |  | 48 | \$39.36 |
| JWEL, HAND, WHITE, MULTIFOLD, 16 PACKS PER CASE,ONE PLY, $91 / 2 \times 91 / 8$, 250/BOX, TORK \#SCA-MB540A OR GEORGIA PACIFIC \#GP2024, LINE ITEM 0060 |  |  |  |  |  |  |  |  |
| 00-048435J | 0.19 EACH | 10/07/16 | 7,200 | 10/07/16 | 7,000 |  | -200 | -S38 |
| LINER, GARBAGE CAN, 38 IN BY 58 IN, LOW LINEAR, TWO MIL THICK, SIXTY GALLON CAPACITY, BLACK, 100 PER CASE |  |  |  |  |  |  |  |  |
| 00-0484400 | 0.30 EACH | 10/07/16 | 1,695 | 10/07/16 | 1,599 |  | -96 | -\$28.8 |
| TISSUE, TOILET, 2 PLY, 96 ROLLS PER CASE, ATLAS \#280, GEORGIA PACIFIC \#GP. 14580101, LINE ITEM 1725 |  |  |  |  |  |  |  |  |
| 00-0484470 | 3.76 EACH | 10/07/16 | 106 | 10/07/16 | 105 |  | -1 | -S3.76 |
| SANITIZER, HAND, IN 16 OZ PUMP BOTTLE, EVAPORATES QUICKLY, KUTOL BRAND \#5630, LINE ITEM 1730 |  |  |  |  |  |  |  |  |
| 00-0484520 | 3.98 EACH | 10/07/16 | 46 | 10/07/16 | 45 |  | -1 | -S3.98 |
| SOAP, LIQUID HAND, HI-TECH SOFT PINK, 1 GAL JUG, LINE ITEM\# 1100 |  |  |  |  |  |  |  |  |
| 00-0484570 | 3.07 EACH | 10/07/16 | 237 | 10/07/16 | 236 |  | -1 | -S3.07 |
| ROACH AND INSECT SPRAY, 20 OZ CAN, WATER BASED, CONTAINS PYRETHRIN AND DELTA GUARD, HI-TECH BRAND \#EJ-300, LINE ITEM 1830 |  |  |  |  |  |  |  |  |
| 00-0484620 | 2.58 EACH | 10/07/16 | 115 | 10/07/16 | 116 |  | 1 | \$2.58 |
| CLEANER, ALL PURPOSE, 409, PRODUCT \#CX-35306-409, 12/32 OUNCE/CASE, LINE ITEM 0720 |  |  |  |  |  |  |  |  |
| 00-0484640 | 17.90 EACH | 10/07/16 | 232 | 10/07/16 | 224 | 10/10/16 | -8 | -S143.2 |
| CLEANER, WECHEM BLUE MAX DEGREASER, 1 GALLON BOTTLE, STATE CONTRACT <br> \#409366, LINE \#00048, COMMODITY CODE \#485.30.002444 |  |  |  |  |  |  |  |  |
| 00-0484760 | 1.62 EACH | 10/07/16 | 65 | 10/07/16 | 56 | 10/10/16 | -9 | -S14.58 |
| BLEACH, 1 GALLON PLASTIC JUG, PURE BRITE BRAND, LINE ITEM 0050 |  |  |  |  |  |  |  |  |
| OO-0484790 |  | 10/07/16 Y OUNCE, LIN | 307 ITEM 0890 | 10/07/16 | 306 | 10/10/16 | -1 | -\$1.94 |
| DEODORANT, DISINFECTANT SPRAY, TWENTY OUNCE, LINE ITEM 0890 |  |  |  |  |  |  |  |  |
| SPRAY, WASP \& HORNET, $0.150 \%$ TETRAMETHRIN, $0.375 \%$ PERMETHRIN, $0.750 \%$ ' ${ }^{\circ}$ ERONYL BUTOXIDE TECHNICAL, 20 FT SPRAY, 49,500 DIELECTRIC STRENGTH, <br> J CFCS, 20 OZ CAN, WECHEM ZAPPER, AERO INSTANT KILL OR = |  |  |  |  |  |  |  |  |
| 0U-0435170 | 4.18 EACH | 10/07/16 | 98 | 10/07/16 | 100 |  | 2 | 8.3 |
| BRUSH, UTILLTY, 20 IN HANDLE, TAMPICO FILL, 2 IN TRIM LENGTH, ADVANCE \#O15. MSC \#09310483 |  |  |  |  |  |  |  |  |

## COUNT BOOK CB16-23749 at WESTBANK \#1

| Stock No. | Unit Price |  | Activated Quantity |  | Counted Quantity |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0485210 | 19.52 EAC | 10/07/16 | 30 | 10/07/16 | 31 | 1 | \$19.52 |
| PLYWOOD, PINE, CDX GRADE, 3/4 IN X 4 FT X 8 FT, LINE ITEM 0300 |  |  |  |  |  |  |  |


| Total number of items listed (out-of-balance): | 20 |
| ---: | :--- |
|  | * Total cost variance: |
|  | $-\$ 67.98$ |



IIEANER, WECHEM PINE PLUS DISINFECTANT, 1 GALLON BOTTLE, STATE NTRACT \#4400004956, T \#90721, LINE \#2,CATALOG\# 983026, COMMODITY CODE .85-25-002417, WECHEM PRODUCT \#D3504
00-0484300 0.82 EAC 10/07/16 $\quad 2,410 \quad 10 / 07 / 16 \quad 2,458$
TOWEL, HAND, WHITE, MULTIFOLD, 16 PACKS PER CASE,ONE PLY, $91 / 2 \times 91 / 8$, 250/BOX, TORK \#SCA-MB540A OR GEORGIA PACIFIC \#GP2024, LINE ITEM 0060

| $00-048435 \mathrm{~J}$ | 0.19 EAC | $10 / 07 / 16$ | 7,200 | $10 / 07 / 16$ | 7,000 |
| :--- | :--- | :--- | :--- | :--- | :--- |

LINER, GARBAGE CAN, 38 IN BY 58 IN, LOW LINEAR, TWO MIL THICK, SIXTY GALLON C.APACITY, BLACK, 100 PER CASE
$\begin{array}{lllll}00-0484400 & 0.30 \text { EAC } & 10 / 07 / 16 & 1,695 & 10 / 07 / 16\end{array}$
$48 \quad \$ 39.36$

TISSUE, TOILET, 2 PLY, 96 ROLLS PER CASE, ATLAS \#280, GEORGIA PACIFIC \#GP14580101, LINE ITEM 1725
$\begin{array}{llllll}00-0484470 & 3.76 \text { EAC 10/07/16 } & 106 & 105\end{array}$
SANITIZER, HAND, IN 16 OZ PUMP BOTTLE, EVAPORATES QUICKLY, KUTOL BRAND \#5630, LINE ITEM 1730
$\begin{array}{llllll}00-0484520 & 3.98 \text { EAC } & \text { 10/07/16 } & 46 & 10 / 07 / 16\end{array}$ SOAP, LIQUID HAND, HI-TECH SOFT PINK, 1 GAL JUG, LINE ITEM\# 1100

| $00-0484530$ | 11.94 GAL | $10 / 07 / 16$ | 53 | $10 / 07 / 16$ |
| :--- | :--- | :--- | :--- | :--- |

CLEANER, CAR WASH, IN 55 GALLON DRUM, WECHEM MARVEL,
STATE CONTRACT\# 4400004956, LINE 2,
CATALOG\# 945877, COMMODITY CODE 485-25-002417
$\rightarrow$ 00-0484570 $\quad 3.07$ EAC 10/07/16 236

| -1 | $-\$ 3.07$ |
| :---: | :---: |
| 1 | $\$ 2.58$ |
| -12 | -8 |
| $-\$ 214.8$ |  |
| -17 | $-\$ 27.54$ |
| -7 | $-\$ 4.86$ |


| Stock No. | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0483500 | 0.65 LB | 10/07/16 | 140 | 10/07/16 | 100 | 10/10/16 | -40 | -\$26 |
| RAGS, WHITE, 10 LB BOXES, $100 \%$ COTTON \# 2 SWEATSHIRT (FLEECE) MATERIAL, LINE ITEM 0010 |  |  |  |  |  |  |  |  |
| 00-0483510 | 3.65 PAC | 10/07/16 | 380 | 10/07/16 | 402 | 10/10/16 | 22 | \$80.3 |
| TOWEL, SHOP, HYDROKNIT WORKHORSE, KIMBERLY-CLARK \#41200, LINE ITEM 0070 |  |  |  |  |  |  |  |  |
| 00-0483530 | 8.39 EAC | 10/07/16 | 304 | 10/07/16 | 305 |  | 1 | \$8.39 |
| WIPES, HAND, PREMOISTENED HEAVY DUTY, NON-ABRASIVE PUMICE, ORANGE DLIMONENE, CITRUS SCENT, 72 SHEETS PER DISPENSER, SIZE $9.50 \mathrm{IN} X 12.50 \mathrm{IN}$, SELIG \#J79706, LINE ITEM 2070 |  |  |  |  |  |  |  |  |
| 00-0483790 | 3.20 EAC | 10/07/16 | 269 | 10/07/16 | 267 | 10/10/16 | -2 | -S6.4 |
| SOLVENT, SAFETY, SPRAY, DEGREASER, LEAVES NO RESIDUE, 36000 KV DIELECTRIC FOR USE ON ELECTRICAL COMPONENTS, NON-FLAMABLE, NO PERCHLORETHYLENE OR METHYLENE CHLORIDE, $180 Z$ CAN, WECHEM FORCE 100 |  |  |  |  |  |  |  |  |
| 00-0484050 | 11.19 EAC | 10/07/16 | 64 | 10/07/16 | 60 |  | -4 | -\$44.76 |
| HEADGEAR, FOR FACE SHIELDS, FIBRE-METAL \#F-300 (NO SUBSTITUTION, MUST FIT EXISTING FIBRE-METAL FACESHIELDS IN USE) |  |  |  |  |  |  |  |  |
| 00-048405B | 12.94 EAC | 10/07/16 | 19 | 10/07/16 | 23 |  | 4 | \$51.76 |
| HEADGEAR, FOR FACE SHIELDS, FIBRE-METAL \#F-400 (NO SUBSTITUTION, MUST FIT EXISTING FIBRE-METAL FACESHIELDS IN USE) |  |  |  |  |  |  |  |  |
| 00-0484260 | 19.50 EAC | 10/07/16 | 472 | 10/07/16 | 474 | 10/10/16 | 2 | \$39 |
| CLEANER, WECHEM PINE PLUS DISINFECTANT, 1 GALLON BOTTLE, STATE CONTRACT \#4400004956, T \#90721, LINE \#2,CATALOG\# 983026, COMMODITY CODE \#485-25-002417, WECHEM PRODUCT \#D3504 |  |  |  |  |  |  |  |  |
| 784300 | 0.82 EAC | 10/07/16 | 2,410 | 10/07/16 | 2,458 |  | 48 | \$39.36 |
| JWEL, HAND, WHITE, MULTIFOLD, 16 PACKS PER CASE,ONE PLY, 9 1/2 X 9 1/8, 250/BOX, TORK \#SCA-MB540A OR GEORGIA PACIFIC \#GP2024, LINE ITEM 0060 |  |  |  |  |  |  |  |  |
| 00-048435J | 0.19 EAC | 10/07/16 | 7,200 | 10/07/16 | 7,000 |  | -200 | -\$38 |
| LINER, GARBAGE CAN, 38 IN BY 58 IN, LOW LINEAR, TWO MIL THICK, SIXTY GALLON CAPACITY, BLACK, 100 PER CASE |  |  |  |  |  |  |  |  |
| 00-0484400 | 0.30 EAC | 10/07/16 | 1,695 | 10/07/16 | 1,599 |  | -96 | -\$28.8 |
| TISSUE, TOILET, 2 PLY, 96 ROLLS PER CASE, ATLAS \#280, GEORGIA PACIFIC \#GP14580101, LINE ITEM 1725 |  |  |  |  |  |  |  |  |
| 00-0484470 | 3.76 EAC | 10/07/16 | 106 | 10/07/16 | 105 |  | -1 | -\$3.76 |
| SANITIZER, HAND, IN 16 OZ PUMP BOTTLE, EVAPORATES QUICKLY, KUTOL BRAND \#5630, LINE ITEM 1730 |  |  |  |  |  |  |  |  |
| 00-0484520 | 3.98 EAC | 10/07/16 | 46 | 10/07/16 | 45 |  | -1 | -\$3.98 |
| SOAP, LIQUID HAND, HI-TECH SOFT PINK, 1 GAL JUG, LINE ITEM\# 1100 |  |  |  |  |  |  |  |  |
| 00-0484570 | 3.07 EAC | 10/07/16 | 237 | 10/07/16 | 236 |  | -1 | -\$3.07 |
| ROACH AND INSECT SPRAY, 20 OZ CAN, WATER BASED, CONTAINS PYRETHRIN AND DELTA GUARD, HI-TECH BRAND \#EJ-300, LINE ITEM 1830 |  |  |  |  |  |  |  |  |
| 00-0484620 | 2.58 EAC | 10/07/16 | 115 | 10/07/16 | 116 |  | 1 | \$2.58 |
| CLEANER, ALL PURPOSE, 409, PRODUCT \#CX-35306-409, 12/32 OUNCE/CASE, LINE ITEM 0720 |  |  |  |  |  |  |  |  |
| 00-0484640 | 17.90 EAC | 10/07/16 | 232 | 10/07/16 | 224 | 10/10/16 | -8 | -\$143.2 |
| CLEANER, WECHEM BLUE MAX DEGREASER, 1 GALLON BOTTLE, STATE CONTRACT \#409366, LINE \#00048, COMMODITY CODE \#485.30.002444 |  |  |  |  |  |  |  |  |
| 00-0484760 | 1.62 EAC | 10/07/16 | 65 | 10/07/16 | 56 | 10/10/16 | -9 | -\$14.58 |
| BLEACH, 1 GALLON PLASTIC JUG, PURE BRITE BRAND, LINE ITEM 0050 |  |  |  |  |  |  |  |  |
| 00-0484790 | 1.94 EAC | 10/07/16 | 307 | 10/07/16 | 306 | 10/10/16 | -1 | -\$1.94 |
| DEODORANT, DISINFECTANT SPRAY, TWENTY OUNCE, LINE ITEM 0890 |  |  |  |  |  |  |  |  |
| 00-0484970 | 2.76 EAC | 10/07/16 | 577 | 10/07/16 | 576 |  | -1 | -\$2.76 |
| SPRAY, WASP \& HORNET, $0.150 \%$ TETRAMETHRIN, $0.375 \%$ PERMETHRIN, $0.750 \%$ DERONYL BUTOXIDE TECHNICAL, 20 FT SPRAY, 49,500 DIELECTRIC STRENGTH, : CFCS, 20 OZ CAN, WECHEM ZAPPER, AERO INSTANT KILL OR = |  |  |  |  |  |  |  |  |
| 00-0485170 | 4.18 EAC | 10/07/16 | 98 | 10/07/16 | 100 |  | 2 | \$8.36 |

BRUSH, UTILITY, 20 IN HANDLE, TAMPICO FILL, 2 IN TRIM LENGTH, ADVANCE \#015.
MSC \#09310483


12/19/15
JEFFERSON PARISH
Page 1
PUBLIC WORKS WAREHOUSE
LÉS Lav. FINAL RECONCILIATION REPORT
(以) COUNT BOOK CB16-24131 at EASTBANK \#1 $\qquad$


Total number of items listed (out-of-balance): 1

* Total cost variance: -\$19.12


# JEFFERSON PARISH <br> PUBLIC WORKS WAREHOUSE <br> PENDING VARIANCE REPORT 

COUNT BOOK CB16-24131 at EASTBANK \#1

| Stock No. | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date | Count | Cost * |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Stock No. |  |  |  |  |  | Recounted |  |  |

Total number of items listed (out-of-balance): 0

* Total cost variance:

12/19/1t
Page 2

## JEFFERSON PARISH <br> PUBLIC WORKS WAREHOUSE

 COUNT BOOK CB16-24131

Counted Quantity

CLIP, BATTERY, 50 AMPERES, LARGE, NAPA \#726104
00-0830220
RESISTER MALLORY 30,000 OHM 1HJ3OK
00-0830230
10.78 EAOH 63.46 EACH

TERMINAL BLOCK, 12 CIRCUITS, 14-4 WIRE, CLASS 9080, 600V, SQUARE D TYPE D-12.
$0 \mathrm{C}-0830233 \quad 6.48 \mathrm{EACH}$
21

STRIP, TERMINAL, EIGHT CIRCUIT, 20 AMP, 250 VOLT, \#14-22 AWG WIRE, \#6-32 SCREW, IDEAL \#89-308
$00-0830210 \quad 1.00$ EACH
FUSE CLIP CLAMP \#2 \#32-002B
00-0330230
5.60 EACH

FUSE HOLDER PHENOLIC BASE 30A 250V BUSMAN \#1B0003
OO-C830230
9.50 EACH

HOLDER, FUSE, 30 AMPERES, 600 VOLT, 3 POLE, SHAWMUT \#30353
00-6036270
1.73 EACH

CAPS SERVICE 3/4" ENT-CLAMP TYPE \#172
OO-2830230
2.30 EACH

CAP, SERVICE ENTRANCE, 1-1/4 IN, CLAMP TYPE, PECO \#173
OC-0630250
6.10 EACH

CAP, SERVICE ENTRANCE, $1-1 / 2$ IN, CLAMP TYPE, PECO \#174
00-883030
CAP, SERVICE ENTRANCE, 2 IN , ALUMINUM, CLAMP TYPE, PECO \#175
D0-iठ60310
CAP, SERVICE ENTRANCE, $2-1 / 2 \mathrm{IN}$, CLAMP TYPE, PECO \#706
CU- 230320
51.00 EACH P, SERVICE ENTRANCE, 3 IN, CLAMP TYPE, PECO \#177
i $\quad j 0330$
3.54 EACH

BOLT SPLIT \#2 STRANDED RANGE, BRONZE, UL LISTED, BLACKBURN \#2HPS.
$00-083004 \mathrm{~J}$ BOLT SPLIT FOR \#4 SOLID WIRE, UL LISTED, HIGH STRENGTH BRONZE, BLACKBURN \#4HPS.
OC-083C050
BOLT, SPLIT, FOR \#12-\#6 SOLID, BRONZE, UL LISTED, BURNDY \#KSU17 00-0830360
2.34 EACH
1.88 EACH

BOLT, SPLIT, FOR \#10-\#8 STRANDED, BRONZE, UL LISTED, BURNDY \#KS15
00-0830370
0.65 EACH

BOLT, SPLIT, FOR \#16 - \#10 STRANDED WIRE, UL LISTED, HIGH STRENGTH BRONZE, BURNDY \#KS90
00-0830380
2.70 EACH

BOLT, SPLIT, FOR \# 1/0 STRANDED WIRE, BRONZE, UL LISTED, PENN-UNION \#S-1/0
00-0880400
5.13 EACH

BOLT SPLIT \#2-\#2/0 RANGE STRANDED, BRONZE, UL LISTED, BLACKBURN \#20H.
00-088C420 3.77 EACH
BOLT, SPLIT, BRONZE, FOR \#3/0 STRANDED WIRE, BURNDY KS28 T8-250 R250

-     - ? .....

BOLT, SPLIT, FOR \#4/O STRANDED WIRE, BRONZE, UL LISTED, BLACKBURN \#30H
00-0880450
0.35 EACH

LUG, TERMINAL, \#6-14 RANGE AL/CU, ILSCO CAT. \#TA-6-S
00-i2830460
0.68 EACH

LUG, TERMINAL, \#14-1/0 RANGE AL/CU, ALLEN SCREW TYPE, 1 CONDUCTOR, BURNDY
CAT. \#KA25U
$0 \mathrm{O}-12830470$
0.75 EACH

- IJG, TERMINAL, 2/0-14 RANGE, AL/CU, ILSCO CATALOG \#TA 0430
17.20 EACH
1
1
5
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$

$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$ $\bar{\square} \bar{\square} \bar{\square}=\square$
$\qquad$
$\qquad$

12/19/16
Page :
JEFFERSON PARISH
PUBLIC WORKS WAREHOUSE
Eb INV. FINAL RECONCILIATION REPORT
(1.) COUNT BOOK CB16-24067 at EASTBANK \#1

| Stock No. - Description | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0306720 | 136.13 EACH | 12/14/16 | 4 | 12/14/16 | 3 |  |  |  |
| HANDLE, TORCH, HEAVY DUTY WITH BUILT-IN REVERSE FLOW CHECK VALVES AND <br> FLASH BACK ARRESTORS, VICTOR \#315FC, MODEL \#0382-0034, GRAINGER \#5KJ43 |  |  |  |  |  |  |  |  |
| HANDLE, TORCH, VICTOR MODEL 310 C, PART \#VICO382 |  |  | 2 | 12/14/16 | 3 |  |  | \$133 |
|  |  |  |  | 121416 | 3 | 12/14/16 | 1 |  |


| Total number of items listed (out-of-balance): | 2 |
| ---: | :--- |
| * Total cost variance: | $-\$ 3.13$ |

## JEFFERSON PARISH

Page 1

## PUBLIC WORKS WAREHOUSE PENDING VARIANCE REPORT <br> COUNT BOOK CB16-24067 at EASTBANK \#1

| Stock No. $\quad$ Unit Price | Date <br> Activated | Activated <br> Quantity | Date <br> Counted | Counted <br> Quantity | Date <br> Recounted | Count <br> Variance | Cost <br> Variance |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: |

* Total cost variance:

12/14/16

## JEFFERSON PARISH PUBLIC WORKS WAREHOUSE COUNT BOOK CB16-24067



## JEFFERSON PARISH

## PUBLIC WORKS WAREHOUSE

FINAL RECONCILIATION REPORT
(w) COUNT BOOK CB16-24087 at EASTBANK \#1

| Stock No. - Description | Unit Price | Date Activated | Activated Quantity | Date Counted |
| :---: | :---: | :---: | :---: | :---: |
| 00-0481800 | 3.80 EACH | 12/12/16 | 922 |  |
| CEMENT, GRAVEL MIX, 80 LB BAG, 42 BAGS PER PALLET, QUIKCRETE BRAND, LINE ITEM 0020 |  |  |  |  |
| 00-0481990 | 179.80 EACH | 12/12/16 | 7 | 12/12/16 |




[^11]Page 31.11


12/20/16
Page 2
JEFFERSON PARISH
PUBLIC WORKS WAREHOUSE FINAL RECONCILIATION REPORT COUNT BOOK CB16-24087 at EASTBANK \#1

| Total number of items listed (out-of-balance): | 20 |
| ---: | :--- |
| * Total cost variance: | $-\$ 2,205.89$ |
|  |  | <br> \title{

## JEFFERSON PARISH <br> \title{ \section*{JEFFERSON PARISH <br> <br> PUBLIC WORKS WAREHOUSE <br> <br> PUBLIC WORKS WAREHOUSE <br> <br> PENDING VARIANCE REPORT <br> <br> PENDING VARIANCE REPORT <br> <br> COUNT BOOK CB16-24087 at EASTBANK \#1 

 <br> <br> COUNT BOOK CB16-24087 at EASTBANK \#1}

Page 1

| Stock No. | nit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Stock No. | 俍 Price |  |  |  |  |  |  |  |

Total number of items listed (out-of-balance): 0

* Total cost variance:


## JEFFERSON PARISH

## PUBLIC WORKS WAREHOUSE <br> COUNT BOOK CB16-24087



## JEFFERSON PARISH

PUBLIC WORKS WAREHOUSE
FINAL RECONCILIATION REPORT

## COUNT BOOK CB16-23733 at WESTBANK \#1

| Stock No. - Description | Unit Price | Date <br> Activated | Activated <br> Quantity | Date <br> Counted | Counted <br> Quantity | Date <br> Recounted | Count <br> Variance | Cost ${ }^{*}$ <br> Variance |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $36-0838150$ <br> CIR-BRKR 30A 240V 3PFPE NE233030 EACH | $10 / 05 / 16$ | 2 | $10 / 05 / 16$ | 3 |  | 1 | $\$ 36.25$ |  |


| Total number of items listed (out-of-balance): | 1 |
| ---: | :--- |
| * Total cost variance: | $\$ 36.25$ |



10/05/16
Page 1

JEFFERSON PARISH
PUBLIC WORKS WAREHOUSE
PENDING VARIANCE REPORT

## COUNT BOOK CB16-23733 at WESTBANK \#1



$$
\begin{array}{ll}
\text { Total number of items listed (out-of-balance): } & 1 \\
& \text { * Total cost variance: } \\
\$ 36.25
\end{array}
$$



| 12. 2 ck 17 | EASTBANK JEFFERSON PARISH |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Page 1 | PUBLIC WORKS WAREHOUSE |  |  |  |  |  |  |
| FINAL RECONCILIATION REPORT |  |  |  |  |  |  |  |
| ( r 1 ) COUNT BOOK CB17-25995 at EASTBANK \#1 $14000-$ i4 200 |  |  |  |  |  |  |  |
|  | Date Activated | Activated Quantity | Date Counted | Counted Quantity | $\begin{gathered} \text { Date } \\ \text { Recounted } \end{gathered}$ | $\begin{gathered} \text { Count } \\ \text { Variance } \end{gathered}$ | $\begin{aligned} & \text { Cost * } \\ & \text { Variance } \end{aligned}$ |

```
Total number of items listed (out-of-balance): 0
* Total cost variance:
```

12/28/17
Page 1

## JEFFERSON PARISH

PUBLIC WORKS WAREHOUSE
COUNT BOOK CB17-25995
EASTBANK \#1


12/05/17
JEFFERSON PARISH
Page 1
PUBLIC WORKS WAREHOUSE
FINAL RECONCILIATION REPORT

## COUNT BOOK CB17-25975 at WESTBANK \#1

| Stock No. - Description | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * <br> Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0870010 | 4.52 EACH | 11/29/17 | 166 | 11/29/17 | 163 |  | -3 | -S13.5 |
| TAPE, ELECTRICAL, VINYL, BLACK, 7 MIL, 0 DEG F THRU 220 DEG F, 600 V INSULATION, $3 / 4$ IN X 66 FT, 3M SCOTCH SUPER 33+, LINE ITEM 0020 |  |  |  |  |  |  |  |  |
| 00-0870970 | 32.94 EACH | 11/29/17 | 63 | 11/29/17 | 64 | 12/01/17 | 1 | \$32.94 |
| PILOT LIGHT WITH GREEN LENSE, 120 V , 2 NO CONTACTS, IDEC BRAND \#ALD29920NG120. |  |  |  |  |  |  |  |  |


| Total number of items listed (out-of-balance): | 2 |
| ---: | :--- |
| * Total cost variance: | $\$ 19.38$ |



## COUNT BOOK CB17-25975 at WESTBANK \#1

| Stock No. | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * <br> Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0870010 | 4.52 EAC | 11/29/17 | 166 | 11/29/17 | 163 |  | -3 | -S13.56 |
| TAPE, ELECTRICAL, VINYL, BLACK, 7 MIL, 0 DEG F THRU 220 DEG F, 600 V INSULATION, $3 / 4$ IN X 66 FT , 3M SCOTCH SUPER $33+$, LINE ITEM 0020 |  |  |  |  |  |  |  |  |
| 00-0870970 | 32.94 EAC | 11/29/17 | 63 | 11/29/17 | 64 | 12/01/17 | 1 | \$32.94 |
| PILOT LIGHT WITH GREEN LENSE, $120 \mathrm{~V}, 2$ NO CONTACTS, IDEC BRAND \#ALD29920NG120. |  |  |  |  |  |  |  |  |


| Total number of items listed (out-of-balance): | 2 |
| ---: | :--- |
| * Total cost variance: | $\$ 19.38$ |


| Stock No. | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0870010 | 4.52 EAC | 11/29/17 | 166 | 11/29/17 | 163 |  | -3 | -S13.56 |
| TAPE, ELECTRICAL, VINYL, BLACK, 7 MIL, 0 DEG F THRU 220 DEG F, 600 V <br> INSULATION, $3 / 4$ IN X 66 FT, 3M SCOTCH SUPER 33+, LINE ITEM 0020 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| NUT, MINI WIRE BLUE, 22-14, IDEAL MODEL \#72B, CAT. \#30-072 PKG/100 |  |  |  |  |  |  |  |  |
| 00-0870970 | 32.94 EAC | 11/29/17 | 63 | 11/29/17 |  |  | 2 | \$65.88 |
| PILOT LIGHT WITH GREEN LENSE, 120V, 2 NO CONTACTS, IDEC BRAND \#ALD29920NG120. |  |  |  |  |  |  |  |  |
| 00-087097A | 33.98 EAC | 11/29/17 | 10 | 11/29/17 | 9 |  | -1 | -\$33.98. |
| SWITCH, PUSH BUTTON, MOMENTARY, ILLUMINATED WITH RED LENS, IDEC \#ALD29911NR6 |  |  |  |  |  |  |  |  |

$$
\begin{aligned}
\text { Total number of items listed (out-of-balance): } & 4 \\
& \text { * Total cost variance: } \\
& \$ 11.41
\end{aligned}
$$

## JEFFERSON PARISH

Page 6
PUBLIC WORKS WAREHOUSE

## COUNT BOOK CB17-25975

ck No. - Description
$\begin{array}{ll}\text { Unit Price } & \begin{array}{c}\text { Activated } \\ \text { Quantity }\end{array}\end{array}$
86.98 EACH 5

SWITCH, MERCOID MERCURY \#9-6207SC
00-087206A
SWITCH, MERCURY, MERCOID \#AS415A1
SWITCH, MERCURY, MERCOID \#AS4I5AI
00-087206B
SWITCH, MERCURY, MERCOID \#AS454A34
00-0872300
SWITCH, MICRO, \#BZ-2RS-A2
00-0872320
SWITCH, MICRO \#BZ-2RQ1-A2
00-0872330
SWITCH, MICRO \# V3L-131-D8
00-0872350
switch, micro, \#BZ-2RW82-A2
00-0872470
SWITCH MICRO \#MS25008-1 DT-2R-A7
00-0872590
SWITCH, PRESSURE, UNITED ELECTRIC BRAND \#1-J403-144
00-0873050
SWITCH SQ-D FLOAT \#9036-DW1
00-0873070
LEVER, STANDARD, MICRO SWITCH PART \#MS-LSZ51D
00-0873110
SWITCH, MICRO LIMIT, HONEYWELL \#1LS1-L
00-0873140
;WITCH, PRESSURE, DPDT, 10A, 600VAC, 250VDC, 1.5-75 DECREASING PRESSURE
. 3 ANGE, $3.5-15$ ADJUSTABLE DIFFERENTIAL, SQUARE-D CLASS 9012, TYPE GAW-24,
SERIES C
266.45
OO-O87314B
SWITCH, PRESSURE, DPDT, 10A, 600VAC, 250VDC, $5-250$ DECREASING PRESURE

RANGE, 10-49 ADJUSTABLE DIFFERENTIAL, SQUARE-D CLASS 9012, TYPE GAW-26,
SERIES C
$00-0873150 \quad 17.25$ EACH
SWITCH, PRESSURE, 20-40 RANGE, SQUARE D \#9013FSG2J20
00-0873210
17.64 EACH

SWITCH, PRESSURE, W/UNLOADER VALVE, $95-125$ PSI RANGE, $1 / 4$ IN FPT, FURNAS \#69MB7Y
00-0873230
79.98 EACH

SWITCH, PRESSURE, 145 - 175 PSI ADJUSTABLE, SQUARE D \#9013-GHG-2C
$00-087331 \mathrm{~A} \quad 69.28 \mathrm{EACH}$
SWITCH PRESSURE ASCO \#PB11A
$00-087331 B$
SWITCH, PRESSURE, ASCO \#SA41A
00-0873500
SWITCH, TOGGLE, 15 AMPS, 120 VOLTS, LEV \#1451-bRN
00-0873510
SWITCH, TOGGLE, 15 AMP, 1 POLE, IVORY, 120 VAC, PASS AND SEYMOUR \#660-I
00-0873550
3.99 EACH
switch, TOGGLE, METAL BALL, 6 AMP, 120V, LEVITON \#720-T
00-0873560
4.67 EACH

SWITCH, MOMENTARY, METAL, SPDT, ON/OFF/ON, 10A-250V/15A-125V, SCREW
TERMINAL, CARLINGSWITCH PART \#6FC54-73XG, GRAINGER \#4X203
00-0873580
419.00 EACH

MANIFOLD, VAPORSTAT, SMITH \& LOVELESS \#5B51

## 873590

6.57 EACH
jWITCH, TOGGLE, SINGLE POLE DOUBLE THROW, SCREW TERMINALS, CARLINGSWITCH \#2FB54-73, GRAINGER \#2X465

11/17/17
Page 1

JEFFERSON PARISH
PUBLIC WORKS WAREHOUSE FINAL RECONCILIATION REPORT

## COUNT BOOK CB17-25836 at WESTBANK \#1

| Stock No. - Description | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0289960 | 0.61 EACH | 10/20/17 | 12 | 10/23/17 | 10 |  | -2 | -\$1.22 |
| BUSHING, GALVANIZED, 3/8 | $\mathrm{NCH} \times 1 / 4 \mathrm{INCH}$ | H, SCHEDULE |  |  | 25 |  | -1 | -\$.45 |
| 00-0289980 | 0.45 EACH | 10/20/17 | 26 | 10/23/17 | 25 |  | -1 | S.45 |
| BUSHING, HEX, GALVANIZ | , $1 / 2 \mathrm{INCH} \mathrm{X} \mathrm{1/4}$ | $4 \mathrm{INCH}, \mathrm{SCHE}$ | DULE 40 |  |  |  | -1 | -S3.8 |
| 00-0290170 | 3.80 EACH | 10/20/17 | 9 | 10/23/17 | 8 |  | -1 | -53.8 |
| BUSHING, HEX, GALVANIZ FPT, DOMESTIC, FASTENA | $\begin{aligned} & \text {, CLASS } 125 \text { S } \\ & \$ 66596 \end{aligned}$ | CHEDULE 40 | -1/4 INCH M | 1 INCH $10 / 23 / 17$ | 2 |  | 1 | \$3.55 |
| 00-0290300 | 3.55 EACH | 10/20/17 | 1 | 10/23/17 | 2 |  |  |  |
| BUSHING, GALVANIZED, S | EDULE 40, DO | MESTIC, 1-1/2 | IN X 1 IN |  | 12 |  | -1 | -\$2.65 |
| 00-0290400 | 2.65 EACH | 10/20/17 | 13 | 10/23/17 | 12 |  | -1 |  |
| BUSHING, GALVANIZED, S | EDULE 40, DO | MESTIC, 2 IN | $3 / 4 \mathrm{IN}$ | 10/23/17 | 6 |  | 2 | \$9 |
| 00-0290900 | 4.50 EACH | 10/20/17 | 4 | 10/23/17 | 6 |  |  |  |
| CAP, GALVANIZED, 1-1/2 IN | H, SCHEDULE |  |  |  | 4 |  | -1 | -\$2.1 |
| 00-0291840 | 2.10 EACH | 10/20/17 | 5 | 10/23/17 | 4 |  |  |  |
| ELBOW, 90 DEGREE, GAL | NIZED, 1 INCH, | , SCHEDULE | 0, LINE ITEM |  | 1 |  | -2 | -S3.2 |
| 00-0292020 | 1.60 EACH | 10/20/17 | 3 | 10/23/17 | 1 |  |  |  |
| ELBOW, STREET, GALVAN | ED, 1/4 INCH, | SCHEDULE 40 | 90 DEGREE |  | 15 |  | -1 | -S. 89 |
| 00-0292350 | 0.89 EACH | 10/20/17 | 16 | 10/2 | 15 |  | -1 |  |
| PLUG, GALVANIZED, 1/4 IN | , SCHEDULE | 40, LINE ITEM |  |  | 8 |  | -1 | -\$1.37 |
| 00-0293600 | 1.37 EACH | 10/20/17 | 9 | 10/23/17 | 8 |  |  |  |
| SLEEVE, GALVANIZED, 1/2 | $\mathrm{NCH}, \mathrm{SCHEDUL}$ | E 40, LINE IT | M 0250 |  |  |  | 3 | \$5.01 |
| - 2295770 | 1.67 EACH | 10/20/17 | 14 | 10/23/17 | 17 |  | 3 |  |
| , PLE, GALVANIZED, S | DULE 40, 1/8 IN | N X 2 IN, DOM | ESTIC |  | 10 | 11/02/17 | -2 | -\$1.38 |
| OU-0296450 | 0.69 EACH | 10/20/17 | 12 | 10/23/17 | 10 | 11/02/7 |  |  |
| NIPPLE, GALVANIZED, SC | DULE 40, DOM | MESTIC, $3 / 4 \mathrm{IN}$ | X CLOSE, |  |  | 11/14/17 | -3 | -S2.52 |
| 00-0296600 | 0.84 EACH | 10/20/17 | 22 | 10/23/17 | 19 | 11/14/17 | -3 | -52.52 |
| NIPPLE, GALVANIZED, $3 / 4$ | $\mathrm{CH} \times 2 \mathrm{INCH}$, | SCHEDULE 4 | , LINE ITEM | 10/23/17 | 6 | 11/14/17 | 1 | \$1.78 |
| 00-0296610 | 1.78 EACH | 10/20/17 | 5 | 10/23/17 |  |  |  |  |
| NIPPLE, PIPE, GALVANIZE | SCHEDULE 40 | , 3/4 IN BY 2- | /2 IN LONG, |  | 12 | 11/14/17 | -1 | -\$2.08 |
| 00-0297000 | 2.08 EACH | 10/20/17 | 13 | 10/23/17 | 12 | 11/14/17 | -1 |  |
| NIPPLE, GALVANIZED, 1 I | H X $2 \mathrm{INCH}, \mathrm{SC}$ | CHEDULE 40, | LINE ITEM 19 | 10/23/17 | 0 | 11/14/17 | -2 | -S6.9 |
| 00-0297800 | 3.45 EACH | 10/20/17 |  | 10/23/17 |  |  |  |  |
| NIPPLE, GALVANIZED, 2 I | H X 3 INCH , S | CHEDULE 40, | MSC \#36994 |  | 2 | 11/02/17 | -1 | -\$5.05 |
| 00-0297850 | 5.05 EACH | 10/20/17 | 3 | 10/23/17 | 2 | 11/02/7 | -1 |  |
| NIPPLE, GALVANIZED, SC | EDULE 40, DOM | MESTIC, 2 IN | 4 IN | 10/23/17 | 6 | 11/14/17 | 1 | \$5 |
| 00-0297900 | 5.00 EACH | 10/20/17 | 5 | 10/23/7 |  |  |  |  |
| NIPPLE, GALVANIZED, S | EDULE 40, DO <br> 7.65 EACH | $\begin{array}{r} \text { MESTIC, } 2 \text { IN } \\ 10 / 20 / 17 \end{array}$ | 3 | 10/23/17 | 2 | 11/14/17 | -1 | -\$7.65 |



## COUNT BOOK CB17-25836 at WESTBANK \#1



10/24/17
Page 2

JEFFERSON PARISH
PUBLIC WORKS WAREHOUSE
PENDING VARIANCE REPORT

COUNT BOOK CB17-25836 at WESTBANK \#1

$$
\begin{array}{ll}
\hline \text { Total number of items listed (out-of-balance): } & 25 \\
\text { * Total cost variance: } & -\$ 2.38
\end{array}
$$



| 12/27/17 <br> Page 1 | $\frac{\text { EASTBAINK }}{\text { PUBLIC WORSNS WARISHOUSE }}$ |
| :--- | :--- |
| FINAL RECONCILIATION REPORT |  |


| Stock No. - Description | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * <br> Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-048005C | 12.62 EACH | 12/27/17 | 154 | 12/27/17 | 115 | 12/27/17 | -39 | -S492.18 |
| STRAP, RATCHET, CARGO, 8 FT X 1 IN WIDTH, S-HOOK ON EACH END, 833 LB WORKING LOAD LIMIT. 2500LB BREAKING STRENTH. GRAINGER \#19XZ75. SNAPLOC \#GR-LS18RSR-PU. |  |  |  |  |  |  |  |  |
| 00-0480150 | 0.32 EACH | 12/27/17 | 34 | 12/27/17 | 20 | 12/27/17 | -14 | -S4.48 |
| SPRAYER, TRIGGER, FOR 32 OZ BOTTLE, HI-TECH BRAND EJ-6900-902B, LINE ITEM 1780 |  |  |  |  |  |  |  |  |
| 00-048015A | 0.35 EACH | 12/27/17 | 95 | 12/27/17 | 93 | 12/27/17 | -2 | -S. 7 |
| BOTTLE, SPRAY, 32 OZ, CONTINENTAL BRAND \#CN-932CG \#UNS 32, LINE ITEM 1770 |  |  |  |  |  |  |  |  |
| 00-0480360 | 2.65 EACH | 12/27/17 | 25 | 12/27/17 | 27 | 12/27/17 | 2 | S5.3 |
| FRAME, PAINT ROLLER, 9 INCH, LINE ITEM 0120 |  |  |  |  |  |  |  |  |
| 00-0480400 | 6.85 EACH | 12/27/17 | 44 | 12/27/17 | 43 | 12/27/17 | -1 | -S6.85 |
| TRAY, PAINT ROLLER, METAL, 13 INCH WIDE, LINE ITEM 0140 |  |  |  |  |  |  |  |  |
| 00-043040A | 0.61 EACH | 12/27/17 | 258 | 12/27/17 | 261 | 12/27/17 | 3 | \$1.83 |
| LINER, TRAY, SHERWIN WILLIAMS \#286-3751, FOR DEEP PAINT ROLLER TRAY, BLP \#ZCCA-9075 |  |  |  |  |  |  |  |  |
| 00-0480450 | 0.99 EACH | 12/27/17 | 177 | 12/27/17 | 174 | 12/27/17 | -3 | -\$2.97 |
| COVER, PAINT ROLLER, 9 IN, 3/8 IN NAP, PLASTIC OR PHENOLIC CORE, LINE \#0040 |  |  |  |  |  |  |  |  |
| 00-048045B | 1.25 EACH | 12/27/17 | 85 | 12/27/17 | 76 | 12/27/17 | -9 | -\$11.25 |
| COVER, PAINT ROLLER, 9 IN, $3 / 4$ IN NAP, PHENOLIC CORE, SHERWIN WILLIAMS \# 173-4318, LINE ITEM 0110 |  |  |  |  |  |  |  |  |
| 480500 | 0.99 EACH | 12/27/17 | 97 | 12/27/17 | 96 | 12/27/17 | -1 | -S.99 |
| BRUSH, PAINT, TOSSAWAY QUALITY, ${ }^{\prime \prime}$ ", \#9991-061, BRUSH \#1113, LINE ITEM 0260 |  |  |  |  |  |  |  |  |
| 00-0480710 | 0.29 EACH | 12/27/17 | 547 | 12/27/17 | 534 | 12/27/17 | -13 | -\$3.77 |
| BRUSH, PAINT, $2 \operatorname{IN}$, TOSSAWAY QUALITY DERBY SQUARE, GREY CHINA BRISTLE, WOOSTER MAGIKOTER BRUSH \#9991-063, LINE ITEM 0240 |  |  |  |  |  |  |  |  |

$$
\begin{array}{ll}
\text { Total number of items listed (out-of-balance): } & 10 \\
& \text { * Total cost variance: }
\end{array}-\$ 516.06
$$

## JEFFERSON PARISH

PUBLIC WORKS WAREHOUSE
PENDING VARIANCE REPORT

## COUNT BOOK CB17-26125 at EASTBANK \#1

|  | Date | Activated | Date | Counted | Date | Count | Cost |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Stock No. | Unit Price |  |  |  |  |  |  |
| Activated | Quantity | Counted | Quantity <br> Recounted | Variance | Variance |  |  |

Total number of items listed (out-of-balance): 0

* Total cost variance:


## JEFFERSON PARISH

Page 2
PUBLIC WORKS WAREHOUSE :
51 Items

## COUNT BOOK CB17-26125 :



12/06/17

## Page 1

JEFFERSON PARISH

## PUBLIC WORKS WAREHOUSE

FINAL RECONCILIATION REPORT

## COUNT BOOK CB17-25930 at WESTBANK \#1

| Stock No. - Description | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0812420 | 25.80 EACH | 11/16/17 | 33 | 11/16/17 | 32 | 11/20/17 | -1 | -S25.8 |
| SWITCH, FLOAT, MERCURY, SPST, NC CONTACT, 30FT CORD, HYDROMATIC \#3901-016-7 |  |  |  |  |  |  |  |  |
| 00-0826000 | 13.75 EACH | 11/16/17 | 4 | 11/16/17 | 2 |  | -2 | -\$27.5 |
| TAPE, WIRE MARKER, 0-9 WITH DISPENSER 3M \#STD-0-9 |  |  |  |  |  |  |  |  |
| 00-0831790 | 12.79 EACH | 11/16/17 | 6 | 11/16/17 | 0 |  | -6 | -\$76.74 |
| ELEMENT, HEATER, ALLEN | RADLEY \#W-7 |  |  |  |  |  |  |  |

## COUNT BOOK CB17-25930 at WESTBANK \#1

| Stock No. | Unit Price | Date Activated | Activated Quantity | Date Counted | Counted Quantity | Date Recounted | Count Variance | Cost * Variance |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00-0812420 | 25.80 EAC | 11/16/17 | 33 | 11/16/17 | 32 | 11/20/17 | -1 | -S25.8 |
| SWITCH, FLOAT, MERCURY, SPST, NC CONTACT, 3OFT CORD, HYDROMATIC \#3901-016-7 |  |  |  |  |  |  |  |  |
| 00-0826000 | 13.75 EAC | 11/16/17 | 4 | 11/16/17 | 2 |  | -2 | -\$27.5 |
| TAPE, WIRE MARKER, 0-9 WITH DISPENSER 3M \#STD-0-9 |  |  |  |  |  |  |  |  |
| 00-0831790 | 12.79 EAC | 11/16/17 | 6 | 11/16/17 | 0 |  | -6 | -S76.74 |
| ELEMENT, HEATER, ALLEN-BRADLEY \#W-79 |  |  |  |  |  |  |  |  |


| Total number of items listed (out-of-balance): | 3 |
| ---: | :--- |
| * Total cost variance: | $-\$ 130.04$ |

## PUBLIC WORKS WAREHOUSE

PENDING VARIANCE REPORT

## COUNT BOOK CB17-25930 at WESTBANK \#1



> | Total number of items listed (out-of-balance): | 4 |
| :--- | :--- |
|  | * Total cost variance: |
|  | $-\$ 570.94$ |



## PUBLIC WORKS WAREHOUSE <br> COUNT BOOK CB17-25930

Unit Price \begin{tabular}{cc}
Activated <br>
Quantity

 

Counted <br>
Quantity
\end{tabular}



## ATTACHMENT D

## SAMPLE SELECTIONS

EAST BANK: 4901 JEFFERSON HIGHWAY

| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL |
| :---: | :---: | :---: | :---: | :---: | :---: |
| EB1 | 00-0140070 | LIMESTONE, \#57 GRAY, DOMESTIC, EASTBANK DELIVERED, LINE ITEM 0010 | 3,442.26 | 39.83 | 137,105.22 |
| EB1 | 00-0382190 | METER, WATER, $5 / 8$ IN X $3 / 4$ IN, NO LEAD BRONZE HOUSING, SHROUD AND LID, POSITIVE DISPLACEMENT, 25 GPM, S/S DISC SPINDLES, CERAMIC MAGNET, WITH ITRON CONNECTOR, BADGER RCDLM25, LINE ITEM 0010 | 1,178.00 | 79.00 | 93,062.00 |
| EB1 | 00-014005A | LIMESTONE, \#610 SACTUN/MEXICAN, BASE COURSE AGGREGATE, DELIVERED, LINE ITEM 0040 EB DELIVERED LINE 0100 WB DELIVERED | 2,339.40 | 39.67 | 92,804.00 |
| EB1 | 00-0383320 | METER, COMPOUND, 8 INCH, OMNI MODEL \#C2, ITRON ERT 100 W READING SYSTEM, INLINE CONNECTOR, FLOATING BALL TECHNOLOGY, LINE ITEM 0120 | 15.00 | 5,299.00 | 79,485.00 |
| EB1 | 00-0383330 | METER, COMPOUND, 10 INCH, OMNI MODEL \#C2, ITRON ERT 100 W READING SYSTEM, INLINE CONNECTOR, FLOATING BALL TECHNOLOGY, LINE ITEM 0130 | 10.00 | 6,831.00 | 68,310.00 |
| EB1 | 00-0383180 | METER, COMPOUND, 6 INCH, CONFIGURATION \#C63EXXXG1ATXX, OMNI MODEL \#C2, ITRON ERT 100 W READING SYSTEM, INLINE CONNECTOR, FLOATING BALL TECHNOLOGY, LINE ITEM 0110 | 22.00 | 2,923.00 | 64,306.00 |
| EB1 | 00-0530400 | ADAPTER NIPPLE, 2 IN CORPORATION STOP OUTLET CONNECTION, OUTSIDE THREAD, MUELLER \#36188, FOR D-5 TAPPING MACHINE. | 5.00 | 91.38 | 456.90 |
| EB1 | 00-0676030 | GR SEAL ASSEMBLY \#GS-1500 | 12.00 | 25.00 | 300.00 |
| EB1 | 00-0181400 | COUPLING $6^{\prime \prime}$ X 11"L 6.22-8.74, CN55-3671, EXP. 06/08/01, CODE \#670.52.00475. | 5.00 | 60.00 | 300.00 |
| EB1 | 00-0951340 | \#745 EAGLE VERITHIN PENCILS CARMINE RED | 10.00 | 0.15 | 1.50 |
|  |  |  |  |  | 536,130.61 |

WEST BANK: 6250 LAPALCO BOULEVARD

| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL |
| :---: | :---: | :---: | :---: | :---: | :---: |
| WB1 | 00-0380820 | VALVE, METER BALL, $3 / 4$ IN, PACK JOINT INLET X METER NUT OUTLET, NO LEAD BRASS, DOMESTIC, FORD \#B43-332W-NL, A Y MCDONALD \#76100MW-22-3/4-NL, LINE ITEM 0780 | 694.00 | 39.39 | 27,336.66 |
| WB1 | 00-0501000 | PIPE, DUCTILE IRON, 12 IN, CLASS 51, BELL X SPIGOT, 20 FT LENGTHS, DOMESTIC | 569.00 | 31.99 | 18,202.31 |
| WB1 | 00-0689000 | IMPELLER, HYDROMATIC \#10427-000-2, 15" OUTSIDE DIAMETER | 4.00 | 3,160.00 | 12,640.00 |
| WB1 | 00-0181510 | COUPLING, TRANSITION, 8 IN X 10.8 IN LENGTH, OD RANGE 8.54 TO 9.84, DOMESTIC, TWO STAINLESS STEEL BOLTS, EPOXY COATED, HYMAX PART \#2000-0984-260, LINE ITEM 0590 | 62.00 | 200.00 | 12,400.00 |
| WB1 | 00-0688990 | IMPELLER, 13 IN, HYDROMATIC \#2304-000-2, FOR MODLE \#60MP | 5.00 | 2,429.00 | 12,145.00 |
| WB1 | 00-068954J | ASSEMBLY, SEALING FLANGE, HYDRO RAIL, 8 IN, HYDROMATIC \#11279-000-5, FOR MODEL S8LX | 4.00 | 2,632.50 | 10,530.00 |
| WB1 | 00-0688200 | HYDRO WEAR RING \#8345-000-2 | 14.00 | 748.80 | 10,483.20 |
| WB1 | 00-0892400 | SHAFT RELIANCE ELEC MOTOR 15 HP \#604918-18RA | 4.00 | 957.00 | 3,828.00 |
| WB1 | 00-0852120 | CONTACT KIT FURNAS \#75DA14 | 16.00 | 25.00 | 400.00 |
| WB1 | 00-0856560 | FUSE, ONE TIME, 90 AMP, 600 VOLT, BUSS \#NOS 90 | 25.00 | 11.00 | 275.00 |
| WB1 | 00-0330720 | STEM (ONLY), 48 IN EXTENSION, CLEVIS PIN TYPE, 5-1/4 IN MUELLER IMPROVED/CENTURION (FOR MODELS BEFORE 1987) CATALOG \#A-423, PART \#158294 | 3.00 | 91.08 | 273.24 |
| WB1 | 00-0342210 | STEM \{ONLY\}, LOWER, 5-1/2 FT THREADED, 5-1/4 IN MUELLER IMPROVED (FOR MODELS BEFORE 1972 "OLD STYLE"), ITEM \#H-79 | 2.00 | 106.00 | 212.00 |
|  |  |  |  |  | 108,725.41 |

## WEST BANK/STREETS: 5701 BELLE TERRE ROAD

| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ST2 | 00-014005A | LIMESTONE, \#610 SACTUN/MEXICAN, BASE COURSE AGGREGATE, DELIVERED, LINE ITEM 0040 EB DELIVERED LINE 0100 WB DELIVERED | 736.66 | 39.67 | 29,223.30 |
| ST2 | 00-0966070 | COLD MIX, HIGH PERFORMANCE ASPHALT, 50 POUND PLASTIC BAG, STREET WISE BRAND, 63 BAGS PER PALLET, LINE ITEM 0010 | 1,451.00 | 7.00 | 10,157.00 |
| ST2 | 00-058028E | RAINCOAT, FULL LENGTH, WITH HOOD, XX-LARGE, YELLOW MATERIAL IS PVC/NYLON/PVC, SEAMS ARE DOUBLE STITCHED AND TAPED, MEETS ASTM D6413, NEESE \#35SC, MCR \#240C-XXL, LINE ITEM 0400 | 1.00 | 6.00 | 6.00 |
|  |  |  |  |  | 39,386.30 |

ATTACHMENT E

## 15 HP ELECTRIC MOTOR SHAFT PICTURES



## ATTACHMENT F

## LOCATION MAPS



| Ref \# | General Description of Items Stored at 4901 Jefferson Hwy | Department |
| :---: | :--- | :--- |
| 1 | Pipe | Drainage |
| 2 | Pipe | Drainage |
| 3 | Pipe | Drainage |
| 4 | Items as per Inventory listing. | Engineering |
| 5 | Items as per Inventory listing. | Engineering |
| 6 | Sand and limestone - per Inventory listing. | Engineering |
| 7 | Items as per Inventory listing. | Engineering |
| 8 | Blocks | Engineering |
| 9 | Lift Station Maintenance shops, old pipe, fittings \& pumps from rehabs of <br> Sewerage lift stations. | Sewerage |
| 10 | Debris pile from Sewerage \& Drainage lines divisions. Used when they <br> cannot go to Landfill. | Drainage |



5701 Belle Terre Rd


| Ref \# | General Description of Items Stored at 5701 Belle Terre Rd | Department |
| :---: | :--- | :--- |
| 1 | Tools and equipment | Streets |
| 2 | Signs, barricades | Streets |
| 3 | Supplies | Streets |
| 4 | Items per Inventory Listing | Engineering |
| 5 | Various equipment/Drainage pipe/Asphalt tack tank/Junk tire container. | Streets |
| 6 | Items per Inventory Listing | Engineering |
| 7 | Limestone and Batture dirt, per Inventory Listing | Engineering |



| Ref \# | General Description of Items Stored at $\mathbf{3 6 0 0}$ Jefferson Hwy | Department |
| :---: | :--- | :--- |
| 1 | Pipe Yard | Engineering |
| 2 | Plant Stockroom (and workshop space for Water) | Engineering |
| 3 | Limestone and Sand | Water |
| 4 | Bulk Storage treatment chemicals | Water |
| 5 | Bulk Storage Chlorine | Water |

4500 West Bank Expressway


| Ref \# | General Description of Items Stored at 4500 WB Expressway | Department |
| :---: | :--- | :--- |
| 1 | Bulk Storage Chlorine | Water |
| 2 | Tool room; supplies for treatment plant | Water |

1450 / 1561 River Park Blvd


| Ref \# | General Description of Items Stored at River Park Blvd | Department |
| :---: | :--- | :--- |
| 1 | Gravel (aggregate) | Water |
| 2 | Sand (aggregate) | Water |
| 3 | Pumps, valves, generators, and misc. equipment for repairs to lift <br> stations. (Mechanical, electrical maintenance bldg.) | Sewerage |
| 4 | West Bank Yard (aggregate, pipe, etc.) | Drainage |
| 5 | Future site of Engineering Warehouse (will house 6250 Lapalco items) | Engineering |

200 Shrewsbury / 211 Arnoult


| Ref \# | General Description of Items Stored at Shrewsbury/Arnoult | Department |
| :---: | :--- | :--- |
| 1 | Concrete supplies, street signal signs, two narrow boards, three portable <br> compressors, drainage supplies, and small barricades. | Streets |
| 2 | Batture dirt, 610 limestone, river sand, and two trash containers. | Streets |
| 3 | Floor mats, gray pavers, concrete supplies, three barricade racks, type-3 <br> barricades, concrete ply boards, family gras materials, and drainage pipes. | Streets |
| 4 | Note: Parking area for heavy equipment, trucks, backhoe, trailers, two <br> trash containers for truck \#4606 and asphalt tack trailers. Also, area for <br> waste tires, trash debris dump area, waste oil container, and sand bag <br> machine. | Streets |

## TFIRTRTEK

## The 3 Big Mistakes in Stockpile Inventory Measurement

Blog, Case Studies, Education, Gallery, Mining, Portfolio, Stockpile
Inventory

[http://distinguishmedia.com/firmatek/wp-content/uploads/2013/03/stockpile-slide-8-
e1363108851591.jpg]
Stockpile inventory management can be a source of ongoing frustration for producers of bulk materials such as aggregates, coal, sawdust, cement clinker and other
products. The challenges of accurately measuring the volume of these stored materials are many, but there are solutions.

The sources of inventory measurement error are primarily caused by these two realities: most stockpiles are highly irregular in shape and are not located on flat open ground. Because of this, assumptions produce inaccuracy.

Over the years, after measuring thousands of piles and having hundreds of discussions with managers, we've observed many sources of error in the methods used to store and measure stockpiles. This article will discuss three of the most prevalent errors and make suggestions for immediately improving the accuracy of your inventories.

Error Source Number One: Poorly Defined Base
Accurately defining the base of a stockpile is critical. It is, however, more difficult than it may seem. This is especially true where the material is spread out or is stored adjacent to materials of similar size and color. Survey methods that use a fixed elevation for the base of a stockpile, or that use a small amount of data around the perimeter of a pile will fail to provide accurate and/or reproducible results. The reason for this is that relatively small errors in defining the base of a stockpile can have an inordinate effect on the calculated volume.

Let's examine the case of a simple cone shaped stockpile (under a radial stacker for example). Assuming the pile is 20 ft high and the side assumes a $30^{\circ}$ angle from vertical (a $60^{\circ}$ angle of repose), the top 12 inches of material has a volume of $.35 \mathrm{ft}^{3}$. This represents $0.01 \%$ of the total volume of the pile (which is $2,793 \mathrm{ft}^{3}$ ). Conversely, the bottom 12 inches contains $398 \mathrm{ft}^{3}$ of material. That's over $14 \%$ of the actual volume of the stockpile.

So...small errors in definition can create large errors in apparent volume. Because of this, choosing a measurement method in which elevations are measured all the way around the perimeter of the stockpile is imperative. This one tip can significantly improve the accuracy of your volumetric measurements. If the base isn't accurate, your inventory won't be either.

Error Source Number Two: Insufficient Data on the Top of the Stockpile

Most stockpiles found in industry are at least 10 feet high. Many are several times that, so from the ground it's impossible to know what that stockpile looks like on top. However, many (if not most) surveyors either ignore the irregularities on the top of the pile or simply take a few representative points and interpolate between them. The conventional technique of going around the pile with a measurement wheel and approximating the angle and height of the pile is a common example.

Unfortunately, laser scanning's reputation for superior accuracy has on occasion taken a hit, not because of any limitations on the method or technology, but because the surveyor simply takes a few points at the bottom and top edges of the pile and ignores the non uniformity of the top surface. This allows him (or her) to do a job quickly and easily and charge a low price for the job. They boast that they are doing laser scanning but the results are often significantly in error. Done properly, laser scanning is the best method for getting accurate, timely results. Done poorly, it can be no better than simple manual methods of stockpile measurement. By paying careful attention to these details clients should expect numbers accurate to within $5 \%$. With internal testing we've found that the volume difference between independent technicians, separately measuring the same pile, usually comes in under 2\%.

How can you make sure that the job is being done accurately? Simply demand that your measurement company give you a computer generated model of the pile. If it doesn't look like the pile, then the answer is wrong. Pay particular attention to the top. If he (or she) did not at least climb up on the pile or a higher adjacent vantage point to ensure that it is uniform, I would question the results.

Error Source Number Three: Including Extra Material
Occasionally, a client will ask us to include material in the floor below the measured base level. This may give them a reported volume closer to their expected value, but it creates problems in future inventories. As an example, let's assume we have measured a pile with a base area of $50 \mathrm{ft} X 100 \mathrm{ft}$. If we include $6^{\prime \prime}$ of material below the pile, this will add $92.5 \mathrm{yd}^{3}\left(2,500 \mathrm{ft}^{3}\right)$ to the calculated volume.

Now let's assume we have added another 20 feet of material to the pile so the new base area is $70 \mathrm{ft} X 100 \mathrm{ft}$. Using the same assumption of $6^{\prime \prime}$ of material below the pile, the computed volume is increased by another $37 \mathrm{yd}^{3}$. That just erroneously added $1,000 \mathrm{ft}^{3}$ of material that doesn't exist! The same problem exists in reverse: If the "footprint" of the pile is less on the second inventory, the reduction in volume is exaggerated.

Let's now do a mental exercise. Let's take the same pile (50ft X 100ft) and push it up on itself, making it taller until the new footprint is only $50 \mathrm{ft} \times 50 \mathrm{ft}$. The actual volume of material is unchanged. The weight of material is unchanged. However, the computed volume of this unchanged pile is now reduced by $46.25 \mathrm{yd}^{3}\left(1,250 \mathrm{ft}^{3}\right)$ ! The more the pile expands or contracts the greater the error.

As you can see, this practice makes it impossible to reconcile inventories from one measurement to the next. We advise clients who request this practice that their inventories won't reconcile between measurements. We can, of course, make the adjustments, but we document these adjustments so if subsequent inventories don't reconcile, we'll know the source of error.

This is not to suggest that material that is stored in the floor cannot be measured. It can be successfully calculated with the right technology by setting up control points, establishing an unchanging perimeter around the area to be measured, and mapping changes in elevations throughout that area.

Summary
"Why won't my inventories reconcile?" is a commonly asked question. The solutions aren't always easy, but by understanding these three common sources of error you can incorporate better practices in storing inventories. Additionally you make sure that if you're hiring a third party to perform inventory measurements they are taking the necessary steps to get the most accurate results. By simply ensuring that the base of the pile is accurately defined, the top of the pile is adequately measured and measuring only what is physically definable, the accuracy of your inventories can be dramatically improved.

Firmatek, LLC is a San Antonio, TX based company that specializes in inventory measurement and consulting. If you're having inventory problems and need assistance please contact us.

0 Comments /

Tags: inventory management, inventory measurement, Stockpile management

## ATTACHMENT H

## INVENTORY DETAILS

The following items have not been used since 1999. There is one (1) item dated 1983; however, it is of insignificant value. Items without a "Last Activity Date" are assumed to be at least as old as 1999. The total value of the items is $\$ 220,899$.

This list is meant as an example of infrequently used items, or items that may potentially be obsolete or not needed. It is not a comprehensive list of items. The items are sorted by Description for ease of review.

## Location Codes:

| Location Code | Description | Physical address of Items |
| :---: | :--- | :--- |
| EB1 | East Bank Warehouse | 4901 Jefferson Highway, Jefferson |
| WB1 | West Bank Warehouse | 6250 Lapalco Boulevard, Marrero |
| STR | Streets Warehouse | 5701 Belle Terre Road, Marrero |
| EB1 | East Bank Pipe Stockroom | 3600 Jefferson Highway, Jefferson |
| WB1 | West Bank Plant Stockroom | 4500 Westbank Expressway, Marrero |


| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL | LAST ACTIVITY DATE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| EB1 | 00-0594400 | \#4 BARNES PIPE CUTTER PINS | 4.00 | 0.42 | 1.68 | 08/17/1999 |
| EB1 | 00-0951340 | \#745 EAGLE VERITHIN PENCILS CARMINE RED | 10.00 | 0.15 | 1.50 | 04/22/1983 |
| EB1 | 00-0583600 | $11 / 2$ TOLEDO DIES \# 1\& 1 A | 11.00 | 9.98 | 109.78 | 08/17/1999 |
| EB1 | 00-0583550 | $11 / 4$ RIDGID DIE HEAD \& DIES | 1.00 | 61.95 | 61.95 | 08/17/1999 |
| EB1 | 00-0601670 | $13 / 16$ SHORT SOCKET-3/4 DRIVE | 4.00 | 9.45 | 37.80 | 08/18/1999 |
| EB1 | 00-0384400 | 1 COPPER TUBING | 960.00 | 0.41 | 393.60 | 08/17/1999 |
| WB1 | 00-0530070 | 1 COUPON REMOVAL TOOL CATALOG NO 581637 | 3.00 | 10.00 | 30.00 | 08/19/1999 |
| WB1 | 00-0563200 | 1 INCH MUELLER WIRE ANCHOR TAP SS BOLTS VINYL COAT | 4.00 | 54.60 | 218.40 | 08/19/1999 |
| EB1 | 00-0583500 | 1 TOLEDO DIES \# 1\&1A | 13.00 | 4.41 | 57.33 | 08/17/1999 |
| EB1 | 00-0583400 | 1 TOLEDO DIES \# 11 | 9.00 | 18.39 | 165.51 | 08/17/1999 |
| EB1 | 00-0583800 | $1 \times 2$ TOLEDO DIES \# 10 \& 10A | 2.00 | 9.98 | 19.96 | 08/17/1999 |
| EB1 | 00-0583290 | 1/2 TOLEDO DIES \# 11 | 6.00 | 100.00 | 600.00 | 08/17/1999 |
| WB1 | 00-0877580 | $21 / 2$ IN RIGID CONDUIT ELBOW | 1.00 | 2.00 | 2.00 | 10/22/1999 |
| EB1 | 00-0595100 | 2 REED PIPE CUTTER WHEELS | 5.00 | 2.68 | 13.40 | 08/17/1999 |
| EB1 | 00-0583700 | 2 TOLEDO DIES \# 1 \& 1 A | 1.00 | 9.98 | 9.98 | 08/17/1999 |
| WB1 | 00-0586750 | 3 PIPE JOINTER H-10728 | 2.00 | 16.40 | 32.80 | 08/19/1999 |
| WB1 | 00-0530060 | 3/4 COUPON REMOVAL TOOL CATALOG NO 581636 | 2.00 | 10.00 | 20.00 | 08/19/1999 |
| WB1 | 00-0563100 | 3/4 MUELLER WIRE ANCHOR TAP A S M \#17925D | 4.00 | 95.00 | 380.00 | 08/19/1999 |
| EB1 | 00-0595300 | 3/4 RIGID WHEEL SCREW \& WASHER \#205 (3593X) | 128.00 | 0.26 | 33.28 | 08/17/1999 |
| EB1 | 00-0583300 | 3/4 TOLEDO DIES \# 11 | 32.00 | 15.67 | 501.44 | 08/17/1999 |
| EB1 | 00-0594710 | 4 TO 12 RIDGID CUTTER WHEEL PINS NO -34790 | 47.00 | 1.21 | 56.87 | 08/17/1999 |
| WB1 | 00-0481180 | 4537-QB SEALED BEAM 13 V 100W SINGLE FILAMENT | 1.00 | 11.85 | 11.85 | 08/19/1999 |
| WB1 | 00-0342400 | 5 1/4 MUELLER DRAIN VALVE FACING H-81 | 5.00 | 0.34 | 1.70 | 07/30/1999 |
| WB1 | 00-0342500 | 5 1/4 MUELLER DRAIN VALVE FACING SCREW H-82 | 9.00 | 0.10 | 0.90 | 07/30/1999 |
| EB1 | 00-0328250 | 5 HYDT MAIN VALVE CYLINDER SEAT M 29 | 38.00 | 80.35 | 3,053.30 | 08/17/1999 |
| EB1 | 00-0326950 | 5 HYDT SWIVEL FLANGE M20 | 9.00 | 38.43 | 345.87 | 08/17/1999 |
| WB1 | 00-0308470 | 5/8×131/2 CAP SCREW / NUT | 31.00 | 1.00 | 31.00 | 07/30/1999 |
| EB1 | 00-0594300 | 6 \& 8 BARNES PIP CUTTER PINS | 60.00 | 0.32 | 19.20 | 08/17/1999 |
| EB1 | 00-0595500 | 8 THRU 12 RIDGID CUTTER WHEEL E-3186 CAT NO 83140 | 50.00 | 13.32 | 666.00 | 08/17/1999 |
| WB1 | 00-0587000 | 8" LEAD JOINT RUNNER \# P-63803 | 1.00 | 40.60 | 40.60 | 08/19/1999 |
| EB1 | 00-0135030 | ADAPTER MANHOLE 10 " FERNCO \#10-CMA | 22.00 | 10.17 | 223.74 | 08/13/1999 |
| EB1 | 00-0135020 | ADAPTER MANHOLE 8"FERNCO \#8-CMA | 75.00 | 4.10 | 307.50 | 08/13/1999 |
| EB1 | 00-0674730 | ALLIS CHALMER IMPELLER C.CLOCKWISE \#52-426-371-001 | 1.00 | 1,278.00 | 1,278.00 | 08/18/1999 |
| EB1 | 00-0674720 | ALLIS CHALMER IMPELLER CLOCKWISE \#52-426-370-001 | 1.00 | 1,278.00 | 1,278.00 | 08/18/1999 |
| EB1 | 00-0674710 | ALLIS CHALMERS MECH SEAL \#52-110-280-807 | 4.00 | 285.00 | 1,140.00 | 08/18/1999 |
| EB1 | 00-0860750 | ALTERNATOR PHASE SENSOR SYRELEC \#DWRA220A | 3.00 | 45.00 | 135.00 | 08/19/1999 |
| EB1 | 00-0860760 | ALTERNATOR TIMEMARK MODEL 261-DX-12, 2-PUMP | 3.00 | 43.50 | 130.50 | 08/19/1999 |
| EB1 | 00-0674950 | APCO FLOAT STEM \#33 | 3.00 | 44.00 | 132.00 | 08/18/1999 |

The above exhibit is shown again on the next page for ease of review.





$\qquad$
$\qquad$BALLAST，FOR 2 ？168－215 WATT，T12 FLUORESCENT VERY HIGH

$$
\text { BEARING BALL } 1318 \text { KJ TAPE RED BORE SELF-ALIGNING }
$$

BEARING BALL DOUBLE SHIELD \#5209-W
BEARING BALL DOUBLE SHIELD \#6206 KG

$$
\begin{aligned}
& \text { BEARING BALL DOUBLE SHIELD \# } 6206 \text { KG } \\
& \text { BEARING BALL OPEN \# } 1318 \text { SELF-ALIGNING STR. BORE }
\end{aligned}
$$

BEARING FAFNIR \#1115KRR/COL
BEARING FAFNIR \#G1104KRR/COL
BEARING FAFNIR \#GN104KLLBRG/COL

$$
\text { BEARING FAFNIR \#MUOA } 1 \text { 15/16" N/115KR }
$$

$$
\text { BEARING FAFNIR \#MUOA } 1 \text { 9/16" SMN109K }
$$

$$
\text { BEARING FAFNIR } 1012 \mathrm{KR}
$$

BEARING FAFNIR 7410PW
BEARING FAFNIR 9107PP

$$
\text { BEARING FAFNIR MUA } 1 \text { 7/8" \#1114KR }
$$

$$
\text { BEARING FAFNIR PILLOW BLOCK \#RAK } 13 / 4 "
$$

BEARING GULF \#3313-NR
๗
 BEARING MRC \＃208SG
 BEARING MRC \＃320S BEARING MRC \＃407SF BEARING MRC \＃5206SBF BEARING NDH \＃3304


BEARING PILLOWBLOCK 2＂SCM／DODGE \＃126815

00－0588320 | 0 |
| :--- |
|  |
|  |
| 0 |
| $\vdots$ | 8

 8 00－0451880 8 8
0
0
1
1
8
8
8

8 | 0 |
| :---: |
| 0 |
| 1 |
| 0 |
| 0 |

 | 0 |
| :--- |
|  |
|  |
|  |
|  |
| $\vdots$ |

 0

N
N
O

i | 0 |
| :--- |
|  |
| in |
| 0 |
| $\vdots$ |
| 0 | 0

$\cdots$
$\vdots$
$\vdots$
$\vdots$
$\vdots$
0 8
0
1
0
0
0
8

 \begin{tabular}{l}
8 <br>
2 <br>
\multirow{1}{4}{} <br>
0 <br>
0 <br>
$\vdots$ <br>
\hline

 00－0457610 

0 <br>

- <br>
0 <br>
0 <br>
0 <br>
0 <br>
\hline
\end{tabular} 00－0450350 0

0
0
0
0
0
0
8
8 00－0464600

止 － EB1 － －ت尔 $\stackrel{-}{\infty} \stackrel{-}{\infty}_{3}^{\infty}$




 O O O O O O O O O O O O O O O O O O O O O O O O

 ह $\underset{\underset{\sigma}{\dot{\sigma}} \underset{\sim}{\infty} \underset{\sim}{\infty} \underset{\sim}{\infty} \underset{\sim}{\infty} \underset{\sim}{\infty}}{\infty}$

$$
\underset{\sim}{\mathrm{O}} \underset{\mathrm{c}}{\mathrm{O}} \mathrm{O}
$$

BLADE, CHAINSAW, PRUNING 12 IN, $3 / 8$ IN PITCH, . 043 GAUGE, STIHL
POWER PRUNNER \#61PMN/44, LINE ITEM 0060
BLADES FOR WIRE ROPE CUTTER MORSE STARRETT \#135 BLIND GLAND \#33 FOR AN $8 \times 10$ GOLDEN ANDERSON

BLOCK, CONTACT, TYPE DB 20, SQUARE-D \#9001
BLOWER, $1 / 100 \mathrm{HP}, 115 \mathrm{~V}, 60 \mathrm{HZ}$, 108CFM, DAYTON \#2C067A B-MACHINE 14 SADDLE \#75 835

B-MACHINE BRASS GATE ARMS \# 40033
B-MACHINE BY PASS SEAT NUT \# 40048
B-MACHINE CHAIN HOOK NUT ONLY \# 40026
B-MACHINE CHAINS \# 87206
B-MACHINE COMBINED FEED NUT \& YORK \# 87150
B-MACHINE CYLINDERS \# 58088
B-MACHINE HAND KNOB \# 40043
B-MACHINE LOCK NUT \# 60039
B-MACHINE PINS FOR BORING BARS \# 40015 B-MACHINE STEEL HANDLES \# 40020






 COST
$\stackrel{\circ}{\circ}$

$\stackrel{\infty}{\infty} \underset{\sim}{i} \underset{\sim}{\sim} \underset{\sim}{\infty}$
N
$\stackrel{\circ}{\circ} \mathrm{O}$

1.40
612.50
0.10
612.50
ু
  $\underset{\sim}{\sim}$ $\begin{array}{r}14.00 \\ 1.00 \\ \\ \hline 1.00\end{array}$
00－0876730 BOX，DEVICE，ALUMINUM，TWO GANG，SHALLOW，APPLETON \＃FSS－2－ 75－A
 IN FACTORY BOX，SQUARE－D \＃KAL－36125－WL（MUST REPLACE EXISTING UNITS WITHOUT MODIFICATION）
BOX SWITCH GEN－DTY \＃TG3222
BOSS STANDARD AIR HOSE CLAMPS
BONNET，MUELLER PART \＃A－8，FOR A 5－1／4 INCH MUELLER SUPER CENTURION 250 HYDRANT


0S $\angle$ It $80-00$

| $\circ$ |
| :--- |
| 0 |
| 0 |
| 0 |
| 8 | | 0 |
| :--- |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 | | 0 |
| :---: |

 O $\begin{array}{ll}00-0630100 & \text { BUSHING DODGE } 1108 \times 11 / 8^{\prime \prime} \\ 00-0630150 & \text { BUSHING DODGE } 1215 \times 11 / 8^{\prime \prime} \\ 00-0630270 & \text { BUSHING DODGE } 1310 \times 11 / 16^{\prime \prime}\end{array}$ $\begin{array}{ll}00-0630100 & \text { BUSHING DODGE } 1108 \times 11 / 8^{\prime \prime} \\ 00-0630150 & \text { BUSHING DODGE } 1215 \times 11 / 8^{\prime \prime} \\ 00-0630270 & \text { BUSHING DODGE } 1310 \times 11 / 6^{\prime \prime}\end{array}$ BUSHING DODGE $1310 \times 11 / 16^{\prime \prime}$


0086It0－00 08てZさto－00
 0TL6โtO－00 0966โセ0－00 $00-0419650$
$00-0419630$ 00－0419570 00－0419400 $00-0419350$
$00-0419300$ 00－0419280 $00-0533500$
$00-0419770$

 － | $08 / 18 / 1999$ |
| :--- |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |


 O




| $08 / 19 / 1999$ |
| :--- |
| $11 / 17 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $10 / 22 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $11 / 17 / 1999$ |







Ni





운 운 웃



O



DESCRIPTION
COIL SOLENOID VALVE \＃64－982－4
COIL SQ－D 120V \＃31063－409－38 COIL WESTINGHOUSE 120V \＃505C806G01 COIL WESTINGHOUSE 480V \＃2050A12G15

COIL， 110 VOLTS ALTERNATING CURRENT，CUTLER－HAMMER \＃9－1318－ 108

## 

COLLAR CLAMPING D－4\＆5 MUELLER \＃83543
COMPRESSOR PUMP DAYTON \＃2Z157B
CONCRETE MANHOLE ADAPTER 6．63？TO 6．28？DIMENSIONAL RANGE，FERNCO \＃6－CMA

CONDUIT NIPPLE RIGID 1 1／2＂X 6 ＂
CONDULET BOX 1 GANG 1／2＂APF \＃FSS1－50
CONDULET BOX EXPLOS－PRUF\＃EZSO4
CONDULET FITTING $1 / 2$ EYD
CONDULET FITTING 3／4 \＃FSC2
CONDULET FITTING STEBER
CONDULET，ALUMINUM，WITH GASKET \＆COVER， $1 / 2$ IN E CONNECTOR EMT 1－1／4＂ 90 DEG APF \＃TWL125L

CONNECTOR TWIST LOCK HART 20A 240V
CONNECTOR，BRONZE SPLIT BOLT， $250-1$ SOL／250－8 SOL， BLACKBURN \＃40 H

CONTACT BLOCK GOULD \＃J20A40
CONTACT GE \＃6960053－G3
CONTACT KIT A－B 509 \＃40410－331－51 SIZE 0 CONTACT KIT AUX A－B \＃1495－G1 SIZE 1 CONTACT KIT AUX A－B \＃1495－G3 SIZE 3 CONTACT KIT ROWAN \＃2090－SPB－410 CONTACT KIT SIEMENS－ALLIS \＃3TY6500－OA SIZE 4 START CONTACT KIT SIZE 2 GENERAL ELECTRIC 546A780G051 CONTACT KIT，C－H \＃6－1－3，SIZE 0 CONTACT KIT，CL 9998 \＃BA－82－82940，SIZE 0

CONTACTOR AC LIGHTING A－B \＃702L－BOA92 CONTACTOR AUX W－H \＃843D943G05 CONTACTOR CROSS BAR RELAY A－B \＃X217648 STOCK NO O
N
o
ón $00-0824380$ 00－0824390 00－0822350

 \begin{tabular}{c}
9 <br>
0 <br>
0 <br>
0 <br>
0 <br>
0 <br>
\hline

 

0 <br>
0 <br>
0 <br>
0 <br>
0 <br>
\hline
\end{tabular} 0

0
0
0
0
0
0
0
$00-0882020$
$00-0876700$
8
0
0
0
0
0
8

| $\circ$ |
| :--- |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |
| 8 |


| 0 |
| :---: |
| 0 |
| 0 |
| 0 |
| 0 |
| 0 |





$\circ$
$\infty$
$\infty$
0
0
0
0



 | 8 |
| :---: |
| 0 |
| 0 |
| 0 |
| 0 |
| $\vdots$ |

 O
0
0
0
0
0
0
0
0
0
0




 65 COUPLING ELEMENT DODGE \＃011105 PX50 COUPLING ELEMENT DODGE \＃PX140 COUPLING FLANGE ASSY \＃PX140 COUPLING FLEX 10 DC X 10 DC COUPLING FLANGE ASSY DODGE \＃010601 PX50 COUPLING LOVEJOY \＃L－070 BORE 3／4＂
COUPLING WOODS TYPE 8 S FITS SHAFT $1-3 / 8^{\prime \prime} \times 1-3 / 4 "$ COVER，ROLLER， 9 IN， $1 / 2$ IN NAP
CRISPIN BACK FLUSH ATTACHMENT 2" PART \#520A/520
 CRISPIN BEARING PIN W／SS BEARING PIN DWG \＃13－11／12 CRISPIN LINK S／S PART \＃7 MD \＃S20A CROSS GALV 1 1／2＂ CROSS GALV 1 1／2＂X 3／4＂ CROSS GALV 1＂ CROSS GALV 2＂ CROSS GALV 2＂X 1＂ CROSS GALV 2＂X 3／4＂ D－4 1／2 BORING BARS D－4 TAPPING MACH PACKING GLAND NO－51377 D－4 TAPP GASKET \＃10844－G DAVCO GASKET \＃10844－G DAVCO GASKET \＃10847－G DECAL FIRE HYDRANT 2＂B DEHUMIDIFIER RELAY KIT DEMOLITION POINT APEX \＃AR1602 FITS TAMAC MD 2－96A DIE PIPE 1 RT／HAND NPT FOR RIDGID 12－R \＃37835
 00－0698510 00－0424190 00－063245X

00－0180700 은 8 00－0631200 00－0631100 00－0575050 00－0631350 00－0135820 00－0632410 00－0628200
 00－0674800
 00－0674920
 00－0291100 8
O
I
O
人

8 \begin{tabular}{l}
0 <br>
O <br>
İ <br>
N <br>
o <br>
\hline 8

 

8 <br>
O <br>
n <br>
万 <br>
o <br>
\hline 8
\end{tabular}



 | 8 |
| :--- |
|  |



 | $O$ |
| :--- |
| 0 |
| N |
| $\vdots$ |
| 0 |
| $\vdots$ |

 | 8 |
| :--- |
| $\mathbf{O}$ |
| N |
| N |
| 1 |

 8
0
0
0
0
0
0
0
0
0
0



| 14.38 |
| :--- |
| 15.4 |
| 42.53 |
| 63.33 |
| 26.0 |

44.87
41.00
140.00
179.00
10.25
5.92
$\stackrel{\circ}{\circ}$ $\stackrel{i}{i}$ $\stackrel{8}{-}$
 웅

- N

 COUPLINGS

ELBOW GALV 3" 45 DEGREE
ELBOW GALV REDUCER 1 1/2" $\times 3 / 4$ " 90 DEGREE ELBOW, COT CONDUIT, $2-1 / 2$ IN, SWEEP 90 DEGREE ELECTRODE PH DAVIS INV. \#TALO300348 ELEMENT LOVEJOY \#SW-150

ELEMENT, HEATER, ALLEN-BRADLEY \#N-32 ELEMENT, HEATER, ALLEN-BRADLEY \#W-83 ELEMENT, HEATER, CUTLER HAMMER \#H2005B ELEMENT, HEATER, FURNAS \#H-42 FALK COUPLING GRID MEMBER SIZE 3 FALK COVER ASSY 70T20 \#B/M-707066 FALK COVER GRID ASSY \#3F

FALK GRID 50T \#246683 FBM BACKHEAD \#T4B34A-0220

FBM BEARING CAP GASKET 4" OD X 2 5/8" ID 4 HOLES FBM COVER THRUST BEAR HOUSE \#L16A14OB S\#K2H1002338 FBM HOUSING THRUST BEARING \#L16A139B S\# K2H1002338


 | 8 |
| :---: |
| 1 | o

N
N
o
ì

 00-0671090 응 00-0671020 00-0683450号 | 8 |
| :---: | :---: |




 5


[^12]FBM IMPELLER \＃T4C1DU HTAC1AA
FBM IMPELLER 10＂CC／W \＃T4C1AA FBM IMPELLER 10．25＂CC／W \＃TS FBM IMPELLER 12＂CC／W \＃T5CIS FBM IMPELLER C／W \＃T4C1DQ
FBM IMPELLER NUT \＃L12A92 7／8＂NF ACORN

FBM IMPELLER WASHER \＃CP5855M－9660F FBM IMPELLER WASHER \＃DP5855M－9660F FBM LANTERN RING \＃TAJE2415A FBM LANTERN RING 2 ＂OD X $11 / 2^{\prime \prime}$ ID $\times 7 / 16^{\prime \prime} T$ FBM LANTERN RING 3 13／16＂OD $\times 215 / 16^{\prime \prime}$ ID $\times 7 / 8^{\prime \prime} T$ FBM LANTERN RING $51 / 16^{\prime \prime}$ OD X $315 / 16^{\prime \prime} 1 D \times 11 / 8^{\prime \prime}$ FBM LANTERN RING MD \＃5441－A21 S／N K2F31709
FBM MECHANICAL SEAL PUMP SHAFT 11／2＂ANCHOR \＃A669 FBM MECHANICAL SEAL U．S．\＃PS－200 FBM MECHANICAL SEAL U．S．\＃PS－100 FBM MECHANICAL SEAL U．S．\＃PS－120 FBM MECHANICAL SEAL U．S．\＃PS－159 FBM MECHANICAL SEAL U．S．\＃PS－185 FBM MECHANICAL SEAL U．S．\＃PS－306 FBM MECHANICAL SEAL U．S．\＃PS－441 FBM MECHANICAL SEAL U．S．\＃PS－452 FBM NUT BRASS 3／4＂NC FBM PACKING GLAND \＃3521 FBM PACKING GLAND \＃4054 FBM PACKING GLAND \＃43674A FBM PACKING GLAND \＃L12A19A FBM PACKING GLAND \＃M14A19A
FBM PACKING GLAND \＃P5184
FBM PACKING GLAND \＃TAJE940A
FBM PACKING GLAND CLIP $15 / 8$＂LONG X 1＂WIDE FBM PLATE SUCTION BOTTOM FLANGE 10＂\＃TALE－3G
FBM SHAFT FOR 16IN PUMP \＃L16A4D
FBM SHIMS LOWER BEARING \＃S10A186C
FBM SHIMS UPPER BEARING \＃S10A186C

| 8 |
| :--- |
| 0 |
| 0 |
| 0 |

 0 0681020 00－0681030 $00-0681200$ 00－0681880  \begin{tabular}{c}
$\circ$ <br>
0 <br>
0 <br>
0 <br>
0 <br>
O <br>
\hline

 00－0681870 

8 <br>
\hline 8 <br>
\hline 8 <br>
\hline
\end{tabular}

 ó 00－0680070 00－0680080 \begin{tabular}{l}
0 <br>
0 <br>
0 <br>
0 <br>
ò <br>
\hline

 

8 <br>
\hline 8 <br>
\hline 8 <br>
\hline
\end{tabular}

 \begin{tabular}{l}
0 <br>
\hline 0 <br>
0 <br>
0 <br>
O <br>
i

 

0 <br>
0 <br>
0 <br>
0 <br>
\hline <br>
\hline

 

8 <br>
\hline 8 <br>
\hline 8 <br>
\hline

 앙 O 

8 <br>
0 <br>
0 <br>
0 <br>
0 <br>
\hline

 

잉 <br>
0 <br>
0 <br>
0 <br>
\hline 8 <br>
\hline 8
\end{tabular}

 $\begin{array}{r}0 \\ 0 \\ 0 \\ 0 \\ 0 \\ \hline 8 \\ \hline\end{array}$ | 0 |
| :--- |
| 0 |
| 0 |
| 0 |
| 0 |
| O | 00－0683850

08/17/1999


| 8 |
| :--- |
| $\underset{8}{8}$ |
| $\underset{0}{1}$ |
| $\underset{0}{0}$ |







FBM SPACER \#CP5855AM-9660

$$
\text { FLANGE WOODS SUR-FLEX \#95 X } 1 \text { 11/16 }
$$

$$
\begin{aligned}
& \text { FBM STUFFING BOX MD \#5441-A21 S/N K2F31709 } \\
& \text { FBM VOLUTE \#T3A30 }
\end{aligned}
$$

$$
\begin{aligned}
& \text { FBM STUFFING BOX \#528A431 } \\
& \text { FBM STUFFING BOX MD \#5441-A21 S/N K2F31709 }
\end{aligned}
$$

$$
\begin{aligned}
& \text { FILE BOX FOR } 3 \times 5 \text { INDEX CARDS } \\
& \hline \text { FLANGE 4" OVAL NPT SUBMERSIBLE PUMP }
\end{aligned}
$$

FLANGE SOCKET PVC SCH-80 12"
FLANGE WOOD S SURE-FLEX PART \#8S X 1-5/8"

$$
\text { FLANGE WOODS SURE-FLEX \#10S } \times 27 / 8^{\prime \prime}
$$

FLANGE WOODS SURE-FLEX \#9S X 2"
FLANGE WOODS SURE-FLEX PART \#6N X 1-3/8"
FLANGE WOODS SURE-FLEX PART \#6N X 1-5/8"

$$
\text { FLANGE, BARREL, } 5 \text { 1/4 IN, AMERICAN D. \#84-29-45 }
$$

$$
\text { FLANGE, COMPANION, DUCTILE IRON, THREADED FOR } 12 \text { IN STEEL }
$$

$$
\text { PIPE, O.D. } 12.75 \text { IN, } 150 \text { PSI, TYLER \#5-750 }
$$

$$
\text { FLANGE, COMPANION, DUCTILE IRON, THREADED FOR } 8 \text { IN STEEL PIPE, }
$$

$$
\text { O.D. } 08.63 \text { IN, } 150 \text { PSI, TYLER \#5-750 }
$$

FLAPPER VALVE FOR A 4" MARLOW PUMP MD \#4DTH24EL
FLARING TOOL FOR 3/4 IN COPPER TUBING, MUELLER \#H-18000

$$
\begin{aligned}
& \text { FLARING TOOL FOR 3/4 IN COPPER TUBING, MUELLER \#H-18000 } \\
& \text { FLAT CHAIN FOR NO } 15 \text { WILLIAMS CHAIN TONGS }
\end{aligned}
$$

$$
\text { FLOAT, BULLFLOAT, HANDICAP, } 42 \text { IN X } 8 \text { IN, GOLBBLATT \#16303 }
$$

FLYGT WATER JACKET RING \#384-06-00

| $09 / 18 / 1999$ |
| :--- |
| $09 / 18 / 1999$ |
| $09 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $09 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $09 / 18 / 1999$ |
| $08 / 18 / 1999$ |

$08 / 17 / 1999$
$10 / 08 / 1999$
$08 / 18 / 1999$
$08 / 181 / 999$
$08 / 18 / 1999$
$08 / 18 / 1999$
$08 / 1811999$
$08 / 18 / 1999$
$08 / 171 / 999$
$08 / 17 / 1999$
FOOT VALVE CONVERSION KIT LMI \#SPU2 FUSE 1/2A 2750/5500VAC 60HZ BUSS \#JCW-1/2E FUSE 4800V 5E AMPS GOULD \#A480T5E FUSE $4800 V$ SLIP AMPS GOULD \#A480T5E

FLAMP \#2 \#32-002B FUSE DUAL ELEMENT 3.2A 600V FUSE FOR A SIMPSON \#260-7 METER PART \#1A FUSE FOR A SIMPSON \#260-7 METER PART \#2ABBS2 FUSE GLASS SLO-BLO .125A 250V GOULD \#GDL-1/8 | $08 / 19 / 1999$ |
| :--- |
| $08 / 19 / 1999$ |
| $11 / 18 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |
| $08 / 19 / 1999$ |

[^13]08/19/1999


$\stackrel{n}{\circ}$


$\stackrel{n}{0}$

0
$\stackrel{8}{\mathrm{O}}$


FUSE, TIME DELAY, 300 AMPERES, 250 VAC, GOULD/SHAWMUT \#TR300R


GASKET FLANGE KIT TACO \#110-127-RP GASKET GRIP-TITE CI-PVC 4" GASKET GRIP-TITE CI-PVC 6" GASKET GRIP-TITE CI-PVC 10" GASKET L-C CL/CEL SPONGE \#5.75SID 6.75OD . 5 GASKET SUPER BELL CI 4" CLOW \#F-173 GASKET SUPER BELL CI 10" CLOW \#F-173 GASKET TRANSITION AC X CI 10" ROMAC GASKET TRANSITION AC X CI 10" ROMAC

 GASKET TRANSITION COUP OD 16.22 OMNI \#33835 00-0511340

 0
$\underset{n}{n}$

0
0
0
8


# 08／19／1999 

$10 / 08 / 1999$
$08 / 18 / 1999$
$08 / 18 / 1999$
$08 / 18 / 1999$
$08 / 18 / 1999$
$08 / 17 / 1999$







음
27.00
서N

人
$\stackrel{8}{\mathrm{O}}$

2.00

808080
O O O O O O O O O O O O O O O O O O O O O O O O O O O O

## GASKET，COVER，GORMAN－RUPP \＃38688－008

GASKET，MECHANICAL JOINT， 30 IN NOM．，FOR DUCTILE IRON PIPE，

# O．D．32．00 IN，CLOW \＃F－915 <br> GASKET，MECHANICAL JOINT， 36 IN NOM．，FOR DUCTILE IRON PIPE， 

 O．D． 38.30 IN, CLOW \＃F－915GAUGE PSI 0－5000 2．5 FACE 1／4 NPT BOTTOM
GAUGE SNUBBER 1／2＂NPT MODEL \＃6

GAUGE TEMPERATURE 60－260 DEG F 10＂THERMO－COUPLER
GAUGE，OXYGEN， 400 PSI，FOR WELDING，2－1／2 IN BRASS，NATTCO GAUGE \＃GA036－0
GLAND TRANSITION COUP OD 16．22－16．90 OMNI \＃21364 GLAND TRANSITION COUP OD 17．40－17．80 OMNI \＃21371 GLAND，TRANSITION COUP OD 15．30－15．80 OMNI \＃21363 GORMAN RUPP BRAND PUMP VOLUTE \＃46472－707． GR ASSEMBLY \＃25271－207 GR BACK COVER \＃2988 GR BEARING CAP \＃4185－A MD \＃16C2－5034

GR DIAPHGAGM \＃S－701 MD\＃3D－S8D SEE ITEM \＃66595 ALSO
GR END PLATE \＃12585 MD\＃16C2－B
GR ENGINE FUEL SEDIMENT BOWL
GR FLAP VALVE SEAT \＃5374 MD\＃3DA
GR FLAP VALVE WEIGHT \＃5428 MD\＃3D－S8D
GR FUEL FILTER WITH＂0＂RINGS \＃3116 MD\＃14A2－ST2S／G GR GASKET \＃10308－G GR GASKET \＃10433－G GR GASKET \＃10842－ 00－0513330 00－0513340 00－0513350 00－0511760 00－0511790 00－0511820 0IをZIS0－00

## 00－0512320

00－0695390 \begin{tabular}{l}
0 <br>
\hline <br>
\hline <br>
0 <br>
0 <br>
0 <br>
$\vdots$ <br>
\hline

 00－0696960 

8 <br>
\hline <br>
\hline <br>
\hline <br>
0 <br>
0 <br>
\hline
\end{tabular}

 00－0513690 00－0513700 | 승 |
| :--- |
| 1 | 0

0
$n$
0
0
0
$\vdots$

$\vdots$ 00－0679140 00－0676640 00－0676680 00－0679560 00－0679580 00－0679650 00－0679690 00－0675890 00－0677560 00－0676280 00－0677710 00－0678140 | 8 |
| :--- |
| 0 |
| 0 |
| $\vdots$ |
| $\vdots$ |
| $\vdots$ |
| 0 | | 8 |
| :---: |
| 0 |
| 0 |
| 0 |
| 0 |
| $\vdots$ |
| $\vdots$ | 00－0678320








[^14]
 COST


© HUB CONDUIT 2-1/2"

HYD KENNEDY GUARDIAN 4 1/2 DRAIN VALVE FACE \#K8137 HYD KENNEDY GUARDIAN 4 1/2 LOWER COUP PIN \#K8122

HYD KENNEDY GUARDIAN 4-1/2 NUT SEAT REMOVAL
HYD KENNEDY GUARDIAN 5-1/4 NUT SEAT REMOVAL
HYD MUELLER CENTURIAN 5 1/4 MAIN VALVE REPAIR KIT HYD MUELLER CENTURION 5 1/4 DRAIN VALVE FACING A34 HYD MUELLER CENTURION $51 / 4$ UPPER BARREL \#A-24


 | 07/30/1999 |
| :--- |
| $07 / 30 / 1999$ |
| $07 / 30 / 1999$ |
| $07 / 30 / 1999$ |
| $07 / 30 / 1999$ |
| $07 / 30 / 1999$ |
| $07 / 30 / 1999$ |
| $09 / 18 / 1999$ |
| $09 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $09 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $08 / 18 / 1999$ |
| $10 / 27 / 1999$ |






 MODEL \#5433B
IMPELLER, 10.25" O.D., CLOCKWISE, FAIRBANKS-MORSE \#T5C1GM,
HYDROMATIC FLAPPER GASKET 6" $1 / 4$ " THICK
HYDROMATIC LIP PLATE \#4025-004-2
HYD MUELLER CENTURION 5 1/4 VALVE FACING SCREW A35
HYD MUELLER CENTURION 5 1/4 X 3.5 LOWER BARREL A32
HYD MUELLER CENTURION $51 / 4 \times 4.5$ LOWER BARREL A32
HYD MUELLER CENTURION $51 / 4 \times 5.5$ LOWER BARREL A32
HYD MUELLER CENTURION $51 / 4 \times 6$ LOWER BARREL \#A-32
HYD MUELLER IMP $51 / 4$ LOWER STEM 2.5 ST/COUP \#H104
HYD MUELLER IMP/CEN $51 / 4 \times 42$ BARREL EXTENSION
HYDRO FLAPPER GASKET 3" \#1074-000-1
HYDRO LIP PLATE 7 1/2" ID \#1211- -2
HYDRO SET SCREW \#00011-002-1 MD\#S4MX

HYDRO WEAR RING \#7077-002-3 MD \#S4M
 HYDRO WEAR RING \#8345-000-2

○
ㅇ


 00-0685080 00-0683630

00-0679060 00-0859800 00-0697770 00-0594000 00-0878860 00-0864000 8
7
7
0
0
0

8 | 8 |
| :---: |
| 0 |
| 0 |
| $\vdots$ |
| ò |
| 8 |


 00-0462600 00-0462700 00-0462750 00-0462800 0
0
0
0
O
i

0 00-0462900 | O |
| :---: |
| O |
| O |
| ì |
| $i$ | 00-0463000 00-0463050 00-0463150

[^15]






| 12.00 | 5.02 | 60.24 |  |
| ---: | ---: | ---: | ---: |
| 12.00 | 3.60 | 43.20 |  |
| 35.00 | 0.12 | 4.20 | $08 / 17 / 1999$ |
| 32.00 | 0.14 | 4.48 | $08 / 17 / 1999$ |
| 15.00 | 2.02 | 313.10 | $07 / 30 / 1999$ |
| 7.00 | 0.11 | 7.70 | $08 / 17 / 1999$ |
| 3.00 | 19.50 | 58.50 |  |
| 4.00 | 88.15 | 352.60 | $10 / 08 / 1999$ |
| 1.00 | 275.00 | 275.00 | $11 / 17 / 1999$ |

LAMP FLOURSCENT 40W \#FC16T9/CW/RS


$$
\text { LAMP QUARTZ TUNGSTEN HALOGEN } 1500 \text { WATTS } 240 \text { VOLTS }
$$


262.50
34.92
LAMP \#4546
$1.00-3.92 \quad 3.92$
$11 / 17 / 1999$
$11 / 17 / 1999$
$07 / 30 / 1999$
TOTAL



OST
300.00
190.00
45.65
13.60
7.30
1.81

| 7 |
| :--- |
| 1 |
| 1 |

⿳亠丷⿵冂⿱䒑口：


QTY


| LOCATION | STOCK NO | DESCRIPTION | QTY |
| :---: | :--- | :--- | :--- |
| ST2 | $00-058429 A$ | PLIERS, DIAGONAL CUTTING, 8 IN LONG, INSUILATED HANDLES MEETS | COST |
|  |  | FED. SPEC. GGG-P-468A, KLEIN \#D228-8-INS, GRAINGER \#4A839, LINE |  |
|  |  | 0246 |  |


| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL | LAST ACTIVITY DATE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| WB1 | 00-085827A | RELAY, 120VAC, 60HZ, KLOCKNER-MOELLER DILOOL-44-NA | 6.00 | 45.00 | 270.00 | 10/22/1999 |
| WB1 | 00-0859370 | RELAY, DP/DT, 10A, 120VAC, 60HZ, 1/6HP, STRUTHERS DUNN \#A314XAX | 2.00 | 16.92 | 33.84 |  |
| EB1 | 00-085971A | RELAY, OVERLOAD, 63-80A, SIEMENS 3UA5800-2U | 3.00 | 64.00 | 192.00 |  |
| WB1 | 00-085963C | RELAY, OVERLOAD, CUTLER-HAMMER \#C300-EN3 | 1.00 | 58.68 | 58.68 | 10/22/1999 |
| WB1 | 00-0858320 | RELAY, OVERLOAD, SIZE 00, 0, 1, FURNAS \#48DB11A | 2.00 | 15.00 | 30.00 | 10/22/1999 |
| WB1 | 00-0858310 | RELAY, OVERLOAD, SIZE 2, FURNAS \#48FA17AL | 3.00 | 15.00 | 45.00 | 10/22/1999 |
| WB1 | 00-085831B | RELAY, OVERLOAD, SIZE 2, FURNAS \#48FA17AR | 2.00 | 15.00 | 30.00 | 10/22/1999 |
| WB1 | 00-085838A | RELAY, OVERLOAD, SIZE 2, FURNAS \#48GB11A | 6.00 | 15.00 | 90.00 | 10/22/1999 |
| WB1 | 00-086200Y | RELAY, TIMING, 3-120 SEC, 240V, ATC \#305E008B10PX | 2.00 | 124.78 | 249.56 | 10/22/1999 |
| EB1 | 00-0596640 | REPAIR KIT LMI \#SPU2 | 3.00 | 42.50 | 127.50 | 08/17/1999 |
| EB1 | 00-0880220 | RESISTER MALLORY 30,000 OHM 1HJ30K | 1.00 | 10.78 | 10.78 | 08/19/1999 |
| EB1 | 00-0384260 | RESTRAINER, FLANGE, 30 IN, FOR DUCTILE IRON PIPE, DUCTILE IRON (C40-45 HARDENED) SET SCREWS, WITH GASKET, DOMESTIC, EBAA E-Z FLANGE \#1030 | 1.00 | 685.00 | 685.00 |  |
| WB1 | 00-0330390 | RING, DRAIN, 5-1/4 IN MUELLER CENTURION (FOR MODELS BEFORE 1987) CATALOG \#A-423, ITEM \#A-42, PART \#142804 | 6.00 | 24.67 | 148.02 | 07/30/1999 |
| EB1 | 00-0314750 | RING, SEAT, 5-1/4 IN KENNEDY GUARDIAN MODEL \#K81D, ITEM \#K8128, PART \#3196772 | 2.00 | 135.00 | 270.00 | 08/17/1999 |
| EB1 | 00-0307210 | ROD CARBON STEEL GAS FOR TIG WELDING $1 / 8{ }^{\prime \prime} \times 36{ }^{\prime \prime}$ | 50.00 | 0.98 | 49.00 | 08/17/1999 |
| EB1 | 00-0884410 | RUBBER BOOT HUBBELL \#6036 FOR PLUG \#7411 | 9.00 | 6.56 | 59.04 | 08/19/1999 |
| EB1 | 00-0673400 | S \& L CHECK VALVE ARM 8 X12 \#250261 | 1.00 | 222.50 | 222.50 | 08/18/1999 |
| EB1 | 00-0673410 | S \& L CHECK VALVE SHAFT $8 \times 12$ | 4.00 | 148.90 | 595.60 | 08/18/1999 |
| EB1 | 00-0673380 | S \& L MANHOLE GASKET 18 5/16 13 9/16 1 5/8 | 8.00 | 5.38 | 43.04 | 08/18/1999 |
| EB1 | 00-0673120 | S \& L SEAL O-RING 2 1/8 IN \#60A41 | 21.00 | 2.00 | 42.00 | 08/18/1999 |
| EB1 | 00-0673170 | S \& L SEAL O-RING 3 IN \#60A53 | 8.00 | 2.00 | 16.00 | 08/18/1999 |
| EB1 | 00-0673530 | S \& L SHAFT CHECK VALVE 4" X 6" \#55B25/E | 3.00 | 96.80 | 290.40 | 08/18/1999 |
| WB1 | 00-0673700 | S \& L SOLENOID VALVE 120V ROSS \#2173B5912 | 8.00 | 78.50 | 628.00 | 09/18/1999 |
| WB1 | 00-0534690 | SADDLE TAPPING 48" C.I. B \& B-100 MUELLER \#75841 | 4.00 | 10.79 | 43.16 | 08/19/1999 |
| EB1 | 00-0132580 | SADDLE TAPPING CLAY $15 \times 6$ PVC-SDR-35 | 2.00 | 124.30 | 248.60 | 08/13/1999 |
| EB1 | 00-0534400 | SADDLE, MACHINE, 16 IN, FOR CAST IRON PIPE, OD RANGE 16.00 IN 19.38 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75836 | 11.00 | 48.00 | 528.00 | 08/17/1999 |
| EB1 | 00-0534500 | SADDLE, MACHINE, 18 IN, FOR CAST IRON PIPE, OD RANGE 17:00 IN ¿ 21.13 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75837 | 11.00 | 19.06 | 209.66 | 08/17/1999 |


| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL | LAST ACTIVITY DATE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| WB1 | 00-0534500 | SADDLE, MACHINE, 18 IN, FOR CAST IRON PIPE, OD RANGE 17:00 IN ¿ 21.13 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75837 | 1.00 | 19.06 | 19.06 | 08/19/1999 |
| EB1 | 00-0534600 | SADDLE, MACHINE, 20 IN, FOR CAST IRON PIPE, OD RANGE 19:00 IN i 27.13 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75204 | 6.00 | 3.62 | 21.72 | 08/17/1999 |
| WB1 | 00-0534600 | SADDLE, MACHINE, 20 IN, FOR CAST IRON PIPE, OD RANGE 19:00 IN i 27.13 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75204 | 2.00 | 3.62 | 7.24 | 08/19/1999 |
| WB1 | 00-0534650 | SADDLE, MACHINE, 24 IN, FOR CAST IRON PIPE, OD RANGE 21:00 IN i 29.13 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75838 | 2.00 | 21.58 | 43.16 | 08/19/1999 |
| EB1 | 00-0533800 | SADDLE, MACHINE, 4 IN, FOR CAST IRON PIPE, OD RANGE 04:38 IN TO 5.00 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75812 | 12.00 | 45.00 | 540.00 | 08/17/1999 |
| EB1 | 00-0534000 | SADDLE, MACHINE, 8 IN, FOR CAST IRON PIPE, OD RANGE 08.00 IN TO09.50 IN, FOR B \& B-100 TAPPING MACHINES, MUELLER \#75817 | 11.00 | 39.00 | 429.00 | 10/14/1999 |
| EB1 | 00-0423590 | SCREW MACHINE SS RD HEAD 5/16" - $18 \times 3$ " | 10.00 | 0.27 | 2.70 | 08/17/1999 |
| EB1 | 00-0422830 | SCREW SOCKET CAP NC 1/2" X 3" SER 1960 | 9.00 | 0.27 | 2.43 | 08/17/1999 |
| EB1 | 00-0422770 | SCREW SOCKET CAP NC 7/16" X 2" SER 1960 | 12.00 | 0.23 | 2.76 | 08/17/1999 |
| EB1 | 00-0422550 | SCREW SOCKET SET NC 1" $\times 11 / 2^{\prime \prime}$ CUP-PT | 97.00 | 0.10 | 9.70 | 08/17/1999 |
| EB1 | 00-0422250 | SCREW SOCKET SET NC 1/2" $\times 2$ " | 99.00 | 0.25 | 24.75 | 08/17/1999 |
| EB1 | 00-0422420 | SCREW SOCKET SET NC 3/4" X 1 1/2" CUP-PT | 122.00 | 0.10 | 12.20 | 08/17/1999 |
| EB1 | 00-0422490 | SCREW SOCKET SET NC 7/8" $\times 1$ 1/2" CUP-PT | 95.00 | 0.10 | 9.50 | 08/17/1999 |
| WB1 | 00-0423360 | SCREW, MACHINE, $1 / 4$ IN - $20 \times 1$ 1/2 IN LONG, $18-8$ STAINLESS STEEL, ROUND HEAD, SLOTTED | 22.00 | 0.11 | 2.42 |  |
| EB1 | 00-0314200 | SCREW, NOZZLE RETAINING SET, 4-1/2 IN AND 5-1/4 IN KENNEDY GUARDIAN MODEL \#K81D, ITEM \#K8141, PART \#443500P | 6.00 | 2.50 | 15.00 | 08/17/1999 |
| EB1 | 00-0575060 | SEAL EG \& 6 \#HYDIADI | 1.00 | 100.00 | 100.00 | 08/17/1999 |
| EB1 | 00-0441220 | SEAL OIL C-R \#12361 | 14.00 | 1.62 | 22.68 | 08/17/1999 |
| WB1 | 00-0441240 | SEAL OIL C-R \#12363 | 5.00 | 2.00 | 10.00 | 05/12/1999 |
| EB1 | 00-0441960 | SEAL OIL C-R \#15142 | 11.00 | 2.22 | 24.42 | 08/17/1999 |
| EB1 | 00-0442010 | SEAL OIL C-R \#15540 | 12.00 | 2.97 | 35.64 | 08/17/1999 |
| EB1 | 00-0442170 | SEAL OIL C-R \#16168 | 12.00 | 2.20 | 26.40 | 08/17/1999 |
| EB1 | 00-0442190 | SEAL OIL C-R \#16314 | 10.00 | 3.15 | 31.50 | 08/17/1999 |
| WB1 | 00-0442240 | SEAL OIL C-R \#16328 | 4.00 | 3.00 | 12.00 | 07/30/1999 |




$\stackrel{\circ}{\stackrel{\circ}{2}} \stackrel{-}{2}$ $\stackrel{\circ}{0}$





## $\stackrel{-}{9}$


 +
 t.

QTY
31.00
6.00
11.00
12.00
24.00
1.00
11.00
10.00
8.00
9.00
6.00
6.00
6.00
11.00
1.00


| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL | LAST ACTIVITY DATE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| EB1 | 00-0620000 | SPRAY HEAD S/S 1/4" 65 DEGREE FLAT SPRAY PATTERN | 7.00 | 35.20 | 246.40 | 08/18/1999 |
| WB1 | 00-0424180 | SPRING PIN SS 7/16" $\times 3$ " | 100.00 | 0.98 | 98.00 | 07/30/1999 |
| EB1 | 00-0870880 | STA-KON CONN F 16-14 INS \#14RBD187A | 100.00 | 0.27 | 27.00 | 10/12/1999 |
| EB1 | 00-0870930 | STA-KON CONN M 22-18 INS TNB \#18RAD-187 | 400.00 | 0.22 | 88.00 | 08/19/1999 |
| WB1 | 00-0870930 | STA-KON CONN M 22-18 INS TNB \#18RAD-187 | 200.00 | 0.22 | 44.00 | 01/01/1999 |
| EB1 | 00-0861590 | STARTER W-H SIZE 3 240V NEMA 1 90A \#A206S3MJW | 4.00 | 1,175.00 | 4,700.00 | 08/19/1999 |
| WB1 | 00-088456X | STARTER, FLUORESCENT TUBE, FOR 13/30/40W, SYLVANIA \#FS-4 | 11.00 | 5.00 | 55.00 | 10/22/1999 |
| WB1 | 00-0861620 | STARTER, SIZE 0, 240V, 60 HZ , CUTLER-HAMMER \#A10-BNOB | 1.00 | 100.00 | 100.00 | 10/22/1999 |
| WB1 | 00-086162B | STARTER, SIZE 2, 240V, 60HZ, CUTLER-HAMMER \#A10-DNOA | 1.00 | 125.00 | 125.00 | 10/22/1999 |
| EB1 | 00-0420400 | STUD SS FULL THREAD NC 5/8" $\times 2$ 2' | 106.00 | 0.30 | 31.80 | 08/17/1999 |
| EB1 | 00-0420390 | STUD SS W/SHOULDER NC 5/8" $\times 1$ 1/2" | 48.00 | 1.08 | 51.84 | 08/17/1999 |
| EB1 | 00-042064B | STUD, 1 INCH X 6-1/2 INCH FULL THREAD, 316 STAINLESS STEEL | 16.00 | 7.84 | 125.44 |  |
| EB1 | 00-0669530 | SUCTION PLATE WITH WEAR RING, YEOMAN PUMP PART \#AM-106727-001-4, FOR PUMP MODEL \#4310-12 | 1.00 | 2,056.00 | 2,056.00 |  |
| EB1 | 00-0872470 | SWITCH MICRO \#MS25008-1 DT-2R-A7 | 20.00 | 5.00 | 100.00 | 08/19/1999 |
| WB1 | 00-087331A | SWITCH PRESSURE ASCO \#PB11A | 3.00 | 69.28 | 207.84 | 10/22/1999 |
| EB1 | 00-0873700 | SWITCHLET MICRO FURNAS \#49L100103 | 6.00 | 13.60 | 81.60 | 08/19/1999 |
| EB1 | 00-0299610 | TEE BLACK IRON $1^{\prime \prime}$ | 16.00 | 1.00 | 16.00 | 08/17/1999 |
| EB1 | 00-0300600 | TEE GALV 2" $\mathrm{X} 11 / 2^{\prime \prime}$ | 15.00 | 1.56 | 23.40 | 08/17/1999 |
| EB1 | 00-0300150 | TEE GALV 2" $\times 11 / 2^{\prime \prime} \times 11 / 2^{\prime \prime}$ | 22.00 | 4.02 | 88.44 | 08/17/1999 |
| EB1 | 00-0300350 | TEE GALV 2" $\times 21 / 2^{\prime \prime} \times 2$ " | 20.00 | 7.53 | 150.60 | 08/17/1999 |
| EB1 | 00-0300220 | TEE GALV 2" $\times 2$ " X 11 1/2" | 42.00 | 11.25 | 472.50 | 08/17/1999 |
| EB1 | 00-0690430 | TEE PVC $11 / 4$ " T X T ${ }^{\text {T }}$ | 27.00 | 9.07 | 244.89 | 08/18/1999 |
| WB1 | 00-0107020 | TEE, 8 IN X 8 IN, DUCTILE IRON, MJ X SWIVEL, FUSION EPOXY COATED, NO ACCESSORIES, MUST HAVE AWWA, ASTM, OR ANSI APPROVAL AND WRITTEN PROOF OF ISO9001 CERTIFICATION, LINE ITEM 1060 | 1.00 | 184.42 | 184.42 |  |
| WB1 | 00-086195A | TIMER, 1-100 SECONDS, 10A, 120V, S.S.A.C. \#KSD2421 | 10.00 | 20.99 | 209.90 | 10/22/1999 |
| WB1 | 00-086205D | TIMER, 3-300 SECONDS, 10A, 120V, NATIONAL CONTROLS CORP. \#T1F-300-461 | 22.00 | 23.10 | 508.20 | 11/04/1999 |
| EB1 | 00-0306710 | TIP, BRAZING, TYPE W, VICTOR \#6 | 1.00 | 52.57 | 52.57 | 08/17/1999 |
| EB1 | 00-0306640 | TIP, BRAZING, WELDER, VICTOR \#2 TYPE W | 5.00 | 34.82 | 174.10 | 08/17/1999 |
| EB1 | 00-0307300 | TIP, CONTACT, BENT, $3 / 64$ IN, GAGE 0.047, FOR ALUMINUM TIG WELDING, MILLER \#094-260 | 20.00 | 1.99 | 39.80 | 08/17/1999 |
| ST2 | 00-030704C | TIP, WELDER, VICTOR \#6-1-101 | 19.00 | 7.50 | 142.50 |  |
| EB1 | 00-0585700 | TOOLS T 30 VALVE FINDER LOUD SPEAKER | 2.00 | 18.38 | 36.76 | 08/17/1999 |
| EB1 | 00-0304330 | TUBING PLASTIC NOPOLINE \#55P 5/16" | 204.00 | 9.07 | 1,850.28 | 08/17/1999 |


| LOCATION | STOCK NO | DESCRIPTION | QTY | COST | TOTAL | LAST ACTIVITY DATE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| EB1 | 00-0878800 | UNION RIGID 2/1/2 APF \#UNF25ONRA | 9.00 | 1.76 | 15.84 | 08/19/1999 |
| EB1 | 00-0621600 | VALVE AIR RELIEF 3/4" 25\# SET AQUATROL SERIES 21 | 4.00 | 45.00 | 180.00 | 08/18/1999 |
| EB1 | 00-0626570 | VALVE ASCO REPAIR KIT \#304328 | 12.00 | 33.62 | 403.44 | 08/18/1999 |
| EB1 | 00-0626660 | VALVE ASCO REPAIR KIT \#K302-711MO | 3.00 | 53.04 | 159.12 | 08/18/1999 |
| EB1 | 00-0626590 | VALVE ASCO REPAIR KIT \#K304323 | 6.00 | 33.62 | 201.72 | 08/18/1999 |
| EB1 | 00-0626540 | VALVE ASCO SOLENOID 12V DC CAT. \#AS-EF8210D14 | 5.00 | 218.80 | 1,094.00 | 08/18/1999 |
| WB1 | 00-0697200 | VALVE PRES/VAC 120V-6.8W 0-150PSI MAC \#111B-111BA | 3.00 | 25.00 | 75.00 | 10/08/1999 |
| EB1 | 00-0631450 | VALVE ROSS 3-WAY PN \#2773A5009 115V 60HZ | 4.00 | 214.80 | 859.20 | 08/27/1999 |
| WB1 | 00-062148A | VALVE, CHECK, 4 INCH, 12-7/8 INCH FACE TO FACE, FLANGED, GRAVITY OPERATED, IBBM, RUBBER DISC FACING, EPOXY COATED, STAINLESS STEEL BOLTS/NUTS, DOMESTIC, M \& H BRAND OR EQUAL | 1.00 | 985.50 | 985.50 |  |
| WB1 | 00-0628090 | VALVE, CHECK, 8 IN, 19-1/2 IN FACE TO FACE, FLANGED, LEVER \& WEIGHT, IBBM, BRONZE DISC FACING, EPOXY COATED, STAINLESS STEEL BOLTS/NUTS, DOMESTIC, MEETS ANSI/AWWA C508, MUELLER \#A-2600-6-01 | 1.00 | 1,259.00 | 1,259.00 |  |
| WB1 | 00-030695B | VALVE, CHECK, TORCH, WELDING, FUEL, MODEL \#CTF, VICTOR \#06900033 | 1.00 | 8.61 | 8.61 |  |
| WB1 | 00-030695A | VALVE, CHECK, TORCH, WELDING, OXYGEN, MODEL \#CTO, VICTOR \#0690-0032 | 1.00 | 8.61 | 8.61 |  |
| WB1 | 00-0677510 | VALVE, FLAP, GORMAN-RUPP \#5427, FOR MODEL \#3D-S8D | 18.00 | 1.55 | 27.90 | 09/18/1999 |
| EB1 | 00-0677510 | VALVE, FLAP, GORMAN-RUPP \#5427, FOR MODEL \#3D-S8D | 16.00 | 1.55 | 24.80 | 08/18/1999 |
| EB1 | 00-0623980 | VALVE, RESILIENT SEAT GATE, 2 IN, MJ, NRS | 6.00 | 100.00 | 600.00 | 08/18/1999 |
| WB1 | 00-0419260 | WASHER FLAT BRASS 1/2" | 187.00 | 0.25 | 46.75 | 07/30/1999 |
| WB1 | 00-0419110 | WASHER FLAT BRASS 5/16" | 473.00 | 0.01 | 4.73 | 07/30/1999 |
| EB1 | 00-0470240 | WASHER, LOCK, BEARING, BORE 4.801 IN, TANG DIA. 6.469 IN, THICKNESS 0.115, KEY WIDTH 0.520 IN, TIMKEN \#TW124 | 1.00 | 50.43 | 50.43 |  |
| EB1 | 00-0380050 | WASHER, SCREW-PLUG ADAPTOR, FOR PACK JOINT CORPORATIONS, 3/4 IN, FORD \#WSP-3 | 14.00 | 4.95 | 69.30 | 08/17/1999 |
| EB1 | 00-0307000 | WELDER GAUGE ACETYLENE PSI 0-4000 | 1.00 | 12.42 | 12.42 | 08/17/1999 |
| EB1 | 00-0306890 | WELDER LENS GOGGLE ROUND 50 MM SHADE 6 | 12.00 | 1.96 | 23.52 | 08/17/1999 |
| EB1 | 00-0306600 | WELDER TIP GX-3 | 3.00 | 11.41 | 34.23 | 08/17/1999 |
| WB1 | 00-0597410 | WHEEL GRINDING 10" X 2 " $\mathrm{X} 1 \mathrm{l} \times 60$ GRIT | 1.00 | 19.70 | 19.70 | 08/19/1999 |
| WB1 | 00-0597420 | WHEEL WIRE 10" $\times 2$ " X 1" X . 014 " WIRE DIAMETER | 2.00 | 50.00 | 100.00 | 08/19/1999 |
| EB1 | 00-059730A | WHEEL, GRINDING, 7 INCH DIAMETER $\times 1 / 4$ INCH THICK $\times 5 / 8$ INCH THREADED BORE - 11. DEWALT \#DW8407, MSC \#08701906. | 2.00 | 15.00 | 30.00 |  |
| EB1 | 00-0307460 | WIRE CUP BRUSH 6" HEAVY DUTY CRIMPED | 3.00 | 16.75 | 50.25 | 08/17/1999 |
| EB1 | 00-0883110 | WIRE ELEC SO 18-5 STRANDED NEOPRENE JACKET | 477.00 | 0.34 | 162.18 | 08/19/1999 |


[^0]:    *** The remainder of the page was intentionally left blank. Please continue to the next page. ***

[^1]:    *** The remainder of the page was intentionally left blank. Please continue to the next page. ***

[^2]:    *** The remainder of the page was intentionally left blank. Please continue to the next page. ${ }^{* * *}$

[^3]:    *** The remainder of the page was intentionally left blank. Please continue to the next page. ***

[^4]:    *** The remainder of the page was intentionally left blank. Please continue to the next page. ***

[^5]:    ^ There is one item on hand that is 35 years old but it is of insignificant value.

[^6]:    ${ }^{1}$ See Appendix II, Objectives, Scope, and Methodology.

[^7]:    ${ }^{2}$ Six Sigma and Breakthrough Strategy are copywritten methods of Six Sigma Academy to provide companies the tactics and tools for rapid, total business transformation.

[^8]:    ${ }^{3}$ Brooks and Wilson, p. 22.

[^9]:    ${ }^{4}$ Location counts are physical counts used by the leading edge locations to check the accuracy of their "floor to record" quantities, whereby all items in a location or area in the warehouse are counted and compared to the inventory records to ensure the proper recorded quantity and location of an item.

[^10]:    ${ }^{5}$ RF Guns are handheld units that receive and transmit information to and from the inventory system. The counter usually scans a bar code for the item or location for count and the RF Gun displays the information for the item or location (i.e., unit of measure, stock number, location). The counter then

[^11]:    $\begin{array}{lllll}00-0483880 & 4.64 \mathrm{EACH} & 12 / 12 / 16 & 117 & 12 / 12 / 16\end{array}$

[^12]:    

[^13]:    $08 / 19 / 1999$
    43.20
    8.64
    5.00

[^14]:    aTY $\qquad$

[^15]:    

