Calgary

City Auditor's Office

Supply Management
Warehouse and Inventory Audit

August 20, 2019

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The City Auditor's Office completes all projects in conformance with the *International Standards for the Professional Practice of Internal Auditing.*

Executive Summary

Effective management of inventory supports the delivery of City of Calgary services by facilitating availability of inventory, while managing obsolete or unneeded inventory to make best use of City dollars, and to avoid waste. Supply Management provides a Procurement and Warehousing service as well as an Inventory sub-service to support City Business Units. This includes both Business Unit specific inventory such as vehicle batteries, and more general usage items such as safety vests. During 2018, Supply Management managed twenty-six warehouses and an average monthly inventory value of approximately $43 million. Inventory items are recorded in Finance and Supply Chain Management (FSCM) enterprise system, a perpetual inventory system. Accurate and complete inventory records provide key information to support decisions regarding the ordering, managing, distributing, disposal of inventory, and also mitigate the risk of misappropriation and loss of inventory.

The objective of the audit was to assess the effectiveness of The City's management of inventory by evaluating the design and operation of key process controls that support the accuracy and completeness of the inventory records. We evaluated access to FSCM, physical access to warehouses, physical inventory counts, and inventory record adjustments during the time period between January 1 and December 31, 2018. Testing was based on sample activity occurring in the Oliver Bowen Maintenance Facility warehouse, and the General Store warehouse, as these two warehouses stored approximately one third of the 2018 total inventory value.

Based on our sample testing, we concluded that controls in operation that support the accuracy and completeness of inventory records are partially effective. While controls that support the accurate entry of inventory received in FSCM, access to warehouses, and physical inventory count are designed and operating effectively, the system control to force a second person approval of significant inventory write off and adjustments is not operating as expected.

Supply Management has designed a control over adjustments to the FSCM inventory record for discrepancies identified from inventory counts. This process requires approval by an additional employee where changes are greater than set tolerances: either $100 or 10% of inventory item quantity. However, we identified through our audit testing that this control did not function as expected. Although sample testing confirmed inventory records reflect current physical inventory held, the risk from inappropriate or unauthorized inventory adjustments is not fully mitigated to support the accuracy and completeness of inventory records. We raised a recommendation to resolve the operation of this control, and Supply Management have committed to taking prompt action in conjunction with IT. We also identified two improvements to the physical inventory count process (introduction of blind counts, and monitoring of cycle count intervals) that will further enhance the effectiveness of the count process.

Supply Management have agreed with our three recommendations, and have set action plan implementation dates no later than March 30, 2020. The City Auditor's Office will follow up on all commitments as part of our ongoing recommendation follow-up process.

1.0 Background

Supply Management offers Procurement and Warehousing services and Inventory sub-service with the aim of delivering the best value for tax payers' dollars and promoting trust in The City of Calgary.

Inventory services facilitate a City-wide network of development and forecasting of inventory requirements to improve operational efficiencies, inventory data control, as well as inventory performance analysis that aligns with customer needs. Inventory items are recorded in FSCM, a perpetual inventory system that tracks and maintains inventory movements and provides up-to-date inventory balance information. This information supports decisions regarding inventory orders. The warehouses manage the receiving, physical control, security and distribution of items inventoried in warehouses across Calgary.

During 2018, there were 26 warehouses in 15 locations located within Calgary boundaries which store inventory for Business Units. Inventory comprises both Corporate Inventory, representing goods and materials used across all Business Units, and Business Unit Specific Inventory which is administered by Supply Management prior to distribution to the specific Business Units. Items commonly used across the City (e.g. safety vests) are usually stocked at the Logistics Centre (comprised of four warehouses), while Business Unit specific items (e.g. vehicle batteries) are stored in other warehouses within the Business Unit service locations across the City. The City's inventory value was between $42 million and $44 million at the end of each month in 2018 as indicated below (Figure 1). On average, the value of inventory held has decreased slightly from 2016 to 2018, which may be indicative of improved inventory management.

Figure 1 – Month End Inventory Values in 2016, 2017, and 2018.
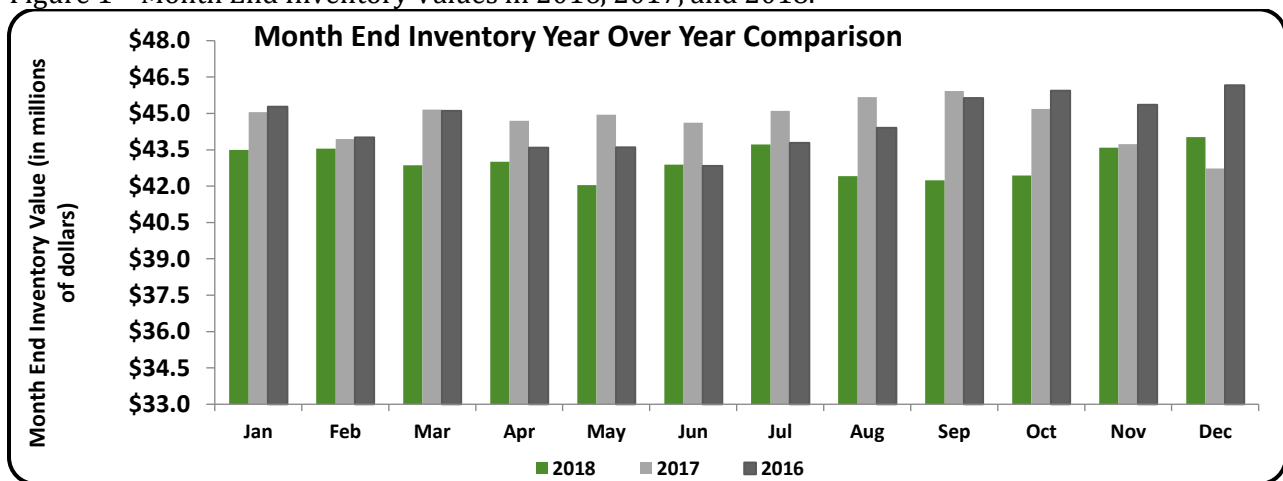

Source: Supply Management

Effective management of inventory supports the delivery of City of Calgary services by facilitating availability of inventory, while managing obsolete or unneeded inventory to make best use of City dollars, and to avoid waste. Accurate and complete inventory records are critical in providing effective information to support inventory services decisions regarding the ordering, managing, distributing, and disposal of inventory, which in turn supports City of Calgary service delivery. Accurate and complete inventory records also mitigate the risk of misappropriation and loss of inventory by supporting early identification of discrepancies between physical inventory and FSCM

records. The range of inventory held by the City is extensive which creates in turn a range of impacts arising from loss or misappropriation. Business Unit specific items such as C Train spare parts are often higher in dollar value, but with limited personal use, whereas Corporate Inventory (e.g. copper wires and batteries) are often lower in individual dollar value but higher in external demand, quantity and turnover which could increase the risk of misappropriation.

2.0 Audit Objectives, Scope and Approach

2.1 Audit Objective
The objective of this audit was to assess the effectiveness of The City's management of inventory. The objective was achieved by evaluating the design and operation of key process controls (see diagram below) that support the accuracy and completeness of the inventory records.
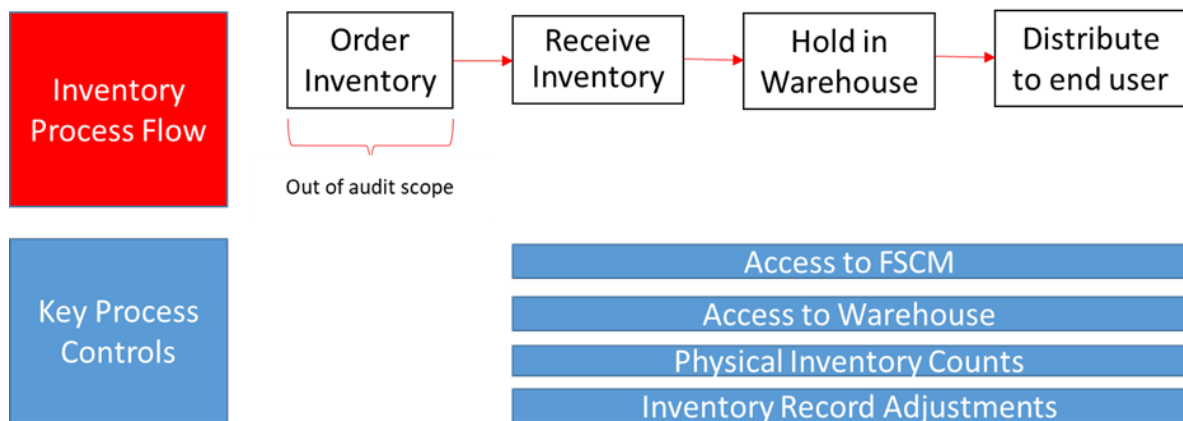
2.2 Audit Scope
The audit was focused on the design and operation of key process controls as shown in the diagram above during the time period between January 1 and December 31, 2018.

Where the operation of key process controls were reviewed, the Oliver Bowen Maintenance Facility warehouse, and the General Store warehouse (part of the Logistics Centre) were selected as samples of the audit, as between them the warehouses stored approximately one third of the total monthly inventory value[1].

2.3 Audit Approach
We conducted interviews with select warehouse team staff and evaluated the operation of key process controls (see Section 2.1 above) based on supporting documentation, including FSCM records and original inventory records such as packing slips from deliveries received.

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[1] Based on analysis of inventory values as of June 14, 2018, the top four warehouses store approximately 70% of the total inventory values. Four warehouses are Oliver Bowen Maintenance Facility (21.3%), Spring Garden Traffic Yard (16.4%), Anderson Bus & LRV Garage Stores (16.4%) and General Store (15.7%).

3.0 Results

Testing was conducted to assess the operating effectiveness of controls specific to FSCM access, physical warehouse access, inventory counts and system recordkeeping and adjustments. Based on our sample testing, we concluded that controls in operation that support the accuracy and completeness of inventory records are partially effective.

3.1 Access to FSCM

Warehouse staff receive inventory deliveries directly at warehouse locations. Designated warehouse staff have access to FSCM so they can enter the packing slip into FSCM, on acceptance of delivery, as well as entering the shipment in FSCM against the request from the Business Unit.

Based on our sample testing we confirmed that the process is operating as designed: we selected 30 receipts from FSCM for each warehouse in our sample, compared data entered back to original packing slips, and confirmed that the data from packing slips was entered into FSCM accurately. We also selected five hardcopy packing slips from each warehouse and confirmed all items on the packing slip had been entered accurately into FSCM.

Warehouse staff can enter and modify the same data entry in FSCM as access to FSCM functions is not segregated by individual employee role. However, mitigating controls are in place to minimize the residual risk that an employee manipulates FSCM data to cover misappropriation of inventory:

- Vendors of inventory are only paid once a three-way match of purchase order, invoice, and delivery note is completed.
- Physical counts of inventory (see Section 3.3 below) are completed on a regular basis which would identify discrepancies between physical inventory and inventory records.
- Business Units requesting distribution of inventory for their use would identify if inventory was not received in the quantity requested.

3.2 Access to Warehouse

Once inventory is stored in a City warehouse, restricting physical access to the inventory to only those employees who require access for business purposes is a control which facilitates the accuracy and completeness of inventory records by reducing the risk of misappropriation of inventory.

Employee access to warehouses is controlled through authorized security card permissions. Access to warehouses is location specific, authorized through a request to Corporate Security by an individual's supervisor, and removing warehouse access from departing employees is incorporated into the Supply Management employee departure checklist for supervisors.

We concluded the physical access controls are operating effectively for both warehouses, specifically:

- Access to both warehouses was restricted by authorized security card access; and
- All employees sampled with warehouse access were appropriate based on current City employee status with a role description indicating they would require warehouse access to complete day to day work.

3.3 Physical Inventory Counts

Completing counts of physical inventory on a regular basis confirms the accuracy and completeness of inventory records, and identifies any discrepancies, by comparing actual inventory held to records.

Warehouse and Inventory have established inventory count frequency requirements based on usage volume analysis. We obtained a manual cycle count statistics report dated December 31, 2018, and confirmed the percentage of counted inventory items during the year were greater than 99.7%, compared to Supply Management's target of 100%. To improve risk management, developing and implementing a process to monitor and verify that inventory counts for type A inventory items (higher usage and turnover) are completed within the required cycle count intervals was recommended (Recommendation 3).

Inventory counts are completed by a single employee using portable bar code readers and the FSCM Manage Inventory Count module. The current count methodology is set so that the employee counting knows the expected number of physical items as per FSCM as they start to count which may create an unconscious bias to arrive at the right answer. We recommended (Recommendation 2) the implementation of "blind counts" (where the employee counting does not know the expected quantity of inventory) to enhance the physical count process effectiveness to support early identification of inventory record discrepancies.

We utilized physical inventory counts to confirm the completeness and accuracy of FSCM records on a sample basis. We selected a sample of 52 items of inventory (29 from Oliver Bowen Maintenance Facility and 23 from the General Store warehouse, reflecting items of both higher dollar value and higher general usage) and conducted an inventory count verification, agreeing inventory quantity amounts in FSCM to physical item quantity held in the warehouses. We also confirmed for a further 15 items that the physical quantities counted in the warehouses (5 types of inventory in Oliver Bowen Maintenance Facility, 10 in the General Store) were recorded accurately and completely in FSCM.

3.4 Inventory Record Adjustments

Approval by an authorized employee of changes (write-offs and other adjustments) to inventory records supports accuracy and completeness of inventory records by ensuring that significant changes cannot be made without independent review.

Supply Management has designed a process whereby if the cycle count adjustment or write-off of inventory in FSCM is greater than either $100 in value or more than 10% of total item quantity, approval must be provided within FSCM by an authorized employee who did not complete the inventory count. If cycle count adjustments or write-offs of inventory are below the tolerance, FSCM automatically processes the change.

We obtained Supply Management's write-off report that included all write-off items for the period between January 1 and December 31, 2018 for the General Store and the Oliver Bowen Maintenance Facility warehouses, and noted 3 of 37 automatically processed write-offs/adjustments over the tolerance level (Section 4.1) in the General Store and did not trigger the expected approval process in FSCM. The sample identified an exposure of less than $1,500, however, the control failure left unmitigated could result in a more significant risk exposure. We recommended (Recommendation 1) that Supply Management work with IT to

investigate and resolve the operation of the FSCM embedded approval process so that it is operating as designed to ensure write-offs greater than tolerance levels are validated and approved by an authorized employee who did not complete the inventory count.

A current collaborative initiative underway by Warehouse and Inventory is to identify, with support from Business Units, obsolete inventory items for write-off purposes. Warehouse and Inventory annually shares a Stagnant Report from FSCM with each Business Unit, which identifies inventory items that have not been utilized in the past three years. Business Units are expected to review the report, and authorize approval of write-off of any obsolete inventory items. Once approval is given, the items will be written off and the cost charged to the relevant Business Unit. If Business Units do not provide approval, inventory items will remain on the Stagnant Report for the following year unless utilized. We analyzed changes as at December of 2016, 2017 and 2018 on the Stagnant Reports and provided this information to Supply Management to support their ongoing work to effectively manage inventory items.

We would like to thank staff from Supply Management for their assistance and support throughout this audit.

4.0 Observations and Recommendations

4.1   Approval of Inventory Adjustments Over Tolerance Level

The FSCM system control which forces a second person approval on write-offs and adjustments of inventory greater than set tolerance levels is not operating as designed.

Warehouse processes require, where a write-off or adjustment of inventory in FSCM is greater than either $100 in value or more than 10% of total item quantity, an approval must be provided by an authorized employee who did not complete the inventory count. Warehouse and Inventory have designed a system control where approval into FSCM is required when tolerances are exceeded, however during 2018, 3 of 37 automatically processed write-offs/adjustments (i.e. $868.91, $133.20 and $366.91) for the General Store warehouse were greater than $100 in value, but did not trigger the expected approval process in the system. Warehouse and Inventory are investigating why the control embedded in FSCM to require approval did not operate as designed. In addition, FSCM reports do not include which employee completed an inventory count, only which employee provided write-off approval if tolerance is exceeded. Warehouse and Inventory therefore cannot verify if the same employee is conducting a count and approving the resulting write-off/adjustment of inventory levels.

Where approvals by an authorized employee (who did not complete the initial inventory count) are not required for higher dollar or quantity write-offs and adjustments, the risk of undetected errors in inventory records and opportunity for misappropriation of inventory increases.

Recommendation 1

Manager, Warehouse and Inventory, to work with IT to investigate and resolve the operation of the FSCM embedded approval process to ensure that write-offs greater than tolerance levels are validated and approved by an authorized employee who did not complete the inventory count.

Management Response:

Agreed.

Action Plan	Responsibility
After review Supply Management, with the support of ESS (IT), will undertake the following actions: 1. Supply has raised a support ticket which ESS to action a review of the documented instances where FSCM failed to correctly handle adjustments in excess of threshold for approval. This ticket tasks ESS to determine why the process control failed. Corrective action will then be taken to ensure that adjustments in excess of tolerance are correctly referred by FSCM for review and approval. 2. ESS at direction of Supply Management will split the Warehouse Roles in FSCM so that users do not have access to both to Cycle Count and Adjustment approval processes. Warehouse FSCM users will then be assigned one of the two new FSCM roles based on their job within Warehouse Operations. 3. ESS will develop a report which will highlight any adjustments where the same user both cycle counted and approved the resulting adjustment. This report will be reviewed on a regular basis by Warehouse Leaders to ensure that the new controls are effective in preventing count and reconciliation by same user.	Lead: Manager, Warehouse & Inventory Support: Leader, IT Commitment Date: Item 1: September 30, 2019 Item 2 & 3: March 30, 2020

4.2 Inventory Count Process

Inventory count processes are not effectively designed to support the completeness and accuracy of inventory records. As a result, errors in inventory records may not be identified in a timely manner.

Inventory counts are not completed using a "blind count" process and are currently performed by a single employee who knows the expected quantity of the item (recorded in FSCM) at the time of count. No independent verification of inventory count is required unless a discrepancy of more than $100 or 10% of item quantity is identified between the count information and FSCM records.

Completion of "blind counts" (where the employee does not know the expected quantity of the item) supports the accuracy of the inventory count process as it requires the physical count to be completed and prevents count bias, where an individual counts to the right answer (based on known FSCM records).

Recommendation 2
Manager, Warehouse and Inventory, to redesign the inventory count process by incorporating blind inventory counts to support the early identification of inventory record discrepancies.

Management Response:

Agreed.

Action Plan	Responsibility
Supply Management will review the operational cycle count procedure, the available FSCM cycle count processes and reports, and develop a new procedure that will adhere to the concept of a "Blind Count". This procedure will ensure that staff counting a location will not be aware of the FSCM item quantity at time of count. This work will include the modification by ESS of the current FSCM count sheet which displays the item quantities by location when created. Once procedure and revised count sheet are completed all Warehouse Division staff will be trained in the new cycle count procedure.	Lead: Manager, Warehouse & Inventory Support: Leader, IT Commitment Date: March 30, 2020

4.3   Inventory Count Frequency

Warehouse and Inventory are not able to monitor and verify whether inventory counts for type A inventory items (high usage) are being completed within the required cycle count intervals.

Inventory items are categorized by type A, B, C, or D based on usage volume analysis; then the frequency of the counts are determined accordingly: type A items are required to be counted at a cycle interval of 70 days due to their higher usage and turnover, while type B, C and D items are required to be counted at a cycle interval of 365 days.

The FSCM inventory report utilized by Warehouse and Inventory includes what items were counted, the percentage of items counted, last count date, and number of counts in a calendar year. The report can only be run at a point in time rather than being able to reflect historical information. The report does not show historic count dates, so cannot be used to provide assurance as to whether type A inventory item counts have been completed at the required interval of 70 days during the year. Where item counts are not completed at the required intervals, the risk of delay in identifying loss, misappropriation or incorrect recordkeeping of type A inventory items increases.

Recommendation 3
Manager, Warehouse and Inventory, to develop a process to monitor and verify that inventory counts for type A inventory items are completed within the required cycle count intervals.

Management Response:

Agreed.

Action Plan	Responsibility
ESS will develop, at direction of Supply Management, a count report that will provide a record at item level per warehouse when counts have been completed versus the assigned categorization frequency (A, B, C, or D) set within FSCM for the year. This report will allow calculation of a completion metric by warehouse that will allow Manager, Warehouse and Inventory, to identify whether required count frequencies are being met at each warehouse. Supply Management's monthly performance metrics will be revised to utilize a new completion metric to provide visibility on adherence to count schedules to Supply Management Leadership.	Lead: Manager, Warehouse & Inventory Support: Leader, IT Commitment Date: March 30, 2020