Overview of Physical Inventories: Concepts & Testing

Presented By:

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Overview

• Today’s session is in two (2) parts:

  • General Concepts (presented by Tom Ruckdaschel)

  • Testing of Contractor Systems/Physical Inventory Results (presented by Dr. Goetz)
Learning Objectives

- At the end of this session, personnel will know:
  - FAR requirements for physical inventories
  - The role of a Property Administrator
    - Authority
    - Limitations
  - How to distinguish between:
    - Formal or “direct” physical inventory events
    - Informal or “indirect” (also known as opportunistic physical inventory events)
    - Inventory adjustments vs. property loss
  - How to test the contractor’s process for compliance/conduct the PMSA

Part 1: Physical Inventory Concepts
“Annual Physical Inventory”
We hear this phrase all the time
What does it imply?
What is the underlying requirement?
What concepts are in play here?

“Annual Physical Inventory”
• The statement implies the following:
  • An “event”
  • A yearly requirement—no matter what
  • 100% of all property is inventoried
  • Formal start and completion dates
  • Regularly scheduled (every March, every April, etc.)
  • No distinction between equipment and material
  • Personnel are formally tasked (“Today we are going to conduct a physical inventory”)

Discussion

Discussion (cont.)
Discussion (cont.)

• The reality of contemporary physical inventory practices is much different
  • Wide-range of acceptable practices
  • The entire population of property may not necessarily be counted at “fixed points” in time
  • Formal start and completion dates may not apply
  • Some inventory practices are not regularly scheduled events
  • Substantial distinctions exist between inventory practices/process tasks for equipment and material

Types of Physical Inventories

• Physical inventory practices fall under two broad categories:
  • Direct action physical inventory practices; and
  • Indirect action physical inventory practices

• **Direct**: formal physical inventory planned process (preparation, physical count, and reconciliation)
  • Wall-to-wall (usually has firm beginning and end dates)
  • Sampling
  • ABC method
  • Cyclic
Types (cont.)

- **Indirect:** unplanned “opportunistic” events
  - Applies when certain “events” are considered a physical inventory action
  - Employees not directly “tasked”
  - No beginning or end date—embedded practices enable physical inventory results

**Examples:**
- Flight logs, utilization/maintenance actions, move tickets/orders—all can qualify as a “touch”
- Events such as building closures, remodeling events, organizational relocations
- Software management system "pings" computers (or other equipment) on a network

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**From DoD Instruction 5000.64**

“Inventory by exception: This type of inventory uses actions or transactions, (e.g., move orders, maintenance actions, calibration checks, usage logs (or flight logs)) where the items are “touched” by disinterested parties (i.e., persons without stewardship responsibilities), with supporting documentation directly associated with an accountable asset. Toward the end of the inventory cycle, an inventory is then performed on items not already inventoried by an action or transaction during the inventory period. If applicable, these types of inventories must be documented as part of the inventory plan and are subject to documented internal control procedures to ensure the validity of accountable property records.”
“In lieu of physical inventories, alternative procedures are employed to assess inventory accuracy. For example, a virtual inventory can be performed using maintenance records, readiness reports, scheduling records, dated photographs, and transfer records.”

-DoD FINANCIAL IMPROVEMENT AND AUDIT READINESS (FIAR) PLAN STATUS REPORT (NOVEMBER 2012)


Types (cont.)

- “Rolling wave”
  - Continuous yearly activity
  - Oldest items touched
- Other
  - Sampling, stratified
  - Touch everything in some manner at least once every 3 years

As you can see, there are many variations to the theme!
“Customary” Inventory Practices

- Equipment, Special Tooling, Special Test Equipment
  - Cyclic: one third of the total population is “touched” at least once over a 3 year cycle
  - Sampling: based on entire population
  - Stratified: based on dollar value
- Progressive approaches based upon continuous improvement:
  - Start with wall-to-wall;
  - Move to cycle counting (once there is proven track record of high accuracy);
  - Then move on to sampling

FAR Language and Intent

FAR 52.245-1—

Physical inventory. “The Contractor shall periodically perform, record, and disclose physical inventory results. A final physical inventory shall be performed upon contract completion or termination. The Property Administrator may waive this final inventory requirement depending on the circumstances (e.g., overall reliability of the contractor’s system of the property is to be transferred to a follow-on contract)”
• “Periodically”  
  • The FAR is intentionally vague
• “Perform”  
  • The act or process of finding, touching (Physically or electronically) and reconciling
• “Record”  
  • Updating the property record to indicate that a physical inventory was performed (Date) as well as count
• “Disclosure”  
  • Informing the Government of physical inventory results

• Why is the FAR so vague?  
  • The wide range of property types and inventory practices make a one size fits all “regulation” impractical, especially at the Federal level
• The language is designed to:  
  • Provide contractors with some discretion on the type and scope of physical inventory practices AND (this is the part few people realize)
  • Allow the Gov’t to craft more defined physical inventory requirements, if it desires, and include these as contractual requirements
If the contract lacks specific physical inventory requirements/outcomes, the general requirement defaults to the contractor’s procedure.

Actual practices should be:
- Reasonable
- Sound
- Effective
- Meaningful (measurable timeframes)
- Based on the literature

Property Administrators:
- Must be familiar with a wide-range of inventory practices and applications; should not direct the contractor on a particular practice or method (assumes an adequate/approved system)

Dictating a particular physical inventory may result in a constructive change:

“...occurs where a contractor performs work beyond the contract requirements, without a formal order under the Changes Clause, either due to an informal order from or through the fault of the Government.” [Government Contract Guidebook]

Result: contractor may be entitled to consideration for extra costs incurred
Disclosing Results

- Contractual Requirements regarding the reporting of “Results”
  - 52.245-1(f)(1)(iv): “The contractor is required to disclose physical inventory results”
  - 52.245-1(l) “All communications under this clause shall be in writing”

- When/how should results be disclosed (reported)?
  - “It depends”
  - As with all other “actions” this must be addressed in the contractor’s procedure. However:
    - PAs should be looking for objective measurable timeframes

Disclosure (cont.)

- The following is based on customary industry practice:
  - Summary level conclusions
  - That the physical inventory was accomplished IAW the contractor’s procedures; Methodology used; e.g., cycle counts, by exception, wall to wall, ABC methodology, etc.
  - Dates performed, etc., inventory start and stop points as applicable; that the inventory was posted to records (including property loss and inventory adjustments of material)
Disclosure (cont.)

- A statement that substantially says: “Records are in agreement except for…” [this statement does not apply to material]
- Property loss reports are available for review
- Inventory adjustments of material (typically not included in a disclosure report) may be reviewed/disclosed during the PMSA
- Documentation is available

Disclosure (cont.)

This is basically “standard reporting convention,” i.e., not part of a correction action plan, contractor system is approved, low risk, etc.
Inventory Adjustments

- Inventory adjustments: apply to MATERIAL items only; must be
  - Reasonable (FAR 31.205-26(c), 52.245-1)
  - Pre-defined, e.g., within an established tolerance (see DFARS clause 252.245-7002)
    - Documented in the property management procedure
- **Reasonable** inventory adjustments therefore:
  - Are not “losses” -- they do not meet the definition of property loss
  - Typically not “reported” to the property PA; contractors adjust records internally—without PA approval/involvement contractor discloses during the PMSA
  - PA reviews adjustment mechanisms and documentation

Summary and Conclusions

- Property Administrators:
  - **SHOULD** determine if the practice is:
    - Reasonable, effective in meeting contractual requirements, adequate
    - Consistent with customary commercial practices, leading industry practices or voluntary consensus standards.
    - Protects the Government’s interest
    - Meets program or contract objectives
    - Gets results; is measurable
  - Note: contractors with significant deficiencies impacting physical inventories will require situational remedies
Population:
- A collection of things with common characteristics: it could be people, records, cars, widgets, etc.
- It is critically important to correctly define the population (!)
- Driven by either:
  - Transactions (a timeframe is available)
    - Example: property receipts for the past x amount of days
  - Attributes (when you cannot apply a timeframe)
    - Location where property is stored
    - Quantities of property
- Sample: Items pulled/selected from the population
Statistics Refresher (cont.)

- **Sampling Methods**
  - **Statistical:** within a given confidence level, a randomly selected* samples will reflect the same characteristics that occur in the population (generalizable)
  - **Judgment/purposeful sampling:** by their nature, these types of sampling are not statistical or random; no confidence levels involved; samples may not reflect the same characteristics of the populations (not generalizable)
  - **Note:** purposeful sampling is used when there are known, suspected or reported defects (should be credible)

*Every item has an equal chance of being selected (unbiased selection)

The closer you get to 100%, the more “confident” we are that our sample is representative of the population. In theory, you could have a confidence level anywhere between 1% (which would be silly) and 99% (which is almost as silly).

90% is where confidence levels start to become meaningful (for confidence levels below 90%, you’re better off with non-statistical, e.g., judgment sampling). So, a confidence level anywhere between 90% and 99% should be used. Of course, you would then have to create 10 different sampling tables for each percentage (90% through 99%), and who wants to do that? To make things easier, we created sampling tables for 90%, 95, and 97% confidence levels (roughly correlate to high/moderate/low risk levels). All posted to the Property Instruction.

Note: the closer a confidence level gets to 100%, the less clear the benefits of statistical sampling. For example, at a confidence level of 99%, you may as well not sample anything (might be easier to just count everything!).
Remember…

- Statistical or other sampling results do not represent “pass/fail” scenarios
- Statistical tools help you arrive at a conclusion
- Your judgment prevails, notwithstanding the results of sampling

“Sampling is a tool that supports, not supplants, the PA’s judgment.”

(DCMA Contract Property Instruction, paragraph 8.13.)

Reminder…

- Don’t confuse confidence levels with accuracy rates—they are two different things:
  - Inventory accuracy: what you strive for; the degree to which records and actual agree-based on established criteria
  - Confidence level: how “confident” are you that the samples you selected from a population reflect the characteristics of other items in that population
- Why use statistical tools?
  - Without them, we would have to check each and every item
  - The proper use of statistical tools is defendable (“I feel good about it” is not a defendable position)
Part 2: Testing of Contactor Systems

PHYSICAL INVENTORIES

- FAR 52.245-1(f)(1)
  - (iv) *Physical inventory*. The Contractor shall periodically perform, record, and disclose physical inventory results. A final physical inventory shall be performed upon contract completion or termination. The Property Administrator may waive this final inventory requirement, depending on the circumstances (e.g., overall reliability of the Contractor's system or the property is to be transferred to a follow-on contract).
PHYSICAL INVENTORIES

• The Auditor is responsible for ensuring that the contractor has scheduled, performed, recorded, and reported physical inventories of Government property in accordance with the contractor's PMS.
  – The basic objective is to determine the effectiveness of the physical inventory process in regard to physically locating and counting Government property, comparing the results to the records, posting the findings and adjustments, and reporting the adjustments to the PA.

PHYSICAL INVENTORIES

• So, What are the “DRIVERS” for the management of this PROCESS?
  1. The GP CLAUSE(S)
     a) FAR 52.245-1 (2007/2010)
  2. Any VCSes, ILPs or CCPs applied for this Process
  3. Written Procedures APPLICABLE to this Process.
To test for compliance, the PA shall ensure the contractor periodically performs, records, and discloses physical inventories results. The PA shall also ensure the contractor:

- Performs required physical inventories commensurate with the kinds of property in its possession.
- Does not allow those who maintain the records, or are responsible for the custody of the property to perform the physical inventories.
- Performs physical inventories promptly upon contract completion or termination, unless waived by the PA.
- Locates and counts property, compares the results of the physical inventories to property management records, properly records losses and adjustments to the property management records, and discloses overall results.

**PHYSICAL INVENTORIES**

- There are really FOUR areas where the auditor will test the process(es):
  - Performance
    - Was the inventory **PERFORMED** as per Procedures
  - Recording
    - Was the inventory **POSTED** to the Record?
  - Records Adjustment
    - Were adjustments **RECONCILED**
  - Reporting of Inventory Findings
    - Were results, including adjustments, **REPORTED**.
POPULATION for AUDITING PHYSICAL INVENTORIES

• So, think for a moment…
• How do we define a population for THIS PROCESS?
• Think about the INDIVIDUAL ITEMS that we need to cover:
  – Performance
  – Recording
  – Adjustments
  – Reporting

POPULATION for AUDITING PHYSICAL INVENTORIES

• A THOUGHT EXERCISE…
  – So, in WORDS, provide me a description of the Population of Physical Inventories – to test “Performance.”
  – Go!!!
  – You have two minutes!
POPULATION for AUDITING PHYSICAL INVENTORIES

• So, how do you DEFINE the Population for Testing Physical Inventories?

IT DEPENDS!

POPULATION for AUDITING PHYSICAL INVENTORIES

• Populations may be arrived at based upon the DRIVERS of this process.
  – The Contractor’s Procedures
    • It is NOT about how YOU think it should be done... It is about how the CONTRACTOR SAID they would do it in their PROCEDURES!
  – What TYPE of Physical Inventory is being used by the Contractor?
  – What is the FREQUENCY or CYCLE?
  – HOW is it being done? Manually? Electronically? RFID?
  – Etc.
POPULATION for AUDITING PHYSICAL INVENTORIES

SOME EXAMPLES:

- One method, for contractors with limited amounts of Government property who use a wall-to-wall inventory would be to use the entire physical inventory listing compiled through the accomplishment of the physical inventory.
  - This may be in the form of a computer printout, in the case of an automated system, or the actual physical count sheets in a manual system.
- Another method, may be used when a cyclic physical inventory is performed.
  This involves the count sheets for the items INVENTORYED during that cycle, e.g., those items counted in a one month period, a two month period, etc., -- rather than waiting for the entire physical inventory to be completed.

- Still another method... When using an electronic touch system (Say “pinging” computer systems on a network) a PRINTOUT of all the items that were pinged and responded during that PI Timeframe of cycle.
- Still yet another method... When contractor uses a Sampling Inventory ensure an appropriate confidence level – and that their PROCEDURES clearly describe how they plan to RANDOMLY SAMPLE the Government Property in their possession such that the entire “universe/population” is accessible.
POPULATION for AUDITING PHYSICAL INVENTORIES

• SOME EXAMPLES:
  – And even one more population, when the contractor uses and “ABC” or Stratified approach, the focus, or higher confidence rate needs to be on the “A” items, i.e., the higher value or more critical items dependent upon your Contractor’s procedures.
  – And a really interesting population for INVENTORY BY EXCEPTION (Opportunistic or “Transaction based Inventory) … with two components:
    1. Use the same population as you did for testing RECORDS – Look for any “action” performed on that item (Material or ST/ST/E).
       For any item NOT “Touched” during the Contractor designated period…
    2. Check that Separate Inventory Count Sheets of all items PHYSICALLY inventoried during the contractor designated period. [Note – the contractor needs to discuss this in their PROCEDURES!]

POPULATION for AUDITING PHYSICAL INVENTORIES

• REMEMBER –
  1. It is CRITICAL that you have a working knowledge of the different Physical inventory methodologies in use today and
  2. You have a clear WRITTEN DESCRIPTION of the PROCESS to be used by your Contractor, clearly outlined and organized in their Procedures!!!
  3. DEFINING your population MUST take into consideration the METHOD employed by the contractor in PERFORMING the Physical Inventory. Without understanding the method used – you MAY define your population incorrectly, i.e., it may be SPECIOUS!
CRITERIA to be AUDITED
PHYSICAL INVENTORIES

• NEXT TOPIC…
• BRAINSTORM!!!
• List the Criteria to be audited under this PROCESS….

CRITERIA to be AUDITED
PHYSICAL INVENTORIES

• My Opinion – some of the columnar headings for COMPARATIVE ANALYSIS:
  – Date(s) Scheduled – Date(s) Performed
    • The “Gross” Inventory
  – Date Performed versus Date Recorded
    • The Line Item inventory
  – Quantity on Record versus Actual Quantity
    • Accurate, or Overages and Shortages
  – Discrepancies Reconciled
  – Final Adjustments and Losses Reported to PA
POSSIBLE WORKSHEET DESIGN
To provide Audit Evidence

SPECIFIC CRITERION HEADINGS

<table>
<thead>
<tr>
<th>BLOCK ANSWER</th>
<th>INDIVIDUAL SAMPLE ITEMS — TESTING QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SAMPLE NUMBER</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These two columns can be treated as a BLOCK ANSWER. Contractor’s Procedures MUST provide PLANNED dates of Performance and then the actual count sheets show ACTUAL DATE PERFORMED.

See DFARS 252.245-7002(b)(2) for the discussion of REASONABLE ADJUSTMENTS of low-risk consumable material and the METRIC established by the contractor for managing this action. Contractors need to establish the limits of what IS a reasonable adjustment versus what IS a LOSS!

POSSIBLE WORKSHEET DESIGN
To provide Audit Evidence

EVIDENCE OF TIMELY POSTING

<table>
<thead>
<tr>
<th>DATE Individual Item Inventory was PERFORMED</th>
<th>DATE Individual Item Inventory was RECORDED/POSTED</th>
<th>TIMEFRAME was in accordance with Contractor’s PMS Procedures</th>
<th>ENTRY on Record Indicates it is a PHYSICAL INVENTORY POSTING (Unless Inventory by Exception)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information from the Inventory Count Sheet</td>
<td>Information Posted to the Item’s Record (Manual or Automated)</td>
<td>ADEQUATE?</td>
<td></td>
</tr>
</tbody>
</table>

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POSSIBLE WORKSHEET DESIGN
To provide Audit Evidence

### RECONCILIATION OF
MATERIAL ITEMS ABOVE "REASONABLE" ADJUSTMENT THRESHOLD* and
NON-MATERIAL ITEMS NOT FOUND DURING PHYSICAL INVENTORY

<table>
<thead>
<tr>
<th>DATE OF RECONCILIATION</th>
<th>QUANTITY DISCREPANT AFTER RECONCILIATION</th>
<th>CAUSE OF ERROR, e.g., Miscount, Error in posting, Transcription Error?</th>
<th>IS CORRECTIVE ACTION REQUIRED FOR INDIVIDUALSAMPLE ITEM?</th>
</tr>
</thead>
</table>

* NOTE – Shortages of items of material BELOW the THRESHOLD of normal and reasonable inventory adjustments, i.e., losses of low-risk consumable material such as common hardware, as agreed to by the Contractor and the Government Property Administrator GENERALLY should **NOT** undergo research and RECONCILIATION. They are product of normal process variation – so long as they are BELOW the agreed upon THRESHOLDS!!!

**NOT EVERYTHING NEEDS TO GO THROUGH A RECONCILIATION PROCESS!!!**

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POSSIBLE WORKSHEET DESIGN
To provide Audit Evidence

### REPORTING OF PHYSICAL INVENTORY RESULTS

<table>
<thead>
<tr>
<th>DATE SCHEDULED IN CONTRACTOR'S PMS for PHYSICAL INVENTORY Results (completion) to be REPORTED to PA</th>
<th>DATE OF PHYSICAL INVENTORY Results ACTUALLY REPORTED to PA</th>
<th>REPORTING was ACCOMPLISHED in accordance with Contractor's PMS Procedures</th>
</tr>
</thead>
</table>

FOR EACH SAMPLE ITEM: Adequate – NO SIGNIFICANT or MATERIAL defects.
Inadequate – cite SIGNIFICANT or INADEQUATE defects.

**IMPORTANT!!!**
WHEN EVALUATING A SAMPLE – REMEMBER THE ISSUES OF SIGNIFICANCE and MATERIALITY!!!
YOU MUST CONSIDER BOTH A QUALITATIVE AND QUANTITATIVE EVALUATION OF THE SAMPLE!
PHYSICAL INVENTORIES

• So, each process requires that you
  – Properly Define The Populations
  – Determine Applicable CRITERIA
  – Design an appropriate WORKSHEETS….

The Tough Part – actually doing it, as it is a LABOR INTENSIVE PROCESS!

PHYSICAL INVENTORIES

• Some Closing Concerns:
  – Physical Inventories SHOULD be performed WITHOUT KNOWLEDGE of the RECORDS BALANCES! (Prevents Pencil Whipping the Process)
  – Physical Inventories GENERALLY should be performed without a “LISTING” of all the property to be inventoried!
    • Why? Because if you only check from the record to the floor in doing a Physical Inventory – what do you do about things NOT on the list?
    • Have we worried about this in other PROCESSES?
    • Yes!!! Doing a Property to Records review to ensure that a RECORD had been created for ALL Government Property.
    • Would a REVERSE ANALYSIS be appropriate under THIS process review?
      – YES!!! To ensure that EVERYTHING SCHEDULED for a Physical Inventory HAD been inventoried!
THANK YOU!

Dr. Douglas N. Goetz, CPPM, CF
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INTERMITTENT DAU PROFESSOR
Hopefully a Good Instructor.

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