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NAVAL SUPPLY SYSTEMS COMMAND

Fleet & Industrial Supply Center

Norfolk

Ocean Terminal EPC Project

Ready. Resourceful. Responsive!

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The Issue

- **Manifest Accuracy and Transshipment On Hand Validity**
  - ***An unacceptable number of shipments get into SEAVAN containers without having been scanned/documented.***
    - **Undocumented shipments do not go on the consist, the manifest, or in the RF-Tag**
    - **Problems for the receiving activity**
    - **Shipments remain on the CFS on-hand journal**
    - **Research is required to identify whether or not the shipment was truly delivered**

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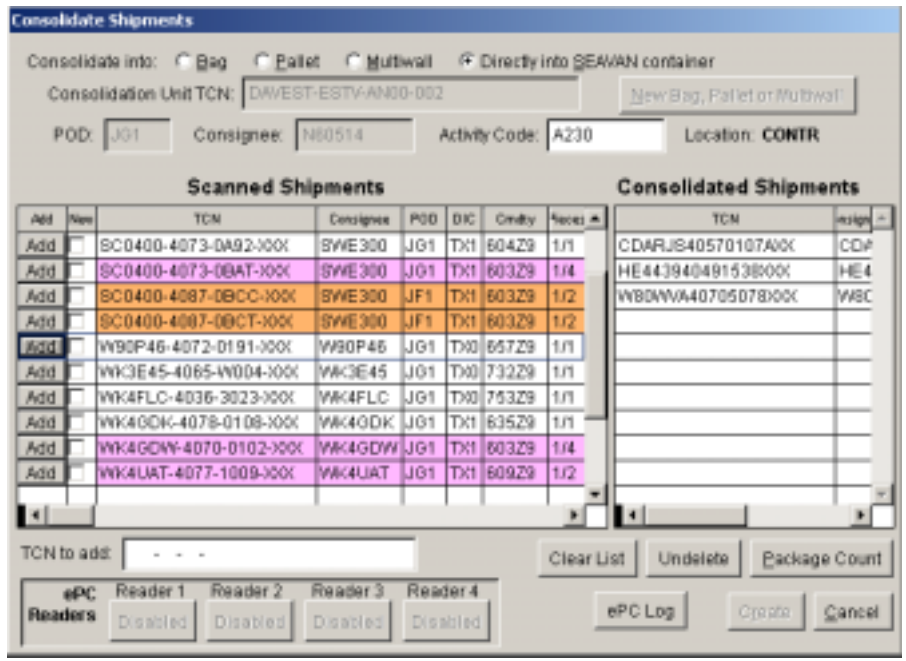
Concept of Operations

- **Receiving**
  - ***Alien Technology EPC reader with circular antenna added to each receiving workstation.***
  - ***Receiving software changed to add the step of reading an EPC tag before printing each FISC Norfolk Internal Tracking Label (FNITL), and linking that EPC ID with the TCN and piece number.***

Concept of Operations

Stuffing

- *As EPC tags are read by the reader, their associated TCN appears on a list of scanned shipments.*
- *A resetable counter (similar to a trip odometer in a car) indicates how many EPC tags have been added to the list since the counter was last reset.*
- *Shipments are color coded to help user spot anomalies or potential problems.*
- *User can add shipments to the list by keypunching the TCN or by scanning a linear or 2D barcode.*
- *Moving shipments from the left list to the right places the shipment in the container.*



Stuffing Workstation Design

- **The ability to get reliable reads results from the multiple-functionality of the workstation.**

Palletized shipments with only a few EPC tags get driven through the "arch"

Small packages are individually run in front of a reader on a gravity conveyor.

Pallets of numerous individual shipments are rebuilt from the original pallet to a blank pallet in front of a reader, allowing the reader to see each box.

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Lessons Learned

- **100% Read Accuracy**
  - ***Hands-Off Approach?***
    - **Technology just isn't there yet!**
    - **Business process must compensate.**
  - ***Must validate number of reads expected against number of reads achieved***
  - ***Visual and Audible Feedback to User***
- **Label placement critical**
  - ***Don't have luxury of uniform boxes***
  - ***Workforce must be trained in principals of RF, and understand why certain label positions work and others don't***
  - ***Optimal EPC location is not always the optimal human-readable label location***

Lessons Learned, Cont.

- In stow, labels need to face out, so shipments can be picked based on human readable information from the label.

- When a forklift picks up the pallet, however, this forward-facing side of the pallet is against the mast.
- Optimal EPC placement would be on the side of the box.
- Compromise required.

Lessons Learned, Cont.

- **Some freight requires a backer or spacer**
  - ***Self-adhesive foam weather stripping (from any hardware store) acts as a great spacer on RF-unfriendly surfaces.***

Lessons Learned, Cont.

- **Collateral Reads**
  - *Reading area needs to be isolated from freight in stow*
  - *Unexpected reads caused by reflections and bounces*
  - *An enclosure around the read area will mitigate*
- **Interference**
- **Integration to AIS**
- **Business Process Changes**
- **Workforce Acceptance**