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Depot level repairable carcass tracking and the Electronic Retrograde Management System

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NAVAL POSTGRADUATE SCHOOL

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Depot Level Repairable Carcass Tracking and the Electronic Retrograde Management System

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December 2006

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DEPOT LEVEL REPAIRABLE CARCASS TRACKING AND THE ELECTRONIC RETROGRADE MANAGEMENT SYSTEM

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Submitted in partial fulfillment of the requirements for the degree of

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December 2006

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ABSTRACT

The purpose of this Project is to develop a Department of the Navy related case study for use in future Supply Chain Management courses at the Naval Postgraduate School, Monterey, CA. Pursuant to this objective the Depot Level Repairable program of the U. S. Navy will be studied. The case progresses through a background of the DLR program, the Advanced Traceability and Control (ATAC) system currently in fleet wide use and the improved process being implemented, the Electronic Retrograde Management System (e-RMS). Through a study of the component processes partnered with selected data for analysis the case will highlight several fundamental concepts of supply chain management and provide for both qualitative and quantitative discussion.

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TABLE OF CONTENTS

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LIST OF FIGURES

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LIST OF TABLES

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I. DEPOT LEVEL REPAIRABLE CARCASS TRACKING

A. INTRODUCTION

The Navy's Depot Level Repairable (DLR) program was established as a means of battling the ever increasing cost of repair parts for an array of technologically advanced weapon systems, ships and aircraft. Through the DLR program, selected components are specially identified for repair or refurbishment at the depot level of maintenance, typically at a Naval Aviation Depot (NADEP), or the original equipment manufacturer such as Raytheon or Hughes[1]. By repairing or refurbishing equipment and components, the Navy saves a significant amount of money over acquisition of new replacement components. This process utilizes a supply chain that links the end use activity (ship, aviation squadron, shore station) with the depot level maintenance site.

For two decades the Navy DLR program has utilized the Advanced Traceability and Control (ATAC) system for retrograde material management. At its inception ATAC was a dramatic step forward; however, as will be shown in the following pages, there were still some significant shortcomings that needed to be overcome.

Over the last few years the Navy has been implementing the electronic Retrograde Management System (e-RMS) at select shore activities and aboard certain ship classes, eventually planning to have the system implemented fleet-wide[2]. An evolutionary next step, e-RMS utilizes current technologies such as a web-based interface and bar-code scanning to provide for some dramatic improvements in the retrograde supply chain.

This case will take the reader through an explanation of the basic DLR concept into the ATAC application and its affects on the supply chain and finally discuss the next generation system currently being fielded, the electronic Retrograde Management System. Data for further analysis and process recommendations will close out the case.

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[1] Repair is now approximately 50% commercial and 50% organic (Navy or interservice), Beverly Thomas, NAVICP 0344, Repairable Distribution

[2] Over 150 sites had been activated as of 25SEP06, Data provided by Paul Wells, TARP

B. THE DLR SUPPLY CHAIN

The general concept of the DLR program is a simple closed loop supply chain that manages retrograde material by linking an end use activity such as a ship, aviation squadron or shore station with the depot level maintenance site as depicted in Figure 1. Through this supply chain an activity returns a broken part, referred to as a Not Ready For Issue (NRFI) part, to the assigned Depot, which performs the required repair and refurbishment actions to return the component to a Ready For Issue (RFI) condition at which point it is available for issue to a fleet unit.

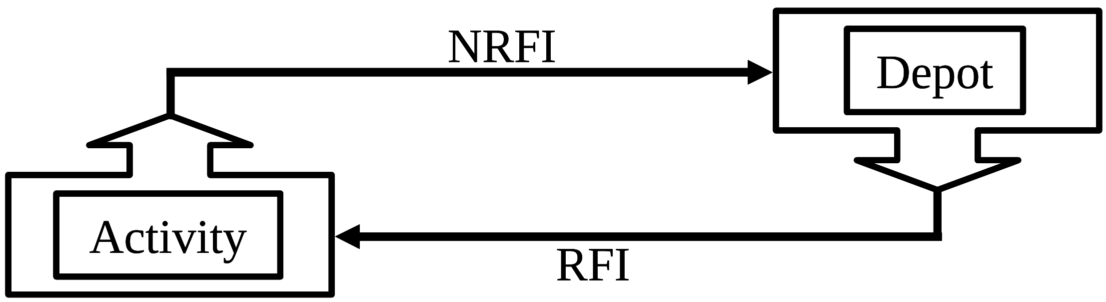

Figure 1. Basic DLR Supply Chain

Retrograde supply chain management has two basic phases, phase one occurs within the lifelines of the activity and consists of the internal processes undertaken to move the material off the ship to the turn-in point, known as the “Carcass Tracking” phase. Phase two, the “SIT” (Stock in Transit) phase, handles the movement of the material from the turn-in point to the depot or storage point. This will be discussed in greater detail in chapter two.

C. DLR COST STRUCTURE

A critical component in the DLR program is the cost structure built into the system. DLR parts carry two distinct prices, a Standard Price and a Net Price. The Standard Price is the price paid for a new component from a manufacturer while Net Price is what gets charged for a refurbished part.

As an example[3], consider a Klystron Tube for a radar assembly: it is a single large component with, say, one hundred internal subassemblies and due to its complexity is

[3] Example is for illustrative purposes only, component design and prices are not factual.

beyond the capability of organizational level (O-level) or intermediate level (I-level) maintenance and must be returned to the manufacturer (Depot level) for repair.

Our Klystron tube costs the Navy $115,000 to purchase new from the manufacturer; this includes the cost to acquire or produce the 100 subassemblies and then assemble the single component, and this $115,000 price tag is the Standard Price. The Net Price is either a contractually agreed upon price based on known component failure rates and associated repair costs or it is determined as the average price of repairs made to the component over time.

Assuming the former is the case a realistic assumption for repair would be a price of $20,000 per tube repaired. In this case the Navy pays $20,000 to get a refurbished Klystron tube into the inventory and recognizes a cost avoidance of $95,000, a savings of nearly 83%.

If we assume the latter is the case and that ten repair actions have been made on Klystron tubes over time and individually they cost (including all parts, materials and labor) $11000, $8000, $18000, $19000, $27000, $32000, $9000, $14000, $12000 and $20000 then a Net Price of $17,000 would be charged for the next component issued in RFI condition from the manufacturer. The DLR program just saved the Navy $98,000 on a single component, a savings of roughly 85% off the new component cost.

There is, however, a catch. The wholesale system provides the RFI components to the Navy stock system at the Net Price with the understanding that at some point they will receive the NRFI part (referred to as a carcass). If an activity fails to return the carcass, then they will be charged the Standard Price for the component. The difference between the Net and Standard Prices is known as a carcass charge and it can have significant negative impacts on an activity's budget. Since Net Price is typically between 25% and 75% of the Standard Price (about 15% in our example), it is extremely important that DLR carcasses are returned promptly to the designated point.

Traditionally the Navy has paid millions of dollars in carcass charges annually due to the loss, damage or misidentification of retrograde material returned to the DLR system. In addition to the direct dollar cost of the material there are also indirect costs to consider such as the man-hours spent managing the program and the operational impact of down or degraded systems.

D. INTERNAL RETROGRADE MANAGEMENT

While all activities differ to some degree in their internal management practices it is important to recognize some of the common steps undertaken by all activities. Certain shore activities and large ships (aircraft carriers and large-deck amphibious ships) have an inherent maintenance capability to repair components that would otherwise be considered depot level. A circuit card for a radar assembly on a cruiser may be considered a DLR while that same circuit card could be repaired locally on the aircraft carrier because of the facilities, test equipment and trained technicians available. There are also distinctions made between normal DLRs and Aviation DLRs (AVDLRs). However, the basic process flow is similar and the key points of failure are common enough to warrant a general discussion based on the operations of a small surface combatant (cruiser, destroyer, frigate) in order to retain simplicity.

When a piece of equipment onboard ship fails, the responsible technician for that equipment will perform some level of troubleshooting to determine the probable cause. A parts request is submitted, a requisition is generated, and a carcass turn-in is received and processed for shipment to the nearest turn-in point. This generic process is outlined in figure 2 below; processes which are shaded are possible points of failure due to manual entry and human action. In addition to some of the more common causes highlighted in the bubbles there are other possible circumstances, too numerous to mention, that could lead to a ship receiving a carcass charge for retrograde material that is lost or damaged beyond repair.

Some key points to draw from this process are the amount of manual entries required for the submission of the parts request, parts requisition and carcass turn-in document as well as the reliance upon possibly outdated reference materials. This process is the basis of the Carcass Tracking phase and it is important to note that the ship is responsible for any carcass charges incurred throughout this phase until the retrograde material is received and TIRed (Transaction Item Record)[4] by the turn-in point. Also of note is the timeline attached to this process, discussed later in chapter 2 and visually represented in Figure 9. While the actual gates are not as important, what is important is that failure to meet a gate will result in a carcass charge to the ship. While it can be reversed it places additional workload on the activity concerned.

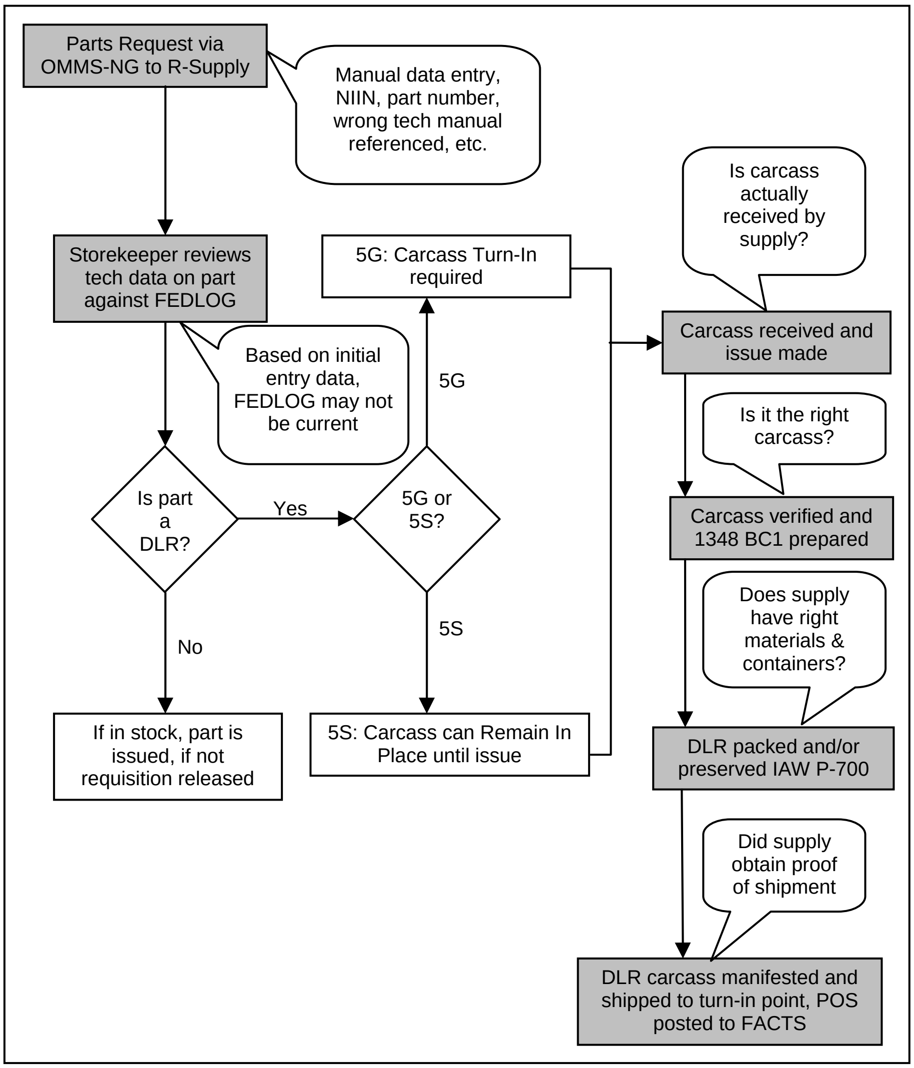

Figure 2. Activity DLR Decision Tree

4 Transaction Item Record is any electronic record update affecting a DLR component. Typical TIRs will be such things as receipt of a turn-in by the ATAC, shipment to a depot, and receipt at depot. TIRs are used to track the progress of a DLR carcass.

- OMMS-NG: Organizational Maintenance Management System – Next Generation
- R-Supply: Relational Supply (Supply system used for stock management)
- FEDLOG: Federal Logistics – Listing of all parts and material in service as well as individual identifying information
- NIIN: National Item Identification Number
- 1348: Form used to document turn-in of the material
- BC1: Code that identifies material being turned in as not being verified ready for shipment to a depot, requires independent verification of material at the turn-in point
- POS: Proof of Shipment
- FACTS: Fleet Automated Control Tracking System

At this point the activity should have a DLR carcass ready for shipment; but where should it be sent? Is it really the right carcass relative to the documentation prepared? Does the activity have the necessary packaging materials and containers and have they prepared the carcass for shipment properly? Who will be responsible for the material once it is shipped? The baseline DLR program had no answers to these questions. The Navy recognized these issues and set out to develop an improved way of managing the retrograde material pipeline.

II. ATAC – THE FIRST GENERATION SOLUTION

A. BACKGROUND

In 1986 the Navy instituted the Advanced Traceability and Control (ATAC) system as an improved means of managing the DLR return process. ATAC was created to simplify and improve the retrograde supply chain for the fleet. ATAC aimed to reduce the work-in-process inventory of individual parts and to shorten the overall pipeline for returning NRFI parts to the depot. Operating on a hub and node concept, ATAC promised transportation savings through consolidation of activity shipments at the hubs and nodes as well as labor and processing savings recognized through improved utilization of information systems in addition to the gains made by consolidation.

ATAC benefit objectives included a reduction in fleet workload, a reduction in the amount of damage to material beyond the initial failure, reduced number of lost and misdirected shipments, reduced transportation costs and an improvement in the accuracy of the right part getting to the right repair site at the right time.

The ATAC hubs provide a defined set of services which include:

- Receiving Material from fleet units
- Material Identification (screening for accuracy)
- Disposition Instructions (what to do with the part)
- Packaging and Protection in accordance with the P-700[5]
- TIR (Transaction Item Reporting) Data Reporting
- Transportation (Carcass Express or Routine)
- Proof of Shipment Data (In-Transit Visibility)
- Customer services related to frustrated or missing shipments

[5] Now known as the Common Naval Packaging P-700 or CNP-P700, it is a web based search tool used to find packaging requirements for Navy items managed by the Naval Inventory Control Point (NAVICP), the Naval Operational Logistics Support Center (NOLSC) and the Marine Corps. Searches for packaging requirements can be done using the nine digit NIIN (National Item Identification Number), part number or the part name

ATAC established two hub sites, one on the east coast in Norfolk, VA and one on the west coast in San Diego, CA. Numerous nodes were established in high fleet concentration areas around the world.

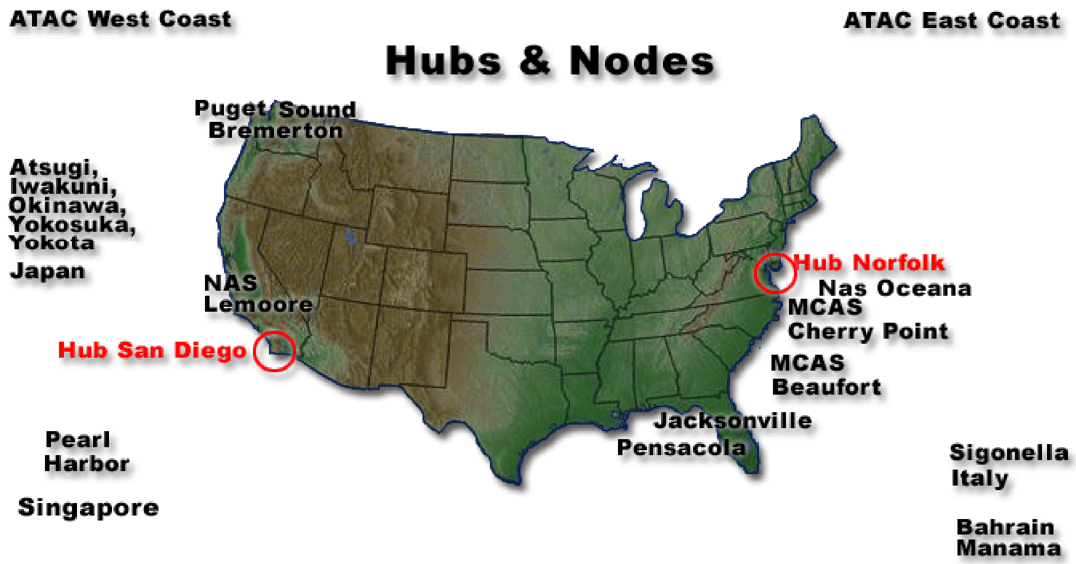

Figure 3. ATAC Hubs & Nodes[6]

B. ATAC DLR SUPPLY CHAIN

Revising the basic process laid out in Figure 1, an intermediate step is now inserted between the activity and the depot. Material originates from an activity and depending upon the unit's geographic location is turned in either directly to the local hub or to the nearest node. If material is sent to a node it is consolidated at that node and then shipped to the appropriate hub site for further disposition.

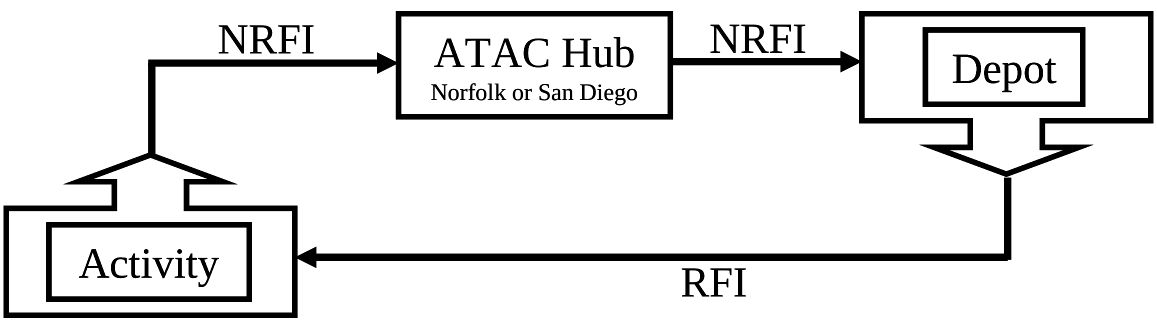

Figure 4. Three stop DLR Supply Chain

[6] Graphic taken from MBA Professional Report, "A Review of Reverse Logistics and Depot Level Repairable Tracking in the United States Navy" of June 2005, Stevenson, Toussaint and Edwards

ATAC hubs have their own set of processes (Figure 6), which they apply to each NRFI ("F" condition) part they receive from an activity. The process flow determines the disposition of the part in question with each part sent either to a Designated Overhaul Point (DOP) for repair/refurbishment or to a Designated Support Point (DSP) for storage until such time as they are needed to replenish RFI ("A" condition) stocks for fleet issue when they will be pulled from storage, re-inspected and sent to a DOP.

The revised supply chain for DLR material now looks like this:

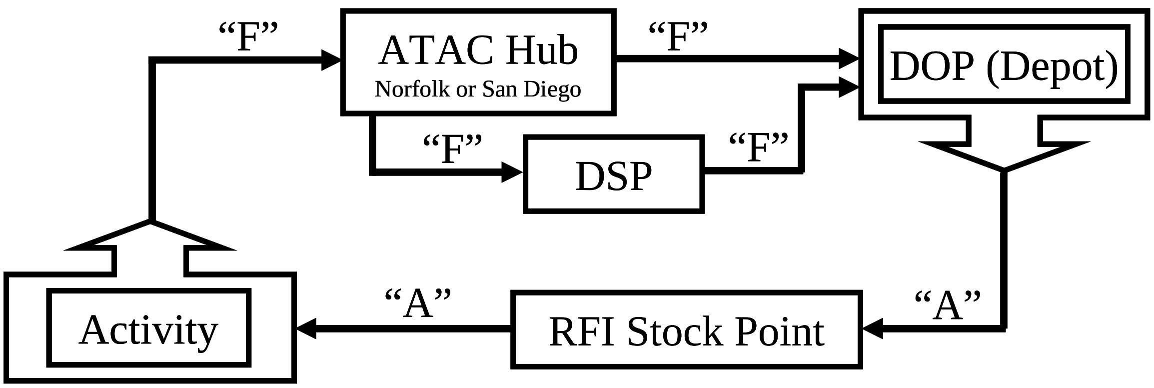

Figure 5. Full DLR Supply Chain

While the ATAC system did provide many improvements and met most of its objectives there were still serious shortcomings in the system's accuracy (many points of manual entry = many points of potential failure), its ability to provide accountability over stock in transit (SIT), and limited in-transit visibility of parts moving between an activity and a depot. Additionally there was an "alarmingly high rate"[7] of parts arriving at the DOPs in a "beyond capability of repair"[8] condition due to improper handling and packaging which caused additional carcass charges to be issued to fleet units. In addition to all this, there remained an excessive amount of work required by the operational units to track carcasses and research and resolve carcass charges.

[7] Gregg Gibeault, CNSF Fleet Carcass Tracking Office

[8] Beyond capability of repair means that a component has been so heavily damaged that it either cannot be repaired or it is not financially viable to repair it (i.e. melted circuit card , crushed gyro assembly)

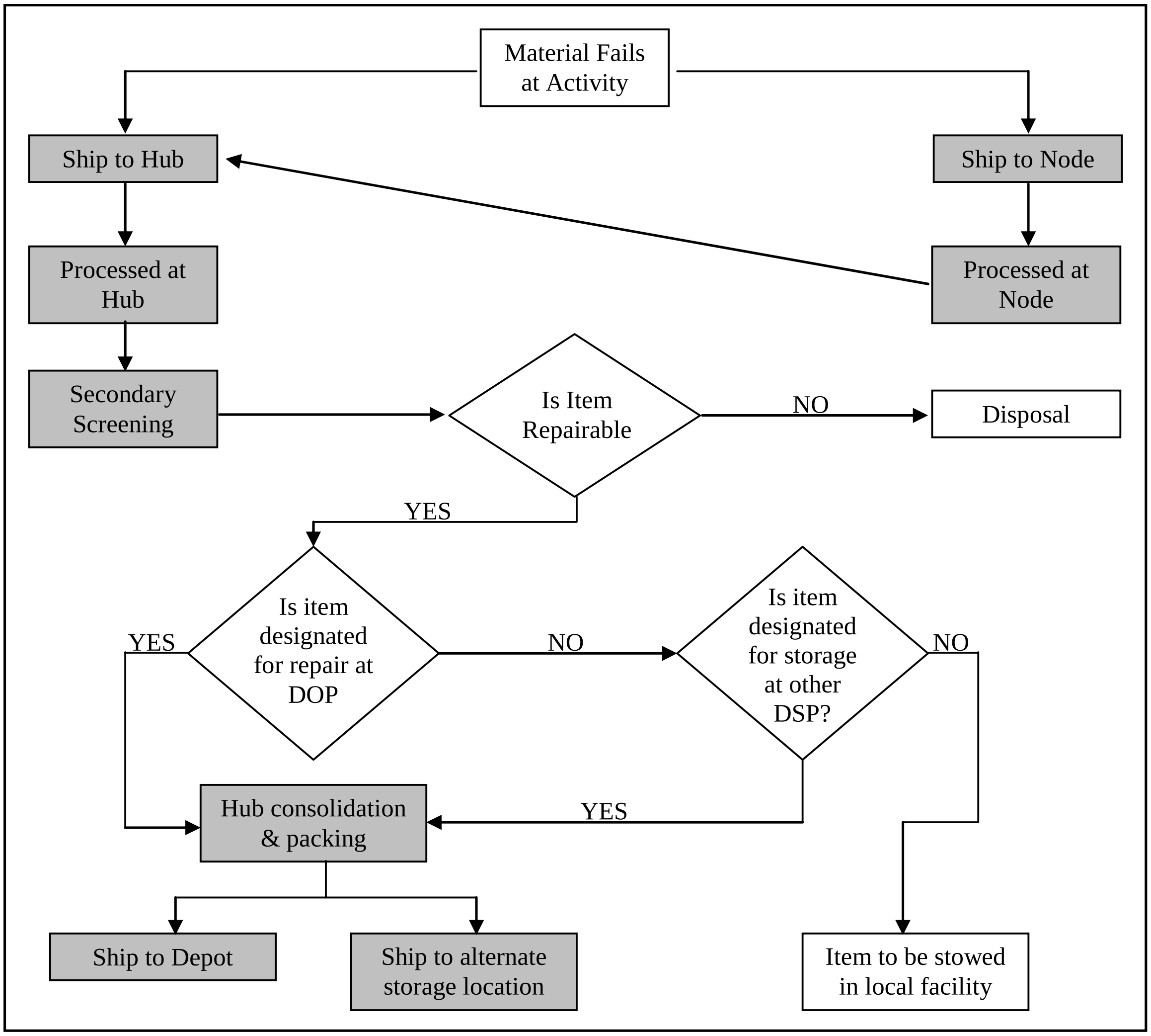

Figure 6. ATAC Process Flow[9]

Similar to what was outlined in the "Activity DLR Decision Tree" diagram (Figure 2) there are numerous points of potential failure within the ATAC system (figure 6) as indicated again by the shaded process boxes.

Shipment to the hubs or nodes bore a high loss rate due to the high operational tempo and multimodal means often employed to get a part from origin to destination. A DLR from a small ship may go via helicopter or high-line transfer to another ship then cross-decked again to a logistics force vessel that will carry the part into their next port of call where it gets handled through local sources for transshipment to a regional node or

[9] Adapted from MBA Professional Report, "A Review of Reverse Logistics and Depot Level Repairable Tracking in the United States Navy" of June 2005, Stephenson, Toussaint and Edwards

stateside hub. The attention to detail given to manifests and document numbers during this entire process is often lacking, not because of negligence but due to the pace at which material is physically moved from point to point, necessitating a high “box-kicking” throughput in order to keep the decks clear.

Hub and node processing requires manual reading and entry of manifest and item data followed by the secondary screening process that physically opens every part submitted under a “BC1” document, removes the part from its packaging, inspects the part for accuracy against the shipping documents and then repackages the part, hopefully in accordance with the P-700 requirements.

Hub consolidation induces errors in manifesting or routing due primarily to the human involvement required to screen documents and route material accordingly. The hubs then have to generate their own 1348 document to ship the material to the appropriate site, at this point the material is labeled as “BC2” meaning that what the label says is in the box is accurate.

This combination of processes may involve as few as three people given certain assumptions such as one technician, one storekeeper who handles the DLR from cradle (technician) to grave (hand-carries it to the ATAC hub) and one ATAC employee who performs all the necessary processes to TIR the DLR, ship or store it and close out the process. On the other hand, a DLR from a deployed vessel may realistically pass through the hands of twenty or more different people before reaching its final destination, each of whom has the potential to induce an error into the process.

Summarizing and visualizing the two phases previously described we can view the traditional retrograde material pipeline as such:

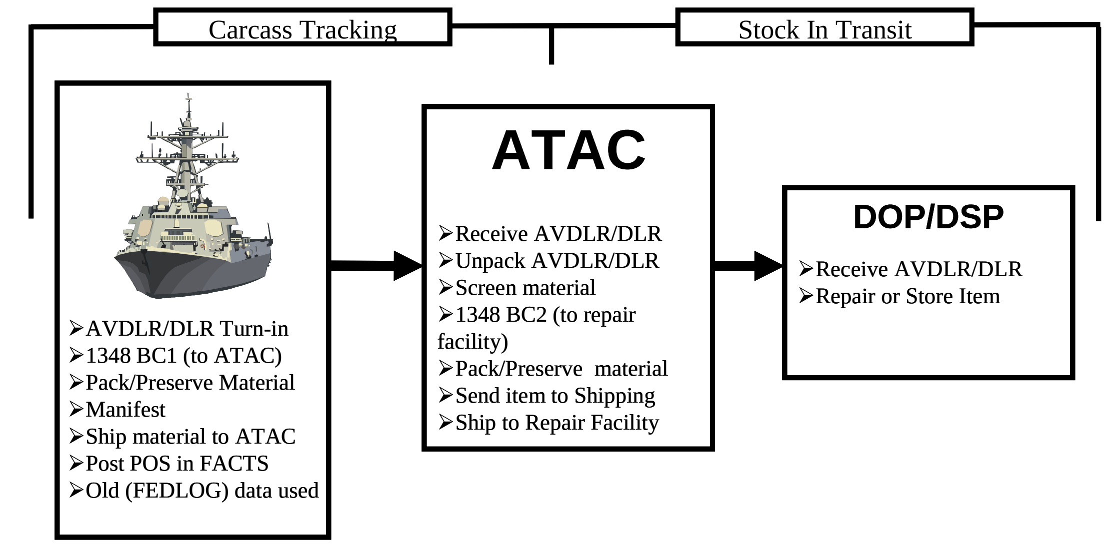

Figure 7. ATAC System Retrograde Material Pipeline

C. ATAC SYSTEM COMMUNICATION AND THE BK PROCESS

Using ATAC as a choke point for the DLR supply chain provided Naval Inventory Control Point (NAVICP) with a system of checks and balances that sought to prevent activity carcass charges by forwarding DLR carcasses from the originating activity to an ATAC hub or node for processing and further shipment to the proper DOP or DSP (Figure 8). Activities were relieved of the carcass charge burden once ATAC processed and eventually TIRed the carcass associated with the DLR requisition.

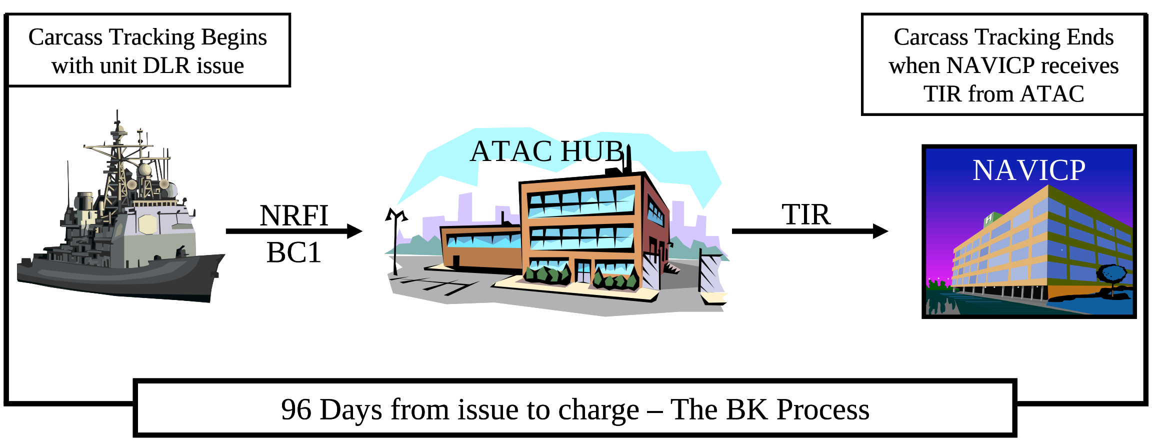

Figure 8. Fleet BK Process Overview[10]

[10] BK is a two-letter code prefix used in association with carcass tracking, it has no independent meaning.

The BK process timeline is depicted in figure 9. Key time gates are 45 days from part issue at the activity to issuance of a BK1 from NAVICP if the carcass has not been TIRed by the ATAC site. The activity then has 21 days to research the discrepancy and respond with a BK2 before receiving a BK3 notification of charge. Once a BK3 has been issued the activity has 30 days to dispute it (via BK2 response) before the activity has to accept the carcass charge. [11]

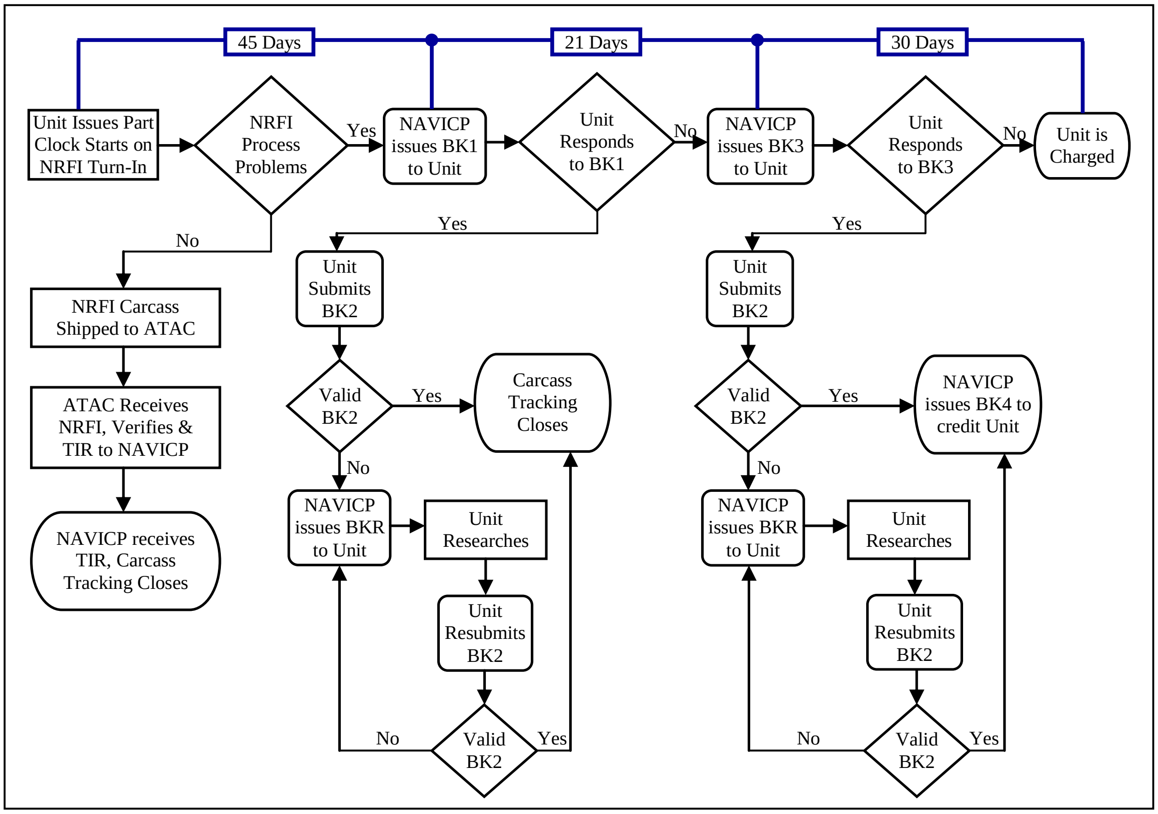

Figure 9. ATAC System BK Timeline Process Flow

The fundamental problem with the ATAC system is the lack of real-time communication and visibility of the carcass between the activity, NAVICP, and ATAC. As described, the BK process has three predominant failings:

[11] BK1: (NAVICP to activity) Where is the carcass?

BK2: (activity response to NAVICP) This is what happened to the carcass.

BK3: (NAVICP notice to activity) We are billing you for the lost carcass.

BK4: (NAVICP notice to activity) We are crediting you for the erroneous carcass charge

BKR: (NAVICP response to activity) Your BK2 was not considered adequate response

- It is a reactive system
- It is an administrative burden
- Financial liability is not correlated with physical ownership

Activities are dependent upon the efficiency of the ATAC hubs and nodes charged with TIRing carcass turn-ins. If a hub or node is inefficient, misplaces a turn-in or experiences some other unexpected impact on operations the originating activity is not aware of the discrepancy until after NAVICP issues the BK1. Responding reactively the activity now has 21 days in which to research and resolve the discrepancy. This process can be complicated by a multitude of factors including; lack of access to the carcass (it was already transferred off site), disputes over component serial numbers, conflicts in documentation due to data entry errors and a host of others. Often times these delays cause the activity to miss the 21 day deadline and they are now faced with a BK3 notice of a pending carcass charge. The activity now has another 30 days to achieve resolution of the issue before being forced to accept the charge into their accounting system, while the charge can be refunded via a BK4 at a later date if the issue is resolved it should be readily apparent that a great deal of time and effort is expended on carcass tracking.

The issue of financial liability revolves around the way carcass charges are assessed. An activity that loses or destroys a carcass is rightly liable for the charge, however, when the activity does everything properly and the material is lost or destroyed at some later point in the pipeline but before it is TIRed out of carcass tracking by an ATAC site the charge is still assessed against the originating activity. What this led to was a practice amongst fleet units to hold carcasses at the activity until they could be hand-carried to one of the ATAC hubs or nodes. To avoid BK3 charges at the 45 day point the activities would manipulate the BK system to defer the BK3 long enough to deliver the material directly to ATAC and then obtain hardcopy proof of delivery to ATAC and in many cases wait until ATAC personnel actually processed and TIRed the material. While beneficial to the individual activity this practice delayed the entry of repairable items into the pipeline, usually to the detriment of overall fleet readiness.

Another key function of the ATAC sites is the 100% inspection of all material received under a BC1 document code (material requires inspection for verification). ATAC personnel would open and inspect all items for proper identification of material against the shipping documentation, correct preservation and packaging in accordance with the CNP-700 and general condition of material to ensure it is actually "F" condition vice "BCM". This inspection was a preventive means of maintaining the integrity of the DLR pipeline, because all material was inspected prior to induction to a DOP or DSP there was a reasonable assurance that what was held as inventory was truly repairable, which meant that NAVICP could forecast quite accurately what it would cost to repair/refurbish any given number of items. Once ATAC had inspected and repackaged the material they would code it as BC2 (material has been inspected and verified, no further action necessary) and ship it to the designated point for repair or storage.

This inspection policy would prove to be costly; both in the labor required to perform the inspections and in the additional errors induced in the system from a second tier of human interface and manual data entry. Time delays caused by backlogs at the sites would lead to carcass charges being incurred at the activities requiring additional administrative efforts to resolve and although material left the ATAC sites coded BC2 this wasn't always the case leading to erroneous inventories in the DLR pipeline.

D. ATAC SUMMARY

The ATAC system provided a central management system for the handling of DLR retrograde material and achieved to some degree all of the objectives it was originally meant to accomplish.

While objectively successful there are certain areas in which the ATAC system was noticeably lacking, particularly asset visibility and communication between stakeholders. ATAC's policy of 100% verification on all BC1 retrograde material ensured accuracy and integrity of material in the wholesale supply chain. ATAC was able to reduce the WIP inventory by streamlining the turn-in process and consolidating shipment of material. Resident experts at the ATAC sites were well-versed on the requirement of the CNP-700 and had the materials available to ensure retrograde was properly packaged, avoiding further damage during shipment. TIR reporting for retrograde returned was moved closer to the customer than it had been before.

ATAC did introduce some new weaknesses into the system, the 100% inspection policy required that material be opened and removed from its packaging, adding touch-points to the carcass processing and increasing the chances for damage. Delays introduced at the ATAC sites often resulted in erroneous carcass charges being issued to the fleet activities. As an intermediate station in the pipeline ATAC was forced to read, enter and produce documentation for material moving through their sites introducing an entire new level of potential human interface errors. Perhaps most significantly though was the loss of asset visibility by the fleet unit that owned the carcass once the retrograde left their activity.

Although ATAC served the Navy well for nearly two decades the new millennium ushered in changes in the global environment that highlighted the operational shortcomings of the legacy system and served as an impetus for the next generational change to DLR asset management.

III. E-RMS – THE NEXT GENERATION

A. BACKGROUND

September 11, 2001 marked the beginning of a new age of operations for the Navy, one which would see a sustained operational tempo unmatched in recent decades and a concurrent reduction in operational and maintenance funding. This combination of factors brought to the forefront the inherent weaknesses and expense of the traditional DLR retrograde handling pipeline and an improved solution was sought.

The Naval Supply Systems Command sponsored a Retrograde Reengineering program beginning in October of 2002 which highlighted three key factors[12]:

#1) Information Technology – the cause of, and solution to, most of the problems

- One IT platform = e-RMS
- e-RMS was already ERP and NMCI compliant
- Provide all retrograde functionality in one system
- Retire or migrate 5 legacy systems (AORS, ATAC, RDO/RFI, WMPS, WMRS)
- $900,000 in annual savings beginning in FY05

#2) Do it right the first time

- Move TIR closer to the customer
- Allow the Fleet to screen BCMs (Beyond Capability of Maintenance), validate against requisitions with e-RMS
- Grant real-time access to live ICP data (disposition, priority, etc.)
- Let each activity do only as much as they can (site surveys)…China Lake vs. Norfolk vs. Singapore vs. USS LINCOLN vs. USS MITSCHER etc.

#3) Supply must drive transportation decisions

[12] NAVICP e-RMS brief prepared by Louis Koplin, NAVICP

- Single carrier contract, expected to save $1.5+ million beginning FY04
- Priority and speed of carcass returns based on current supply posture

The IT platform chosen to spearhead the reengineering initiative was e-RMS which is a web based tool that is designed to streamline the retrograde pipeline by allowing the proper identification, packaging and documentation of the asset. It matches the turn-in carcass against the requisition to ensure that credit is received by the activity. The system provides shipment tracking and asset visibility throughout the entire pipeline in real-time and greatly reduces the number of carcass “touch points”.

B. E-RMS SUPPLY CHAIN AND COMMUNICATION

The supply chain for e-RMS is conceptually identical to that for the ATAC system, retrograde material still moves from fleet units through the ATAC hubs and nodes until reaching its final destination for repair or storage. The major differences between the systems are the transition point from carcass tracking to stock in transit and the real time visibility of the carcass at all points in the supply chain.

The conceptual flow of material and associated process actions throughout the e-RMS retrograde pipelines are shown in figures 10 and 11. These graphics also illustrate the potential value of adding a web-based utility to track retrograde material throughout the wholesale supply chain. Touch points are greatly reduced by initiating SIT and turning off carcass tracking at the activity level. Each entity within the chain is independent of one another, which reduces the reliance of multiple touch points for carcass TIRing. Having independent entities also gives Naval Inventory Control Point (NAVICP) the ability to isolate problems that occur within the chain without sacrificing the readiness of the non-effected entities within the chain.

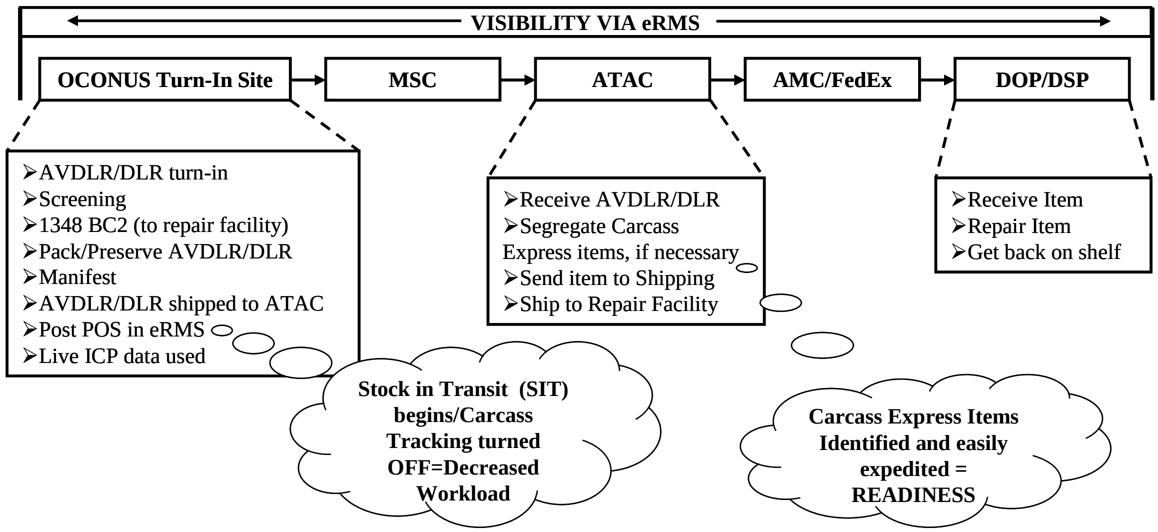

Figure 10. OCONUS e-RMS Retrograde Pipeline[13]

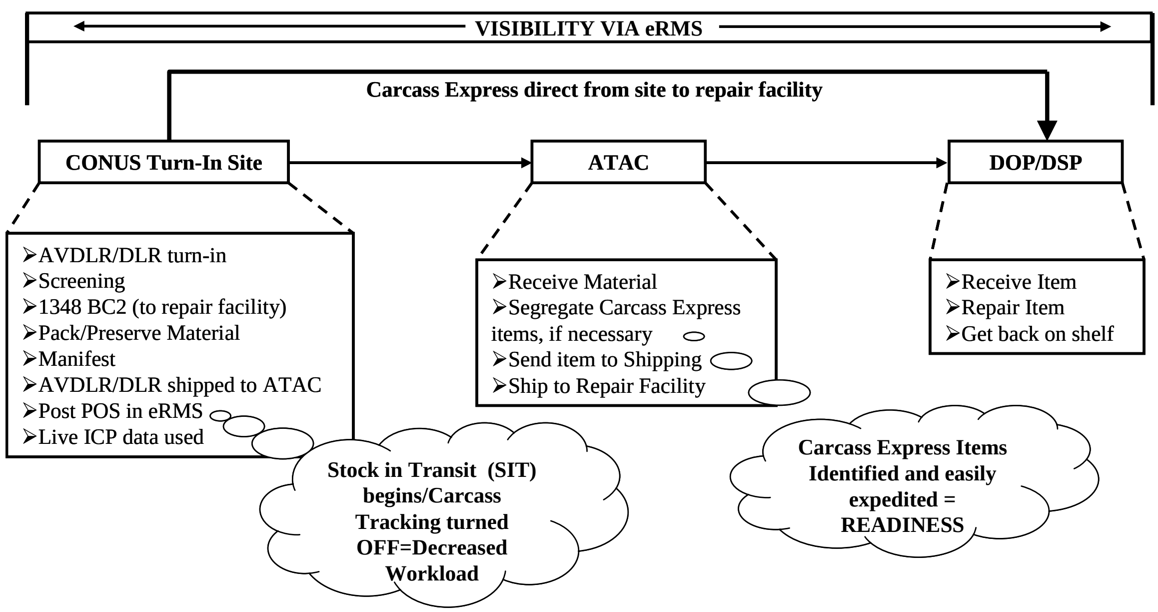

Figure 11. CONUS e-RMS Retrograde Pipeline[14]

C. E-RMS IMPLEMENTATION

By developing and implementing e-RMS NAVICP/Navy Supply Information Systems Activity (NAVSISA)/Navy Supply Systems Command (NAVSUP) provided activities with a web based “cradle to grave” visibility that was not accessible to them

13 Adapted from brief provided by Beverly Thomas, NAVICP 0344, Repairable Distribution

14 Ibid.

through the legacy ATAC system. Prior to e-RMS activities only had the ability to perform the following functions under the ATAC system:

- Identify retrograde
- Initiate Stock in Transit (SIT)
- Create bar-coded turn-in/shipping documents (DD1348-1s)
- Create shipping manifests and Military Shipping Labels (DD1387s
- Print a bar-coded DD1348-1 turn-in shipping document reflecting the Designated Overhaul Point (DOP)/Depot Supply Point (DSP) and other critical information
- Create shipping documentation for Repair and Return assets
- Identify appropriate shipping containers, Carcass Express, Crown Jewel, and Hazardous designated NRFI assets.

Through e-RMS activities became Retrograde Asset Managers with the ability to perform the actions listed above plus the following additional functions:

- Terminate carcass tracking
- Capture Proof of Shipment (POS)
- Capture Proof of Delivery (POD)

These additional features provide a proactive posture for activities within the wholesale supply chain. Activities can dictate the TIRing process and initiate SIT by posting POS/POD; effectively ending carcass tracking and eliminating the burden of reactively monitoring the BK process timeline. Communication difficulties experienced under the legacy system are eliminated with ATAC's role reduction to router and shipper and the activities ability to transfer carcass accountability to ATAC after posting POS/POD to e-RMS.

D. NAVSUP ACTIVITY MANAGEMENT THROUGH E-RMS

NAVSUP developed two management tools assist in tracking the progress of activities involved with e-RMS implementation. The first was the Retrograde Dashboard, which tracked wholesale supply chain effectiveness; and the second was the Proof of Shipment Quality Assurance Report (POS QA), which tracked the activities use of POS postings in relation to stock in transit ordering (SIT).

The Retrograde Dashboard management tool, shown in Appendix A, measured efficiency of the wholesale supply chain in time (Cycle time, measured in number of calendar days, for NRFI material to travel through the wholesale system) and Quality (General health of the wholesale system). Measurements of time were weighted at 60% of importance for management purposes and concentrated on the following metrics:

- Fleet (or Supply) Time: Days until NRFI is either received at ATAC or is worked and shipped (POS posted) using e-RMS
- ATAC (or Transportation) Time: # of Days until ATAC provides proof of delivery (POD) to DOP/DSP
- DOP/DSP Time: # of Days until DOP/DSP processes receipt TIR
- Measurements of quality were weighted at 40% importance and concentrated on the following metrics:
- Percent Turned-In: Did the Fleet turn in as many carcasses as were owed?
- Percent Delivered: Did NAVSUP get 100% POD on the carcasses that were turned in?
- Percent TIRed: Did the DOP/DSP provide receipt TIR on every delivery?
- The POS QA report, shown in Appendix 2, provided NAVSUP with a means of determining which activities where fully utilizing e-RMS and which required additional training by examining the following metrics:
- Number of BC2s produced: NRFI Material worked and screened

- Number of Auto POS transactions: Activity did not post POS, but ATAC reported receipt, so "dummy" POS was automatically loaded instead by e-RMS.
- Number missing POS with DOP/DSP TIR: NFRI arrived at DOP/DSP without activity posting POS or going through ATAC for transportation.
- Number missing POS without DOP/DSP TIR: Activity did not post POS and did not receive credit for turn-in. Carcass Tracking still open, material may be onsite or lost.
- Number of local deliveries without POD – In this case, activity must post POD also to get credit for turn-in

Activities are required to submit NFRI materials to ATAC under a BC2 code. The POS QA management tool allowed NAVSUP to determine which activities were failing to code their NRFI materials, posting POS or POD, and failing to submit NRFI materials after requesting SIT.

E. ACTIVITY COMMUNICATION THROUGH E-RMS

The legacy ATAC system offered a BK Timeline messaging system for activities needing to communicate with NAVICP about discrepancy issues concerning NRFI materials. Activity BK2 message responses to NAVICP generated BK1/3/4 messages were essentially the only way to communicate discrepancies concerning NRFI materials within the wholesale supply chain. As part of the web based functionality of e-RMS NAVSUP developed a web Shipping Discrepancy Reporting system (SDR)[15] to improve communication efficiency for activities using the e-RMS system. Instead of waiting for a discrepancy message an activity can post information concerning a NRFI submission to ATAC. SDR also allows NAVICP to track SIT requisitions initiated without POS/POD posting to e-RMS by the activities. With SDR the frustration of singular points of communication is replaced by interactive problem solving with all entities involved in the wholesale supply chain.

[15] Snapshot of SDR login page is pictured in Appendix C

F. TECHNICAL ASSISTANCE FOR REPAIRABLE PROTECTION

Between August 2000 and July 2002 the USS ABRAHAM LINCOLN (CVN72) lost accountability of 954 DLR carcasses valued at more than $16 million while operating under the ATAC system[16]. Appendix D shows the carcasses processed by the LINCOLN from August 2000 through July 2002 and the percentage of those that made it successfully through the ATAC system. NAVICP determined through interviews with CVN72 Supply Department and ATAC site personnel that a majority of the lost carcasses were attributed to packaging errors. It was at this point that NAVSUP decided to incorporate a packaging tutorial into the e-RMS system.

Technical Assistance for Repairable Protection (TARP) presents the DLR custodian with a step-by-step tutorial for packaging NFRI material in preparation for shipment within the wholesale supply chain. The tutorial is essentially a web-based CNP-700 instruction offered through e-RMS to the custodian once the NFRI material is determined to be BCM and requires shipment from the activity to ATAC. All aspects of packaging are included; method of packaging, required materials, container requirements and required labeling. If the CNP-700 instructions are followed correctly the custodian can greatly reduce the potential for additional damage to retrograde material during shipment within the wholesale supply chain.

Appendix D also shows the August 2002 through July 2003 improvements experienced by CVN72 after implementing e-RMS w/TARP. These improvements were instrumental in NAVICP developing a policy of coding all NRFI submitted through e-RMS to ATAC as BC2. Unlike BC1 coding, which is subject to ATAC's 100% inspection policy, BC2 coded NRFI material does not require inspection. As mentioned earlier in the case NRFI material was historically returned from ATAC hubs to the originating activities at a rate of 12% reflective of the errors discovered by ATAC personnel executing the 100% open and inspect policy. This is an important procedural change because it places the responsibility of effective packaging directly on the DLR custodian without using ATAC as a check point for packaging errors.

[16] Data provided by NAVSUP and Beverly Thomas, ATAC, e-RMS, and TARP program manager.

To track DLR custodian packaging efficiency NAVICP instructed ATAC to conduct random inspections on NFRI material turn-ins and outgoing shipments to the DOP/DSP. Appendix E represents the random inspection data collected from sampling 5461 out of 213,601 BC2 coded retrograded material items submitted to ATAC from June 16th through Nov 9th of 2006.

G. ATAC CLOSURES

The success of e-RMS onboard CVN72 coupled with the start of fleet wide e-RMS implementation signaled a change in the historical workloads normally experienced by ATAC personnel. Appendix F charts the progressive reduction in manning levels at the ATAC sites of both contractor personnel and Full Time Equivalent (FTE) government personnel. From pre-implementation through stage one and into stage two there have been significant reductions in manpower across the ATAC sites. This reduction and associated labor savings results from the dramatic change in workload at the ATAC sites brought about by the policy changes of e-RMS. By eliminating BC1 material the labor-intensive process of 100% inspection at the ATAC sites was also eliminated, essentially reducing the site responsibilities to that of a trans-shipper only. Stage two e-RMS implementation removed enough workload to justify the complete closure of seven ATAC sites (compare tables 5 and 6 in appendix F).

H. WHAT IS THE VALUE OF E-RMS?

NAVICP's introduction of e-RMS into the wholesale supply chain solved many of the communication issues between the activities and ATAC. Supply Officers formerly reliant on ATAC efficiency to prevent carcass charges were now in control of the TIRing process reports to NAVICP, which left them free to worry less about the possibility of carcass charges and concentrate more on improving the overall supply chain. However, the question still remains: how positive the introduction of e-RMS was for the wholesale supply chain? To answer that question we will need to answer the following questions:

1. Can the wholesale supply chain maintain integrity from potentially damaging NRFI materials if ATAC is removed as a packaging error safety checkpoint and packaging responsibilities are placed with the activities?

2. Does replacing a non-web based legacy system – built on a single choke point – with a web-based system that provides proactive possibilities for all entities add value to the supply chain?

3. Does it make sense to risk the validity of the material within the wholesale supply chain for the cost savings recognized through reductions in operating expenses?

4. Is there an impact on readiness brought on by the elimination of the ATAC inspection policy and the subsequent potential for non-repairable items to exist within the wholesale supply chain?

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IV. ANALYSIS AND RECOMMENDATIONS

A. TARP'S EFFECT ON THE WHOLESALE SUPPLY CHAIN

To examine the question of TARP's effectiveness in reducing activity packaging errors and the effect of changing activity NRFI submission coding from BC1 to BC2 we examine the data provided in appendix 4. ATAC hubs received 213,601 NRFI materials during a five month period in 2006, during that same period a total 5,461 items were randomly sampled for an inspection rate of 2.5%

$$\frac{5461}{213{,}601} = 2.5\%$$

Under the legacy ATAC system NRFI materials coded BC1 were inspected 100% of the time. The submission code change to BC2 under e-RMS has dropped the rate to 2.5%, which implies that NAVICP relies heavily on the TARP tutorial within the e-RMS database to be an effective training tool for DLR custodians.

Of the 5461 sampled BCM material items, 661 errors were detected. 509 of those errors were caused by packaging deficiencies, 5 were caused by misidentification of BCM material, and 147 were caused by what ATAC considered other discrepancies. Other errors are those errors that are associated with internal mis-steps within ATAC, and do not apply towards the error rate associated with activity DLR custodian deficiencies. Dismissing other errors and misidentification errors, because of their small percentage, we isolate the packaging errors to focus on DLR custodian efficiency. Of the 509 packaging errors 460 were associated with NRFI material submissions and 49 were associated with transfers from ATAC to the DOP/DSP. As mentioned earlier in the case, the historical rate of NRFI returns to activities due to packaging discrepancies and misidentifications is 12%. Assuming that most of the errors were due to packaging we can use the historical 12% as the return rate for packaging errors. Using the Null Hypothesis method we determine if the historical rate continued to occur under the new coding policy or if it has substantially changed.

H_0: p = 0.12 ("the error rate continues at the historical level of 12%")

H_1: p <> 0.12 ("the error rate has changed")

Using the 16.5% total sample error rate as sample population we can use the following formula to examine the null hypothesis:

$$\frac{Z = (.165(Sample\%) - 0.12(historical\_rate)}{\sqrt{.12(historical\_rate)x(\frac{(1-0.12)}{3,626(\#of\_random\_samples)}}} = 8.34$$

Normally if the results of the Null Hypothesis were closer to 1 or 2 we could infer that is true, which means that the historical rate of 12% packaging errors is continuing under e-RMS. The result of 8.34 indicates that the alternative hypothesis (that the error rate has changed) is a more accurate accounting of the random inspection process. Taking this into account when examining a 2.5% sample rate we can conclude that the TARP tutorial within e-RMS is less effective in reducing the packaging discrepancies than the ATAC legacy system of physical inspection. Furthermore, there is a strong possibility that a large percentage of incorrectly packaged NFRI material is finding its way into the wholesale supply chain.

To further support this argument we can look at the accuracy of ATAC's random inspection error rate by determining the validity of using the error rate as a barometer for the actual number of incorrectly packaged NFRI materials within ATAC. It is logical to assume that 12.69% packaging error rate discovered from a sample of 3,626 NFRI materials could be applied to the 213,601 NRFI materials that flowed through ATAC during the 5 month period; which means that approximately 27,105 incorrectly packaged materials have become part of the wholesale supply chain. To examine the confidence of the inspection we can use the following confidence interval formula:

$$Confidence = 0.1269(error\_rate) + / - 1.96(confidence\_interval)x\sqrt{0.1269x\frac{(1-0.1269)}{3,626}}$$

The results put the confidence interval between 10.89% and 13.77% so it is highly likely that the error rate can be applied to the total number of NRFI materials that flowed through ATAC during the 5 month period.

Although it would appear to be a damning statement for TARP and ultimately e-RMS the data only shows that packaging errors are still occurring at an unacceptable rate. Because packaging errors by the activities increase the possibility of additional and often severe damage to NRFI materials during wholesale supply chain cycle time, it is logical to assume that a significant number will be damaged beyond repair and require full cost replacement. However, without actually sampling the NRFI materials currently in DSP/DOP and determining the dollar value of potentially damaged carcasses we cannot definitively state that the TARP tutorial is failing.

B. DOES E-RMS ADD VALUE TO THE SUPPLY CHAIN?

Determining if e-RMS adds value to the wholesale supply chain requires analysis of the organizations within the chain as they relate to improving the strength of the framework. Figure 12 shows the standard Value Chain, which uses primary and support entities to examine the competitive value added to a business model. The primary entities: inbound logistics, operations, outbound logistics, marketing and sales service; are linked to support entities: procurement, technology development, human resource management, and infrastructure to gauge value of the business framework. The linkage between the primary and support entities is critical to examine the framework of the chain because of the margins they produce in conjunction with one another; and it is the analysis of those margins that determine if a process can add value to a supply chain. In the case of the DLR retrograde material wholesale supply chain determining if the addition of e-RMS adds value to the margin depends heavily on the linkage between the Primary Entities: Inbound and Outbound Logistics, and the Support Entities: Human Resource Management and Technology Development.

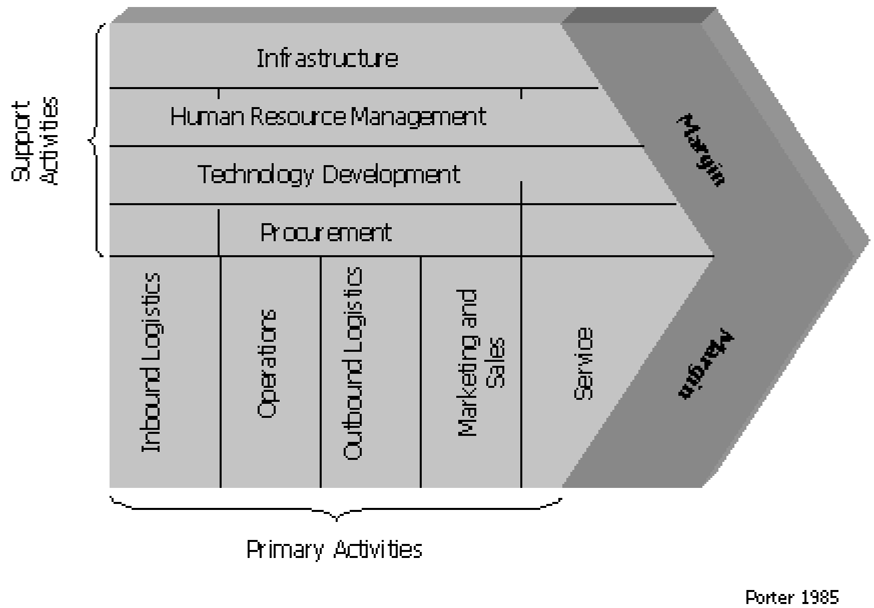

Figure 12. Value Chain[17]

Under the legacy ATAC system the linkage between the primary and support entities was hampered by a lack of communication between the activities, ATAC, and NAVICP. Lack of visibility prevented inbound and outbound logistics associated with the wholesale supply chain from performing efficiently, which in turn led to wasted efforts in human resource management attempting to correct NRFI submissions errors. Activity Supply Departments forced to deal with the reactionary nature of the BK Process regarding NRFI submission errors could potentially waste valuable man hours responding to BK1 and BK3 messages. Without a significant advancement in technology that would allow the activities to gain a proactive posture, the antiquated ATAC system's primary and support entities did not share a value added linkage and therefore devalued the wholesale supply chain.

The addition of e-RMS added value to the wholesale supply chain by both improving the technological development entity and reducing the workload on the human resource management entities. The web based functionality improved visibility for inbound and outbound logistics efficiency and decreased wholesale supply chain cycle

[17]Porter, Michael E., "Competitive Advantage". 1985, The Free Press, New York

time through value added linkages to the human resource management and technological development support entities. With e-RMS, activity Supply Departments were able to eliminate the loss of and time and human resource man hours associated with tracking submission errors under the legacy ATAC system. The step-by-step tracking demonstrated within the ATAC BK Timeline Process Flow Chart displayed in Figure 9 shows the potential savings of human resource management assets that could be realized once the BK process requirements are eliminated by e-RMS.

C. REWARD VS RISK

As mentioned earlier in the analysis of packaging efficiency the e-RMS system of submitting NRFI materials to ATAC under BC2 is likely producing a 12.69% packaging error rate. If the average NRFI material is valued at $50,000 that would mean there is potential for $1.35B NRFI materials losses. But the question of risk is not that easily answered. Packaging errors do not necessarily translate into lost NRFI material; the NRFI material may still be repairable only with incorrect packaging. The question of necessity of replacement costs also comes into play when trying to estimate the cost of risk. All NRFI material within the wholesale supply chain has a safety stock supply to support high tempo operations that may require a larger percent of SIT requests. The Klystron tube, mentioned earlier in the case, has a new replacement cost of $115,000. If a packaging error to that tube occurred while it was in NRFI status the decision to procure the item would not be automatic. If the Klystron tube has a low frequency of SIT requests the decision would more likely be to absorb one from the safety stock rather than to procure a new one.

E-RMS has reduced contractor and FTE manning totals at the ATAC sites from 230 to 75 positions (see Appendix G) with an associated costs saving of $40,785,422[18]. It has also reduced activity and NAVICP workloads dramatically and continues to streamline the wholesale supply chain. Without actual data to support perceived losses

[18] Totals take from restructuring data provided from Commander Fleet Industrial Supply Center Program Management Update for Naval Supply Systems FY06 Transportation Brief.

associated with packaging errors the tangible costs savings favor the reward of implementing e-RMS over the potential risk associated with the policies established by e-RMS.

D. THE IMPACT ON READINESS

From a fleet perspective DLR readiness comes down to the material being available when it is needed. Current practice is to maintain some level of safety stock as mentioned, however when certain circumstances such as low demand and high cost combine the decision is often made to draw a replacement from stock without replenishment. While there is a threat to readiness due to the draw-down in safety stock it is offset by the low rate of demand. This gives NAVICP time to recognize the need for replenishment, draw NRFI components from the DSP, have them repaired and replenish stock levels before any negative impact on fleet readiness occurs.

The more dangerous situation and far greater threat to readiness is the loss of visibility as pertains to the quality of the NRFI items in the DSP inventories. Over time as components fail in the fleet there will be an inflow of NRFI carcasses to the DSP and an outflow of RFI components from the supply sites. Under e-RMS practices the ATAC sites are no longer verifying the condition of material turned in and the system is assuming that all carcasses are in fact repairable.

If we return to the Klystron tube once again as an example and assess two time values to it we can see where the problem lies. Assume that it takes two weeks to open, inspect and repair the average damaged tube and that historical usage data indicates that a safety stock of twelve RFI tubes is required. Now assume that it takes the manufacturer three months to build a new tube from scratch.

As the low limit established by NAVICP of five RFI tubes is reached they will contact the responsible DSP and direct them to release seven NRFI carcasses to the DOP for repair and return to RFI inventory. NAVICP is expecting this to take approximately fourteen weeks. However, when the seven NRFI carcasses are pulled from inventory it is discovered that they are damaged beyond repair, it will now take twenty-one months to return safety stock to its high limit.

Just to make the problem more apparent let's also assume that during the repair period a sizable portion of the fleet was sortied for a major series of operations and the demand for Klystron tubes doubles, the last of the safety stock is issued and a lot of requisitions go unfilled. Radars are out of commission and the combat capability of the fleet is seriously degraded, this is an obvious readiness degrader.

Another serious impact brought about by this situation is the financial cost. NAVICP may have an annual expected repair cost for Klystron tubes of $216K (12 repairs at $18K each), now they have to fund the acquisition of seven new components at a cost of $805,000 in addition to any other repair costs throughout the year.

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V. APPENDICES

APPENDIX A: NAVSUP RETROGRADE DASHBOARD

The Retrograde DASHBOARD report is part of a review conducted by NAVICP to monitor retrograde material management performance. The DASHBOARD provides a snapshot comparison of selected performance metrics comparing actual performance of fleet activities, ATAC sites, DSPs and DOPs against a set of predetermined criteria.

Table 2 provides two selected reports for comparison purposes. The different tiers and the weights assigned to each are not of importance here, they feed a higher level roll-up report. What should be noted is the actual performance numbers against the standard in each month and the relative performance over the two years.

May-04								
TIER 1	**TIER 2**	**TIER 3**	**Definition**	**Measurement**	**Green**	**Yellow**	**Red**	**Actuals**
Retrograde Management 30%	NRFI Time 60%	Fleet Time (50)%	NRFI travel time to ATAC	Days	11	16	17	10
		ATAC Time (45)%	ATAC POR to final POD	Days	7	10	11	7
		DOP/DSP Time (5)%	ATAC POD to D6 TIR	Days	3	6	7	3
	NRFI Quality 40%	% Turned in (30)%	# of ATAC or DOP PORs / # of BCMs	Percentage	90	85	84	89
		% ATAC Delivered (65)%	# of ATAC PODs / # of ATAC POSs	Percentage	99	96	95	99
		% TIRed (5)%	# of D6 TIRs / # ATAC PODs	Percentage	90	75	74	87
June-06								
TIER 1	**TIER 2**	**TIER 3**	**Definition**	**Measurement**	**Green**	**Yellow**	**Red**	**Actuals**
Retrograde Management 30%	NRFI Time 60%	Fleet Time (50)%	BCM to ATAC or DOP POR	Days	11	16	17	7
		ATAC Time (45)%	ATAC POR to final POD	Days	7	10	11	9
		DOP/DSP Time (5)%	ATAC POD to D6 TIR	Days	3	6	7	3
	NRFI Quality 40%	% Turned in (30)%	# of ATAC or DOP PORs / # of BCMs	Percentage	90	85	84	99.21
		% ATAC Delivered (65)%	# of ATAC PODs / # of ATAC POSs	Percentage	99	96	95	99.07
		% TIRed (5)%	# of D6 TIRs / # ATAC PODs	Percentage	90	75	74	92.71

Table 1. Retrograde DASHBOARD Metrics[19]

Table Descriptions:

- NRFI Time: Represents total retrograde lag time for NRFI DLR assets being returned to the Navy wholesale system by fleet activities.
- Fleet Time: Calendar days from the time a customer declares a BCM action (identifies a DLR turn-in) until that document is first received by a Navy wholesale activity (ATAC or e-RMS or final Destination Receipt Date minus the BCM date).

[19] Beverly Thomas, NAVICP 0344, Repairable Distribution.

- ATAC/e-RMS Time: Calendar days from the first ATAC or e-RMS receipt date until proof of delivery (POD) to final destination date. (Final POD date minus ATAC/e-RMS receipt date).
- DOP/DSP Time: Designated Overhaul Point/Designated Support Point TIR time. Calendar days it takes the delivery destination to provide a receipt TIR to the ICP from the date on which proof of delivery was provided to the ICP. (Receipt TIR date minus POD date).
- NRFI Quality: Represents the total percentage of NRFI DLR assets being returned to the Navy wholesale system after customers have determined material cannot be repaired at the Intermediate level.
- % Turned-In: Percent of exchange retrograde returns made by a customer after declaring it BCM for which ATAC or the e-RMS supply activity has acknowledged a receipt (# of ATAC or e-RMS receipts divided by # of BCM actions).
- % Retrograde Delivered: This is the Proof Of Delivery (POD) percentage for all retrograde shipments made by ATAC and e-RMS supply activities. It is the number of documents for which POD was provided to the ICP divided by the number of documents for which ATAC / e-RMS Proof Of Shipment was provided (# of ATAC or e-RMS PODs divided by # of ATAC or e-RMS POSs).
- % TIRed: This is the DOP/DSP receipt TIR percentage for all retrograde deliveries. The number of DOP/DSP receipt TIRs divided by the number of PODs provided to the ICP (# receipt TIRs divided by # PODs).

APPENDIX B: PROOF OF SHIPMENT QA REPORT

The Proof of Shipment Quality Assurance report is a comparison tool to measure the quality of recording for activity shipment and delivery actions. E-RMS has two key retrograde functions – item screening and proof of shipment (POS), the fleet activities are good at the first but bad at the second. The POS QA report helps NAVICP to identify those sites which need training.

UIC	Site Name	Month	# BC2	# Autopos	# No POS w/ D6K	# No POS No POR	# Local Delv No POD	% Autopos	% No POS w/ D6K	% No POS No POR	% Local Delv No POD
N60201	NAS MAYPORT	06 MAR	510	4	0	4	0	0.8%	0.0%	0.8%	0.0%
N60201	NAS MAYPORT	06 APR	420	98	0	8	0	23.3%	0.0%	1.9%	0.0%
R09808	MALS-39 (PENDLETON)	06 MAR	563	6	0	0	0	1.1%	0.0%	0.0%	0.0%
R09808	MALS-39 (PENDLETON)	06 APR	479	154	0	0	0	32.2%	0.0%	0.0%	0.0%
R09111	MALS-11 (MIRAMAR)	06 MAR	934	18	0	0	0	1.9%	0.0%	0.0%	0.0%
R09111	MALS-11 (MIRAMAR)	06 APR	925	4	1	1	0	0.4%	0.1%	0.1%	0.0%
R09808	MALS-39 (PENDLETON)	06 MAR	563	6	0	0	0	1.1%	0.0%	0.0%	0.0%
R09808	MALS-39 (PENDLETON)	06 APR	479	154	0	0	0	32.2%	0.0%	0.0%	0.0%
R20550	USS TARAWA LHA-1	06 MAR	15	10	0	0	5	66.7%	0.0%	0.0%	33.3%
R20550	USS TARAWA LHA-1	06 APR	8	1	1	2	4	12.5%	12.5%	25.0%	50.0%
V21829	USS VELLA GULF CG 72	06 MAR	63	0	0	0	0	0.0%	0.0%	0.0%	0.0%
V21829	USS VELLA GULF CG 72	06 APR	93	61	0	0	0	65.6%	0.0%	0.0%	0.0%

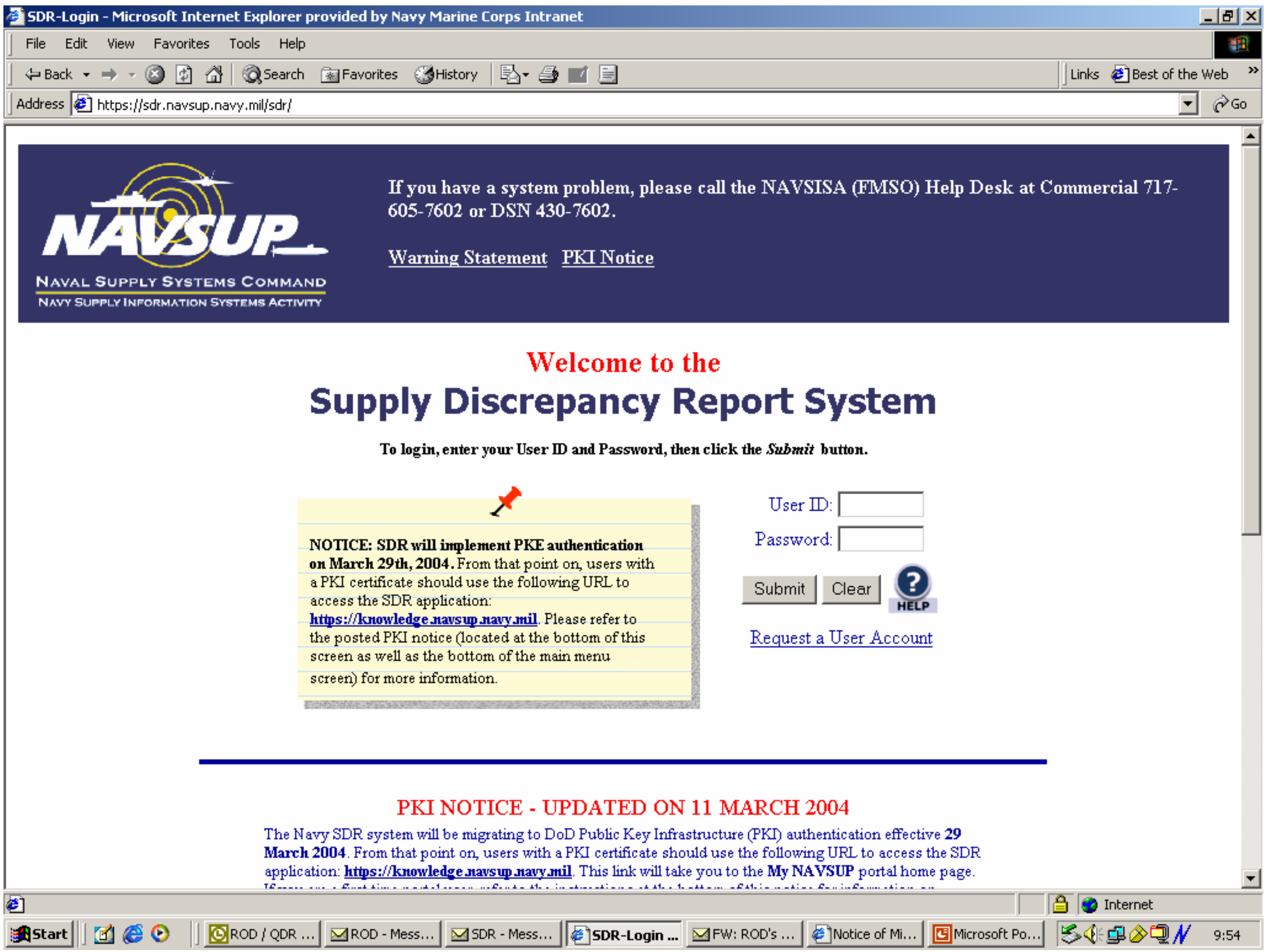
Table 2. Proof of Shipment Quality Assurance Report[20]

- Number of BC2s produced (retrograde assets worked and screened)
- Number of AutoPOS transactions – Activity did not post POS, but ATAC reported receipt, so "dummy" POS was automatically loaded instead by e-RMS. Training issue – sites must post 100% POS.
- Number missing POS, but with DOP/DSP TIR – Activity did not post POS and did not go through ATAC for transportation, but the asset arrived at destination anyway. Training needed.
- Number missing POS, no DOP/DSP TIR – Activity did not post POS, did not receive credit for turn-in. Carcass Tracking still open, material may be onsite or lost.
- Number of local deliveries, no POD – In this case, activity must post POD also to get credit for turn-in.

[20] Beverly Thomas, NAVICP 0344, Repairable Distribution.

APPENDIX C: E-RMS SUPPLY DISCREPANCY REPORTING

The e-RMS Supply Discrepancy Reporting[21] tool is a web-based interface allowing activity supply personnel to submit reports of discrepancy in material shipments or receipts in real-time, information is automatically tied to the related DLR transaction record and made available to anyone with the appropriate access. This interface allows for rapid reporting of supply chain errors so that appropriate action can be undertaken by the site associated with the error.



[21] Snapshot of SDR webpage tutorial provided by Naval Supply Systems. Snapshot provided by Greg Gibeault, Fleet Carcass Tracking Manager for Commander Naval Surface Forces Pacific Fleet.

APPENDIX D: CVN 72 CARCASS TRACKING COMPARISON

The USS ABRAHAM LINCOLN was a test site for the original implementation of the e-RMS system. The graphics below represent two operationally relative time periods, prior to and subsequent to e-RMS implementation. What the charts compare is the percentage of carcass turn-ins from the unit for which NAVICP has positive proof of delivery. In this comparison, activity return rate improved from 85.71% to 99.56% meaning that less than one percent of activity returns are subject to carcass charges.[22]

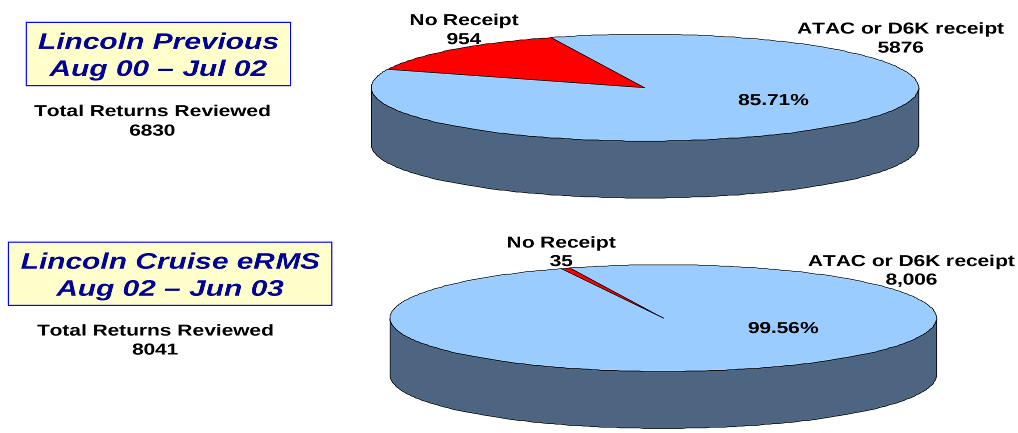


Figure 13. CVN 72 Carcass Tracking Comparison

[22] Beverly Thomas, NAVICP 0344, Repairable Distribution.

APPENDIX E: TARP SAMPLING DATA

Table 3 represents the sampling data collected by representatives of the Technical Assistance for Repairable Protection office over a five month period (June 18, 2006 through November 9, 2006) at the ATAC hub site in San Diego, CA. Total retrograde material processing over this period was 213,601 pieces. [23]

TARP Efficiency Sampling					
	Number Sampled	Number of Deficiencies			Total Error
		Mis-ID	Packaging	Other	
Total	5461	5	509	147	661
Incoming	3626	3	460	136	599
Outgoing	1835	2	49	11	62

Table 3. TARP Efficiency Sampling Data

[23] Beverly Thomas, NAVICP 0344, Repairable Distribution.

APPENDIX F: ATAC RESTRUCTURING

The following tables show the three stages of personnel manning at the ATAC sites worldwide. [24]

Pre e-RMS Implementation

Site	Contractor	Contractor Value	Gov FTE	Gov FTE Value
Norfolk	8	$125,000	40	$2,240,000
Bahrain	10	$350,000	10	$700,000
Sigonella	4	$270,000	5	$300,000
Yokota	3	$105,000	5	$300,000
San Diego	10	$800,000	60	$33,420,844
Puget - Everett	4	$60,000	8	$480,000
NASWI	3	$120,000	6	$240,000
Guam	4	$240,000	5	$180,000
Singapore	4	$240,000	5	$200,000
Japan	2	$140,000	10	$700,000
Australia	3	$180,000	5	$375,000
Jax	2	$80,000	7	$364,000
Pearl	2	$160,000	5	$2,775,000
Total	59	$2,870,000	171	$42,274,844

Table 4. ATAC Manning Levels Pre e-RMS

First Stage of e-RMS Implementation (Transition manning level)

Site	Contractor	Contractor Value	Gov FTE	Gov FTE Value
Norfolk	2	$125,000	22	$1,232,000
Bahrain	4	$140,000	0	$ -
Sigonella	2	$135,000	0	$ -
Yokota	1	$35,000	0	$ -
San Diego	5	$400,000	30	$1,710,422
Puget - Everett	1.5	$45,000	2	$120,000
NASWI	0.5	$20,000	0	$ -
Guam	2	$120,000	0	$ -
Singapore	2	$120,000	0	$ -
Japan	0	$ -	5	$350,000
Australia	2	$120,000	0	$ -
Jax	0	$ -	3	$156,000
Pearl	0	$ -	2	$111,000
Total	22	$1,260,000	64	$3,679,422

Table 5. ATAC Manning Levels, 1st Stage e-RMS

[24] Restructuring data provided from Commander Fleet Industrial Supply Center Program Management Update for Naval Supply Systems FY06 Transportation Brief.

Second Stage of e-RMS Implementation (Current manning level)

Site	Contractor	Contractor Value	Gov FTE	Gov FTE Value
Norfolk	2	$125,000	22	$1,232,000
Bahrain	4	$140,000	0	$ -
Sigonella	2	$135,000	0	$ -
San Diego	5	$400,000	30	$1,710,422
Japan	0	$ -	5	$350,000
Jax	0	$ -	3	$156,000
Pearl	0	$ -	2	$111,000
Total	13	$800,000	62	$3,559,422

Table 6. ATAC Manning Levels, 2nd Stage e-RMS

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