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## Automatic Identification Technology (AIT) Quarterly Edition

Brought to you by the AIT Implementation Branch

### Greetings from the Logistics Technology Integration Division

Welcome to the fourth AIT Quarterly Edition of *The DPO Update*. The focus article is a general coverage of active radio frequency identification (aRFID) with a brief history on its use. It provides a perfect opening to encourage reuse of these tags. As we move from an American to an international standard for radio transmissions between the aRFID tag and the interrogator (the air interface), we must make sure there are enough American-standard tags in the system to get us to the point where the international-standard tags are readily available and usable. For more information, check out the AIT Question Corner.

Implementation of passive RFID (pRFID) is also on the move, showing credible, measurable results in improving supply chain effectiveness. This is made clear in this edition's Lead Service/Agency Article, *AIT at Defense Depot Pearl Harbor*, contributed by DLA. Their efforts in Hawaii are an excellent example of what can be accomplished with pRFID when Service/Agency leadership supports the program across their enterprise.

We hope you enjoy this AIT Quarterly Edition of *The DPO Update*. As always, we welcome your comments and suggestions.

Dave Dias  
Chief, Logistics Technology Integration Division

### DPO Update Items of Interest

#### 2010 USTRANSCOM Survey Results

- Thank you to those DPO customers and partners who responded to the 2010 Survey.
- We received 1,100+ responses from all over the defense supply chain.
- Those responses will help us shape our strategy and actions in the year to come.

#### Items of Interest from Around the Supply Chain Community

- The Defense Logistics Agency is on Facebook. [Check them out here.](#)
- Secretary of Defense, [Robert M. Gates](#), awarded USTRANSCOM the Joint Meritorious Unit Award on 1 April. [General David H. Petraeus](#), Commander of U.S. Central Command, was also in attendance. To read about the awards ceremony, [click here.](#)
- [Admiral Allen](#), Commandant of the U.S. Coast Guard, and [General McNabb](#), USTRANSCOM Commander, spoke to the U.S. Transportation Command Reserve Components Chiefs and Adjutants General Conference at Scott Air Force Base, Illinois on 25 March.
- General McNabb testified before the [House Armed Services Committee](#) on 17 March. "Together, we are an unrivaled, global team operating an integrated, networked end-to-end defense distribution system..." To read more of General McNabb's testimony, [click here.](#)
- Work at USTRANSCOM? Want to hear what Vice Admiral Harnitchek is thinking about? Check out The Deputy Commander's Blog" [here.](#)
- *The New York Times* published a story on 31 March on the movement of materiel from Iraq to Afghanistan. [Click here to read it.](#)

*The DPO Update* is a biweekly publication for Distribution Process Owner stakeholders. It is designed to generate a conversation around key issues surrounding deployment and distribution in order to increase service to the American warfighter. To submit an article, announcement, or topic, [email Jonathan.Block\\_ctr@ustrancom.mil](mailto:Jonathan.Block_ctr@ustrancom.mil).

## Focus Article

### Active Radio Frequency Identification (aRFID) Tags

By Bob McCalmont, USTRANSCOM TCJ5/4-TA [Robert.mccalmont.ctr@ustranscom.mil](mailto:Robert.mccalmont.ctr@ustranscom.mil)

#### Article Quick Summary

- aRFID uses radio transmitters to “tag” cargo and monitor the cargo’s progression through the DOD supply chain using automated information systems
- DoD is transitioning the aRFID infrastructure to align with international standards. The U.S. Army Program Manager Joint AIT office supports this transition.

Active RFID (aRFID) is a system which uses radio transmitters to “tag” cargo. These transmitting tags are detected as they pass within 300 feet of interrogators. Because DOD managers have mapped the location of the interrogators, they consequently know the location of tagged cargo being detected by any given interrogator. This detection is relayed to automated information systems (AIS), such as the radio frequency in-transit visibility (RF-ITV) server or the Global Transportation Network (GTN), for use by warfighters. With a look at the RF-ITV website, one can view the world of active RFID. (For a complete explanation of RFID, see *The DPO Update*, Issue #114, at <http://www.transcom.mil/dpo/>.)

Active RFID tags span the globe providing, for example, information to a warfighter supply specialist on where his repair parts are in the “system,” or information for a staff officer at a four-star command to locate equipment of a deploying unit. Active RFID tags have been affixed to unit equipment – prime movers, tractors, trailers, etc.; to 463L air pallets during the “capping” process; and to 20- and 40-foot containers by soldiers, civilians and commercial vendors for over 29 years (See Figure 1).



Figure 1: Prepositioned ammunition container with aRFID tag attached.

DOD has enhanced the aRFID tags with security, sensor, and other features to meet the requirements of the warfighter. Hundreds of thousands of tags travel the globe daily – perhaps affixed to a 463L air pallet inside the cargo bay of a C-17 en route to a USAF base in the US Pacific Command (PACOM) area of responsibility (AOR); or attached to a 40-foot container inside the hull of a ship en route to the port of Karachi, Pakistan, and then moved forward to a forward operating base (FOB) in Afghanistan; or perhaps affixed to military material with shipping instructions for the Army’s Reset Program; or even on a vehicle in a ground convoy transiting the road network from Kuwait into Iraq. The aRFID tags are in constant motion, acting as messengers on a mission with vital information to users in the vast AIS network that DOD relies on to make decisions and keep the warfighter satisfied with all that is needed to fulfill the requirements of the combatant commander.

DOD is transitioning the aRFID infrastructure from operating in accordance with standards from the [American National Standards Institute \(ANSI\)](#) to standards from the [International Organization for Standardization \(ISO\)](#). The third Radio Frequency Identification Contract (RFID-III), administered by the [U.S. Army Product Manager Joint- Automatic Identification Technology \(PMJ-AIT\)](#), supports a worldwide technology effort that replaces the current tags and readers compliant with standard 256 of ANSI’s International Committee for Information Technology Standards with products and solutions compliant with the open standards-based [ISO 18000-7 standard](#). As such RFID-III includes ISO-compliant products for purchase. ANSI products are no longer available for purchase under the RFID-III or earlier RFID-II contracts. DOD is implementing a detailed migration plan which includes finding and returning “sidelined” tags.

Active RFID tags continue to be the workhorse of AIT media for DOD. These world “travelers” continue to provide information to users 24/7, rain or shine. Talk to them at <https://cac.national.rfitv.army.mil>.

## AIT Question Corner

### You have questions? We have answers.

**Question:** In my unit we have never run out of active RFID tags. Why all the push to recycle tags? What's different?

**Answer:** Actually, it's probably more accurate to say we're running out of tag numbers! To understand, you need to know two things. First, each active radio frequency identification (aRFID) tag has a unique, sequential identification number. This allows us to associate a particular tag with cargo, specifically, if we know the location of tag number such-and-such, then we also know the location of the cargo it is attached to.

Second, current aRFID tags are based on standards from the [American National Standards Institute \(ANSI\)](#). This standard only supports sequential numbers to a certain point. When we reach that "magic number," we simply run out of numbers.

To solve this problem (among other reasons), the DOD is adopting an [International Organization for Standardization \(ISO\)](#) standard which supports an unlimited sequence of numbers. The difficulty is in the transition period. The DOD is no longer buying "old" ANSI tags – but they are being used until the aRFID infrastructure is completely converted to the "new" ISO standard.

In short, we have to make the old tags last until we are completely transitioned to the new system. This transition requires modification of myriad automated information systems so that they can read data from and write data to the new ISO tag. There are enough old tags in the system to make this work *if we use them wisely*. This means reusing the tags we have and turning in any excess tags so that others in the system can use them. We have included information in Figure 2 [concerning return of RFID tags](#). Also, for more information, see *The DPO Update*, Issue #120. (To access: go to <http://www.transcom.mil/dpo/>.)



## RFID Tags Usage and Collection

RFID tags and accessories are available via normal supply channels as:

- Model 654 with 128 KB RAM  
NSN 6350-01-523-1998
- ISO Container Door Tag Model ST-656-I  
NSN 6350-01-531-6358
- Model 654/656-I RFID Tag Battery, (*Do not use AA batteries*)  
NSN 6135-01-524-7621



ST 654 Tag



ST 654 and ST 656-I Tag Battery



ST 656-I ISO Container Door Tag



ST 410 RFID Tag  
400-series tags will still be usable until further notice

RFID tags are reusable and recyclable. Upon receipt at final destination, remove and invert the tag battery to prevent further interrogation.

Any activity, unit, DoD agency, contractor/vendor receiving RFID-tagged shipments must turn in excess RFID tags to the nearest support Movement Control Team (MCT), Supply Support Activity (SSA), Aerial Port of Debarkation (APOD), or Surface Port of Debarkation (SPOD).

SWA: If the nearest MCT, SSA, APOD, or SPOD is unknown, contact USARCENT Logistics Automation Branch at DSN (318) 430-5172.

MCTs, SSAs, APODs, and SPODs with excess RFID tags will contact the nearest consolidation point for disposition instructions and POCs.

### Collection Points for Excess RFID Tags

Excess RFID tags in CONUS:	Excess RFID tags in EUCOM:	Excess RFID tags in SWA:	Kuwait:
SW3100, Transportation Officer, DDSP New Cumberland Facility Building Mission Door 113-134 New Cumberland, PA 17070-5002	US Depot Gernersheim, TCSP-EATTN DDDE DE BLDG 7976 F-WHS Vonwerk Friedrich Str. 07274-965086 Lingenfeld DE 67360 DSN: (314) 378-5032	Iraq: W91XBJ Balad DS Multi-Class Warehouse (RIC: WPT), DSN (318) 483-2628 910th QM APO AE 09391	Alghanistan: SSA Bagram DSN (318) 431-3425 Building 310 APO AE 09354 Bagram, AF or 273rd TC Detachment (MCT) DSN (318) 431-2260 APO AE 09354
SW3224, Def Dist Depot San Joaquin Receiving Warehouse 10, 25600 South Chrisman Road Tracy, CA 95376-5000			SW3109 DDKS Multi-Class Warehouse (RIC: W7A), DSN (318) 430-6071 US Def Dist Depot Kuwait Mina Abdullah PWC Logistics Site No 4 Mina Abdullah Unit 1-6 Fahahill, KW Arabian Gulf KW

[www.eis.army.mil/ait](http://www.eis.army.mil/ait)

Figure 2: RFID tag usage and collection.

If you have questions about AIT or its implementation, e-mail: [USTCJ5J4-T@USTRANSCOM.mil](mailto:USTCJ5J4-T@USTRANSCOM.mil). We will respond to questions of general interest in the next AIT Quarterly Edition.

## Spotlight on Standards AIT Standards—Critical to Interoperability...And So Much More

By Dan Kimball, USTRANSCOM TCJ5/4-TA, [dan.kimball.ctr@ustranscom.mil](mailto:dan.kimball.ctr@ustranscom.mil)

### Article Quick Summary

- Standardization is needed to allow interconnectivity between military and commercial partners
- Commercial standards allow DOD to get goods and services at lower cost
- AIT standards allow for streamlined procurement of commercially-available hardware
- USTRANSCOM J5/4 involvement in standards development creates a more agile, responsive DoD supply chain

### Why Standards?

Standardization is critical in all aspects of modern life, whether it be standardized traffic signals or various electronic devices. Can you imagine trying to deal with nonstandard traffic lights? Perhaps red means stop in one city, but green means stop in a neighboring city? What would you do at the blue light?

Obviously the point here is that *standards* are necessary to allow interactivity. With AIT, DOD needs standards to be interactive with itself (Services, agencies, etc.), its allies, and its commercial partners.

There are obvious reasons for standards in addition to interoperability. Quality, physical compatibility, and fitness for use are three that quickly come to mind. History is replete with tales of people supplying the military with shoddy goods that did not work properly. Other reasons may not jump to mind as quickly – reduced inventories and shorter procurement lead times are just such a pair. The common thread here is that all of these reasons for standards support USTRANSCOM’s push for distribution excellence – constantly improving supply chain effectiveness and efficiency.

### Why Commercial Standards?

The big reason is economics. Use of commercial standards for material means that DOD can get the goods and services it needs at lower costs due to the economies of scale. Also, in most cases there is no reason why the commercial product will not work just as well. Commercial products are not over-engineered – something that can happen with military projects that do not have a for-profit aspect.

### Why AIT Standards?

Again, this is mostly economic. The military needs product identification, faster reliable shipping, and accurate data on lo-

cation and condition of supplies. These needs are exactly the same as any retailer or manufacturer. Since AIT performs a function and is not itself an end, the procurement of commercially available AIT hardware is faster, cheaper, and able to do everything necessary to improve DOD supply chain performance.

### Why USTRANSCOM J5/4 Role in Standards Development?

If DOD is going to buy and use AIT like a commercial industry, then like an industry, DOD needs to make sure its requirements are identified and considered. DOD’s unique situation is the potentially catastrophic consequences of supply chain failure.

[TCJ5/4](#) is working with myriad standards organizations every day. In one case our efforts might be to make sure standards developers consider environmental conditions like those in Afghanistan and not just California. In another situation, having standards encourages multiple domestic sources for *standardized* hardware thus ensuring DOD is not at the mercy of single source suppliers. (This is especially serious if it is a single, *foreign* supplier.) Being proactive in standards development also gives DOD advance information on the direction and future of standards activities, helping to keep the DOD supply chain harmonized with our partners and better positioned to be agile and responsive.

TCJ5/4 also works with [NATO](#) and our other Allies to help standardize the AIT our people experience daily all the way out to the point of the spear. It is easier for governments to adopt voluntary international standards than to justify the adoption of any other nation’s unique solution. The TCJ5/4 involvement in international standards development yields just such a win-win scenario. Specific examples of this are the NATO adoption of the same hardware and interface standards for both active and passive radio frequency identification (RFID) and the identical item marking technology for unique item identification (UID).

### Why Should DOD Remain Engaged in All Aspects of National and International Standards?

Standards are critical to a DOD supply chain that must interact with the larger collective world-wide supply chain – anything less puts DOD at a disadvantage.

## Lead Agency Article: Defense Logistics Agency (DLA) AIT at Defense Depot Pearl Harbor

By Mark Lieberman, DLA AIT Program Manager, [mark.lieberman@dla.mil](mailto:mark.lieberman@dla.mil)

### Article Quick Summary

- Defense Distribution Depot Pearl Harbor (DDPH) applies RFID tags to all outbound shipments to provide in-transit visibility to customers.
- DDPH has identified a number of key “paperwork” bottlenecks thanks to the metrics made possible through the use of AIT and RFID.
- Top challenges in implementing AIT are (1) proper application of pRFID tags and (2) integration of pRFID tag-read data into local systems.
- DDPH leverages the benefits of AIT by connecting upstream and downstream partners to bring value and new capabilities to the military supply chain.

On the island of Oahu, the [Defense Logistics Agency \(DLA\)](#) faces a unique challenge. DLA uses its Pacific hub – the [Defense Distribution Depot Pearl Harbor \(DDPH\)](#) – to meet the changing distribution needs of our military in the Pacific, and also to support on-island military Services activity, including the Marine Corps Base Kaneohe Bay, Hickam Air Force Base, Schofield Army Barracks, and Pearl Harbor Naval Base. Faced with directing billions of dollars of materiel to customers around the globe, DLA’s [Defense Distribution Center \(DDC\)](#) in Pennsylvania, along with DLA-HQ, turned to radio frequency identification (RFID), a type of AIT, to reduce operational costs and improve service to its customers by enhancing supply chain visibility.

DDPH is one of only two depots in the world which applies RFID tags to all outbound shipments, called materiel release orders (MRO) – the other is Defense Depot San Joaquin (DDJC). As such, they are called MRO-ALL depots. Because of this, DDPH is positioned at the forefront of DOD supply chain innovation. As an MRO-ALL site, DDPH applies passive radio frequency identification (pRFID) tags on all outbound materiel to allow their customers to leverage the benefits RFID can provide. (For a description of RFID and an understanding of the distinction between pRFID and active RFID, see *The DPO Update*, Issue #114 at <http://www.transcom.mil/dpo/>).

In addition to the ability to track shipments in real time, the use of RFID on outbound shipments yielded an abundance of data on the performance of the supply chain. DDPH was able to use this data to identify a significant gap between the time a ship-

ment is delivered and the time the customer acknowledges receipt of the delivery. Recent analysis puts the gap at six and a half days or 45% of the time from creation of a requisition until customer acknowledgement of receipt. DDPH is working with the Services to shorten this gap.

### Background

DDPH is located on the island of Oahu within [Naval Station Pearl Harbor](#). DDPH is a regional DLA hub, providing service to Marine, Army, Air Force, and Navy installations on the island as well as to installations throughout the Pacific Theater.

Like other depots, DDPH must juggle a variety of receiving and shipping processes, such as:

- Receive to stock
- Receive to transship to nonlocal regional customers
- Receive to deliver locally: DoD locations on island

While it is true that these challenges apply to many DLA operations, DDPH also has very specific tactical objectives and challenges to address based on its location on Oahu and its strategic position relative to the supply chain serving the Pacific. Faced with the need to stay on top of materiel flowing in and out of DDPH warehouses, DLA turned to RFID and centralized reporting tools to help DDPH track both materiel and the data that would enable it to proactively address challenges as they arise.

### Customer Benefits

The ability of DLA’s customers to leverage tagged materiel for their internal process benefits is an additional measure of success of the DDPH deployment.

Tagged materiel can be automatically received and tracked by other Defense organizations without the burden of attaching their own tags. In addition, since DDPH has registered its read points with enterprise-level Defense systems, other Defense users can globally track assets from the time tags were first applied at DDPH through any other read points these tags traverse throughout the global defense supply chain.

[Fleet and Industrial Supply Center \(FISC\) Pearl Harbor](#), which receives materiel issued from DDPH to support the shipyard, is one of DDPH’s customers who make use of pRFID data. DSS provides an Advanced Shipping Notice (ASN) to FISC when

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## AIT at Defense Depot Pearl Harbor

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materiel departs DDPH. This ASN provides the first visibility to FISC, from a pRFID perspective. When they receive these shipments, the materiel either passes through RFID reader portals located at key doors or is scanned with hand-held readers. At this time, FISC personnel do not have visibility into data in DLA's DSS. However, this does not mean they are blind to the status of items coming into DDPH (or that may already have arrived) to fulfill orders. If the materiel had pRFID tags applied at the originating depot, its location will be updated in DAAS; therefore, data on its most recent location will be available through WebVLIPS.

### Challenges

#### Proper Application of pRFID Tags

DDPH deals with a wide variety of products – from tires, to large metal drums, to engines and tools, to perishable liquid items. Tagging these products effectively to ensure they will be readable by downstream customers can be challenging. By both providing guidelines to vendors and SOPs for locations shipping to DDPH on how to apply tags, DDPH was able to increase its ability to read tags.

#### Integration of pRFID Tag Read Data into Local Systems

When tagged items leave DDPH through a portal, DDPH can look up the tagged item in the local installation of their RFID middleware solution. However, when the item arrives at FISC and goes through a Navy portal, the read data is only visible to DDPH through a centralized, web-based system such as WebVLIPS. DLA-HQ and DDC have acknowledged that one of the long-term goals on the systems integration front will be to have RFID middleware systems under different commands talking to each other. The ultimate goal, of course, is the integration of such data into the local DSS installation. At this time, requirements are still being evaluated to ensure the update is made correctly.

### The Way Ahead

One of the challenges in adoption of RFID in larger supply chains is that oftentimes they are not a closed loop. In the case of Defense, DLA has many vendors, many operational sites and many customers. DLA manages one of the more complex supply chains in the world today. DDPH is the perfect example of leveraging benefits: connecting upstream and downstream partners to bring value and a new capability to the military.

At DDPH, the Defense Logistics Agency has taken a big step forward. By tagging all outbound materiel, as well as tracking shipments accurately to on-island customers, DLA not only realized benefits for itself but its customers as well. This is the kind of thought leadership that will fuel the next wave of military RFID deployments.

For more information on Defense Depot Pearl Harbor, [visit the AIT website.](#)

### Lead Service/Agency Article

The lead Service/Agency Article for the next AIT Quarterly Edition is the United States Marine Corps. We will accept short updates from other Services/Agencies on a variety of topics.

If you are interested in writing a lead Service/Agency Article for an upcoming edition of the AIT Quarterly Edition, please contact the [AIT Implementation Branch](#).

### AIT Quarterly Edition #5: Next Time

AIT Quarterly Edition #5 will be published in July 2010. Deadline for [submitting articles](#) is 17 June 2010.

The AIT Quarterly Edition #5 Focus Article will feature passive radio frequency identification (pRFID).

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