

## Case study

# United States Navy

Intermec RFID  
reduces US Navy  
inventory time



### At a glance

**Industry:** Government

**Application:** Aviation Spare Parts Tracking

**Program Results:** Estimated total annual savings of \$2.2M per year, Reduced inventory time from 24 hours to less than thirty minutes

The magnificent flying machines deployed by the United States Navy are technological wonders. While the planes and their pilots may be the stars of the show, deploying a Naval aviation squadron usually requires a skilled crew and a pack-up kit, or PUK, containing hundreds of replacement parts worth \$10 million or more.

The U.S. Navy Regional Supply Office in Norfolk, Va. provides logistical support for the aircraft squadrons stationed at Naval Air Station Norfolk. Aircraft types based at NAS Norfolk include E-2C, C-2, MH-53, H-46, SH-3 and MH-60. When a squadron is deployed, a PUK of several pallets and five-by-five-by-five foot cartons of supplies, known as tri-walls, are sent along with it, traveling from the regional supply office command to the supply command assigned to the squadron. A typical E2C PUK contains 500-600 parts.

Before the PUK leaves Norfolk, both commands must agree upon the contents. In the past, one person called out part numbers from a printed list while two others – each representing a command – checked off the items on their own inventory lists. Any discrepancies were noted and manually entered into the system after the inventory was complete. This process usually took three people

a total of 24 man-hours. At an average burdened wage of \$28.83 per hour, the labor cost for performing one PUK inventory was in excess of \$690. Multiply that by the 64 PUKs inventoried at least four times a year at Norfolk alone, and the Navy had a very costly logistical nightmare.

In addition, once the PUK was in the field, simply locating one part out of the 500 in the kit could take hours. And there was little visibility into the replenishment supply chain, sometimes resulting in multiple orders of the same part.

### Testing RFID

To improve inventory management, the supply officers at NAS Norfolk looked to radio frequency identification (RFID) technology and the expertise of a team of logistics and RFID specialists, including Intermec Technologies, Serco, Phase IV Engineering, Boh Environmental and PSC Technology.

RFID technology allows users to automatically track inventory throughout an entire supply chain. RFID data collection systems typically do not require line of sight or manual scanning as do most bar code-based systems, and offer significant improvement over the labor and logistical challenges of manual

systems. The technology was a natural fit for the Navy's Automatic Identification Technology (AIT) initiative, and so the Navy ordered a pilot technological overhaul of the PUK inventory process.

The initiative includes a blanket purchasing agreement, awarded to Intermec, to provide EPC Class 1 RFID tags, passive UHF RFID fixed-mounted and transportable RFID readers, RFID printers and related equipment, and passive RFID technical engineering service to support the Department of Defense and the U.S. Coast Guard.

98 percent reduction in inventory time NAS Norfolk's first evaluation of RFID integrated the technology into the E-2C PUKs assigned to a detachment at NAS Fallon, Nev. The evaluation yielded dramatic results.

"Each time we sent a PUK out on detachment, we'd have to do a turnover inventory from my command to the supply personnel attached to the squadron," said Lt. John Wait, assistant supply officer at NAS Norfolk. "Both commands must count the same things together and agree on the contents. It's extremely cumbersome. We'd each have a paper copy of the inventory and someone would call off each nine-digit number and we all check it off the list. With the manual system, it took about 24 man-hours to do one E2 PUK. With RFID, we now inventory that same PUK in less than 30 minutes."

Once at work in the field, the Navy's technology investment in RFID paid even further dividends.

"Under the old system, when a maintenance tech set out to find a part there was no telling its location – down to which tri-wall the part was in or even which pallet," Wait said. "It was kind of like finding a needle in a haystack."

"Imagine 500-600 parts in a warehouse on 12 or 15 pallets, or the parts are stored in tri-walls with approximately 50 parts in each, some the size of a carton of cigarettes," said Chet Zeller, project manager for Serco, systems integrator for the project. "When a mechanic needs a specific bleed air valve, it may take several hours just to find that one part. With RFID, the mechanic enters the item he needs, scans with the reader and receives the location of the item. It's that simple."

### Significant Improvements in Inventory Accuracy

The RFID system also paid off by greatly improving inventory accuracy. Previous manual systems allowed little if any visibility to the actual inventory on hand, and as parts were replenished there was significant room for error.

"As maintenance crews worked with the parts, either taking new ones off the PUK or turning old ones in, they sometimes lost track of the part's specific location. We call those lost parts 'carcasses,'" Zeller said. "They're not actually lost, however, they aren't visible within the supply system. And so the system would react to replenish in error."

With the RFID system, inventory is kept in real-time and replenishment orders are transmitted back to NAS Norfolk as parts are checked out. Supply officers also have complete visibility of the replacement parts in-transit, eliminating duplicate orders.

"That's the key money saver," added Zeller. "If you get accurate control of a \$10 million inventory, it can be reduced by ten or fifteen items, which shrinks the dollar value \$500,000 to \$1 million – a 5 or 10 percent reduction. The real value is enabling just-in-time replenishment and just-in-time inventory management."

### Improved Operational Abilities

"This project proved that, not only can we find the part quickly by using RFID, our database knows where the part is already," Wait said. "It greatly improved our organizational abilities and turnover time of a pack up kit."

Zeller lauds the trial both for its immediate success and the benefits the Navy will reap when RFID technology is more widely implemented.

"There are more than ten identical sites within the Navy that operate in the same way as Norfolk. Serco's business case analysis, provided in our post-implementation report to the Navy, concluded that the total annual savings the Navy reaped by implementing this one business process improvement across all ten sites would be in excess of \$2.2M per year. And this is for just one small section of the Navy supply chain," Zeller said.

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