



*Oil is the lifeblood of war in our times. Without it a nation cannot fight. It is the basic munition. There is nothing else the deprivation of which would have so damaging an effect upon a country's prospect of achieving victory. The loss of it would mean, indeed, the certainty of defeat. However great the reserve of manpower and machine-power, however ample the armaments that have been amassed, a nation could not hope for victory if it lacked the oil-power without which its men, its machines, and armaments would be immobilized and powerless.*

—James Molony Spaight, C.B., C.B.E., *The War of Oil*

# Thinking about logistics

**Air Force Munitions ISO Management: Logistics Enterprise for Containers**  
**Strategic Energy Lessons: A Historical Perspective Applied to America's Source Issues**  
**Integrating Air and Ground: Joint Theater Distribution System**

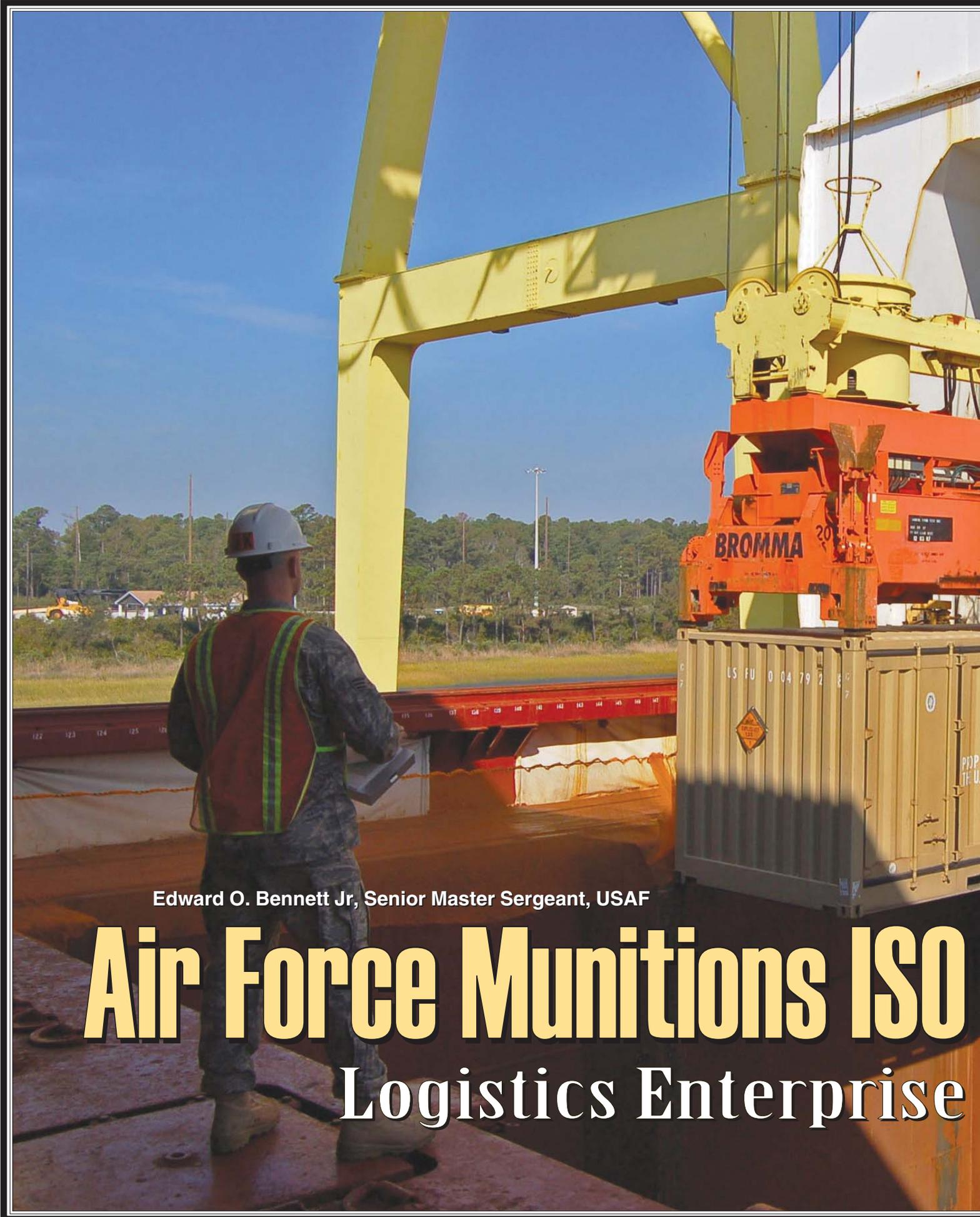
This special double edition of the Journal presents three featured articles: "Air Force Munitions ISO Management: Logistics Enterprise for Containers," "Strategic Energy Lessons: A Historical Perspective Applied to America's Source Issues," and "Integrating Air and Ground: Joint Theater Distribution System."

In "Air Force Munitions ISO Management: Logistics Enterprise for Containers," the author presents the results of an Air Force Logistics Management Agency (AFLMA) analysis comparing the use of the common commercial ISO (International Organization for Standardization) pool to total ownership of ISO containers to meet Air Force contingency munitions needs. This article documents the relevant background information, problem,

objectives, methodology, research, and findings associated with this effort.

The second featured article investigates a past coal-to-liquids program (German efforts during WWII) to determine whether there are strategic lessons for the United States that can be applied to today's energy situation, seen particularly from the perspective of national security.

In the concluding article the authors make the case that a single command structure responsible for the movement control of the theater could better utilize available assets to meet mission requirements by selecting the mode that would be most effective for the mission.



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# Air Force Munitions ISO Logistics Enterprise



## Introduction

Since inception, the Air Force munitions Afloat Prepositioned Fleet (APF) has been, and will remain a key pillar of the Department of Defense (DoD) Global Force Management and prepositioning. The Global Force Management construct supplements prepositioned theater munitions with war reserve materiel (WRM) swing stocks to meet a variety of missions throughout multiple theaters. Prepositioning provides the bridge between the early warfighting requirements in a particular theater and the strategic mobility assets required to move these requirements. The primary purpose of Air Force munitions prepositioning is to provide responsive and effective agile combat support (ACS) by positioning munitions where the combatant commander (CCDR) needs them to accomplish the mission.<sup>1</sup>

**Special  
Feature**

The Air Force Munitions APF has undergone drastic changes over the last few years; specifically, going from a four-ship construct to a two-ship construct. Another change was allowing each CCDR to utilize both vessels for planning purposes. The transformation that APF has undergone was not only driven by fiscal realities but, more importantly, enhanced ACS will be provided to the CCDRs by enabling an end-to-end enterprise distribution system utilizing the inherent movement capacity of the APF.<sup>2</sup> This transformation caused an excess in International Organization for Standardization (ISO) containers throughout the major commands (MAJCOM) and the APF.

Headquarters Air Force/A4MW, Munitions and Missile Maintenance Division, requested a study from the Air Force Logistics Management Agency (AFLMA) to recommend an economic strategy comparing the use of the common commercial ISO pool to total ownership of ISO containers to meet Air Force contingency munitions needs. Additionally, the AFLMA was asked to make recommendations that would effectively reduce APF excess ISO container investment. This article documents the relevant background information, problem, objectives, methodology, research, and findings associated with this effort. It concludes with recommendations to realize the cost savings associated with AFLMA's findings.

Let's begin with some background on what ISO really means. ISO is the world's largest developer and publisher of international standards for a large majority of products and services. ISO is a network of the national standards institutes of 157 countries, with one member per country. A central secretariat in Geneva, Switzerland coordinates the system. It is a nongovernmental organization that forms a bridge between the public and private sectors. On one hand, many of its member institutes are part of the governmental structure of their countries or are mandated by their government. On the other hand, other members have their roots uniquely in the private sector, having been

# Management for Containers

# Article Highlights

## Rapid response swing stocks are used to help fill the differences between the theater's minimum munitions stockpile requirements and on-hand stocks.

Currently, the Air Force has ownership of 5,428, 20-foot ISO containers to support Afloat Prepositioned Fleet (APF), retrograde, and refresh operations. With APF operations now at a two-ship construct, the need for containers has been significantly reduced. Current operations would require 200 at each major depot: Tooele Army Depot, Crane Army Activity, Bluegrass Army Depot, and McAlester Army Ammunitions Plant. The two remaining vessels (MV Fisher and MV Bennett), will carry 1,301 containers, which includes the 391 empty containers currently loaded on the MV Bennett. Thirty containers will be kept at Kadena Air Base to carry out refresh operations and an additional 100 at Military Ocean Terminal Sunny Point as spares. The total number of containers required to carry out these operations is approximately 2,231, a difference of 3,197 containers from current total ownership.

Annual cost of repair for the current balance of 5,428 is approximately \$52K annually. Reducing the on-hand number of containers to 2,231 would reduce the annual cost of repair to \$22K annually, a savings of \$30K. Excess containers, approximately 3,197, could then be transferred to the Army Intermodal Distribution Platform Management Office (AIDPMO) to be utilized by any Department of Defense (DoD) agency requiring these type containers. AIDPMO will pay for transportation costs to locations that possess the capability to inspect, repair, and maintain serviceable containers. AIDPMO will also accept unserviceable containers and transport them to a repair facility for inspection and repair. Containers deemed not repairable could be turned in to Defense Reutilization and Marketing Service for resale or scrap.

AIDPMO has agreed to accept responsibility of all excess containers turned over to their agency to include all transportation costs. The APF and Air Force Materiel Command should coordinate this directly through AIDPMO. The DoD gain of the approximate 3,197 excess containers transferred from APF operations to AIDPMO will reduce the number of containers that the DoD currently leases, while creating significant cost avoidance for the Air Force. Since September 2006 the Air Force has leased 1,874 containers. With the additional 3,197 ISO containers turned in by APF

set up by national partnerships with industry associations. Therefore, ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society.<sup>3</sup>

These standards are used when selecting containers for transporting munitions over international waters, thereby conforming to worldwide safety standards.

Since APF's inception in 1997, there have been considerable changes to the APF structure. Fiscal realities and Pacific Command concerns prompted accelerated consideration of the two-ship APF construct. AF/A4MW conducted a detailed value analysis of APF costs and benefits and concluded that a two-ship APF fleet in the short-term is best served by Motor Vessel (MV) Fisher and MV Bennett. This analysis was validated by Military Sealift Command planners and AF/A4/7 (Logistics and Installations). The decision was made to take an additional APF vessel off-lease at the end of fiscal year (FY) 2008. The MV Chapman went off-lease in FY07. The MV Pitsenbarger discharged select assets in-theater, picked up retrograde, and sailed to the Military Ocean Terminal Sunny Point (MOTSU) and discharged in mid-September 2008.<sup>4</sup>

The US Air Force APF carries required munitions assets in a forward-based environment. This gives theater commanders greater deployment flexibility by reducing early munitions airlift requirements and allowing rapid movement from region to region as priorities or circumstances change. This supports the Air Force policy of global engagement, enabling quick response to needs of an engaged theater commander or an air component commander worldwide. Rapid response swing stocks are used to help fill the differences between the theater's minimum munitions stockpile requirements and on-hand stocks. The APF program is a component of rapid swing stock. The APF weapons mix provides both bomber and tactical fighter support for a variety of missions. The APF program is part of the Global Asset Positioning program. From lessons learned in the Gulf War, the munitions community began working on ways to enhance port handling and intratheater transportation capabilities. The effort centered on the use of ISO 20-foot side opening containers to transport and store munitions earmarked for contingencies. To support this effort, the APF began working with Military Sealift Command to replace bulk cargo vessels with vessels capable of handling containerized munitions.<sup>5</sup>

The Air Force munitions logistics enterprise owns 5,428 ISO containers and treats them as WRM assets. These containers are prepositioned at various munitions hubs to load immediately to meet any global contingency tasking. The containers also represent a very large inventory investment that essentially doesn't move except on infrequent occasions (see Figure 1). From a cost and effort perspective, should the Air Force continue to maintain ownership of intermodal ISO containers or use a lease option through the Army Intermodal Distribution Platform Management Office (AIDPMO)? What is the best course of action to deal with excess containers generated from the discharge of two APF vessels?

### Objectives

This article will address the following objectives:

- Identify the major sources of costs associated with ISO container ownership and management with leasing options.

# Article Highlights

- Identify areas to exploit cost savings by reducing inventory.
- Provide recommended changes to achieve cost savings.
- To the extent possible, quantify potential savings realized through the adoption of the recommended changes.

## Assumptions

This article will assume the following:

- Data collected is accurate and complete.
- Historical data is representative of future operations.

Methodology was based on personal interviews conducted by AFLMA with APF program management personnel, both past and present, via telephone and e-mail. Interviews were also conducted with AIDPMO, Air Force item managers, and equipment specialists associated with ISO containers. Summaries of the interview responses are given in this report. Container data is extracted from the Combat Ammunition System, Agile Munitions Support Tool, and Asset Inventory Management System.

## Research and Findings

The discharge of the MV Chapman and the MV Pitsenbarger left an excess of approximately 3,100 Air Force-owned, 20-foot ISO containers throughout four MAJCOMs.

This resulted in excess containers left static at numerous locations throughout the Air Force utilizing precious space, manpower, equipment, and consumables in an attempt to maintain serviceable containers. Required container certifications are not properly managed due to lack of qualified personnel at container locations and lack of funding to secure contractors. This has resulted in 643 unserviceable containers to date.<sup>6</sup> Locations with empty containers do not have certified personnel capable of inspecting or repairing current stocks.

Future requirements for the MV Fisher and MV Bennett require approximately 910 containers.<sup>7</sup>

The lease cost for these containers is based on a maximum lease period of 5 years with an approximate cost of \$3.3M for both vessels with container repair as part of the lease. This equates to \$3,636 per container over a 5-year period. The initial purchase cost of a single container is \$6,684;<sup>8</sup> therefore two 5-year leases would exceed the original purchase price of a container. The cost required to manage and maintain all Air Force owned ISO containers, based

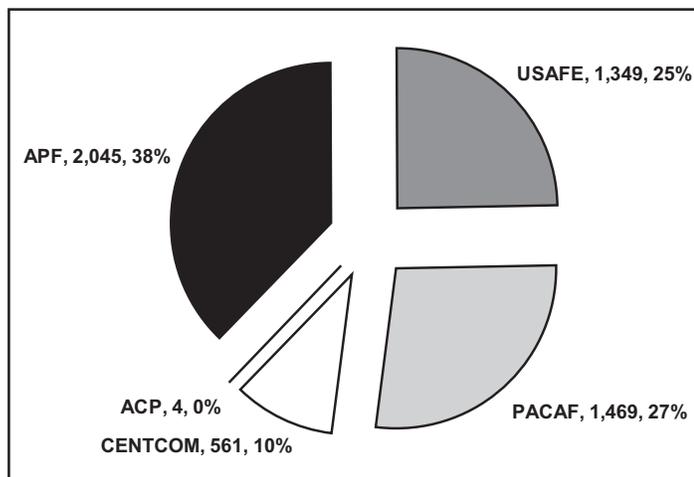


Figure 1. ISO Distribution

to DoD stockpile (controlled by AIDPMO), leasing containers for munitions movements would be virtually eliminated.

In accordance with Air Force instructions, units will maintain containers in serviceable condition for munitions redistribution or storage at all times. The Convention for Safe Containers certification on all Air Force-owned containers must be kept current. The cost to manage and maintain Air Force-owned ISO containers is minor compared to the cost of leasing containers to support these operations. It would be in the best interest of the Air Force to maintain total ownership of sufficient containers to support APF operations and any required retrograde. It is also recommended that the Air Force turn over all excess containers to AIDPMO to manage and maintain. This significantly reduces the storage space, manpower, equipment, and consumables required to maintain serviceable containers.

By reducing the ISO container inventory by 57 percent the repair savings is approximately \$150K over the first 5 years. Additionally, transferring excess containers to AIDPMO will allow DoD to utilize over 3,000 ISO containers it would have otherwise had to lease commercially. Furthermore, maintaining ownership of containers required to support the APF mission will help provide responsive and effective ACS by allowing the flexibility total ownership provides and cost avoidance of approximately \$16M.

## Article Acronyms

- ACS – Agile Combat Support
- AFLMA – Air Force Logistics Management Agency
- AFMC – Air Force Materiel Command
- AIDPMO – Army Intermodal Distribution Platform Management Office
- AMST – Agile Munitions Support Tool
- APF – Afloat Prepositioned Fleet
- CENTCOM – Central Command
- CCDR – Combatant Commander
- DoD – Department of Defense
- FY – Fiscal Year
- ISO – International Organization for Standardization
- MAJCOM – Major Command
- MOTSU – Military Ocean Terminal Sunny Point
- MV – Motor Vessel
- PACAF – Pacific Air Forces
- PEC – Program Element Code
- US – United States
- USAFE – United States Air Forces in Europe
- WRM – War Reserve Materiel

on 2 years' worth of data from the APF office equates to approximately \$9K annually which is \$45K over a 5-year period. This cost is primarily attributed to damage the containers may receive during loading and unloading operations. The vessels are climate controlled; therefore no additional weathering damage is incurred.

## Conclusions and Recommendations

### Recommendations

Currently, the Air Force has ownership of 5,428, 20-foot ISO containers to support APF, retrograde, and refresh operations. With APF operations now at a two-ship construct, the need for containers has been significantly reduced. Current operations would require 200 at each major depot: Tooele Army Depot, Crane Army Activity, Bluegrass Army Depot, and McAlester Army Ammunitions Plant. The two remaining vessels (MV Fisher and MV Bennett), will carry 1,301 containers, which includes the 391 empty containers currently loaded on the MV Bennett. Thirty containers will be kept at Kadena Air Base to carry out refresh operations and an additional 100 at MOTSU as spares.<sup>9</sup> The total number of containers required to carry out these

Location	Container Quantity Required
APF Ships, two	1,301
Tooele	200
Crane	200
McAlester	200
Bluegrass	200
MOTSU	100
Kadena	30
<b>Total</b>	<b>2,231</b>

Table 1. Containers Required for APF Mission

operations is approximately 2,231, a difference of 3,197 containers from current total ownership (see Table 1).

Annual cost of repair for current balance of 5,428 is approximately \$52K annually.<sup>10</sup> Reducing the on-hand number of containers to 2,231 would reduce the annual cost of repair to \$22K annually, a savings of \$30K. Excess containers, approximately 3,197, could then be transferred to AIDPMO to be utilized by any DoD agency requiring these type containers. AIDPMO will pay for transportation costs to locations that possess the capability to inspect, repair, and maintain serviceable containers. AIDPMO will also accept unserviceable containers and transport them to a repair facility for inspection and repair. Containers deemed not repairable could be turned in to Defense Reutilization and Marketing Service for resale or scrap. See Table 2 for current container quantities, locations, serviceability, and associated value.

AIDPMO has agreed to accept responsibility of all excess containers turned over to their agency to include all transportation costs.<sup>11</sup> The APF and Air Force Materiel Command should coordinate this directly through AIDPMO. The DoD gain of the approximate 3,197 excess containers transferred from APF operations to AIDPMO will reduce the number of containers that the DoD currently leases, while creating significant cost avoidance for the Air Force. Since September 2006 the Air Force has leased 1,874 containers.<sup>12</sup> With the additional 3,197 ISO containers turned in by APF to DoD stockpile (controlled by AIDPMO), leasing containers for munitions movements would be virtually eliminated.

In accordance with Air Force instructions, units will maintain containers in serviceable condition for munitions redistribution or storage at all times. The Convention for Safe Containers certification on all Air Force-owned containers must be kept current. Maintenance, repair, and inspection of ISO containers is a program element code (PEC) 28030 expense (PEC 55396F for Air Force Reserve Command).<sup>13</sup> The cost to manage and

Location of Container	Quantity of Containers	Purchased Cost	Quantity Serviceable	Purchased Cost	Quantity Unserviceable	Purchased Cost
USAFE	1,349	\$9,016,716	1,163	\$7,773,492	186	\$1,243,224
APF/AFMC	2,045	\$13,668,780	2,045	\$13,668,780	0	\$0
PACAF	1,469	\$9,818,796	1,053	\$7,038,252	416	\$2,780,544
ACP/AFMC	4	\$26,736	4	\$26,736	0	\$0
CENTCOM	561	\$3,749,724	520	\$3,475,680	41	\$274,044
<b>Totals</b>	<b>5,428</b>	<b>\$36,280,752</b>	<b>4,785</b>	<b>\$31,982,940</b>	<b>643</b>	<b>\$4,297,812</b>

Table 2. Breakout of Air Force Owned ISO Assets (data derived from AMST on 25 July 2008)

Ownership Cost Versus Lease Cost					
Owned/Leased	Number of Years	Per Container	910 <sup>1</sup> Containers	2,231 <sup>2</sup> Containers	5,428 <sup>3</sup> Containers
Air Force Owns Containers Cost <sup>4</sup>	5 year	\$48.55	\$44,180.50	\$108,315.05	\$263,529.40
	10 Year	\$97.10	\$88,361.00	\$216,630.10	\$527,058.80
Leased Cost <sup>5</sup>	5 Year	\$3,636.00	\$3,308,760.00	\$8,111,916.00	\$19,736,208.00
	10 Year	\$7,270.00	\$6,615,700.00	\$16,223,832.00	\$39,461,560.00

Table 3. Cost Comparison; Notes: <sup>1</sup>projected requirements for the MV Fisher and Bennett, <sup>2</sup>total number of containers to fully support APF missions, <sup>3</sup>current on-hand balance of containers, <sup>4</sup>Air Force owns containers and only needs to pay for maintenance and upkeep, and <sup>5</sup>leases containers from a commercial ISO pool and includes maintenance and upkeep

maintain Air Force-owned ISO containers is minor compared to the cost of leasing containers to support these operations. It would be in the best interest of the Air Force to maintain total ownership of sufficient containers to support APF operations and any required retrograde. It is also recommended that the Air Force turn over all excess containers to AIDPMO to manage and maintain. This significantly reduces the storage space, manpower, equipment, and consumables required to maintain serviceable containers. See Table 3 for owning versus leasing cost analysis breakdown.

### Benefits

By reducing the ISO container inventory by 57 percent the repair savings is approximately \$150K over the first 5 years. Additionally, transferring excess containers to AIDPMO will allow DoD to utilize over 3,000 ISO containers it would have otherwise had to lease commercially. Furthermore, maintaining ownership of containers required to support the APF mission will help provide responsive and effective ACS by allowing the flexibility total ownership provides and cost avoidance of approximately \$16M.

### Notes

1. *FY2008–2019, US Air Force Directorate of Installations, Logistics, and Mission Support, Afloat Prepositioned Fleet Strategic Overview, (2008).*
2. *Ibid.*

3. *International Standards for Business, Government and Society*, [Online] Available: International Organization for Standardization: <http://www.iso.org/iso/about.htm>, August 2008.
4. *Afloat Prepositioned Fleet Strategic Overview.*
5. 784<sup>th</sup> Combat Sustainment Group, 505<sup>th</sup> Combat Sustainment Squadron, Readiness Division, *Afloat Prepositioned Fleet Battle book*, (2008).
6. USAF Combat Ammunitions System and Agile Munitions Support Tool, *CAS and AMST.*
7. R. O’Conner, (July–August 2008), 2<sup>d</sup> Lt, USAF, AFMC 505/CBSS/GBLA, OIC APF Operations, (E. Bennett, Interviewer).
8. USAF Combat Ammunitions System and Agile Munitions Support Tool.
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11. S. Gorba, (July–August 2008), Chief, Army Intermodal and Distribution Platform Management Office, (E. Bennett, Interviewer).
12. D. Rumford, (July–August 2008), Logistics Analyst, III-SAIC, AIDPMO, (E. Bennett, Interviewer).
13. AFI21-201, *Conventional Munitions Maintenance Management*, 23 Nov 2007.

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## **Knowledge - Technology - Innovation**

Lots of organizations have catchy mottoes. Likewise, many have catchy vision statements. We do, too. But there’s a big difference—we deliver on what we promise. *Generating Transformational Solutions Today; Focusing the Logistics Enterprise of the Future* aren’t just words to us; they’re our organizational culture. We use a broad range of functional, analytical, and scientific expertise to produce innovative solutions to problems and design new or improved concepts, methods, systems, or policies that improve peacetime readiness and build war-winning logistics capabilities. Our key strength is our people. They’re all professionals from logistics functions, operational analysis sections, and computer programming shops. Virtually all of them have advanced degrees. But more important, virtually all of them have recent field experience. They’ve been there and done that. They have the kind of experience that lets us blend innovation and new technology with real-world common sense and moxie. Our special blend of problem-solving capabilities is available to every logistician in the Air Force.

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