

Citywide Fuel Expenditures Harbor Department

Report 2 of 4

August 2013



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Executive Summary

We have conducted an audit of Citywide fuel expenditures. The City currently has three fueling systems overseen by the Fleet Services Bureau (Fleet Services), the Harbor Department (Harbor) and the Water Department (Water). Due to the use of multiple fuel systems and the size and complexity of the fuel operations, the results of our audit will be communicated throughout a series of four reports. The first report, issued on July 10, 2013, focused on the City's largest fuel operations, which is overseen by Fleet Services. This report (the second in the series of four) focuses on audit results related to the fuel operation overseen by Harbor. Report three will focus on Water's fuel operations and the final report will explore the possibility of consolidating the fueling operations Citywide. Therefore, numbers and information discussed throughout this report pertain to the Harbor's fuel operation only.

The Harbor purchased approximately 109,000 gallons of fuel costing nearly \$388,000 in fiscal year (FY) 2012. The Harbor performed an estimated 9,000 fuel transactions at their two fueling locations during this same period. A significant portion, 97%, of the Harbor's fuel is accessed through the use of fuel rings and appears to provide adequate control over the fuel usage. Fuel rings are more effective in limiting unauthorized access to fuel than equipment such as fuel keys, which are used by Fleet Services and discussed in the first report.

The Harbor's remaining 3% of fuel usage is accessed through two other methods which appear to be less restrictive than fuel rings. However, during our audit, we did not find a pattern of unusual or excessive fuel use with these methods either. While unusual or inappropriate fueling did not appear prevalent, we did identify areas where control weaknesses exist, and the use of mitigating controls could provide further protection against misuse.

The Harbor has been using the current fuel system since 1995 and has selected a new fuel system that will be implemented with the completion of their new maintenance facility later this year. Upgrading to a new system will provide the opportunity for better controls, and the Harbor should capitalize on the system's new and expanded functionality, such as system parameters and effective reporting, to strengthen areas where weaknesses exist.

The topic of consolidating systems with the City and Water will be explored more in the final report on Citywide fueling operations. Even if the Harbor decides not to consolidate, immediate action can be taken to strengthen controls such as developing a fuel ring inventory, reconciling fuel rings to active assets, improving accountability for box ring transactions, and increasing transactional review.

We want to thank Harbor staff for their cooperation, and we appreciate their efforts and desire to improve processes to secure and safeguard City resources. We respectfully request that in one year management provide status of the progress made in implementation of the recommendations detailed in this report.

Background

The City of Long Beach (City) has three separate fueling operations. The Fleet Services Bureau (Fleet Services) within the Department of Financial Management oversees the fuel operations for all City departments with the exception of the Water Department (Water) and Harbor Department (Harbor). Water and Harbor each have their own independent fueling systems that are operated and managed by their own departments. This report focuses on the Harbor's fuel operations and thus, all numbers and information discussed throughout the report pertain to Harbor only.

The Harbor's *Administrative Directive 10.05* (AD 10.05) states that it is the responsibility of the Maintenance Division to administer the Vehicle Fleet Program. In addition, it states that it is the responsibility of the Fleet Manager to oversee the operation of the Harbor's vehicle fleet including fueling.

Harbor Fuel Operations

In fiscal year (FY) 2012, the Harbor purchased approximately 109,000 gallons of fuel at a cost of nearly \$388,000. The Harbor's Maintenance Division oversees the fuel operation and bears the cost of fuel purchases. Table 1 shows fuel purchases over the last five fiscal years.

Table 1
Harbor Fuel Purchases
Fiscal Year 2008 – 2012

Fiscal Year (FY)	Fuel Purchases
FY 2008	\$ 334,400
FY 2009	233,900
FY 2010	285,900
FY 2011	354,700
FY 2012	387,600

Fuel is currently dispensed at two active fuel sites located at the Harbor Administrative Building and Harbor Maintenance Facility. Unleaded fuel is available at the

Administrative Building site, while unleaded, diesel, and propane can be accessed at the Maintenance Facility site.

In addition to the two Harbor-run fuel sites, Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) vehicles get fuel from non-City fuel sites run by an outside vendor, Clean Energy. Also, Harbor boats are fueled at a non-City site located in the port. The Harbor is invoiced by the vendor for these fuel purchases, but the transactions are not entered into the Harbor's fuel management system.

As seen below in Table 2, during our six-month audit period, the Harbor conducted over 4,600 transactions which accounted for almost 48,200 gallons of fuel. The table does not include over 10,000 gallons of CNG, LNG, and boat fuel used during our audit period.

Table 2
Fuel Usage by Fuel Type
April – September 2012

Fuel Type	No. of Fuel Transactions	Fuel Quantity (in Gallons)
Unleaded	4,307	41,604
Diesel	234	3,739
Propane	102	2,856
Total	4,643	48,199

Fueling Methods

Fuel can be obtained for vehicles and equipment at Harbor fuel sites through three methods: fuel rings, reprogrammable box rings (box rings), and a master garage remote (master remote).

Fuel rings are physical rings placed around the fuel tanks of Harbor vehicles and can only be installed by trained technicians. When the fuel ring is installed, it is programmed with the vehicle number and the vehicle fuel type. When the fuel ring comes into close proximity (within approximately two inches) of the fuel nozzle, the pump is activated and fueling is allowed to occur. Therefore, it appears fuel can be dispensed for that vehicle only. Harbor represented that they have 168 fuel rings, 161 of which are installed on vehicles and 7 that are not in use. Our audit did not include a verification of this inventory.

The second method of accessing fuel is through a box ring. The Harbor has two box rings which are retained in portable wooden boxes in the main garage area of the

Harbor maintenance facility instead of being affixed to vehicles. One of the box rings is used for various activities, such as fueling vehicles that have malfunctioning fuel rings, fueling assets that don't have a fuel ring installed on them, or transporting fuel via gas can for a specific asset. The technicians program the asset number that will be receiving fuel to the box ring so that the fuel can be traced back to that asset. This box ring is continually reprogrammed depending on the asset receiving fuel. The other box ring is used to fuel rental equipment, such as a front loader that is needed for short-term use in a large construction job. This box ring has a generic asset number programmed for ease of use. While asset numbers may be entered when activating both box rings, this is strictly a recordkeeping function and does not control the access to fuel.

The third method to access fuel is by use of the master remote which looks similar to a garage remote. When the master remote is held up to the fuel nozzle, it activates the pump to allow fueling and does not require any information to be programmed, such as an asset number, fuel type, etc. Therefore, transactions initiated by the master remote cannot be traced back to a specific asset number and do not restrict access to fuel.

Table 3 below provides a breakdown of the number of fuel transactions conducted at Harbor fueling stations and number of gallons dispensed by each fueling method. The table shows the majority of fuel was dispensed with fuel rings.

**Table 3
Fueling Methods & Activity Level
April – September 2012**

Fueling Method	No. of Devices	No. of Fuel Transactions	Fuel Quantity (in Gallons)	% of Fuel Used
Fuel Rings	168	4,504	46,954	97%
Reprogrammable Box Ring*	2	50	840	2%
Master Garage Remote	1	89	405	1%
Total	171	4,643	48,199	100%

*The Reprogrammable Box Rings were quantified for diesel and propane fuel only. Unleaded transactions did not have a unique identifier; therefore, unleaded Reprogrammable Box Ring transactions would be captured in the Fuel Rings line.

Fuel Management System

Orpak USA is the supplier of the Harbor's fuel management system, RNI 2000 (Fuel System). The Fuel System keeps track of transactional activity by vehicle number and location. The Harbor has used the system since 1995. Table 4 shows that over the last three fiscal years, the Harbor has made payments to Orpak USA for approximately \$3,400 in software, technical support, and system repairs. The Fuel System stopped

being supported by the vendor in late 2012, eliminating system updates and decreasing reporting capabilities.

Table 4
Payments to Orpak
Fiscal Year 2010 – 2012

Fiscal Year (FY)	Amount Paid
FY 2010	\$ 1,682
FY 2011	1,693
FY 2012	0
Total	\$ 3,375

The Harbor is currently in the process of constructing a new maintenance facility that is projected to be completed in the fall of 2013. When the new maintenance facility is operational, the Harbor will be implementing a new fuel management system, Orpak Island Card Reader, and retain the fuel ring equipment. The new fuel system is expected to provide more parameter settings and reporting capabilities.

Objective & Methodology

The objective of our audit was to assess the appropriateness of the City's fuel expenditures. The first report focused on the City's largest fuel operation, which is overseen by Fleet Services and was issued on July 10, 2013. This report (the second in a series of four) specifically focuses on our audit results related to the fuel operation overseen by the Harbor Department. Report three will focus on the Water Department's fuel operations and the final report will explore the possibility of consolidation of the fueling operations Citywide. Our audit scope covered Harbor fuel transactions that occurred from April 1, 2012 through September 30, 2012. During our audit, we performed the following procedures:

- Reviewed applicable policies and procedures to gain an understanding of critical processes and responsibilities;
- Interviewed Harbor Department personnel and obtained an understanding of the internal controls related to our audit objectives;
- Evaluated the fuel system capabilities and access controls;
- Reviewed vehicle information and maintenance records; and
- Analyzed a sample of fuel transactions that occurred during the audit period.

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results

In fiscal year (FY) 2012, the Harbor Department (Harbor) purchased about 109,000 gallons of fuel at a cost of nearly \$388,000 and performed approximately 9,000 fueling transactions. Approximately 97% of fuel used during the six-month audit period was accessed by fuel rings, and our review of system data found minimal transactions that appeared unusual. Therefore, it appears the fuel rings are working as intended and serving the purpose of restricting access to the majority of fuel usage.

The other two methods of accessing fuel, the box rings and master remote, appear to be less restrictive than the fuel rings. However, our review of transactional data associated with these fueling methods did not reveal unusual or excessive use of fuel.

While inappropriate fueling did not appear prevalent for the transactions we reviewed, we did identify areas where control weaknesses exist and where the use of mitigating controls could provide further protection for the Harbor's valuable fuel resource. The pending implementation of a new software system should provide the opportunity for increased controls as well. We categorized the control weaknesses into three areas:

- Lack of Fuel Ring Inventory
- System Parameters Not Used to Control Fuel Use
- Some Fueling Methods Allow Unlimited Access to Fuel

1. Lack of Fuel Ring Inventory

During the six-month period we reviewed, the Harbor conducted over 4,600 transactions, using 48,200 gallons of fuel. The majority, 97%, of these fuel transactions are performed by fuel rings.

Fuel rings are installed by trained department personnel and should only be installed on Harbor vehicles. When the fuel ring is installed, the vehicle number and fuel type are programmed into the fuel ring so that fuel transactions can be traced back to the specific vehicle. To activate the pump and allow fueling, the fuel ring must come into close proximity with the fuel nozzle. Therefore, it appears fuel can be dispensed for that vehicle only.

While we acknowledge the fuel ring technology appears to be effectively limiting fueling to Harbor vehicles, the fuel ring inventory is not documented. In addition, there is no reconciliation of fuel rings to asset listings to identify how all vehicles are fueled. Therefore, without an inventory, we are unable to determine if all fuel rings are accounted for. Additionally, fuel rings not currently installed on vehicles are kept in an unsecured garage storage area at the maintenance facility. It is important that fuel rings purchased, installed, and disposed of be properly secured and accounted for so that misappropriation or misuse of fuel rings can be detected.

2. System Parameters Not Used to Control Fuel Use

The purpose of fuel system parameters is to restrict the use of fuel based on user needs. Different parameters (such as odometer readings, maximum travel distance, maximum quantity, maximum daily visits) can be set to further restrict fuel access.

However, during our audit we could not find evidence Fuel System parameters were in use, and Harbor staff acknowledged not setting parameters for specific fuel rings. It would not be productive for Harbor to establish parameters in the current system since it is no longer supported by the vendor, and there are plans to implement a new fuel system in the near future. However, the Harbor should consider establishing reasonable parameters within the new system and monitoring transactions that fall outside those parameters to ensure they are explainable and justifiable to further protect Harbor's fuel from misuse.

3. Some Fueling Methods Allow Unlimited Access to Fuel

In addition to fuel rings, there are two other ways to access fuel, reprogrammable box rings (box rings) and a master garage remote (master remote). Unlike fuel rings, these devices are not installed on specific vehicles and can be used to fuel any vehicle or equipment, Harbor owned or not. When using these devices there is no restriction at the pump to limit what is fueled.

During the six-month audit period, these devices were used to dispense at least 1,200 gallons, 3%, of fuel. While this is a small percentage of the total fuel dispensed, due to

the lack of restriction around their usage, fueling by these methods poses the highest risk for misuse of fuel.

We were able to identify fueling transactions initiated by the master remote on system reports. However, for the box rings, only diesel and propane transactions could be tracked. Unleaded transactions initiated through the box rings are not distinguished from unleaded fuel ring transactions. Without a distinguishing mark, we were unable to determine the amount of fuel obtained through each method. It is critical to isolate these transactions due to the high risk of misuse of fuel.

Additionally, when the box rings are used, an asset number can be programmed so that the fuel is traced to a specific asset. However, any number can be programmed, and there is no check within the system to ensure the asset number entered exists and is accurate. Therefore, a non-existent or invalid asset number could be entered to activate the fueling.

Recommendations

The Harbor has been using the current Fuel System since 1995 and recognizes that a system upgrade is needed. A new fuel system has already been selected and is expected to be implemented in fall 2013. Although upgrading to a new system will provide better controls over the use of fuel, the Harbor needs to fully capitalize on the new system capabilities and implement mitigating controls to help minimize risk of misuse in areas where weaknesses exist.

In addition to the Fuel System overseen by Harbor, other City fuel systems are managed by Fleet Services and the Water Department. Our final report on Citywide fuel operations will discuss the possibility of consolidating resources to provide efficiencies in system costs and shared allocation of dedicated personnel to monitor controls and transactional data.

Although the Harbor is going to be implementing a new software system in the near future, there are steps that can be taken immediately to strengthen controls over fuel use. Establishing the following mitigating controls will reduce the risk of misappropriation of fuel for non-City purposes.

- Develop a fuel ring inventory showing the serial number for each fuel ring and the vehicle it is installed on. Track all fuel rings that are in the inventory, even those that are not in use. Perform periodic reviews of the inventory to ensure all fuel rings are accounted for.

- Reconcile the fuel ring inventory to current assets. Identify those assets with no fuel rings and determine the best method for their fueling whether through installation of a fuel ring or by using the master garage remote or reprogrammable box rings. For those assets without fuel rings, communicate to employees the most appropriate method of fueling. This will establish a pattern of consistency among fueling methods and improve tracking capabilities.
- Create a way for unleaded reprogrammable box ring transactions to be identified on fuel transaction reports similar to the method already used for diesel and propane.
- Perform periodic reviews of fuel transactions to identify anomalies that may need explanation, focusing on transactions with the highest risk, such as those performed by the master garage remote and reprogrammable box rings.

When the new fuel system is implemented, Harbor should ensure that the following recommendations are addressed to further strengthen controls. These include, but are not limited to:

- Establish appropriate system parameters based on vehicle specifications and user needs; monitor activity to ensure transactions occur within reasonable parameters.
- Develop system reports to identify such things as system overrides, unusual transactions, and system edits. Review these reports timely and follow up on occurrences that require further explanation to ensure they were necessary and justified.
- Determine if new technology can replace or improve upon the use of the reprogrammable box rings and the master garage remote to reduce the risk of misappropriation.

Appendix A

Management's Response

Date: August 27, 2013

To: Terra Van Andel, Deputy City Auditor

From: Randy J. Rich, Director of Maintenance

Subject: **Response to Harbor Department Fuel Audit Findings**

Thank you for the opportunity to respond to your findings. We have reviewed the report carefully and are confident that your team has acquired a thorough knowledge of our fuel management system. We intend to employ your recommendations as soon as we are capable given the limited system functionality of our outdated RNI 2000 fuel system, which, as stated in your report is no longer supported by the vendor. Additionally, we are eager to implement a new fuel management system, Orpak Island Card Reader (OICR), which will provide the tools necessary to address the remaining concerns described in the report. To this end, we would like to address the recommendations in two sections: (1) those that can and will be performed now (Immediate Actions); and (2) those that will be performed once the new OICR system takes effect (Future Actions).

Immediate Actions:

1. Development of a fuel ring inventory linking the fuel ring serial number to the vehicle or identifying it as not in use.
2. For assets without a fuel ring we will define and govern the fueling method based on quantity of fuel used as follows: (1) the master remote will only be used for small issues such as edgers, mowers, or small gas cans for use in these tools and equipment; and (2) the reprogrammable box will only be used for larger quantities and be programmed to charge the fuel to the equipment in which it will be used. Both the master remote and the reprogrammable box are stored in the garage. During business hours the garage supervisor must authorize the use of these systems and after hours the garage is locked and alarmed.
3. Program a code for unleaded fuel into the module of the reprogrammable box that will appear on the fuel transaction report in the same way diesel and propane are currently shown. When we first set up the box the modules were coded to track their use. When the gasoline module failed several years ago and was replaced, the code was not reprogrammed into it. This was an oversight that was not caught and will be easily remedied.

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Future Actions:

1. Establish system parameters and monitor activity to ensure fuel transactions are reasonable based on user needs.
2. Develop and regularly review system reports that will be available in the new OICR fuel management system. The exact content/subject of these reports will depend on what is available from OICR once we are introduced to the new system, but the objective will be to focus on ensuring that all fueling transactions are necessary and justified.
3. Work with OICR to ensure that our reprogrammable box and master remote devices are the most advanced technology available for refueling assets with no fuel rings, and explore any viable alternatives.

As requested we will provide a status report in approximately one year detailing our progress in implementing your recommendations. Thank you for your time and effort in this endeavor and please let us know if we can be of any further assistance.