

**DRAFT PHILIPPINE NATIONAL STANDARD (PNS) ON LIQUID FUELS MOBILE  
VEHICLE DISPENSING SYSTEM (LF-MVDS) AND CODE OF SAFETY  
PRACTICES**

## **DRAFT PHILIPPINE NATIONAL STANDARD (PNS) ON LIQUID FUELS MOBILE VEHICLE DISPENSING SYSTEM (LF-MVDS) AND CODE OF SAFETY PRACTICES**

This Standard has been prepared by the Technical Working Group (TWG) under the Technical Committee on Petroleum Processes and Facilities (TCPPF) in response to the policy direction of the Department of Energy-Oil Industry Management Bureau to offer guidance and prepare a document reflective of the local regulations and safety requirements associated with the introduction and use of Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS).

This Standard also incorporates the Code of Safety Practices expected in the transportation of Liquid Fuels. Covered in the Safety and Practices are the operation of Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS), proper maintenance, and the personnel qualifications and requirements of driver and pump attendant as operators of the LF-MVDS.

The TWG Members are composed of technical representatives from government agencies, downstream oil industries and safety practitioners/organization.

It is anticipated that the user of this Standard and the materials referenced herein would form the basic requirements for a safe, worker-safe, environment-friendly and responsible operation of the Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS) and act as the primary and minimum requirements in this sector of the Downstream Oil Industry.

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## FOREWORD

This Philippine National Standard on Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS) and Code of Safety Practices was prepared under the direction of the Technical Committee on Petroleum Processes and Facilities (BPS/TC 68) through its Technical Working Group. This Standard was approved for adoption as Philippine National Standard by the Bureau of Philippine Standards.

This Standard provides for the minimum requirements of LF-MVDS design and specifications to ensure worker-safe, environment-friendly and quality assured transport/dispensing of bulk liquid fuels. Furthermore, this Standard also provides appropriate government regulations and requirements at the time of publication, in the operation and maintenance of LF-MVDS.

Where government regulation is more stringent than the requirements given here, the government regulation shall apply.

In the development of this Standard, the following technical references were considered:

- Department of Energy
  - DC 98-03-0004 – Rules and Regulations Implementing RA 8749
  - DC 2017-11-0011 – Revised Rules and Regulations Governing the Business of Retailing Liquid Fuels
- PNS on Vehicle Transport for Bulk Liquid Fuels (LF) and Code of Safety Practices
- Bureau of Fire Protection
  - Fire Code of the Philippines of 2008 (Republic Act No. 9514)
- Land Transportation Franchising and Regulatory Board
  - MC No. 2018-007
  - DO No. 2015-018
  - MC No. 92-009
  - MC No. 2011-014
- Land Transportation Office
  - RA 4136
  - RA 10930
- Department of Public Works and Highways – Bureau of Quality and Safety (RA 8794)
- Environmental Management Bureau
  - DAO 2000-81
- United States Department of Transportation Code of Federal Regulations Title 49– (USDOTR CFR Title 49)
- United States Department of Transportation Code of Federal Regulations– 40 CFR National Fire Protection Association NFPA 385 (2000 edition)

## **ACKNOWLEDGEMENT**

This Philippine National Standard on Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS) and Code of Safety Practices has been a collaborative effort of the Oil Industry Management Bureau of the Department of Energy (DOE-OIMB) and the Bureau of Philippine Standards of the Department of Trade and Industry (DTI-BPS) with the help, support, and technical assistance of the following:

### **Government Agencies:**

- Department of Environment and Natural Resources – Environmental Management Bureau (DENR-EMB)
- Department of Interior and Local Government – Bureau of Fire Protection (DILG-BFP)
- Department of Labor and Employment – Bureau of Working Conditions (DOLE-BWC)
- Department of Labor and Employment – Occupational Safety and Health Center (DOLE-OSHC)
- Department of Science and Technology – Industrial Technology Development Institute (DOST-ITDI)
- Department of Science and Technology – Metals Industry Research and Development Center (DOST-MIRDC)

### **Invitees:**

- Department of Transportation – Land Transportation Office (DOTr-LTO)
- Department of Public Works and Highways – Bureau of Quality and Safety (DPWH-BQS)
- Department of Transportation – Land Transportation Franchising and Regulatory Board (DOTr-LTFRB)

### **Downstream Oil Industry Associations:**

- Independent Philippine Petroleum Companies Association (IPPCA)
- Philippine Institute of Petroleum (PIP)
- Individual Oil Companies

### **Safety Practitioners/ Organization:**

- Safety Organization of the Philippines (SOPI)
- ESA Health, Environment and Safety Services, Engr. Eduardo S. Ajero, President (Invitee/ Technical Expert)

### **Technology Providers:**

- Tri Magnum Inc.
- Kepi Tech Center

### **TCPPF Secretariat:**

- **Oil Industry Standards and Monitoring Division**

## 1. SCOPE

This Standard covers the minimum requirements for the transportation of Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS) used for the dispensing of diesel and/ or gasoline during emergency situations in the aftermath of such as typhoon, earthquake, flood, etc., when the operations of the existing Retail Outlets are temporarily non-operational.

Under this Standard specification, an LF-MVDS shall not be used or deployed to conduct retailing business in areas where existing retail outlets can operate normally even under calamity.

An LF-MVDS may also be utilized for own-use provided that all technical standards / requirements herein are complied with.

Additional requirements may be referenced to PNS on Vehicle Transport for Bulk Liquid Fuels (LF) and Code of Safety Practices, as appropriate.

## 2. DEFINITION OF TERMS

For the purpose of this standard the following definitions shall apply.

**appurtenance**

any attachment to a tank truck that has no lading retention or containment function and provides no structural support to the tank truck

**baffle**

a non-liquid-tight transverse partition device that deflects, checks or regulates fluid motion in a tank

**bulkhead**

a liquid-tight transverse closure at the ends of or between tank truck

**cabin**

the driver compartment of the truck or tractor. The cab is the area of the vehicle where the driver sits

**calibration**

the set of operations to determine the capacity of a tank, at one or several filling levels, whether marked or not

**dispensing device**

is an equipment used to dispense petroleum products such as gasoline, diesel and kerosene

**early warning device**

a safety tool that provides you with the safety net by way of added visibility especially during an emergency stop on a road

**fire extinguisher**

a portable device that discharges a jet of water, foam, gas, or other material to extinguish a fire

**flammable liquids**

categorized as "*hazardous materials*" with which their storage, handling and use will be subjected to applicable standards

**fuel dispenser module**

a complete modular dispensing system containing flexible hose, pump, nozzle, and product volume and price display

**pipe**

a fitting with internal threads on both ends

**rigid tanker**

a rigid tank trucks with two axle sets, a driver's position, a steering system, motive power and a single rigid chassis

**tank shell**

a container, consisting of a shell and heads, that forms a pressure tight vessel having openings designed to accept pressure tight fittings or closures, but excludes any appurtenances, reinforcements, fittings, or closures

**tank appurtenances**

as any attachment to a tank truck that has no lading retention or containment function and provides no structural support to the cargo tank. Some examples of an appurtenance include ladders, light brackets, hose trays, conduit clips, brake line clips and placard holders, just to name a few

**tank truck**

any single self-propelled motor vehicle equipped with a tank truck mounted thereon and used for the transportation of flammable and combustible liquids. A Tank Truck is a composite unit consisting of a propelling motor and cab together with one or more tanks fixed to a chassis such that bulk transportation of petroleum can be done, specifically intended for this guideline

**wheel chock**

wedge of sturdy material, such as plastic, wooden or rubber, placed against a vehicle's wheels to prevent accidental movement

## **CHAPTER I MOBILE VEHICLE DISPENSING SYSTEM TANK TRUCK DESIGN**



### 3. TANK TRUCK DESIGNS

Below is a consolidated minimum requirements recommended for a Rigid Tanker Design to be used for LF-MVDS (see Figure 1 illustrative example). Additional requirements may be referenced to PNS on Vehicle Transport for Bulk Liquid Fuels (LF) and Code of Safety Practices, as appropriate.

Table 1. Tank Truck Design Specification

Item	Description
<b>Physical Characteristics</b>	Compliant to legal dimension limits:
	Length: depending on tank shell product capacity
	Compliant to legal age of trucks in the Philippines pursuant to LTFRB MC 2018-007 "Non-Acceptance of applications for truck for-hire services with units more than fifteen years old."
	Compliant to legal weight limits pursuant to of RA 4136 Section 9 - "Permissible Weights and Dimensions of Vehicles in Highways Traffic"
	Must comply with the requirements of the Fire Safety Clearance - Conveyance of Hazardous Materials and Chemicals in cargo vehicles
	The liquid volume capacity of the tank shell must be properly calibrated
	Capacity: Minimum 4000 liters
	Product Type: Gasoline, diesel, or both (Materials for the tank shell must be compatible to the product type)
<b>Engine</b>	Diesel-powered engine
	Engine must start easily and does not backfire
	Air intake stack pipe has proper top cover and located away from possible ingress of petroleum vapor
	Compliant with the current emission standards
<b>Brakes</b>	No leaks in the system (pipe works, wheel cylinders and master cylinder)
	Hand brake lever is in good working order and can hold the entire truck in non-moving position
	Air pressure gauge is available and in good working order (if truck is equipped with air brakes)
	All braking systems shall be fail-safe in nature (e.g., spring brake boosters)

	Where drum brakes are fitted they shall have manual or automatic slack adjusters
	Unit may be fitted with an endurance or auxiliary braking system (ex. Jacob brake/exhaust brake)
	Unit may be equipped with ABS/EBS with stability control
<b>Seating</b>	One driver and one passenger seat shall be provided which shall also incorporate head restraints
	Driver seat may be adjustable to accommodate different size of drivers
	A 2-point and 3-point manual/ automatic safety belts are provided for driver seat and passenger seat pursuant to PNS 1892:2000 Amd. 01:2002 Road Vehicles/ Safety Belts and Restraints Systems Specification
<b>Cabin</b>	Steps and grabs for easy access for driver and passenger
<b>Mirrors</b>	All tank truck shall be equipped with heavy-duty wide angled fully adjustable rear vision mirrors on both driver and passenger sides of the vehicle
	Passenger side shall also have a wide-range (convex) mirror/s to give driver vision of passenger side blind spot
	Tank truck with a conventional (bonnet/hood) cabin shall be equipped with a rear-view passenger side mirror mounted at the front of the bonnet/hood
<b>Windscreen / Windows</b>	Front windscreen should be fitted with laminated glass
	Toughened/tempered safety glass in all other windows
<b>Horn</b>	Unit shall be equipped with a good functioning horn
<b>Pedals</b>	Non-slip pedal pads to be fitted for brake, clutch and accelerator pedals
<b>Interlocks</b>	Tank trucks are to be fitted with an interlock system to prevent driving away while connected to loading rack or during discharge process (e.g. brake interlock, wheel chock, handbrake/ maxibrake)
<b>Lighting</b>	All tank truck shall be equipped with front and rear auxiliary driving lights or fog lights
	All tank truck shall be fitted with hazard warning lights
	Two operational reversing lamps mounted at the rear end of the unit, one on the left side and one on the right side
	Vehicles longer than 9.3 m shall have side lights positioned each 1/3 of the overall length from the front of the truck in conformance to local country lighting regulations pursuant to LTO MC 2020-2240
	Only amber colored lights are permitted along the sides of the tank truck pursuant to LTO MC 2020-2240

<b>Visibility</b>	Unit shall have horizontal reflective high visibility (conspicuity) strips running continuously along each side and at the rear of the rigid tank body
<b>Front bumper height</b>	Height from the underside of the front bumper to the road surface shall not exceed 440 mm. Additional structure must be installed if the gap is greater
<b>Side Under-run Protection / Underride guards</b>	Unit shall be equipped with side under-run protection bars / underride guards to deflect other road users from going underneath the trailer wheels.
<b>Rear Under-run Protection / Underride guards (See also Visibility Item)</b>	Unit shall be equipped with strengthened rear under-run protection bar / underride guards. Note: In the annual registration of tank truck of the DOTr/LTO, it is recommended that the installation of rear and side under-run protection / underride guards is ensured.
<b>Reversing Alarms</b>	Unit may be fitted with an audible reversing alarm on the rear most point of the entire tank truck.
<b>Tires</b>	No visible signs of tire side wall damage, bulges, tear/cracks.
	Load temperature and speed rating identified on the tire to be applicable for the actual operating conditions.
	The tires shall be maintained such that the minimum tire tread depth across 75% of the surface of the tire is at least 2mm and tires shall be proactively changed- out before these limits are breached.
	No tires shall be permitted to have re-treaded or re-grooved tires on the steering axle.
	No tires shall be permitted to have re-treaded or re-grooved tires on the spare tire position.
<b>Wheel nut</b>	No broken studs/no missing nuts. All nuts must be tight.
	Wheel nuts to be provided with visual indicator that gives a visual alert should a nut become loose or starts to rotate.
<b>Manholes</b>	Manhole cover is provided with locking mechanism and in good working order.
<b>Equipment Stowage</b>	Unit shall be equipped with sufficient stowage boxes (or storage lockers) required to store all required equipment. All storage boxes and lockers must be capable of being locked by a key operated lock (or padlock).
<b>Pumping Equipment</b>	All vehicles that have an engine power take off installed to drive a product pump or other equipment that will transfer liquid fuels shall be fitted with an external engine cut-off device located in a readily accessible location for the driver or operator of the power take off.

<b>Speed Limiter</b>	Unit shall be equipped with a method to limit the maximum vehicle speed to the lower of either the national speed limit or the Company maximum speed limit. The speed limiter shall be configured such that the driver of the vehicle cannot modify this setting (specified in R.A. 10196 – The Road Speed Limiter Act of 2016)
<b>Electrical Systems Requirements</b>	Have vapor-proof electrical systems which includes all light housings. Wire splicing outside of vapor proof junction boxes are prohibited.
	Shall be equipped with a clearly labelled and externally accessible battery isolation switch that interrupts all vehicle electrical circuits.



Figure 1. Sample Liquid Fuels Mobile Vehicle Dispensing System (LF-MVDS)

#### 4. APPURTENANCES

- **Manhole and Manhole Cover** - provided with locking mechanism and in good working order.
- **Emergency shut-off levers or Internal Shut-off Valve (ISV)** – manually actuated designed valve used to control or stop the flow of the product.
- **Equipment Stowage** - unit shall be equipped with sufficient stowage boxes

(or storage lockers) required to store all required equipment. All storage boxes and lockers must be capable of being locked by a key operated lock (or padlock).

- **Modular Fuel Dispenser** - a complete modular dispensing system containing flexible hose, pump, nozzle, break away coupling and product volume and price display. Have vapor-proof electrical systems which includes all light housings. (See Figure 2)



Figure 2. Sample Modular Fuel Dispenser

- **Dispenser Power System** - must be electrically powered, independent and separate from the truck engine system. Must have an emergency shut-off system both for the dispenser and fuel pump.
- **Grounding or Earthing Connection** – connection to the ground used to protect from an electric shock (See Figure 3)

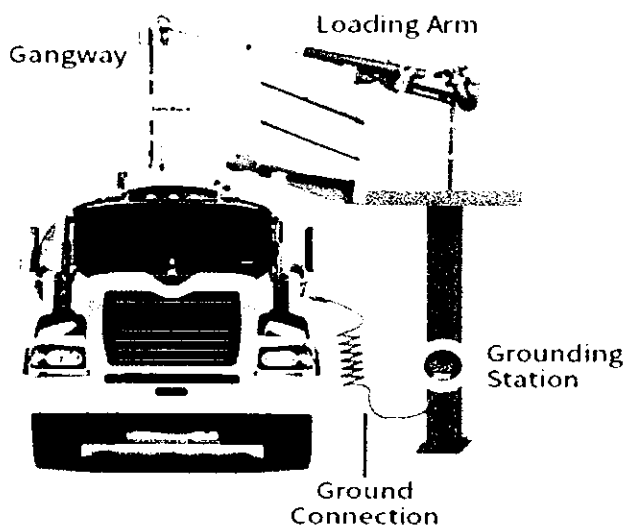


Figure 3. Sample Grounding or Earthing Connection

- **Ullage Ruler** – the distance from Manhole cover lid to product level (See Figure 4 and Figure 5)

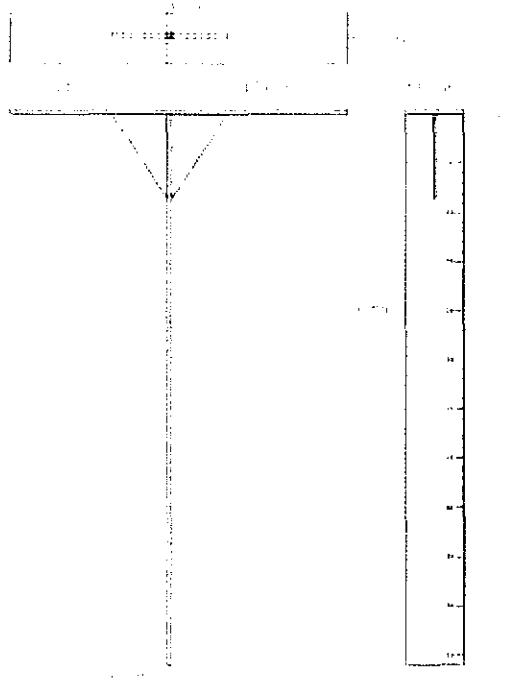


Figure 4. Ullage Ruler

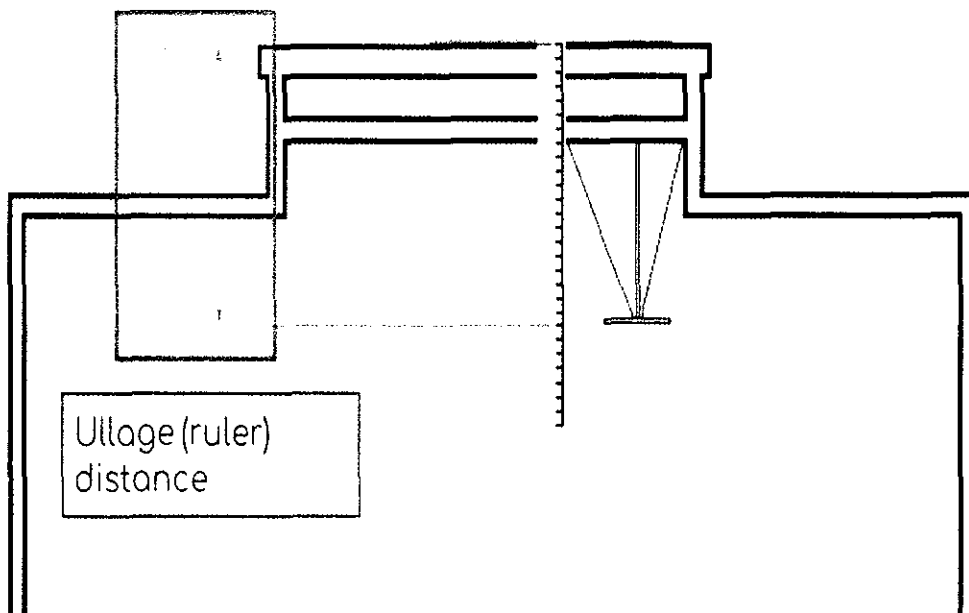


Figure 5. Ullage (Ruler) Distance

## 5. EMERGENCY EQUIPMENT

- **Fire Extinguisher** – fully charged and sealed dry chemical fire extinguisher.
- **Wheel Chock** – at least two plastic or wooden wheel chocks shall be in placed under the rear wheels to prevent movement of trucks during the conduct of dispensing.
- **Early Warning Device and Cones** – one (1) set of early warning device and four (4) pieces of warning cones with at least two feet high.
- **Medical First Aid Kit** – a set of materials and tools used for giving emergency treatment to a sick or injured person e.g., cotton, bandages, medicine etc.
- **Oil Spill Kit** – recommended standard oil spill kit is composed of oil absorbent boom, oil absorbent pads, disposable plastic containers, personal protective equipment such as nitrile gloves and chemical goggles.



Figure 6. Sample Oil Spill Kit

- **Jack Wrench** – tire wrench with extension handle (pipe)
- **Explosion Proof Flashlight**

## 6. MARKING REQUIREMENTS

Every tank truck used for the LF-MVDS should be conspicuously and legibly marked.

### 6.1 Tank Markings

- a. The tank shell of a LF-MVDS should carry the following technical markings. Such markings as a minimum should display the following:

- Manufacturer's serial no.:
  - Nominal Tank Capacity:
  - Maximum Product Load:
  - Markings for individual compartment capacity
  - Loading Limits:
  - ERG Markings/ Product Label
- b. These markings should not be modified, obstructed, made inaccessible or unreadable by paints or any fixtures.
  - c. If a marker plate is used, the installation of said plate with these markings onto the tank body should not compromise the safety and integrity of the tank.
  - d. Other tank details/ documents must be readily available at the cabin.

## **6.2 Appearances**

### **a. Tank body**

- Tank Body must be painted with light color (white).
- For stainless and aluminum tank shell, the same should be brushed or matte finished.
- Front bumper must be painted with standard scheme, if required.
- Hauler's/ Owner's name on both doors as requirement for hired vehicles pursuant to DOTr-LTFRB
- Emergency telephone number for driving complaints at rear for hired vehicles

### **b. DOT C2 Conspicuity Tape**

- Reflective tapes or DOT C2 conspicuity tape must be installed at the side of the truck at least 15 to 60 inches above the road.
- Must cover 50% to 100% length of the truck starting from the front to the rear.
- Whole length of the rear impact guard and the width of the vehicle must be covered by reflective tapes.

## **6.3 Warning Signs/ Flammable Sign**

Warning signs should measure at least 273 mm (10.8 inches) on both sides and have a 12.7mm (0.5 inches) solid line inner border and be conspicuously sited as required by the DILG-BFP. The text indicating the hazard and the hazard class should be at least 41mm (1.6 inches) in height for both. The background color on the "FLAMMABLE GAS" placard must be red. The symbol, text, class number and inner border must be white. (See Figure 7)





Figure 7. Flammable Sign

#### 6.4. Product Label

The tank body should have placard which indicates the Product Identification Number, Emergency Response Guide (ERG) Number, and Emergency Telephone Number. (See Figure 8)

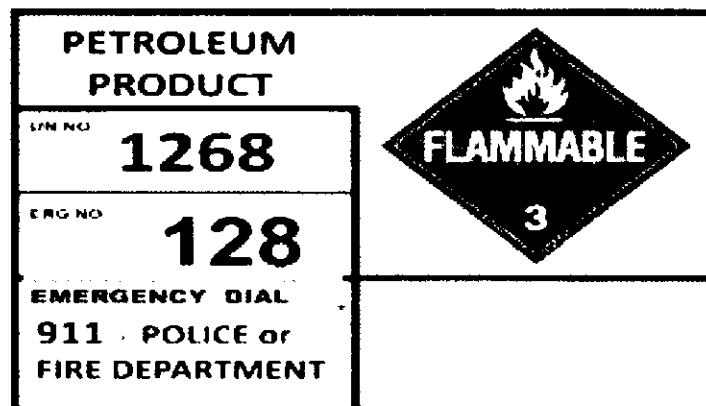


Figure 8. Sample Product Label

**CHAPTER II CODE OF SAFETY PRACTICES**

## **7. TANK TRUCK SAFETY OPERATIONAL PROCEDURES**

Following are the established minimum operational procedures in the safety operations of dispensing LF-MVDS. Refer to PNS on Vehicle Transport for Bulk Liquid Fuels (LF) and Code of Safety Practices for prior loading procedures of MVDS.

### **a. Prior to Loading Procedures**

- Turn off cell phone.
- Visually check all hoses for leaks and wet spots. Inspect hoses for integrity and the absence of contaminants. Faulty hoses should not be used.
- Verify that sufficient volume is available in the storage tank or truck.
- Properly position the truck for loading, secure the brakes and choke the tires. Verify that the vehicle's parking brakes are set. Secure the tank vehicle with wheel chocks or interlocks.
- Verify proper alignment of valves and proper functioning of the pumping system.
- Establish adequate bonding and grounding prior to connecting to the fuel transfer point.
- Carefully check delivery documents to verify the products and quantities to be unloaded.
- If multiple products are included in separate documents, take special care to avoid possible contamination.

### **b. Prior to Dispensing Procedures**

- Ensure presence and coordination with area or location Security Officer responsible for crowd control.
- Turn off cell phone.
- Properly position the truck for dispensing, secure the brakes and choke the tires. Verify that the vehicle's parking brakes are set. Secure the tank vehicle with wheel chocks or interlocks.
- Place fire extinguisher in the designated area for easy access.
- Monitor potential sources of ignition. Do not proceed if presence can not be addressed properly.
- Establish adequate bonding and grounding prior to dispensing of fuel.
- Turn on levers and valves of required compartment.
- Turn on the Modular Fuel Dispenser.
- If the fuel pump is operated by PTO, turn-on engine and disengage the transmission axle connection to the rear wheel.

### **c. During Dispensing**

- Driver/pump attendant must stay with the vehicle at all times during dispensing activities.
- Place nozzle at filling point, press nozzle and start dispensing.
- Use the appropriate nozzle flow rate to avoid fuel spillage during dispensing.
- Use of appropriate container for liquid fuels must be observed i.e. High density Poly-ethylene (HDPE) container.





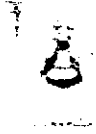
**d. After dispensing procedures**

- Turn-off the Modular Fuel Dispenser
- Secure all hatches are properly covered and close all fuel line valves.
- Make sure the hoses are drained to remove the remaining fuel before moving them away. Use a drip pan.
- Check for spillage.
- Cap the end of the hose to prevent uncontrolled leakage.
- Remove wheel chocks or interlocks.
- Practice good housekeeping before leaving the area.

**8. PERSONAL PROTECTIVE EQUIPMENT**

The driver and pump attendant shall wear appropriate Personal Protective Equipment (PPE) at all times during operations. See Table 2 Personal Protective Equipment (PPE).

Table 2. Personal Protective Equipment

Activity	Uniform 	Hard Hat 	Safety Shoes 	Appropriate Gloves 	Full Body Harness 
<b>Procedure for Operation</b>					
A. Tank Truck Loading	✓	✓	✓	✓	✓
B. Product Dispensing	✓	✓	✓		

**9. LF-MVDS MAINTENANCE**

All tank truck appurtenances, associated piping, hoses, ancillaries, and tank vehicles should be inspected and maintained in good condition while in service. Additional safety activities are as follows:

- Ensure that the diesel engine is receiving the basic maintenance needed for long life and maximum efficiency; clean oil, clean air filter, and clean fuel
- Comply with tank truck Manufacturer's Suggested Maintenance Schedule
- Adequate and sufficient garaging space shall be provided for all tank trucks.

## **10. PERSONNEL QUALIFICATION AND REQUIREMENTS**

### **10.1. Driver**

Tank truck drivers should possess a valid driver's license pursuant to the requirements and classification of DOTr- LTO with Driver's License (DL) Codes C & CE and must possess the following qualification and requirements:

- Physically and mentally fit
- No unsettled traffic violation
- Attended and passed the practical driving course, as required by the LTO or company policy.

### **10.2. Pump Attendant**

- Completion on the basic operation of Modular Fuel Dispenser Training per manufacturers' manual of operations.

## **11. EMERGENCY RESPONSE**

Tank truck drivers/ pump attendant must be able to respond immediately and must be trained to any liquid fuel spill and fire to prevent property damages and fatalities.

They should understand and apply the initial Emergency Response recommended by the Bureau of Fire Protection (BFP) as their protocol in responding to chemical or hazardous material incidents while awaiting the arrival and intervention of the BFP or other emergency responders.

## **CHAPTER III GOVERNMENT REQUIREMENTS**

## 12. OTHER GOVERNMENT REQUIREMENTS

The owner/operator of the tank truck shall secure and possess valid certificates/permits/licenses and follow government regulations prior to operation. See Annex III for the details of the requirements.

<b>Government Agencies</b>	<b>Type of Permits or Clearances Issued</b>	<b>Applicable RA, DC, Rules</b>	<b>Validity Period</b>
<b>DOTR- LTO</b>	Certificate of Registration of Vehicle	RA 4136 / RA 10930 <i>"Land Transportation and Traffic Code"</i>	Annually
	Driver's License		Five (5) years or Ten (10) years
<b>DOTR-LTFRB</b>	Certificate of Public Convenience	DO No. 2015-018 <i>(Terms and Conditions of a Certificate of Public Convenience to Operate a Transportation Network Vehicle Service)</i>	Five (5) years
		MC No. 92-009 <i>(Defining the Policy Framework for the Regulation of Transportation Services)</i>	
		Mc No. 2011-014 <i>(Safety Compliance Orders)</i>	
<b>DILG-BFP</b>	Fire Safety Clearance (Conveyance of Hazardous Materials and Chemicals in cargo vehicles)	<i>IRR of RA 9514 "Fire Code of the Philippines"</i>	Annually
<b>DILG-LGU</b>	Coordination with LGU for crowd control and public safety		As the need arises

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