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Petroleum Installation Requirement Guide

Ofreg Fuels

This document serves to layout out OfReg's basic requirements for petroleum based installations in the Cayman Islands. In no way is this a comprehensive document and all clarifications should be sought through the department.

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Introduction

A role of OfReg Fuels is to inspect sites that store an aggregate of 250 imperial gallons (300 US gallons) or more of petroleum product(s) as mandated in the Dangerous Substances Law. The requirements in this document are however recommended for sites below this threshold for personal, public and general safety. The information herein is a combination of international code requirements and local standards proven to mitigate against the risk associated with dangerous substance storage. In the event that a manufacturer's recommendations for installation or testing of equipment conflicts with any of the information in this document, the department is to be consulted and will make the final decision on which to uphold. Any clarification on any of the subjects covered below should also be sought through us. OfReg can be contacted by phone at **946-4282** or by email at **fuels@ofreg.ky**. OfReg recommends and encourages individuals and businesses looking to install or upgrade petroleum related installations to setup a meeting with us to discuss plans before proceeding. Appendix 3 of this document consists of visual aids to help clarify what a compliant installation looks like.

Aboveground Petroleum Storage Tank (Guided by NFPA 30)

General Requirements:

- Tanks must be double-walled & UL listed
- Tanks must be anchored to a stable foundation
- Tanks must meet setbacks ([see Appendix 1, Table 1](#))
- High fuel level and interstitial space alarms must be installed
- Fuel level gauge required
- Normal vent required on primary tank
- Emergency/pressure activated vents required for both primary & secondary tanks
- Proper warning signage required ([see Appendix 2, Template 1](#))
- Proper coating/corrosion protection needed
- Metallic tanks must be grounded/bonded

Underground Petroleum Storage Tank (Guided by NFPA 30)

General Requirements:

- Tanks must be double-walled, non-metallic and UL listed
- Tanks must be anchored
- Minimum of 10 feet from property lines and buildings
- 24/7 Electronic monitoring required with high level and leak alarms
- Vents must be 12 feet above grade & away from obstructions, openings and intakes
- Type of product stored must be identified at the fill point
- Proper coating/corrosion protection needed on all risers
- Pressure test required before installation ([See Pressure Test Requirements](#))
- Installed as per manufacturer's recommendations for burial depth and coverage
- Monitor wells required (minimum of 2, varies by location)

Fuel Station Installation (Guided by NFPA 30A)

General Requirements:

- All of the above requirements are mandatory based on type of tanks used
- Property must have an Oil/Water Separator
- Tanks are required to include Stage 1 Vapor Recovery
- [See Piping Requirements](#)
- [See Public Fuel Dispenser requirements](#)
- Spill kit must be kept on site for incidental spills

Fuel Dispensers (Guided by NFPA 30A)

General Requirements for Private Use:

- UL listed pumps, hoses and nozzles rated for petroleum products
- Nozzles must have automatic shutoff
- Breakaway valve required on fuel hose
- Nozzles must have swivels
- Meters must be calibrated at least once annually if dispenser is connected to an underground tank. ([See Calibration Requirements](#))
- Must be protected from vehicular damage
- Must be installed with a proper sump (if applicable)
- Warning Signage Required ([See Appendix 2, Template 2](#))

General Requirements for Public Use:

- All of the Private Use requirements apply
- Meters must be calibrated at least once annually ([See Calibration Requirements](#))
- Fuel grades must be clearly identified

General Requirements for Marina Use:

- All of the Public & Private Use requirements apply
- Dispensers should be made from Marine grade materials
- Nozzles **must not** have an autofill clip

Piping Requirements (Guided by NFPA 30)

Aboveground Piping

- All piping must be liquid tight
- If metallic, properly coated to avoid corrosion
- Anti-Siphon valves required on piping extending below the tank top
- Valves must be installed to allow system isolation in case of emergency
- Must be protected from vehicular damage
- Metallic piping must be grounded/bonded

Underground Piping

- Piping must be double-walled, non-metallic
- Bedding and coverage depth according to NFPA ([see Appendix 1, Table 2](#))
- Valves must be installed to allow system isolation in case of emergency
- Pressure Test must be performed before use ([See Pressure Test Requirements](#))
- Any underground transitions must be done in a sump
- Must be buried and laid on sand

Pressure Testing Requirements (Guided by NFPA 30A)

Underground Fuel Tank Requirements

- Tanks must be tested at between 3-5 psi for a duration of 1 hour minimum
- Test pressure must be stable for 5 minutes before the test time starts
- Both the primary and secondary compartments must be tested
- If the tank is new, air can be used to pressurize the tank
- If the tank is not new, an inert gas must be used

Underground Fuel Lines

- Primary fuel lines must be tested at 110% of working pressure if pneumatically tested
- Primary fuel lines must be tested at 150% if hydrostatically tested
- Secondary fuel lines must be tested at 3-5 psi
- Test pressure must be stable for 5 minutes before the test time
- Pressure must hold for 1 hour minimum
- If the lines are new and free of product, air can be used to pressurize the lines
- If the lines are not new, an inert gas must be used

Fuel Station Calibration Requirements (Guided by NIST Handbook 44)

Pre-Test

- All calibrations must be witnessed by CPI, arrangements need to be made so we are on site
- Prover (Calibration Can) must be level before starting the calibrations
- One "wet run" must be performed before starting calibrations

General Requirements

- All calibrations must be within $\pm 3 \text{ in}^3$ on a 5-gallon Prover
- 2 consecutive runs within range constitute a properly calibrated meter
- Cases where a 5 gallon can is not allowed to be used will be dealt with on a case by case basis
- All meters must be sealed after calibration (tampering voids calibration)

Appendix 1: Tables

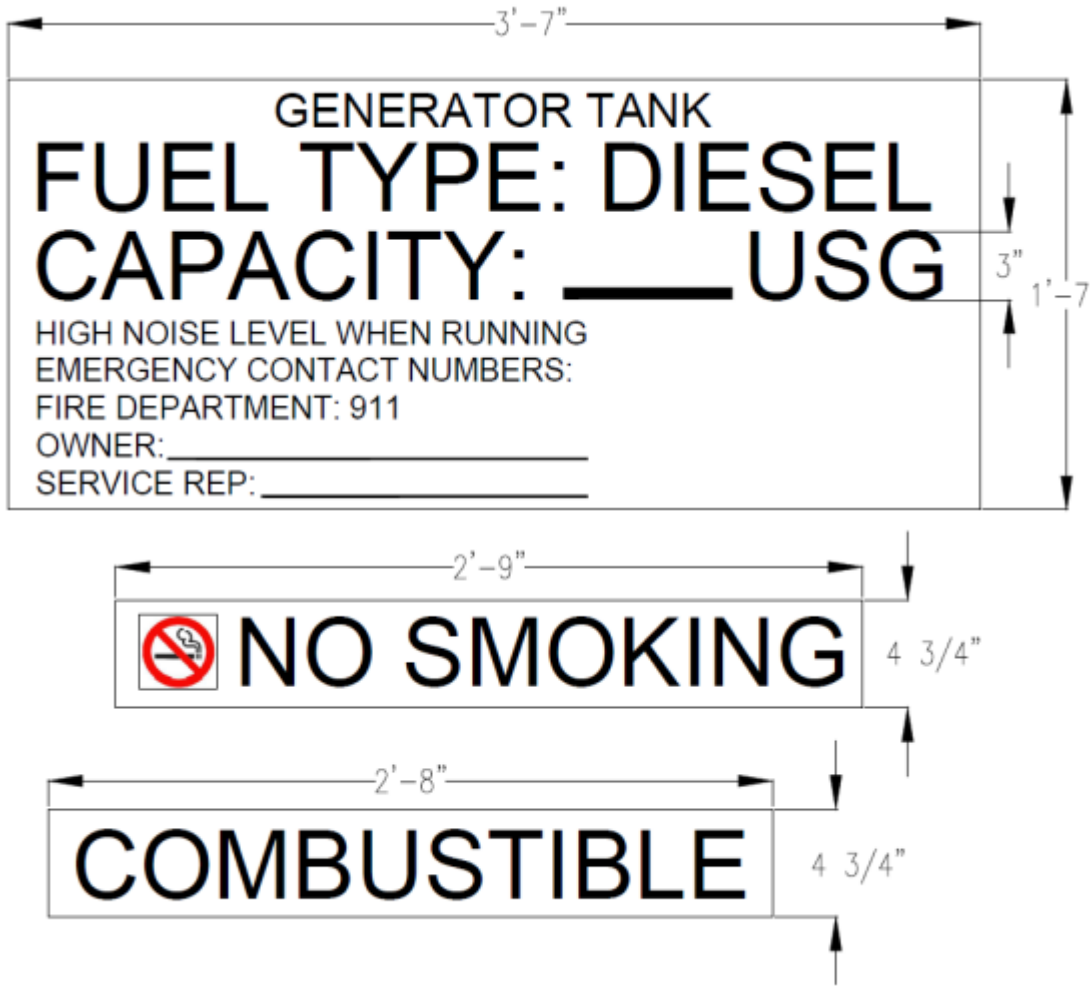
Tank Capacity (US gallon)	Minimum Distance (Feet) From property line	Minimum Distance (Feet) From nearest side of any public way or from nearest important building on the same property
275 or Less	5	5
276- 750	10	5
751- 12,000	15	5
12,001 - 30,000	20	5
30,001 - 50,000	30	10
50,001 - 100,000	50	15
100,001 - 500,000	80	25
500,001 - 1,000,000	100	35

Table 1: Aboveground Tank Setbacks (NFPA 30)


Piping Burial Method	Minimum Bedding Depth	Minimum Coverage Depth
<u>Vehicular Traffic Area</u>		
Dirt Burial Only	6 inches	18 inches
Asphalt Top (e.g, parking lot)	6 inches	2 inches of Asphalt on top of 8 inches of sand
Reinforced Concrete Top (e.g driveway)	6 inches	4 inches of Concrete on top of 4 inches of sand
<u>Non-Vehicular Traffic Area</u>		
All Cases	6 inches	6 inches of sand

Table 2: Underground Piping Burial Depths (NFPA 30)




Appendix 2: Templates



Template 1: Aboveground Fuel Tank Warning Signage

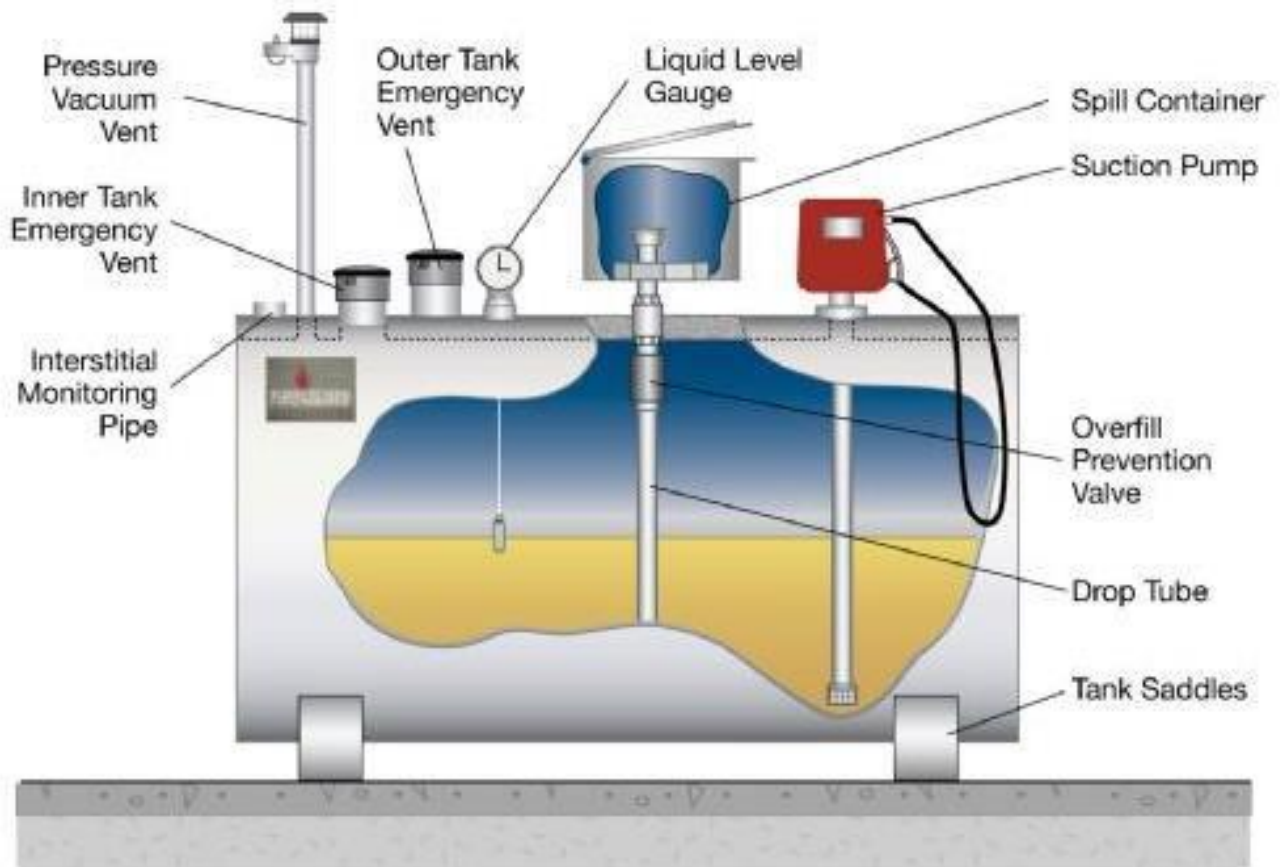


WARNING

<div style="background-color: red; color: white; padding: 2px; text-align: center; font-weight: bold;">FIRE HAZARD</div> <ul style="list-style-type: none"> ● NO SMOKING-STOP ENGINE ● WARNING- IT IS UNLAWFUL AND DANGEROUS TO DISPENSE MOTOR FUELS INTO UNAPPROVED CONTAINERS ● ONLY PERSONS OF LICENSED AGE MAY OPERATE PUMP AND REMAIN NEAR VEHICLE WHILE FUELING. ● KEEP CHILDREN AWAY FROM PUMP. ● BY ORDER OF STATE FIRE MARSHAL 	<div style="background-color: red; color: white; padding: 2px; text-align: center; font-weight: bold;">HEALTH & SAFETY</div> <ul style="list-style-type: none"> ● EXTREMELY FLAMMABLE, VAPORS MAY EXPLODE ● HARMFUL OR FATAL IF SWALLOWED ● LONG TERM EXPOSURE HAS CAUSED CANCER IN LABORATORY ANIMALS ● KEEP FACE AWAY FROM NOZZLE WHILE FILLING ● KEEP NOZZLE AWAY FROM EYES AND SKIN ● NEVER SYPHON BY MOUTH ● DO NOT OVERFILL TANK <p style="text-align: center; font-weight: bold; margin-top: 10px;">FOR USE AS A MOTOR FUEL ONLY</p>
<div style="background-color: red; color: white; padding: 2px; text-align: center; font-weight: bold;">STATIC ELECTRICITY SPARK EXPLOSION HAZARD</div> <ul style="list-style-type: none"> ● DISCHARGE YOUR STATIC ELECTRICITY BEFORE FUELING BY TOUCHING A METAL SURFACE AWAY FROM THE NOZZLE ● TO PREVENT STATIC CHARGE, DO NOT REENTER YOUR VEHICLE WHILE GASOLINE IS PUMPING 	<div style="background-color: red; color: white; padding: 2px; text-align: center; font-weight: bold;">ELECTRONIC DEVICE HAZARD</div> <p>PLEASE TURN OFF AND KEEP ALL CELLULAR PHONES OR OTHER ELECTRONIC DEVICES IN YOUR VEHICLE WHILE AT PUMP AREA</p>
<ul style="list-style-type: none"> ● IF FIRE STARTS, DO NOT REMOVE NOZZLE. BACK AWAY IMMEDIATELY ● NO FILLING OF PORTABLE CONTAINERS IN OR ON MOTOR VEHICLE. PLACE CONTAINER ON GROUND BEFORE FILLING <div style="text-align: center; margin-top: 10px;">   </div>	<div style="text-align: center; margin-top: 10px;">  </div>
<p>ED-230X</p>	<p style="text-align: right;">EMPRO PRODUCTS</p>

Template 2: Fuel Dispenser Warning Signage

Appendix 3: Visual Aids



Visual Aid 1: Horizontal Aboveground Fuel Tank