



Foam Filled Disused Petrol Tanks

Awareness of Possible Unsafe Conditions and Enhanced Guidance on the Making Safe of Disused Petrol Tanks

FOREWORD

This guidance supersedes and expands on all guidance given in previous PETELs on the subject, and forms part of a series of PETELs issued as part of the PELG-PETEL series from 2012 onwards by the Petroleum Enforcement Liaison Group (PELG), a health and safety advisory committee hosted by the Energy Institute. It comprises representatives of the Retail Petroleum Industry, the Petroleum Licensing Authorities (PLAs), UKLPG and the Environment Agency, with technical support from the Health and Safety Executive. It has the aim of facilitating appropriate and consistent enforcement by PLAs through the dissemination of advice, guidance and good practice.

The guidance is directed at those with a responsibility for the safe operation of facilities where petrol is stored and dispensed into vehicle fuel tanks, to enable them to comply with the relevant health & safety legislation; in particular their statutory duties under the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR). The guidance is not meant to be prescriptive and alternative methods of controlling the risks of fire and explosion may be followed where these provide an equivalent level of safety. However, if this guidance is followed, site operators will normally be able to demonstrate their compliance with the law.

INTRODUCTION

The use of resin generated foam to make disused petrol tanks safe has been widely used in this industry for over 25 years. A large number of tanks have been safely and successfully filled during this period by reliable and competent contractors, however like many operations unless done properly and in accordance with guidance - poor practices can lead to problems.

Following allegations relating to sub standard work by one company RGF Ltd of Neath, investigations were carried out by the London Fire Brigade and the allegations appear well founded, and the following discovered:

- There is evidence of erroneous self certification by RGF Ltd
- Tanks had not been properly filled with foam
- The foam mix has found in some cases not to have set
- Tanks left with unsafe conditions and likely to have voids with flammable atmosphere present
- RGF Ltd ceased trading in 2011



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POTENTIAL SAFETY ISSUES FOR DISUSED PETROL TANKS

The conclusion is that site owners and/or occupiers should be warned that disused petrol tanks that have been certified as having been made safe by filling with resin generated foam by RGF Ltd are likely to be in an unsafe condition. It is to be noted that even if the tank access chamber on inspection can appear to be filled with foam, the main body of the tank may still contain voids where a flammable atmosphere is potentially likely to be present.

The persons responsible for the land on which any tanks that fall within this category should be informed, so that they may investigate and take appropriate action. It is especially important this action is taken prior to any work that is to be carried out on or near to tank(s), or the tank is to be removed. The remedial actions should only be carried out by people that are competent to carry out this type of work and who have the necessary skills and knowledge to take the appropriate precautions necessary to deal with potential flammable atmospheres.

Whilst the primary purpose of this PETEL is to alert persons to the potential safety issues with regards to work carried out by RGF Foam Ltd., it is also intended to serve as a reminder of the responsibilities of all those commissioning and carrying out tank decommissioning work. In particular, in discharging their duties under the Construction (Design & Management) Regulations 2007 (CDM) the requirement to ensure the work is properly planned and adequate systems are put in place to ensure the work is progressed and completed as intended to ensure healthy and safe working conditions are implemented and maintained over the course of the work and that the proposed work is not going to put others at risk. Further guidance on this is given in EI MCoSP Part 16 'Tank cleaning safety code' and APEA/EI Guidance 'Design, construction, modification, maintenance and decommissioning of filling stations' (chapter 15)."

DESIGN, CONSTRUCTION, MODIFICATION, MAINTENANCE AND DECOMMISSIONING OF FILLING STATIONS (BLUE BOOK)

As a result of the findings of the investigation and in consultation with interested parties, there is a need to revise the guidance offered in chapter 15 of the Blue Book.

The publishers of the Blue Book have agreed to examine these suggestions when the book is next revised.

In the interim period, PELG wish to provide as guidance, the revisions that they believe should be made to what currently exists in Chapter 15, Blue Book Guidance.

Annex 1 shows the suggested rewording of Blue Book reference 15.2.4.2 referring to hydrophobic foam.

Annex 2 shows a table of the suggested re categorisation of the methods of making disused tanks safe



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Annex 1 Filling with Hydrophobic Foam

Urea amino foam is a hydrophobic substance that has the ability to absorb small quantities of hydrocarbons and it is therefore not necessary to degas the tank before infilling. With this method of decommissioning there may be no need to remove the tank lid as the foam can be pumped into the tank through the fill pipe (either direct or indirect), however there may be circumstances where due to factors such as the size of the tank, the position of the tank lid on the tank, the unknown configuration of the tank filling arrangement that will necessitate the gaining of an unimpeded entry into the tank, this could be by the removal of the tank fill pipe internal, or an access flange on the lid of the tank, this will enable the use of a method of filling the tank with hydrophobic foam known as 'reverse injection'. All work of this nature must be carried out by a competent specialist contractor who is familiar with the product and the foam manufacturer's instructions.

The tank shall be bottomed as detailed in 15.2.2.2. In addition it may be necessary to treat the bottom of the tank with a proprietary emulsifier to ensure, so far as is reasonably practicable, all residual petrol is removed. In some cases it may be necessary to remove (and later replace) the tank lid to achieve this.

If it is not intended to foam fill the pipework associated with the tank(s), the tank to dispenser pipe(s), should be disconnected and the tank orifice(s) sealed. The vent pipe should be disconnected (in the tank access chamber) and a temporary ventilation outlet fitted. Consideration must be given to the hazardous zone that will be formed when the petrol vapour is emitted from the temporary vent, and to whether the tank vent is manifolded with vents from other tanks or fitted with a pressure vacuum valve.

The foam shall be pumped into the tank through a hose connected to the fill pipe. Filling must continue until foam is discharged from the vent pipe. The vent pipe should then be removed and the vent connection to the tank sealed. Decommissioning is completed by replacing the tank fill pipe cap.

Where redundant pipework is to be left in situ, it may also be inerted by filling with foam. In many cases this operation can be carried out simultaneously with the filling of the tank to which the pipework is connected.

The following paragraph to be appropriate to all situations where a tank has been made 'safe in situ' as categorised in the table in Annex 2

When a disused tank is made safe in situ, the area above and adjacent to the tank shall not be built on, until the tank has been removed. This is because the integrity and structural strength of the tank, the tank surround and the backfill and the material used to infill the tank cannot be assessed. There is also a strong possibility of contamination within the ground surrounding the tank.



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Annex 2

Category	Suitable Method	Summary of works	Blue Book reference(s)	Changes from existing guidance
Temporary (months)	Water-filling	As existing	15.2.2.7	None
Temporary (months) Short term during works	Foam-filling with low density hydrophobic foam	As existing	15.2.2.4	Restricted to short term during works
Temporary (short term during works)	Nitrogen foam fill	As existing	15.2.2.5	None
Temporary (short term during works)	Nitrogen gas	As existing	15.2.2.6	None
Temporary (short term during works)	Dry ice	As existing	15.2.2.8	None
Temporary (short term during works)	Combustion gas	As existing	15.2.2.9	None
Tank safe in situ (safe until removed)	Filling with hydrophobic foam	As existing plus enhanced guidance on tank preparation (see Annex 1)	15.2.4.2	Tanks are not to be located below structures (see Annex 1)
Tank safe in situ (safe until removed)	Filling with sand and cement slurry	As existing	15.2.4.1	Tanks are not to be located below structures (see Annex 1)
Tank safe in situ (safe until removed)	Filling with foamed concrete	As existing	15.2.4.3	Tanks are not to be located below structures (see Annex 1)
Tanks to be removed (permanent solution)	Underground tanks to be removed	As existing	15.2.2	None