

17. OPERATION

17.1 Inventory Control

The operator shall set up and maintain an inventory control system.

The system shall include regular routine reconciliations of quantities of sales, use, receipts and stock-on-hand, with monthly reviews of cumulative variances. Reconciliations should be made daily on a busy site, and no less frequently than fill-to-fill on any other site.

Any petroleum storage installation that has a properly administered inventory control system will display a regular pattern of stock variation peculiar to that installation. Similar sites in the same region should display similar characteristics.

Any departure from the established pattern for a particular UPSS must be immediately investigated and explained.

17.2 Equipment Checks

In addition to inventory control, the components of the UPSS should be regularly checked by the operator.

Pumps and dispensers should be inspected weekly for signs of product loss. A small leakage may be thus corrected before it becomes of sufficient magnitude to create an inventory shortage.

Hesitation in the delivery from a pump may indicate a leak in the suction piping.

Tanks should be checked at least weekly for the presence of water. This may not necessarily be due to leakage but it is nevertheless a most undesirable situation. Water should be removed as soon as practicable and the cause of water ingress investigated.

The cathodic protection system will have a prescribed maintenance and checking routine. If an impressed current system is installed, the site operator will be required to check on a monthly basis that the system is energised and operating from a continuous power supply and that a fault condition is not indicated.

17.3 Response to Product Release

The UPSS is engineered and operated so that the likelihood of product release is minimised. Notwithstanding this, further precautions by way of preparedness must be in place so that should a product release occur, its effect will be minimised by prompt and appropriate action.

The owner shall have an appropriate response plan prepared in case product is released.

The immediate essential steps, some of which can be taken concurrently, are:

- Stop the release at source.
- Report the release to the relevant authorities and to the owner.
- Respond to any emergencies.
- Contain any release of product where possible.
- Assess the degree of contamination.
- Develop a corrective action plan in conjunction with the authority and clean up the released product.

18. PRODUCT LOSS INVESTIGATION

18.1 General

Whenever a loss is suspected, observation wells should first be checked to see whether there is any build-up of hydrocarbons in the ground or ground water.

Product loss will usually become apparent due to inventory shortage. Rather than immediately concluding that the UPSS is leaking, a series of steps should be undertaken promptly in the order listed to find the reason for the shortage. The order listed reflects their probability as the cause of product shortage, beginning with the most likely.

18.2 Inventory Check

The most common cause of an apparent shortage of inventory is error in the calculation of stock on hand. Inventory records should be carefully reviewed to ensure that the discrepancy has not been caused by record keeping error. If no error in the records is found, an independent calculation of apparent loss should be made by a qualified person, starting from the point where records indicate satisfactory results.

The objectives of the audit should be:

- To confirm an actual product loss or identify and reconcile the apparent loss.
- To prescribe improvements to inventory control procedures appropriate to the site in question.
- To prescribe appropriate improvements to product security measures at the site.

The above audit, if it does confirm that there is a product shortage should, if adequate inventory control procedures are in place, indicate an individual tank or group of syphon-connected tanks as being the suspected source of loss.

18.3 Meter Calibration Checks

The most common cause of actual product shortage is that of overdispensing. Experience shows that as meters wear they almost invariably drift towards dispensing more product than is recorded. Unfortunately, meters wear at an unpredictable rate. The first step after confirming that an apparent inventory shortage is not the result of accounting error is to have a qualified person check the calibration of all the meters on the site. Should this check show that meters are inaccurate, the pump maintenance contractor should be contacted to carry out adjustment.

18.4 Pump Leakage Checks

The pump cover panels should be removed and the area below each pump inspected for signs of obvious leakage. If leakage is detected, the pump shall be taken out of service and locked, and the pump maintenance contractor should be summoned immediately to carry out repairs.

18.5 Delivery Checks

Another possible cause of product shortage is that the amount of product actually delivered to the site is less than the amount invoiced. A check should be made that the amount invoiced has in fact been delivered. If this does not correspond, the recipient **should** take the necessary measures to reconcile the difference.

18.6 Leak Test

Where there is product shortage and all the above possibilities have been investigated, the tank(s) involved, together with associated pipework, must be tested for any leakage as described in section 19.

19. LEAK TESTING

19.1 General

Leak testing of the tank and pipework shall be carried out upon completion of the installation.

After the UPSS has been commissioned, a leak test should only be carried out when there is reason to believe that there has been a release of product from the system and all other possible explanations have been tested. Experience with product loss investigation has shown system leakage to be the least likely cause.

Free product suddenly appearing in trenches, drains, etc., near a UPSS does not necessarily indicate tank leakage. Such incidents may be the result of accidental spillage during delivery. An immediate check of deliveries should be made, the time of the last delivery determined, enquiries made and quantities reconciled. These checks should be

carried out within four hours of the product being detected, by which time all free product should have been recovered and a determination made of whether further product is continuing to appear. When the foregoing fails to suggest an explanation for the product release, a leak test should be arranged.

19.2 Method

A proven hydrostatic or other approved test method shall be used by a competent exponent of that method to test the tank system. Air pressure testing shall not be used in any circumstances.

The whole tank and pipework system shall be tested and repaired if found to be leaking.

A tank that is found to be leaking shall be immediately emptied and removed from service.

A suitable leak testing procedure is attached as Appendix A.

20. SITE RECORDS

The owner shall maintain records as specified in this section.

20.1 As-Built Drawings

As-built drawings as specified in section 8.3 shall be kept by the owner, and key plans provided as described in section 8.4.

The as-built drawings shall include details of the initial installation and any subsequent additions and alterations.

In addition, the owner shall maintain on file any photographs taken during construction, additions and alterations.

20.2 Environmental Risk Evaluation

The Owner shall retain on file the results of the environmental sensitivity analysis together with the hydrogeological survey where one was carried out.

20.3 Records of Tests

20.3.1 Tank Manufacture Test: The record of the tank tests carried out at the manufacturer's premises shall be retained by the owner of the installation.

20.3.2 Backfill: The certificate that the material used for backfilling around the tank and pipework meets this code shall be retained by the owner of the installation.

20.3.3 Leak Tests: The records of all tank and pipework tests carried out at the time of installation, together with the record of any tank and/or pipework leak tests carried out during the operational life of the site,

shall be retained by the owner. These records shall also include details of any repair work that had to be carried out to the tanks and associated pipework.

- 20.3.4 Cathodic Protection Tests:** The results of the commissioning tests and ongoing routine tests of the cathodic protection system shall be retained on-site and also by the owner. (See section 15.6.)

| 21. CHANGE OF OWNERSHIP OR USE

21.1 G General

When an underground petroleum storage system (UPSS) undergoes a change of ownership, both the vendor of the UPSS and the purchaser of the UPSS must ensure that their interests are protected regarding the possibility of environmental clean-up costs. Doing so will ensure that the interests of the environment will also be protected.

The vendor will wish to be protected from incurring the costs of clean-up of contamination which may occur under the ownership of the purchaser. Similarly, the purchaser will not wish to be liable for the clean-up of contamination which occurred whilst the property was in the possession of the previous owner.

Vendor and purchaser must agree a test programme, and the tanks and pipework shall be checked for integrity and the UPSS proved leak-tight in all its components within 30 days prior to the transfer of ownership. If any leaks are detected, they must be repaired and proved leak-tight, or the UPSS must be removed. In addition, the site is to be examined for hydrocarbon contamination. If residual contamination is not found, the site will be considered acceptable. If residual contamination is found, then irrespective of the future use of the site, the Authority shall be informed and immediate clean-up action taken to reinstate the site to a standard agreed with the appropriate authorities having regard to the environmental sensitivity of the site.

Costs of any investigation and clean-up shall be subject to negotiation between the vendor and the purchaser of the UPSS.

21.2 Site Assessment

- 21.2.1 Tank and Pipework Integrity Test:** Tanks and pipework shall be tested by the methods detailed in this code, or other approved test methods. Where testing is carried out due to a change in ownership of the UPSS, the purchaser of the UPSS shall be given the opportunity to witness the testing.

- 21.2.2 Presence of Contamination:** The presence of hydrocarbon contamination can be assessed by direct examination of the soil.

Where tanks and pipework are removed, all backfill shall also be removed and the empty excavations shall be examined for the presence of any hydrocarbons.

Samples of soil from the pit sides and floor shall be taken and sent to an approved testing laboratory and analysed for hydrocarbon contamination. The results of the analysis shall be kept on file by the vendor, and a copy passed on to the purchaser.

Where a site is being sold as an operating facility, a bore hole shall be made adjacent to each tank or group of tanks on the site but outside any secondary containment system used. The bore shall extend to 2 m below the level of the bottom of the lowest tank, and soil samples taken.

Where a secondary containment system has been used, any backfill within the secondary containment shall also be sampled unless the observation wells are completely clear of any petroleum liquids or vapours.

Samples of soil shall be examined by an approved testing laboratory for the presence of hydrocarbon, and the results recorded and communicated to the purchaser and kept on file by the vendor.

21.2.3 Extent of Contamination: If the initial examination of soil samples shows the presence of hydrocarbons, the extent of the contamination shall be determined by detailed testing by a competent engineer.

A minimum of three monitoring wells shall be made in appropriate locations on the site, and sampled to determine the depth and spread of the hydrocarbon plume, the depth and gradient of the water table and the porosity of the site soil.

Further examination shall be carried out as required until the limits of the hydrocarbon contamination can be established. The extent of contamination shall be fully documented and communicated to the appropriate authorities.

A clean-up plan to suit the condition of the site shall be drawn up by the engineer. Details of the plan shall be communicated to and agreed with the appropriate authorities and clean-up commence immediately.

At the completion of clean-up, the appropriate authorities shall be requested to certify that hydrocarbon contamination of the site soil has been removed to their satisfaction.

21.3 Site Records

The vendor of the LASS shall pass on to the new owner, at the time of sale, all site records described in section 20 of this code.

21.4 Change of Use

Should the site use change so that it is no longer used for the storage of petroleum, or should the owner of the site require the UPSS to be removed for any other reason, all tanks and associated equipment shall be removed, including any tanks that have been previously decommissioned.

At the same time, checks shall be made for any hydrocarbon contamination as described in section 21.2.2, and any contamination found dealt with as described in section 21.2.3.

21.5 Change of Operator

When a new operator takes over control of any UPSS site, the owner shall review all site records relating to the UPSS including drawings, site manual and log books with the new operator.