Ministry of Defence

Professional Inspection of Fuel Infrastructure and Flammable Dangerous Goods Stores

Practitioner Guide 06/12

Estate Management

Document Aim:
This Practitioner Guide sets the Ministry of Defence (MOD) Standard for the inspection of fuel infrastructure and flammable dangerous goods stores.

Document Synopsis:
This document provides procedural guidance on the maintenance, inspection and testing of fixed mechanical and electrical equipment installed at petroleum installations on MOD estate. It is not a technical guide on the practical aspects of maintenance, inspection and testing of such installations, which is left to the professional skills and judgement of Competent Person(s) undertaking the work.

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Document Information	
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Who should read this: DIO, Top level Budget Holders, Maintenance Management Organisations, Private Finance Initiative Contractors, Regional Prime Contractors, Stand Alone Prime Contractors, Specialist Principal Support Providers, DIO Specialist Term Consultants and Site Estate Authority Teams

When it takes effect: Immediately	**When it is due to expire**: When Rescinded

Equality And Diversity Impact Assessment

This policy has been Equality and Diversity Impact Assessed in accordance with the Department's Equality and Diversity Impact Assessment Tool against:

Part 1 Assessment Only (no diversity impact found).

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26 November 2012	1.0	Mark Spooner	Document replaces the following documents: PG 01/09 - Inspection of fuels infrastructure and flammable goods facilities TB 99/23 -The Assessment of Small Bore Buried Steel Fuel Lines.
Amendments			
No	Date	Details	Initials

Foreword

This Practitioner Guide here after known as the guide is published by Defence Infrastructure Organisation (DIO) for application across all areas of the MOD and replaces Practitioner Guide 01/09. The Guide is mandated for all contracts let after publication of this document. For existing contracts, no work involving expenditure on any MOD account is to be entered into without prior authority from the appropriate MOD officer for that location or facility.

CONTENTS

INTRODUCTION

1. The MOD operates a range of fuel infrastructure which is maintained by Maintenance Management Organisations (MMO) under contract. An annual professional inspection of fuel facilities is mandatory within these contracts in order to comply with the requirements of JSP 317 – Joint Service Safety Regulations for the Storage and Handling of Fuels and Lubricants as the professional inspection is an integral element of the Licensing and Fuel Safety Assurance Assessment (FSAA) regime.

2. This professional inspection shall be annual and its purpose is to:

a. Confirm that all currently applicable legislation and legal requirements are adhered to.

b. Confirm that there is a maintenance management system in place (with details) and that the facilities are being maintained to the appropriate standard.

c. Provide a report based on a thorough visual inspection of the facilities.

d. Review non-destructive examination data to ensure appropriate future actions are programmed as part of the asset management strategy.

e. Confirm that the installations can continue to be used until the next annual inspection or to precisely define the actions required in order for the installations to continue to be used.

3. It should be noted that this annual professional inspection does not include the evaluation of operating procedures or fuel quality checks, and therefore in no way provides assurance that these practices are being suitably carried out.

4. The Fuel and Gas Safety Regulator (FGSR) (which is a specialist group located in the Defence Safety and Environment Authority (DSEA)) is responsible within the MOD for awarding permission to operate fuel installations and may issue licences for a period of up to one year contingent on the status of the installations defined by this annual professional inspection.

5. A list of relevant documents which apply to this inspection can be found at Annex A. Note that this list is not exhaustive.

SCOPE

TYPES OF FUEL INSTALLATIONS TO BE INSPECTED

6. A professional inspection is required for the following:

a. Storage for flammable liquids or aviation fuel including slops and buffer tanks

b. Fuel transfer installations (e.g. cross-base pipelines and naval fuel jetties) including pigging facilities where appropriate

c. Aviation fuel hydrant systems

d. Mechanical transport fuelling installations

e. Flammable dangerous goods stores

f. Specialist installations for example; semi permanent installations, jerry can filling plants

g. Bulk storage installations for plant diesel and fuel oil

h. Ancillary installations; including small plant diesel, fuel oil and waste oil installations

7. Above ground ancillary installations shall be examined annually. The MMO must appoint a competent person to undertake the ancillary tank inspections. The competent person must be suitably qualified and experienced to undertake the task and shall have an understanding of the current regulations,

British/European Standards and industry standards to enable judgement to be made for the installation's compliance with legislation and fitness for continued operational use.

The MMO is to provide a declaration to the inspector confirming that these installations either:

a. comply with current legislation, which will include the Control of Pollution (Oil Storage) (England) Regulations 2001 or The Water Environment (Oil Storage) (Scotland) Regulations 2006 along with associated guidance for above ground storage tanks (ASTs); and the Groundwater Regulations 1998 along with associated guidance for underground storage tanks (USTs)

or

b. do not comply with current legislation but that an action plan is in place with appropriate timescales

8. A template for the declaration can be found in Annex E.

9. The declaration from the MMO must also confirm that there is an appropriate and implemented planned maintenance regime.

10. The declaration from the MMO is to be included within the professional inspection report.

11. Those undertaking the professional inspection shall examine a minimum of 10% of the ancillary installations in order to confirm the MMO declaration and include them as part of the professional inspection report. This must specifically highlight where the MMO is not completing their responsibilities satisfactorily.

12. For the purpose of this professional inspection, those sites that have only ancillary installations must be grouped with the nearest inspected site for that contract or other area to ensure oversight by the inspector of any declaration by the MMO.

13. All underground ancillary storage shall be examined annually by the professional inspector completing this report. Each examination shall consider the requirement for appropriate non-destructive testing of the storage tank and any associated underground pipelines.

14. Service Family Accommodation and Misappropriated Service Family Accommodation with domestic size oil fuel storage are exempt from inspection under this publication (but not exempt from an appropriate maintenance regime).

APPLICATION OF THE GUIDE ELSEWHERE

15. This Practitioner Guide (PG) applies to all Defence Infrastructure Organisation (DIO) managed overseas estate fuel installations which are subject to an FGSR license or FSAA regime.

16. The estates occupied by BF(G) apply their own local (German) regulations and where acceptable to the FGSR, the TUV inspection reports can be utilised as an equal and equivalent to the Professional Inspection.

17. The guidelines given in this PG are applicable to fuel installations on MOD establishments occupied by the United States Visiting Forces (USVF).

18. Where acceptable to the FGSR, USVF professional inspection reports can be utilised as an equal and equivalent to the Professional Inspection.

19. For Deployed Operating Bases where operational conditions permit the application of peacetime regulations and contractors are engaged on works services under CONDO[1] the guidance given in this PG should be followed for permanent/semi-permanent deployed operating bases where practicable. The guide is not applicable for installations designed, executed and maintained by the Royal Engineers in an operational theatre designated as a Military Works Area[2].

[1] Contractors on Deployed Operations.

[2] Infrastructure Management on Joint Operations: Joint Warfare Publication 4-05.

PREPARATION FOR THE INSPECTION

20. **Site Estate Team/MMO**. In order to initiate the Professional Inspection, the Site Estate Team will advise the inspector of the due date, the list of assets to be inspected, inform all stakeholders, make access arrangements and offer any assistance required by the inspector.

The Site shall arrange meetings between the inspector and all relevant stakeholders to ensure the main findings of the inspection are identified and to ensure the site estate team have a clear understanding and agreement of the actions required.

21. **Inspector**. Prior to the site visit, the inspector is to provide notification to the Site Estate Team / MMO to inform them of the programme, information and access required to conduct the inspection. A template for this can be found at Annex I.

STRUCTURE OF THE INSPECTION

22. A list of fuel installations and flammable dangerous goods stores for the location to be inspected is to be provided to the inspector by the Site Estate Team/MMO.

23. The inspection will comprise:

a. A visual examination of the installations (paragraphs 24-26)

b. An inspection of the maintenance records and supporting information (paragraphs 27-31)

c. An assessment of the historical data from non-destructive examinations (paragraphs 32-36)

VISUAL EXAMINATION OF THE INSTALLATIONS

24. The basic elements of the visual inspection for each of the applicable fuel installations, described in Item 6 above, are contained in the standard report format, which can be found in Annex D

25. The inspector should also ensure that the design and location of installations is in accordance with applicable standards (see References contained within Annex A). Unsafe design features or unsafe conditions are to be reported with suggested actions (see also paragraph 38).

26. Where the inspector identifies installations and/or equipment that is determined as requiring inspection but are not identified on the list of fuel installations, the site estate team is to be informed immediately to enable their asset register to be updated and any funds to be secured for subsequent inspection. The inspector is to identify any such installation in the final report.

INSPECTION OF MAINTENANCE RECORDS & SUPPORTING INFORMATION

27. A sample check of the maintenance procedures and records is required to:

a. Confirm that an appropriate system of planned maintenance is in place in accordance with the MMOs agreed specification and scope of work

b. Confirm that the system of maintenance is implemented and that tasks are completed with appropriate records

c. Confirm that modifications and other works are designed and implemented to conform to current legislation and appropriate standards

28. The views of the body responsible for operating the installation (referred to hereafter as the Operating Authority) on the condition and maintenance of the installations should be taken into account in the preparation of the inspection report.

29. The inspector should confirm the availability of a hazardous area classification plan for the site as required by the Dangerous Substances and Explosive Atmospheres Regulations 2002. Where within the expertise of the Inspector any observations based on the DSEAR records and the hazardous area classification of installations should be reported with suggested actions.

30. The inspector should confirm the availability of a Unit Spillage Response Plan (USRP) and note the date that it was last amended and issued.

31. The inspector should comment on the installation records, noting in particular whether there is original design data, design drawings, piping and instrumentation diagrams (P&IDs) and information on repairs, modifications and other changes. (Note: data for assets maintained under Project Aquatrine is the responsibility of the Aquatrine Service Providers. In exceptional circumstances, where access to this data is required in order to provide the necessary assurance, contact can be made with the Aquatrine Service Providers through the Aquatrine Local Representative).

ASSESSMENT OF HISTORICAL DATA FROM NON DESTRUCTIVE EXAMINATIONS

32. The frequency of internal inspections for storage tanks, which include thickness measurements of both bottom and shell, will vary dependant on a number of factors, including product stored, lining and environment. Guidance on typical frequencies for these inspections is contained in References at Annex A and further guidance can be obtained from Defence Infrastructure Organisation (DIO) Technical Authority if required.

33. The inspector should review historical data collected from previous non destructive examinations for the installations to help determine future testing requirements and any other appropriate actions.

34. There are a number of underground tanks on the MOD estate. A process for the assessment of the condition of such tanks can be found in Annex B.

35. There are a number of underground pipelines on the MOD estate. A process for the assessment of the condition of such pipelines can be found in Annex C.

36. The MMO should provide any completed assessments for the inspector to evaluate. The inspector should make observations relating to the need for any further testing.

REPORTING

37. The inspector is required to complete and submit a report, the format of which can be found in Annex D. Key elements of the report will include:

a. A summary and recommendations, including a determination regarding future testing requirements and associated actions

b. A list of categorised defects and recommendations identified by the visual inspection

c. A statement of professional judgement on the condition of the fuel installations and flammable dangerous goods stores confirming that they are either:

- Fit for continued use until the next inspection or for a period of twelve months, whichever is sooner

or

- Fit for continued use for a specified period or under other restrictions to allow defined actions to be implemented

or

- Not fit for continued use

38. Any installation where the remedial action associated with an identified defect is required to meet statutory or mandatory obligations (Grade D) will be declared either:

- Not fit for continued use

or

- Fit for continued use for a restricted period to allow defined actions to be implemented

39. When an inspection has declared an installation Not Fit For Continued Use pending corrective action, (or Fit For Continued Use for a specified time period pending corrective action), the installation shall only be considered Fit for Continued Use, following a written declaration by those completing the corrective actions,

that they have been completed to the required standard. This declaration is to be kept with the Inspection Report.

40. Those actions associated with the declaration will be confirmed as adequate by the inspector during the next inspection.

41. During an inspection if there are serious conditions identified regarding an installation for which the Inspector determines is unsafe for continued use, the information should be immediately communicated to the Operating Authority and MMO.

42. The report is to be submitted electronically direct to the MMO and copied to the estate manager (who may be the DIO Facility Manager or Site Estate Team Leader), the Operating Authority, Fuel & Gas Safety Regulator, DIO Technical Authority, Authorised Person Petroleum and Authorising Engineer Petroleum within four weeks of inspection completion (a detailed distribution is included within Annex D). The site estate team are responsible for further distribution of the professional report and must consider stakeholders within their management chain who will require sight of the report; this may include the Head of Establishment, CESOs and other TLB staff.

43. MMOs that work to different prioritising criteria than those contained in the standard report format in Annex D, are to include a comparator either in their covering letter or as an additional column in the Table of Defects and Rated Seriousness.

QUALIFICATIONS OF THE INSPECTOR

44. The inspector should provide the level of skill and experience based on professional practice to identify safety and maintenance problems, over a wide range of installations. It is therefore the responsibility of the MMO to ensure that the inspector is competent and as a minimum is a Chartered Mechanical Engineer with demonstrable experience in petroleum installations. Full membership of an appropriate institute recognised by the Engineering Council is required.

45. The inspector may be an employee of the MMO although independence from the site maintenance delivery team should be considered in order to provide the necessary impartiality.

46. In exceptional circumstances and with agreement from DIO Technical Authority, Engineers with appropriate qualifications and significant relevant experience, but who are not Chartered Mechanical Engineers, may be engaged to carry out the inspection. In such cases all inspection reports will be countersigned and approved by a Chartered Mechanical Engineer experienced in petroleum installations who will take professional responsibility for the content of the report.

47. MMOs carrying out these professional inspections shall submit the names and qualifications of their prospective inspectors, plus any countersigning Chartered Mechanical Engineers taking professional responsibility, for inclusion on a register that will be maintained by DIO Technical Authority. CVs of prospective candidates should be provided to DIO Technical Authority in sufficient time in order that an assessment can be made and the individual included in the register prior to the inspection being carried out.

48. Individuals will be notified in writing whether they have been included on this register and, if successful; their names will be available to the Fuel & Gas Safety Regulator.

49. DIO Technical Authority (Fuel) for the purposes of this publication can be contacted at:

Head Mechanical and Fuels Infrastructure
Professional Technical Support
Defence Infrastructure Organisation
Kingston Road
Sutton Coldfield
B75 7RL
Tel: 0121 311 2069
E-mail: DIOOpsNorth-PTS9D@mod.uk

ANNEX A REFERENCES

1. The Petroleum Consolidation Act 1928 (as amended)

2. Health and Safety at Work etc. Act 1974 (as amended)

3. Management of Health and Safety at Work Regulations 1999 (as amended)

4. Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) 2002 (as amended)
    a. ACOP L133 Unloading petrol from road tankers
    b. ACOP L134 Design of equipment, plant and workplaces
    c. ACOP L135 Storage of dangerous substances
    d. ACOP L136 Control and mitigation measures
    e. ACOP L137 Safe maintenance, repair and cleaning procedures
    f. ACOP L138 DSEAR approved code of practice and guidance.

5. HS(G) 51 The storage of flammable liquids in containers

6. HS G) 140 The safe use and handling of flammable liquids

7. HS(G) 146 Dispensing petrol – Assessing and controlling the risks of fire and explosions at sites where petrol is stored as a fuel

8. HS(G) 176 The storage of flammable liquids in tanks

9. Health and Safety (Safety Signs and Signals) Regulations

10. JSP 375 Volume 3, Chapter 5 – Petroleum

11. JSP 317 Joint service safety regulations for the handling of fuels and lubricants

12. Defence Works Functional Standard 05 Specification for Specialist Works on Petroleum Installations – Mechanical

13. Defence Works Functional Standard 07 The Inspection, Maintenance and Testing of Equipment at Petroleum Installations – Mechanical and Electrical

14. Defence Works Functional Standard 14 Design and Installation Guide for Works on Petroleum Installations – Electrical

15. Defence Works Functional Standard Specification 031 Internal Cleaning of Fuel Tanks

16. Defence Works Functional Standard Specification 032 Internal Coating of Aviation Fuel Tanks

17. Defence Estates Organisation, Specification 043. Pumps for Bulk Fuel Installations

18. Defence Estates Organisation, Specification 044. Fuel Measurement

19. Defence Estates Organisation, Specification 46. Aviation Fuel Filtration

20. Design and Maintenance Guide 03 Storage of Dangerous Substances

21. Design and Maintenance Guide 014 Mechanical Transport Fuelling Installations

22. Technical Bulletin TB 97/47 Mechanical Transport Publications

23. Policy Instruction PI 65/2004 Aviation Fuel Quality. Separator element fitted to filter water separators

24. Defence Instruction Notice 2007DIN04-123 (Replaces 2006DIN04-105) Aviation fuel quality. Removal of absorbent type elements from Aviation Fuel Filter Monitors

25. Defence Standard 91-87 is for F34 – (Avtur FSII – Kerosene + FSII)

26. Defence Standard 91 Series fuels and lubricants

27. Defence Standard 01-5 Fuels, Lubricants and Associated Products

28. Defence Standard 05-52, parts 1 & 2, Markings for the identification of fuels, lubricants and associated products

29. The Control of Pollution (Oil Storage) (England) Regulations 2001 (as amended)

30. The Water Environment (Oil Storage) (Scotland) Regulations 2006 (as amended)

31. The Groundwater Regulations 1998 (as amended)

32. DEFRA – Groundwater Protection Code

33. DEFRA – Guidance note for the Control of Pollution (Oil storage)(England) Regulations

34. The Environment Agency and The Scottish Environment Protection Agency Pollution Prevention Guidelines
    a. Above Ground Oil Storage Tanks: PPG2
    b. Use and Design of Oil Separators in Surface Water Drainage Systems: PPG3
    c. Refuelling Installations: PPG7
    d. Storage & Handling of Drums & Intermediate Bulk Containers: PPG26
    e. Installation, Decommissioning and Removal of Underground Storage Tanks: PPG27

35. APEA/EI Guidance for the Design, Construction, Modification and Maintenance of Petrol Filling Stations

36. IP Model Code of Safe Practice in the Petroleum Industry – part 15 Area Classification Code for Petroleum Installations

37. API Standard 653 Tank Inspection, Repair, Alteration and Reconstruction

38. API RP 575 Guidelines and Methods for Inspection of Existing Atmospheric and Low-pressure Storage Tanks

39. API/EI 1550 **–** Handbook on Equipment used for the Maintenance and Delivery of Clean Aviation Fuel

40. Associated Octel Company. Leaded Gasoline Tank Cleaning and Disposal of Sludge.

41. BS EN 13160 1 to 7 Leak detection standards

42. BS EN 60079 10 Classification of hazardous areas

43. BS EN 60079 14 Selection, Installation and Maintenance of Electrical Apparatus for Use in Potentially Explosive Areas

44. BS EN 60079 17 Electrical apparatus for explosive gas atmospheres – Part 17: Inspection and maintenance of electrical installations in hazardous areas (other than mines)

45. BS EN 14161 Petroleum and Natural Gas Industries – Pipeline transportation systems

46. BS EN 61508 Functional safety of electrical/electronic/programmable electronic safety- related systems (SIL assessment)

47. BS EN 61511 Functional safety. Safety instrumented systems for the process industry sector

48. Process Safety Leadership Group (PSLG). Safety and environmental standards for fuel storage sites

49. EEMUA Publication 183 Guide for the prevention of bottom leakage from vertical, cylindrical, steel storage tanks

50. EEMUA Publication 186 A Practitioner's Handbook – Electrical Installation, Inspection and Maintenance in Potentially Explosive Atmospheres

51. EEMUA Publication 159 – User's Guide to the Inspection, Maintenance and Repair of Aboveground Vertical Cylindrical Steel Storage Tanks

52. ISGOTT – International Safety Guide for Oil Tankers and Terminals

ANNEX B – ASSESSMENT OF UNDERGROUND AND MOUNDED SINGLE SKINNED STEEL TANKS

INTRODUCTION

1. There are large numbers of underground and mounded single skinned steel tanks on the MOD estate. In order to ensure these tanks do not create explosion risks or pollution through loss of integrity, they require an appropriate inspection regime informing a pro-active schedule of maintenance and infrastructure replacement.

2. An important component of inspection and maintenance for underground single skinned steel tanks is a process that allows for data collection, analysis of the data and appropriate non destructive testing.

3. This document describes such a process as follows:

a. Level 1 assessment – data collection and analysis in order to determine whether there is an increased risk of loss of integrity

b. Level 2 testing – appropriate non destructive testing that can subsequently be applied

4. The process described in this document is relevant for bulk fuel, slops or liquid chemical storage and motor transport fuelling installations. Vertical, splinter protected NATO type installations are excluded from the Level 1 assessment. Aviation fuel tanks are subject to internal inspection as defined by Section 2.0 Job 2.0 of the extant version of the Practitioner Guide for 'The Inspection, Maintenance and Testing of Equipment Installed at Petroleum Installations – Mechanical and Electrical'.

5. All underground single skinned steel tanks used for the storage of fuel, slops or liquid chemicals shall be subjected to an initial Level 1 assessment using this guidance. These initial assessments only need to be updated if conditions assessed within the report are subject to change.

6. The results of the Level 1 assessments will determine, in part, the requirement for Level 2 testing and should be used by MMOs to inform prioritised and pro-active infrastructure lifecycle replacement. All high risk tanks (score >6) will require a follow up level 2 test to be undertaken.

7. All work is to be undertaken in accordance with JSP 375 Volume 3 Chapter 5 Petroleum and the Authorised Person (Petroleum) should be consulted prior to any Level 2 testing.

LEVEL 1 ASSESSMENT

8. Data collection and analysis is non-invasive and therefore does not require any operational constraints to be imposed.

9. The MMO should make available either of the following:

a. Previously completed Level 1 assessments

b. Construction, ground conditions and aquifer data to permit the completion of Level 1 assessments

10. Construction or ground condition data may not be available but the assessment can still be completed. However, the result may be a higher risk score with follow up actions.

11. The Level 1 assessment should be undertaken using the standard forms provided in this guide.

12. Table 1 indicates the extent of information required to be collated. To aid completion the following paragraphs provide additional guidance

a. Tank Description
License/FSAA issued and expiry date is available from the current Certificate of Continued Operation issued by the Fuel and Gas Safety Regulator

b. Tank Construction

External Coating – If this information is not available, then the top of the tank should be inspected at the manhole access. A bitumen enamel coating will be 2 – 4 mm thick, bitumen paint and coal tar epoxy will be less than 500 micron thick. Bitumen enamel and bitumen paint are degraded by fuels, consequently if a spillage has occurred in the manhole then the coating may have been removed. If this is the case then write “bare” in the “other” category

Internal Lining – This information will be available only from construction, inspection or repair records

Surround – This information will be available only from construction or repair records

Proximity of Earth Rods – This can be confirmed on site by visual examination

Depth – Measure the diameter of the tank using the gauge stick and the distance from ground level to the top of the tank in the manhole. Measurements are to be recorded to the nearest 0.1m

c. Inspection and Repair
This section can be completed only by reference to the inspection records

d. Current Status
This section must be completed for all tanks. If data is not readily available, a request should be made to the Operating Authority

e. Ground Conditions
The information may be available from an existing Land Quality Assessment, Land Condition File or soil surveys carried out for works projects

f. Additional Information
Provide further information if considered relevant

13. Table 2 indicates rankings that can be assigned from the information obtained from Table 1. The cumulative score will provide an indication of the likely risk of loss of integrity presented by the tank. The higher the score the higher the probability of the tank constituting a safety and/or environmental hazard.

14. After the initial preparation of a Level 1 assessment, the Inspector will review the results annually, where there has been a change that may potentially raise the overall score the level 1 assessment is to be revised. Where the score is >6 then appropriate actions as detailed in paragraph 6 should be taken.

LEVEL 2 TESTING

16. Level 2 testing should be undertaken only by a qualified contractor with relevant experience. DIO can advise on the need for additional survey work and contractors.

17. **Tanks with restricted entry** – Where the entry to an underground single skinned tank is deemed to be unacceptable due to the high risks involved, Level 2 testing is to be undertaken from the outside. Proprietary precision tightness test methods are to be utilised which do not require product removal but do necessitate the tank being out of operation whilst the test is in progress. Test methods available can be divided into:

a. Volumetric Methods – use techniques that detect any change in height of liquid in the tank to define a leaking or tight tank. Examples of this type of test are those that measure product height:

Electronically

Using Ultrasonic Testing

b. Non Volumetric Methods – do not rely on detecting a change in height measurement to determine a leaking or tight tank. Examples of this type of test are those that use a chemical tracer or those that apply vacuum and/or pressure using inert gas and:

Measure pressure loss/decay over time

Measure mass decay over time

Listen for ingress of groundwater and/or air

It should be noted that the chemical tracer method requires the installation of underground test probes and that any chemical additive to the fuel must have been previously tested and approved for use on the MOD Estate

Regardless of the test method selected, a pass/fail certificate should be obtained that is in accordance with a recognised standard such as the United States Environmental Protection Agency Standard test procedure for evaluating leak detection methods

18. **Motor Transport Fuelling Installations** – Underground single skinned steel tanks at motor transport fuelling installations shall undergo Level 2 testing in years 20, 25, 30 and every 2 years thereafter as a minimum and more frequently if the inspector deems this necessary.

19. **Aviation Installations** – Testing requires internal access. Consequently the tank needs to be emptied, cleaned and gas-freed prior to any activities commencing.

Underground Tanks

a. A detailed visual inspection should be completed for all accessible areas

b. Corrosion and pitting in the tank walls should be assessed using magnetic flux leakage (MFL) or a similar technique, which is good at detecting inner and outer side metal loss. This test should cover the entire wall area

c. Ultrasonic scanning should be used to confirm the initial material thickness, where there is significant material loss detected by the MFL inspection (typically greater than 40%) and the dished ends of the tank, the shape of which will normally preclude the use of MFL scanners. A series of spot thickness checks on the dished ends may suffice, but a series of Ultrasonic scans will improve coverage and assist in keeping more detailed records

d. Welds can be tested using a technique that is suitable for the application such as vacuum box or magnetic particle inspection (MPI)

Mounded Tanks

a. A detailed visual inspection should be completed for all accessible areas and components of the tank

b. Corrosion and pitting in the tank floor should be assessed using MFL or a similar technique, which is good at detecting inner and outer side metal loss. This test should cover the entire floor area (scanners are not able to cover 100% of the floor area and have “dead” zones)

c. Ultrasonic scanning should be used to confirm the initial material thickness and where there is significant material loss detected by the MFL inspection (typically greater than 40%). Ultrasonic measurement of all indications is not normally required with all computerised MFL mapping systems, but a sample number of checks should be performed to confirm the accuracy of results

d. Ultrasonic corrosion sizing should be completed for the sump plates and all tank nozzles

e. MPI testing should be completed on the sump and nozzle welds (coating removal required)

f. Vacuum Box testing should be completed on all floor plate welds (coating removal required)

g. Floor to shell plate welds can be tested using MPI or vacuum box (coating removal required).

h. MFL testing should be completed on at least 5% of the tank shell plus any associated corrosion sizing with Ultrasonic testing. Sample areas at various positions around the tank should be inspected and coverage should be increased if issues are detected

i. Several vertical ultrasonic line scans of the shell, in accordance with the requirements of EEMUA 159, should be completed

j. A visual inspection of the internal tank roof should be completed from ground level using a video camera to enable later analysis of potential problems associated with the outer concrete protection

k. Mounding material that is directly in contact with roof mounted nozzles should be temporarily removed to determine the condition of any wrapping and whether there is corrosion at the interface. The inspector may consider it necessary to remove further mounding dependant on initial inspection results

20. The survey report is to provide the test results together with a recommendation of any remedial work required and a projection of tank life.

21. Remedial work should be completed in accordance with the original design specification if known and to an accepted standard such as EEMUA 159 or API 653.

22. Where there is concern or analysis of the video recording indicates potential problems with the outer concrete protection, a specialist will need be employed to carry out a detailed survey. This survey may include exposing a section of the external roof, material sampling and an examination of any membrane and the re-bar. Further guidance should be obtained from DIO Technical Authority before proceeding.

TABLE 1 – COLLATION OF INFORMATION

SITE:

Tank Identifier				
Tank Description				
In service/not in service				
Fuel stored				
Capacity (litres)				
Date installed (or estimated)				
Date last licensed				
Date next licence due				
NATO/national facility				
Buried/semi-buried				
Hardened/soft				
Frequency of fuel delivery				
Tank Construction				
External coating **-bitumen enamel** **-coal tar epoxy** **-bitumen paint** **-other** **-not known**				
Internal lining **-epoxy** **-other** **-not known**				
Surround **-concrete** **-clay** **-not known**				
Proximity of earthing rods **-< 5m** **-5 - 10m** **-10 - 20m** **->20m** **-not known**				
Piping materials **-steel** **-galvanised steel** **-externally coated** **-not known**				
Depth **-ground level to top of tank (m)** **-top of tank to base of tank (m)**				
Inspection and Repair				
Inspection type and date **-internal visual** **-internal NDT** **-external visual**				
Level gauge calibration method and date				
Previous leaks identified and dates				
Previous leaks attributed to **-internal corrosion** **-external corrosion**				
Current Status				
Daily dips within prescribed limits*				
Dip readings erratic*				
Ground Conditions				
Soil ph				
Soil profile				

-topsoil **-made ground** **-clay** **-sand** **-peat** **-rock** **-not known**				
Depth of water table below ground level (m)				
Aquifer type **-Principal (Major)** **-Secondary A (Minor)** **-Secondary B (Non-aquifer)** **-Unproductive Strata (Non-aquifer)**				
Is the tank <5 km from the coast?				
Additional Information				

*** Defined locally**

TABLE 2 - COMPONENT RANKING

Component	Ranking				
	+2	+1	0	-1	-2
Tank surround	Clay / Not known	-	-	Concrete	-
Soil type	Sand & Gravel / Not known	Loam	-	Clay	-
Age of tank (years)	>25	20 - 25	10 - 20	5 - 10	<5
Coastal location?	-	Yes	-	No	-
Externally coated?	No / Not known	-	-	Yes	-
Internally coated?	No / Not known	-	-	Yes	-
Aquifer type	Principal (Major) / Not known	Secondary A (Minor)	Secondary B	Unproductive Strata (Non)	-

A tank is deemed to be at high risk when the cumulative score exceeds the value of 6.

Example A:		**Example B**	
Tank surround is concrete	-1	Tank surround is clay	+2
Soil type is clay	-1	Soil type is clay	-1
Tank is 40 years old	+2	Tanks is over 25 years old	+2
Tank is inland	-1	Tank is inland	-1
Tank is not externally coated	+2	Tank is not externally coated	+2
Tank is internally coated	-1	Tank is not internally coated	+2
Secondary A (Minor aquifer area)	+1	Principal (Major aquifer area)	+2
Total	**+1**	**Total**	**+8**

It is important to note that the factors listed above are not weighted.

ANNEX C – BURIED STEEL FUEL PIPELINES: COATING CONDITION AND CATHODIC PROTECTION MONITORING

INTRODUCTION

1. The professional inspection shall take account of the condition of buried steel pipelines. When making judgement on the condition the inspector is to consider similar criteria as detailed in Annex B together with evaluation of records provided by the MMO of the maintenance, testing and inspection regime. Where there are doubts or a lack of assurance regarding the condition of a buried steel fuel pipeline, the inspector shall consider recommending suitable surveys that can be used to evaluate both coating and cathodic protection systems. The information contained in this annex describes some of the methods available.

2. The following fuel systems are covered by this annex

a. Airfield bulk fuel delivery pipelines

b. Airfield cross-base pipelines between Bulk Fuel Installations

c. Aircraft hydrant systems

d. Oil fuel depot receipt/issue pipelines

3. This annex is not applicable to pipework installed at Mechanical Transport Fuelling Installations.

4. The two major causes of pipeline failure are mechanical damage and external corrosion.

5. External corrosion may be caused by damage to the protective wrapping or by failure of the cathodic protection system. Not all buried pipelines are cathodically protected and the application is dependent on the results of a geological survey, which should have been carried out during design.

6. If the pipeline is cathodically protected, previous test results (see paragraphs 16 and 17) are to be reviewed to determine whether the cell has decayed to a level at which a protective circuit has not been established. If considered likely then a further set of test results will be needed to determine the extent of restoration required.

7. If the pipeline is not cathodically protected or if test results indicate that an effective cell is still in place then a coating survey is required to determine the condition of the wrapping.

8. The pipeline surveys described in this annex are specialised and should be undertaken only by appropriately qualified and experienced contractors. Although this annex suggests survey methods, the final decision should rest with the specialist contractor in consultation with site personnel.

9. It should be noted that proprietary equipment rather than the survey methods listed in this annex should be used to determine the location and routing of pipelines for which all survey drawings have been lost.

SELECTION OF THE TYPE OF SURVEY

10. The information required from the survey determines the technique to be used. The following surveys are available:

a. Close Interval Potential – to provide initial cathodic protection data for new pipelines to assess cathodic protection levels and areas of poor protection to identify major coating defects

b. DC Voltage Gradient – to identify specific areas of coating defects together with an estimate of the defect size

c. Pearson Coating – to identify specific areas of coating defects

d. Signal Attenuation Coating – to rapidly assess the coating condition and identify the worst areas

A Signal Attenuation Coating Survey can be followed by a more detailed DC Voltage Gradient or Pearson Coating Survey. In this way the pipeline can be appraised in a cost effective manner. A Signal Attenuation

Coating Survey can take 10% of the time of a Pearson Coating Survey and 30% of the time of a DC Voltage Gradient Survey.

SURVEY METHODS

11. The Close Interval Potential Survey measures the pipe to soil potential level at intervals between 1 and 5 metres with the cathodic protection system both 'on' and 'off'. The latter is achieved by fitting all the cathodic protection stations and pipeline bonds with synchronised current interrupters. The potential is measured by a high impedance voltmeter connected to a Cu/CuSO4 reference electrode and to the pipeline at a test point by means of a trailing wire. The 'off' potential is known as the polarised potential and is indicative of the level of cathodic protection achieved. An immediate voltage drop will be apparent when the cathodic protection is switched 'off'. A further drop of at least 0.1V should occur after the initial drop to indicate the effectiveness of the system.

The information to be produced is a graph of soil to pipe voltage against pipeline distance referred to a datum point. Each graph will have two sets of readings to denote the cathodic protection system in the 'on' and 'off' mode. Defects will appear as troughs on the graph.

12. The DC Voltage Gradient Survey measures the voltage gradient between the pipe and the soil when a direct current at a pulsed frequency is applied to the pipe. The existing cathodic protection system can be used to apply the current, or temporary earth rods may be installed along the route.

Pipelines which are well coated have a high resistance to earth but those with defects can readily impart the currents through the soil and hence a voltage gradient is set up in the vicinity of the defect. The larger the defect, the greater the gradient. The voltage gradient is detected by a meter connected to two probes.

As the pipeline is walked the meter needle will deflect as a defect is found. If a deflection is noticed it is indicative of the probes measuring a voltage gradient. By relocating the probes the deflection will disappear; this indicates an equipotential being measured. The defect is therefore between the probes. After the defect has been located a series of readings laterally to the pipe are taken which, when viewed in conjunction with the signal strength, determine the magnitude of the defect.

13. The Pearson Coating Survey measures the voltage gradient between the pipe and the soil when an alternating current is applied to the pipe via either the existing cathodic protection system or a suitable exposed part of the pipeline whilst the other terminal is connected to a remote earth. The coating provides the resistance and any defect provides a current leakage path, which can then be detected at ground level. The strength of the emitted signal will vary according to location and size of coating defects.

The survey is conducted by two operators walking along the route of the pipeline, one behind the other. The distance between them depends on the diameter of the pipeline and can be 6 to 12 metres. As the leading operator approaches a coating defect the signal will gradually increase and peak as he passes over the defect. The signal will gradually reduce to a null when the defect is midway between the two operators

The information provided would be a graph of signal responses against pipeline distance referred to a datum point.

14. The Signal Attenuation Coating Survey measures the signal strength in decibels emanating from the pipeline when an alternating current is applied to the pipe, via either the existing cathodic protection system or a suitable exposed part of the pipeline. The other terminal is connected to a remote earth.

A receiver connected to an antenna is then walked along the pipeline and the signal strength recorded. A plot of signal strength against pipeline distance is then produced and from this a plot of signal loss against pipeline distance can be determined. The final output is a histogram of signal loss/distance against pipeline distance. The greater the signal loss/distance against distance value the more probability there is of a defect.

CATHODIC PROTECTION MONITORING

15. Cathodic protection is provided to buried pipelines either by impressed current or by sacrificial anodes. The effectiveness of either system can be determined from a Close Interval Potential Survey. Protection potentials are contained in BS EN 12954 Table 1.

16. A sacrificial anode system requires little maintenance or inspection beyond an evaluation of effectiveness. Should there be a reduction in the cell voltage commensurate with design life then the sacrificial anodes require replacement. The frequency of functional checks should be in accordance with BS EN 12954 Table 2 and are to comprise:

a. Measurement of anode current and potential

b. Measurement of the pipeline to soil potential

17. An impressed current system consists of an ac power supply, transformer/rectifier, distribution boxes, control boxes and ammeters. The frequency of functional checks should be in accordance with BS EN 12954 Table 2 and are to comprise:

a. Measurement of transformer/rectifier current and potential

b. Inspection of transformer/rectifiers for oil leaks, oil temperature, oil level (all as appropriate), cable connections, fuses, surge diverters and local earthing facilities

c. Measurement of distribution, control and junction box current and potential

d. Inspection of cable connections, fuses, shunts, resistors, ammeters and surge diverters

e. Measurement of the pipeline to soil potential

ANNEX D – STANDARD REPORT FOR THE PROFESSIONAL INSPECTION OF FUEL INSTALLATIONS AND FLAMMABLE GOODS STORES

1. The objective of this standard report format is to:

    a. Ensure that specific items of the inspection are always covered

    b. Ensure that inspections are completed to a uniform minimum standard

    c. Provide a method of reporting by which clear comparisons can be made with previous reports and comparable installations.

2. This standard report format is structured to enable the inspector to delete non-applicable sections.

3. The text in italics in this standard report format is intended to provide guidance and to indicate where site/inspection specific information is to be inserted. It is not intended to be prescriptive or to constrain the inspector from recording those observations that are considered relevant.

4. Photographs may be included within the report to highlight particular issues provided that Site procedures for photographic equipment are adhered to.

5. Additional observations that the inspector wishes to make regarding subjects not covered by the standard report format should be recorded in the separate boxes marked General Comments (guidance regarding the type of comments to be included is given in italics).

Ministry of Defence

INSPECTION OF FUEL INSTALLATIONS AND FLAMMABLE DANGEROUS GOODS STORES

CONTRACT: *The name of the MMO contract or organisation operating the sites*

SITES COVERED BY THIS REPORT:

1. *Site*
2. *Site*

AUTHOR: *The name of the Inspecting Engineer*
CHECKED BY: *The name of the Checking Engineer*

DATE OF INSPECTION: *The date the inspection was carried out*

CONTENTS

1.0 INTRODUCTION

The purpose of this inspection is to:

a. Confirm compliance with appropriate legislation.

b. Confirm that there is a maintenance management system in place and that the installations are being maintained to the appropriate standard.

c. Report on the visual condition of the installations.

d. Review non-destructive examination data to ensure appropriate future actions are programmed.

e. Confirm that the installations can continue to be used until the next annual inspection or to define the actions required.

Date of inspection	*Enter the date that the inspection took place*
Date of previous inspection	*Enter the date that the previous inspection took place*
Date of existing licence/FSAA	*From site records*
MMO Name	*The name of Maintenance Management Organisation*
MMO Site Contact **Email address**	*Name* *email address*
DIO Facility Manager or Site Estates Team Leader **Email address**	*Name* *email address*
Operating Authority **Email address**	*Name* *email address*
Fuel and Gas Safety Regulator **Email address**	DSEA-DLSR-FGSRInspGroup@mod.uk
DIO Technical Authority **Email address**	DIO-ptsaudits@mod.uk
AP PET **Email address**	*Enter the name of the lead AP PET and email address for forwarding a copy of the report*
AE PET **Email address**	*Enter the name of the AE PET for the site and email address for forwarding a copy of the report*
Inspector **Email address**	*Name* *email address*

2.0 SUMMARY AND RECOMMENDATIONS

This summary of recommendations and the following table of defects should be read in conjunction with the complete report, which contains further detail and actions.

This visual inspection has been carried out in accordance with the extant Practitioner Guide for the Inspection of Petroleum Installations and Flammable Dangerous Goods Stores and the installations inspected were identified from the schedule provided.

Insert the appropriate numbers relating to the asset types in the table below.

Asset type	Total number	Fit for continued use	Fit for continued use with restrictions	Not fit for continued use
Bulk fuel installations				
Semi permanent aviation installations				
Motor transport fuelling installations				
Product receipt enclosures				
Pipelines				
Hydrant systems				
Flammable dangerous goods stores				
Ancillary installations				

During the inspection, a number of defects and areas of improvement were noted and the most significant are detailed as follows:

Bulk Fuel Installations – *This section should include comments on airfield BFIs, PSDs, slops tanks, buffer tanks and other bulk fuel storage.*

Semi Permanent Installations – *This section may refer to proprietary skid mounted aircraft equipment or similar installations.*

Product Receipt Enclosures – *This section may refer either to a separate fenced enclosure or to an area within another installation, such as a BFI pump room that includes the equipment.*

Pipelines – *This section should include comments on cross country, cross base, naval jetty pipelines or similar and pig installations where appropriate. It does not apply to small bore pipelines (50 mm or less).*

Hydrant Systems – *This section should include comments on the hydrant and de-fuel line, any associated valve pits and the hydrant couplers.*

Motor Transport Fuelling Installations – *This section refers to fixed dispensing installations but should also include any ad hoc installations observed.*

Flammable Dangerous Goods Stores – *This section should include comments on any buildings, barns or open compounds inspected.*

Ancillary Installations – *This section should include the statement regarding who has carried out the checks on these tanks, whether there are any non compliance issues associated with Statutory Duties, whether there is an appropriate inspection and planned maintenance regime in place and whether that maintenance regime is being implemented by the MMO.*

General – *Include here anything that does not fit under the headings above. For example comments on maintenance, installation records, spillage response plans or compliance issues with specific legislation. Also, any instances of items (that require an inspection) noticed on site during the inspection, but that are not on the inspection list.*

Table of defects and rated seriousness

The defects noted during the inspection are listed in the following table. Alongside each entry is a rating to indicate the seriousness of the defect with regard to the long-term life and maintenance requirements of the facility.

Serial No.	Location	Defect	Rating
	To include the local identifier e.g. building number or asset number	*A description of the defect and/or suggested remedial action*	*As per Section 4*

3.0 CERTIFICATE OF FITNESS FOR CONTINUED USE *(Shown as example)*

This certificate confirms that the petroleum installations and flammable dangerous goods stores are either:

Fit for continued use until the next inspection or for a period of twelve months, whichever is sooner

or

Fit for continued use for a specified period or under other restrictions to allow defined actions to be implemented

or

Not fit for continued use

Asset description and ID	Status	Action close out
Bulk Fuel Installation *RAF Anywhere – BFI 1* *RAF Anywhere – BFI 2*	***Not fit*** *for continued use until the completion of actions 5, 8, 13, 18 19, 49, 53, 54, 56, 59, 64 and 65. Thereafter fit for continued use only until [date] to allow completion of tasks 15 and 17* *Fit for continued use*	*Date, job reference, file reference*
Semi Permanent Installation	*N/A*	
Product Receipt Enclosure	*N/A*	
Cross Base Pipeline	*N/A*	
Hydrant System	*N/A*	
Motor Transport Fuelling Installation *RAF Anywhere – MTFI 3*	*Fit for continued use*	
Flammable Dangerous Goods Store *RAF Anywhere – Building 4*	*Fit for continued use* ***only until*** *[date] to allow completion of tasks 25 and 27*	
Ancillary Installations	*The MMO declaration was provided and confirms that these tanks comply with current legislation and are subjected to an appropriate maintenance regime.*	

	Name	Signature	Date
Inspector			
Counter-signature (if required)			

4.0 INSPECTION PROCEDURES

The following installations were inspected:

INSTALLATIONS INSPECTED	IDENTIFICATION
Bulk Fuel Installations	*In each of these sections, the installations examined should be recorded using the local identifier e.g. building or asset number*
Semi Permanent Installations	
Product Receipt Enclosure	
Pipelines	
Hydrant Systems	
Mechanical Transport Fuelling Installations	
Flammable Dangerous Goods Stores	
Ancillary Installations	

The inspection commenced with a visual examination of the installations listed above to check on the condition of plant, to note any defects and to look for indications that maintenance was being carried out. Any signs of recent work (such as the replacement or removal of valves, or the renewal of filter elements in separators) were noted such that the information could be used for auditing the maintenance records. Defects were also noted.

The second part of the inspection involved an examination of a sample of the maintenance management organisation's detailed records to see if the required maintenance records were present, to check that any maintenance recently carried out (as witnessed by the visual inspection) had been recorded and to check that the frequency of planned maintenance operations is suitable and sufficient and in line with relevant reference documents.

During the course of the inspection, a representative of the Operating Authority was approached to describe the operation and maintenance of the installations. In carrying out these various inspections, the views of the maintenance management organisation and operators of the installations were sought to see if there were any problems experienced relating to the operation and maintenance of the installation.

This visual inspection report includes an opinion on each part of the facility regarding its ability to perform its duty and includes a description of its visual condition. In describing a defect, a relevant rating is applied to provide an indication of the seriousness.

The rating is an indication of the seriousness of the defect; this will be arrived at by considering the number of defects, whether the defect is contrary to statute (law) and the risk of continued use of the installation. Other factors will include conformance to MOD mandated publications, manufacturer's requirements, current usage, age and historical data for the type of installation.

The grading methodology follows the JSP 434 framework.

KEY TO GRADING:

Grade D (Major Non-Conformance/s) – The Regulator may award an Immediate Prohibition Notice as a result of this rating. This rating may be awarded for statutory or mandatory non-compliance.
Immediate action will be to make safe, by physical (mechanical and/or electrical isolation) or enhanced operational procedures put in place, with a programme of repair implemented and time scales defined.

Grade C (Minor Non-Conformance/s) – The Regulator may award an Immediate Prohibition Notice or an Improvement Notice as a result of this rating. This rating may be awarded for risk to safety, the environment, operational effectiveness or serious dilapidation.
Asset has continued use with a programme of repair implemented within a specified time scale, usually within three to twelve months.

Grade B (Observation/s) – The Regulator may award an Improvement Notice as a result of this rating. This rating may be awarded for risk of an increased cost to maintenance if delayed and where work is required to maintain the value or utility of the estate.
Asset has continued use, with these observations monitored. Funding required within three years.

Grade A (Satisfactory condition) – no defects noted.
Asset has continued use, with condition of asset defined.

Note: Within this grading structure where required actions have not been taken there is potential that a Grade B (Observation) can become a Grade C (Minor Non-Conformance) and Grade C (Minor Non-Conformance) can become Grade D (Major Non-Conformance).

5.0 VISUAL INSPECTION OF THE INSTALLATIONS

Mounded or Below Ground BFI - Visual Inspection Report		
ID	*The local identifier e.g. building or asset number*	
Type of installation	*The type e.g. horizontal single or twin skin or NATO type vertical cylindrical single skin splinter protected etc. and its purpose e.g. aviation fuel for helicopter refuelling. Enter the manufacturer of the installation if known*	
Number of tanks	*Number of tanks in the BFI*	
Capacity of each tank (litres)	*As marked on the tank or from the records*	
Product	*As marked on the tank or from the records*	
Date constructed (approx)	*On the tank information plate or in the records*	
Date internally lined	*The date of the last lining application*	
Last inspection date	*As marked on the tank or from the records*	
Next inspection date	*As marked on the tank or from the records*	
Last clean date	*As marked on the tank or from the records*	
Next clean date	*As marked on the tank or from the records*	
Last non destructive test type & date	*Ultrasonic, MFL etc. report ref. & date completed*	
Number, make and model of FWS	*From a visual inspection of equipment or records*	
Number, make and model of pumps	*From a visual inspection of equipment or records*	
Number, make and model of FWM	*From a visual inspection of equipment or records*	
Last dispense meter calibration	*From the maintenance records*	
Last electrical test date	*From the maintenance records*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Condition of tanks: Rust on exposed metal? Access steps and handrails sound? PV valves in good condition? Evidence of leakage? Paintwork acceptable? Valve stems greased? Cathodically protected? Evidence of instability of mound? Level gauging?		
Comments: 1. *Are the access steps and associated handrails to the top of the tank, handrails around the top and any tank top walkways sound?* 2. *Does the tank have PV valves or open vents? Do the PV valves look maintained and if open vents have protective mesh, are they clear of paint and other debris?* 3. *Are the tanks cathodically protected and are there any reported problems?* 4. *Does the earth mound look like it is becoming unstable, perhaps through the activity of rabbits or heavy rain?* 5. *Check for cracks or signs of leakage on weld joints, manways and reinforcing plates.* 6. *Record the type of gauging e.g. radar, servo etc. Check for damage, its general condition and whether there are reported problems.*		
Condition of pump and filter area: Rust on piping? Rust on equipment? Paintwork acceptable? Pressure gauges acceptable? Differential pressure gauges acceptable? Evidence of leakage? Notices in order? Schematic shown? Neat and tidy?		

Valve stems greased? Filters last/next change date?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *Check for cracks or signs of leakage on weld joints and flanges.*		
Condition of dispense points: Rust on piping? Rust on equipment? Paintwork acceptable? Meter acceptable? Pressure gauges acceptable? Valve stems greased? Hose condition acceptable? Earth system acceptable?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *You should determine whether the hoses are pressure tested, you should record the test date and age of hose.* 3. *Is the earth system sound and secure?*		
Condition of road offload points: Rust on piping? Rust on equipment? Paintwork acceptable? Pressure gauges acceptable? Valve stems greased? Earth system acceptable?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *You should determine whether the hoses are pressure tested, you should record the test date and age of hose.* 3. *Is the earth system sound and secure?*		
Condition of control room: Clean and tidy? Level gauges working? Temperature gauges working? Fire panel working? Alarms functioning? Damaged equipment?		
Comments: 1. *If there is a fuel management system, you should ask to see it working and confirm that the readings being displayed for level and temperature are reasonable. You should also ask the Operating Authority whether there are any known problems*		
Condition of generator house: Generator in good condition? Leaks in generator area? Diesel bulk tank rusty? Leaks from bulk tank? Valve stems greased? Bulk tank equipment acceptable? Level gauges working? Paintwork acceptable?		
Comments: 1. *Is the generator and oil tank system in a condition that gives cause for concern about its ability to*		

function as intended?		
Condition of secondary/tertiary containment: Would a failure of the storage tank be detected or contained? Would a failure of the ancillaries be detected or contained? Risk assessment for tertiary containment completed? Do the tertiary containment measures appear adequate?		
Comments: 1. *You should ask about the measures that are in place/deployable should there be a breach of the secondary containment or where there is no defined secondary containment.* 2. *The risk assessment can utilise COMAH, EA & CIRIA guidelines.*		
Condition of interceptor: Operational and in sound condition? Emptied regularly? Clean and tidy?		
Comments: 1. *Record whether access was available and if possible your observations regarding signs, general condition and any contamination observed.*		
Condition of electrical equipment: Hazardous area classification plan? Equipment appropriate for hazard area? Enclosures fully bolted? Cables tight in glands? Earth test points acceptable?		
Comments: 1. *Record whether there was a hazardous area classification plan in accordance with the requirements of DSEAR available.* 2. *Check the protection rating for equipment to determine whether it complies with the hazardous zone classification.*		
General comments: *1. Include comments on any other issues or observations here.* *2. Are signs adequate?* *3. What is the general housekeeping like?* 4. *State whether there is an up to date license to operate displayed or FSAA available*		

Above Ground BFI - Visual Inspection Report	
ID	*The local identifier e.g. building or asset number*
Type of installation	*The type e.g. horizontal cylindrical or vertical, whether single skinned in a bund or integrally bunded and its purpose e.g. aviation fuel for aircraft refuelling. Enter the manufacturer of the installation if known.*
Number of tanks	*Number of tanks in the BFI*
Last non destructive test type & date	*Ultrasonic, MFL etc. report ref. & date completed*
Number, make and model of FWS	*From a visual inspection of equipment or records*
Number, make and model of pumps	*From a visual inspection of equipment or records*
Number, make and model of FWM	*From a visual inspection of equipment or records*
Last dispense meter calibration	*From the maintenance records*
Last electrical test date	*From the maintenance records*

Condition of tanks:

For each storage tank in the installation, the following points should be addressed

Tank No. *Local identifier* **Capacity (litres)** *From records* **Product** *From records*
Constructed *From records* **Date lined** *From records* **Last cleaned**
Last inspection **Next clean** **Next inspection**
Last NDT type and date *Ultrasonic, MFL etc. report ref. & date completed*

Concrete Ring –
Is there broken concrete or cracks? Is there obvious settlement and is there vegetation against the bottom of the tank?

Tank –
Is there rust on exposed metal and is the paintwork acceptable? Are the access steps and associated handrails to the top of the tank, handrails around the top and any tank top walkways sound? Does the visible base appear sound and is the tank to visible base seal intact? Check for cracks or signs of leakage on weld joints, manways and reinforcing plates. Are cable connections to earthing lugs sound? Is there grooving, corrosion, pitting or coating failure on the visible internal surfaces of floating roof tanks?

Pipe work –
Check for cracks or signs of leakage on weld joints and flanges. Is there rust on exposed metal and is the paintwork acceptable for the pipework, valves and other fittings? Are valve stems greased?

Secondary containment – *You should address each of the questions below*
Contains at least 110% of the largest tank or 25% of total storage, whichever is greatest?
Impermeable to water and/or oil?
Intact and without openings or valves for drainage?
Pipes that pass through sealed adequately?
Vent pipes, taps and valve arranged so that oil will be retained?
Signs of product staining?
Access acceptable?
Area outside the bund clear of signs of spillage?
Expansion joints in both bund floor and walls, intact?
Fire resistant structural integrity, joints and pipework penetrations?
Expanding fire resistant sealing to current standards?

Level gauge –
Record the type of gauging e.g. radar, servo etc. Check for damage, its general condition and whether there are reported problems.

PRVs –
Is there thermal pressure relief across main tank and main pipework isolating valves and does it look maintained?

Vents –
Does the tank have PV valves or open vents? Do the PV valves look maintained and if open vents have protective mesh, are they clear of paint and other debris?

Access –
Are the access steps and associated handrails to the top of the tank, handrails around the top and any tank top walkways sound?

General –
Is the tank cathodically protected and are there any reported problems? What is the general housekeeping like and are signs adequate?

Tank No. *Local identifier* **Capacity (litres)** *From records* **Product** *From records*
Constructed *From records* **Date lined** *From records* **Last cleaned**
Last inspection **Next clean** **Next inspection**
Last NDT type and date *Ultrasonic, MFL etc. report ref. & date completed*

	Yes, No, Not Applicable or Not Known	Comment Reference No.
Condition of pump and filter area: Rust on piping? Rust on equipment? Paintwork acceptable? Pressure gauges acceptable? Differential pressure gauges acceptable? Evidence of leakage? Notices in order? Schematic shown? Neat and tidy? Valve stems greased? Filters last/next change date?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *Check for cracks or signs of leakage on weld joints and flanges.*		
Condition of dispense points: Rust on piping? Rust on equipment? Paintwork acceptable? Meter acceptable? Pressure gauges acceptable? Valve stems greased? Hose condition acceptable? Earth system acceptable?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *You should determine whether the hoses are pressure tested or visually inspected, you should record the test date and age of hose.* 3. *Is the earth system sound and secure?*		

Condition of road offload points: Rust on piping? Rust on equipment? Paintwork acceptable? Pressure gauges acceptable? Valve stems greased? Earth system acceptable?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *You should determine whether the hoses are pressure tested, you should record the test date and age of hose.* 3. *Is the earth system sound and secure?*		
Condition of control room: Clean and tidy? Level gauges working? Temperature gauges working? Fire panel working? Alarms functioning? Damaged equipment?		
Comments: 1. *If there is a fuel management system, you should ask to see it working and confirm that the readings being displayed for level and temperature are reasonable.* 2. *You should also ask the Operating Authority whether there are any known problems.*		
Condition of generator house: Generator in good condition? Leaks in generator area? Diesel bulk tank rusty? Leaks from bulk tank? Valve stems greased? Bulk tank equipment acceptable? Level gauges working? Paintwork acceptable?		
Comments: 1. *Is the generator and oil tank system in a condition that gives cause for concern about its ability to function as intended?*		
Condition of secondary/tertiary containment: Would a failure of the storage tank be detected or contained? Would a failure of the ancillaries be detected or contained? Risk assessment for tertiary containment completed? Do the tertiary containment measures appear adequate?		
Comments: 1. *You should ask about the measures that are in place/deployable should there be a breach of the secondary containment or where there is no defined secondary containment.* 2. *The risk assessment can utilise COMAH, EA & CIRIA guidelines.*		
Condition of interceptor: Operational and in sound condition? Emptied regularly? Clean and tidy?		

Comments: 1. *Record whether access was available and if possible your observations regarding signs, general condition and any contamination observed.*		
Condition of electrical equipment: Hazardous area classification plan? Equipment appropriate for hazard area? Enclosures fully bolted? Cables tight in glands? Earth test points acceptable?		
Comments: *1. Record whether there was a hazardous area classification plan in accordance with the requirements of DSEAR available.* 2. *Check the protection rating for equipment to determine whether it complies with the hazardous zone classification.*		
General comments: *1. Include comments on any other issues or observations here.* *2. Are signs adequate?* *3. What is the general housekeeping like?* 4. *State whether there is an up to date license to operate displayed or FSAA available.*		

Semi Permanent Aviation Installations - Visual Inspection Report		
ID	*The local identifier e.g. building or asset number*	
Type of installation	*Enter the manufacturer of the installation, the type e.g. horizontal cylindrical skid and its purpose e.g. aviation fuel for helicopter refuelling*	
Capacity of tank (litres)	*As marked on the tank or from the records*	
Product	*As marked on the tank or from the records*	
Date constructed (approx)	*On the tank information plate or in the records*	
Single skin or integral containment	*Single skin with separate bund or integral containment*	
Type of filters installed	*E.g. coalescing, particulate etc.*	
Make and model of pump	*From a visual inspection of equipment or records*	
Last dispense meter calibration	*From the maintenance records*	
Last electrical test date	*From the maintenance records*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Condition of tanks: Rust on exposed metal? Adequate secondary containment? Interstitial monitoring? PV valve or open vent in good condition? Evidence of leakage? Paintwork acceptable? Instruments acceptable? Access to tank top acceptable?		
Comments: 1. *Is the secondary containment at least 110% of the volume of the primary containment, is there adequate means of monitoring the interstitial space and are there sufficient instruments to fulfil the required tasks?* 2. *Does the tank have a PV valve or open vent? Does the PV valve look maintained and if open vents have protective mesh, are they clear of paint and other debris?*		
Condition of pump/dispense area: Rust on piping? Rust on equipment? Paintwork acceptable? Meter acceptable? Pressure gauges acceptable? Differential pressure gauges acceptable? Evidence of leakage? Notice in order? Planometric shown? Neat & tidy? Valve stems greased? Filters last/next change date? Adequate secondary containment? Hose condition acceptable? Earth system acceptable? Alarms adequate?		
Comments: 1. *You should decide whether the gauges, any differential pressure gauges and meters appear operational and calibrated.* 2. *You should determine whether the hoses are pressure tested, record the date and age of hose.* 3. *Confirm that the earth system is sound and secure and that the flying lead is long enough.* 4. *You should confirm that the secondary containment is adequate for this part of the installation,*		

that it can be emptied and that the relevant alarms are acceptable.		
Condition of secondary/tertiary containment: Would a failure of the storage tank be detected or contained? Would a failure of the ancillaries be detected or contained? Risk assessment for tertiary containment completed? Do the tertiary containment measures appear adequate?		
Comments: 1. *You should ask about the measures that are in place/deployable should there be a breach of the secondary containment or where there is no defined secondary containment.* 2. *The risk assessment can utilise COMAH, EA & CIRIA guidelines.*		
Condition of interceptor for installation: Served by an interceptor? Operational? Emptied regularly? Clean & tidy?		
Comments: 1. *Record whether the area in which the installation is placed is served by an interceptor and if not, whether an appropriate environmental risk assessment has been completed.* 2. *If there is an interceptor, record whether access was available and if possible your observations regarding general condition and any contamination observed.*		
Condition of electrical equipment: Hazardous area classification plan? Equipment appropriate for hazard area? Enclosures fully bolted? Cables tight in glands? Installation earthed??		
Comments: 1. *Record whether there was a hazardous area classification plan in accordance with the requirements of Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) available and comment on any areas of disagreement with suggested changes.* 2. *Check the protection rating to determine whether it complies with the hazardous zone classification.*		
General comments: *1. Include comments on any other issues or observations here.* *2. Are signs adequate?* *3. What is the general housekeeping like?* 4. *State whether there is an up to date license to operate displayed or FSAA available.*		

Product Receipt Enclosure - Visual Inspection Report		
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Condition of PRE facility: Rust on pipework? Evidence of leakage? Paintwork acceptable? Pressure gauges acceptable? Valves greased?		
Comments: *1. Do the gauges and differential pressure gauges appear operational and calibrated?*		
Condition of precoat filters: Rust on pipe work? Evidence of leakage? Paintwork acceptable? Pressure gauges acceptable? Differential pressure gauges acceptable? Flow indicators acceptable? Dosing pots acceptable? Valves greased?		
Comments: 1. *Do the gauges and differential pressure gauges appear operational and calibrated?* 2. *You should ask the Operating Authority whether there are any known problems with the filter.*		
Condition of back flush tank: Rust on tank? Rust on piping? PV valve in good condition? Evidence of leakage? Paintwork acceptable? Pressure gauges acceptable? Level gauges acceptable? Pump acceptable? Valves greased?		
Comments: *1. Does the PV valve on the back flush tank appear to be maintained?* *2. If the level gauge is part of the fuel management system, you should you should ask to see it working and confirm that the readings being displayed are reasonable.* *3. You should also ask the Operating Authority whether there are any known problems.*		
Condition of electrical equipment: Hazardous area classification plan? Equipment appropriate for hazard area? Enclosures fully bolted? Cables tight on glands? Earth test points acceptable?		
Comments: *1. Record whether there was a hazardous area classification plan available in accordance with the requirements of DSEAR.* 2. *Check the protection rating to determine whether it complies with the hazardous zone*		

classification.
General comments: 1. *Include comments on any other issues or observations here.* 2. *Comment on any common / linked safety, alarm and shut down systems between the site and the Oil and Pipeline Agency.* 3. *What is the general housekeeping like and are signs adequate?* 4. *Include comments on pigging installations where they are included.*

Pipeline - Visual Inspection Report										
BFIs connected to pipeline	*Use the local identifiers*									
Date constructed (approx)	*From the records*									
Pipeline diameter	*From the records or your measurement*									
Above or below ground	*E.g. buried, partially buried or above ground*									
Last non destructive test type & date	*E.g. pressure test, coating survey etc. report ref. & date completed*									
	Yes, No, Not Applicable or Not Known					**Comment Reference No.**				
Condition of pipeline: Is the route marked? Is the pipe line cathodically protected? Isolation flanges acceptable? Adequate provision for thermal expansion? Leak detection system acceptable? Evidence/signs of leakage? Pipeline supports acceptable? Signs of ground settlement? Is fuel reconciliation accurate enough to detect leaks?										
Comments: 1. *Are the routes of buried pipelines clearly identified with marker posts and have above ground pipelines been designed with adequate provision for thermal expansion?* 2. *Where cathodic protection is by impress current you should record any known problems and you should check both a sample of test points to ensure that they are intact and that isolation flanges look in good condition.* 3. *State location/position of the CP supply and control panel.* 4. *Where fitted, does the leak detection system have any known problems?*										
List of valve pits inspected:										
Condition of valve pits: Covers removable? Rust on exposed metal? Evidence of leakage? Paintwork acceptable? Valves acceptable? Water accumulation? Valve stems greased?	1	2	3	4	5	6	7	8	9	10
Comments: 1. *When answering these questions you should consider whether the evidence indicates that the isolation, drain and vent valve pits are being maintained.*										
General comments: *1. Include comments on any other issues or observations here. Include comments on pigging installations where they are included.*										

Hydrant Pipeline - Visual Inspection Report										
BFIs connected to pipeline	*Use the local identifiers*									
Date constructed (approx)	*From the records*									
Pipeline diameter	*From the records or your measurement*									
Last non destructive test type & date	*E.g. pressure test, coating survey etc. report ref. & date completed*									
	Yes, No, Not Applicable or Not Known					**Comment Reference No.**				
Condition of pipeline: Is the route marked? Is the pipe line cathodically protected? Isolation flanges acceptable? Leak detection system acceptable? Evidence/signs of leakage? Pipeline supports acceptable? Signs of ground settlement? Is fuel reconciliation accurate enough to detect leaks?										
Comments: 1. *Are the routes of buried pipelines clearly identified with marker posts?* 2. *Where cathodic protection is by impress current you should record any known problems and you should check both a sample of test points to ensure that they are intact and that isolation flanges look in good condition.* 3. *State location/position of the CP supply and control panel.* 4. *Where fitted, does the leak detection system have any known problems?*										
Line valve pits inspected:										
Condition of line valve pits: Covers removable? Rust on exposed metal? Evidence of leakage? Paintwork acceptable? Valves acceptable? Water accumulation? Valve stems greased?										
Comments: 1. *This section refers to the main valve pits for the hydrant line to the ASP and de-fuel line if appropriate.* 2. *You should consider whether the evidence indicates that the isolation, drain and vent valve pits are being maintained.*										
Condition of Hydrant pits: Covers removable? Dust caps serviceable? Signs of fuel leak? Lanyard to the pilot valve intact? Pilot valve operates without leaks? Deadman's handle intact? Rust on seats? Earth point sound?	1	2	3	4	5	6	7	8	9	10

Comments:

1. *Some hydrant couplers will have a visible pilot valve to release pressure on the seat and no Deadman handle, which will be on the hydrant cart and some will not have a visible pilot valve, but will have a Deadman handle.*
2. *Where possible, opening and closing the pilot valves will indicate whether the main valve seats leak.*
3. *You should check the adjacent earth point to ensure that it is sound.*

General comments:

1. *Include comments on any other issues or observations here.*

Mechanical Transport Fuelling Installations - Visual Inspection Report		
ID	*Use the local identifiers*	
Type of installation	*Single or twin skinned horizontal cylindrical etc. and material. Most tank installations will be below ground, but if above ground, an Above Ground Ancillary Storage Tank Installation sheet must be completed in addition, which will include comment on the underground pipework.*	
Number of tanks	*Number of tanks in the installation*	
Type of leak detection	*From the records*	
Capacity of each tank (litres)	*As marked on the tank or from the records*	
Type of wet stock management system	*Automatic (record manufacturer) and/or dips* *This may include an Automatic Fuelling Dispensing System (AFDS) and/or an automatic tank gauging (ATG) system*	
Number, make and model of dispensers	*From a visual inspection of equipment or records*	
Product	*As marked on the tank or from the records*	
Date constructed (approx)	*As marked on the tank or from the records*	
Last non destructive test type & date	*E.g. precision tank tightness test (integrity test) etc. report ref. & date completed*	
Last dispense pump calibration	*From the maintenance records*	
Last electrical test date	*From the maintenance records*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Condition of tanks: Rust on exposed metal? Paintwork acceptable? Access steps and handrails sound? Evidence of leakage? Leak detection system working? Manway free of product? Manway free of water? Vents clear from obstruction – 3m radius? Tanks and vents correctly labelled? Vapour recovery system fitted? Vapour recovery system operating instructions available?		
Comments: 1. *If there is leak detection installed, are there any known problems with the system?*		
Condition of fuel dispenser pumps: Rust on exposed metal? Evidence of leakage? Staining of floor? Paintwork acceptable? Hose condition acceptable? Pistol condition acceptable? Dispense pump condition acceptable?		
Comments: 1. *The hose should be sound, free of serious damage and fitted with safety break couplings.* 2. *For all self service installations the latching pins should be removed from the pistol and the pistol should be free from leaks.*		

Condition of electrical equipment: Hazardous area classification plan? Equipment appropriate for hazard area? Enclosures fully bolted? Cables tight in glands? Earth test points acceptable?		
Comments: 1. *Record whether there was a hazardous area classification plan in accordance with the requirements of DSEAR available.* 2. *Check the protection rating for equipment to determine whether it complies with the hazardous zone classification.*		
General comments: *1. Include comments on any other issues or observations here.* *2. What is the general housekeeping like and are signs adequate?* *3. State whether there is an up to date license to operate displayed or FSAA available.* *4. State whether there is there an appropriate interceptor of adequate size.*		

Underground Tank and Pipework Assessment		
ID	*Use the local identifiers*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Level 1 assessment undertaken?		*Appropriate for steel tanks only*
Level 2 testing undertaken?		*Appropriate for single skinned tanks but may also include single skinned pipework associated with double skinned tanks*
Further testing required?		*Based on age, last test or the inspector's opinion*
Comments: *1. You should comment on the impact of the scoring from the level 1 assessment, the requirement for further non destructive testing and you should recommend the type of test that is appropriate.*		

Flammable Dangerous Goods Store - Visual Inspection Report		
ID	*Use the local identifiers*	
Type of structure	*Record the structure type*	
Date constructed (approx)	*From the records*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Storage: Substances segregated by UN Class? Substances separated by minimum distances? Separate area for repacking of damaged containers? Separate room for acid storage?		
Comments: 1. *You should comment on what is being stored by UN Class and any departures from the requirements of Design and Maintenance Guide 03 – Storage of Dangerous Substances, Section 3 Product Segregation.*		
Store construction: All walls fire rated? Explosion relief roof design? Storage areas bunded? Prevention of aqueous substances from reaching the drainage system?		
Comments: 1. *You should comment on whether the structure is purpose built and complying to the requirements of Design and Maintenance Guide 03 – Storage of Dangerous Substances, Section 4 Storage Buildings/Compounds.*		
Building services: Electrical equipment complies with the hazardous area and temperature classification? Fire fighting equipment? Lightning protection? Emergency telephone? Adequate ventilation? Drench shower and eyewash for acid store? Are appropriate signs displayed?		
Comments: 1. *Are the appropriate UN Class product signs displayed on the door or access gate?* 2. *Are there signs in accordance with the requirements of DSEAR?*		
General comments: *1. Include comments on any other issues or observations here.* *2. What is the general housekeeping like?* *3. Record whether there was a hazardous area classification plan in accordance with the requirements of Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) available.*		

Above Ground Ancillary Storage Tank Installations – Visual Inspection Report		
ID	*Use the local identifiers*	
Type of installation	*E.g. horizontal or vertical, cylindrical or rectangular, single skinned with separate secondary containment or integrally bunded and its purpose e.g. standby generator or heating. Record the material of construction and enter the manufacturer of the installation if known.*	
Number of tanks	*Number of tanks in the installation*	
Type of fuel measurement system	*As observed on the tank*	
Type of leak detection	*From the records*	
Capacity of each tank (litres)	*As marked on the tank and from the records*	
Product and classification	*As marked on the tank and from the records*	
Date constructed (approx)	*As marked on the tank and from the records*	
Last non destructive test type & date	*E.g. precision tank tightness test (integrity test) etc. report ref. & date completed*	
Last inspection date	*From the records*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Location: Is the tank situated more than 10 metres from a watercourse? Is the tank situated more than 50 metres from a well or borehole? Is the tank protected from impact damage?		
Comments: *1. Refer to SI 2001 No. 2954 (OSR England), and EA PPG2 guidance.* *2. Does the tank have adequate mechanical protection, especially if it does not sit in a conventional bund?*		
Condition of tanks: Rust on exposed metal? Evidence of leakage? Paintwork acceptable? Instruments acceptable? Correct signage displayed for the tank and its contents?		
Comments: 1. *Comment if the tank is so badly corroded that in your opinion it is likely to leak.* 2. *Signs should include tank ID, product and capacity as a minimum.*		
Secondary containment: At least 110% of the largest tank or 25% of total storage, whichever is greatest? Impermeable to water or oil? Intact and without openings or valves for drainage? Pipes that pass through sealed adequately? Are vent pipes, taps and valve arranged so that oil will be contained? Signs of product staining? Access acceptable?		
Comments: *1. Is there evidence that the integrity of the bund may be suspect and is the overall condition*		

satisfactory?		
Condition of ancillaries: Ancillaries within secondary containment? Instruments acceptable? Tank vent visible from fill point? Automatic over fill protection device fitted and working? Sight gauge properly supported? Sight gauge fitted with self closing valve? Protected from impact and damage? Protected from corrosion? Paintwork acceptable? Valves locked when not in use? Evidence of leakage? Fill point acceptable? Flexible connections/draw-off pipes fitted? Auto closure valve fitted to flexible? Flexible stowed correctly when not in use? Flexible pipework <10 years old? Pump set fitted? Non-return valve fitted to pump set suction line? Pump set protected from misuse or accidental damage? Adequate leak detection for underground pipework? Leak detection maintained?		
Comments: 1. *Underground pipelines should not have mechanical joints unless it is possible for them to be inspected.*		
Condition of exposed pipework: Rust on exposed metal? Evidence of leakage? Paintwork acceptable? Lagging intact, where fitted? Valve stems greased? Mechanical joints satisfactory?		
Comments: *1. Inspect the exposed mechanical joints for evidence of failure.*		
General comments: *1. Include comments on any other issues or observations here.* *2. What is the general housekeeping like?*		

Underground Ancillary Storage Tank Installations – Visual Inspection Report		
ID	*Use the local identifiers*	
Type of installation	*E.g. horizontal cylindrical and its purpose e.g. standby generator or heating. Record the material of construction and enter the manufacturer of the installation if known.*	
Number of tanks	*Number of tanks in the installation*	
Type of fuel measurement system	*As observed on the tank*	
Type of leak detection	*From the records*	
Capacity of each tank (litres)	*As marked on the tank and from the records*	
Product and classification	*As marked on the tank and from the records*	
Date constructed (approx)	*As marked on the tank and from the records*	
Last non destructive test type & date	*E.g. precision tank tightness test (integrity test) etc. report ref. & date completed*	
Last inspection date	*From the records*	
Next inspection date	*From the records, from the age or from the condition*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Condition of tanks: Rust on exposed metal? Evidence of leakage? Paintwork acceptable? Contents gauges, overfilling alarm/device acceptable? Tank interstitial space leak detection acceptable? Correct signage displayed for the tank and its contents?		
Comments: *1. Comment of the visible aspects of the tank.* *2. Signs should include tank ID, product and capacity as a minimum.*		
Condition of ancillaries: Are ancillaries including vent pipes, taps and valve arranged so that oil will be retained within a secondary containment system? Instruments acceptable? Tank vent visible from fill point? Automatic over fill protection device fitted and working? Protected from corrosion? Paintwork acceptable? Valves locked when not in use? Evidence of leakage? Adequate leak detection for underground pipework? Leak detection maintained? Pump set fitted? Pump set protected from misuse or accidental damage?		
Comments: 1. *Underground pipelines should not have mechanical joints unless it is possible for them to be inspected.*		
Condition of exposed piping: Rust on exposed metal? Evidence of leakage?		

Paintwork acceptable? Lagging intact, where fitted? Valve stems greased? Mechanical joints satisfactory?		
Comments: 1. *Inspect the exposed mechanical joints for evidence of failure.*		
General comments: *1. Include comments on any other issues or observations here.*		

Underground Tank and Pipework Assessment		
ID	*Use the local identifiers*	
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Level 1 assessment undertaken?		*Appropriate for steel tanks only*
Level 2 testing undertaken?		*Appropriate for single skinned tanks but may also include single skinned pipework associated with double skinned tanks*
Further testing required?		*Based on age, last test or the inspector's opinion*
Comments: *1. You should comment on the impact of the scoring from the level 1 assessment, the requirement for further non destructive testing and you should recommend the type of test that is appropriate.*		

6. INSPECTION OF MAINTENANCE RECORDS AND SUPPORTING INFORMATION

6.1 Spillage Response Plans

Record here whether spillage response plans are available, note the date that they were last amended and issued and any other pertinent comments.

6.2 Installation Records

Record here your comments on the installation records, noting in particular whether there is original design data, design drawings, P&IDs and information on repairs, modifications and other changes

6.3 List of Maintenance Work

Following the visual inspection, a review of the maintenance regime was carried out. The maintenance work is managed using *(record here the name of the system being used)* computer based system, the scope of which is based upon the extant Practitioner Guide for 'The Inspection, Maintenance and Testing of Equipment Installed at Petroleum Installations Mechanical and Electrical' and Design and Maintenance Guide 14

Evidence was sought for the following:

List here those installations checked and the tasks e.g. MTFI mechanical maintenance and calibration

6.4 Maintenance Register

A maintenance register should be kept listing all maintenance operations, their frequencies of requirement, special notes on repairs carried out and any observations of problems noticed.

The extant Practitioner Guide for The Inspection, Maintenance and Testing of Equipment Installed at Petroleum Installations – Mechanical and Electrical and Design and Maintenance Guide 14 – Mechanical Transport Fuelling Installations define the frequency at which the various items of equipment should be maintained.

Mechanical Maintenance Register - Document Inspection Report		
ID	*Record here the local identifier e.g. Building Number*	
Tasks checked:		
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Are all the tasks above being completed? Are the tasks completed at the correct frequency? Are all the tasks dated correctly? Are all the tasks signed off?		
Is the equipment shown as satisfactory/not satisfactory? If “not" does the register record the reasons? Is incidental or repair work recorded in the register?		
Are the separator element changes recorded? If "Yes" does date match that on the separator body?		
General comments: 1. *You should record the maintenance tasks that you have checked and the dates that they were last completed.* *E.g. Jacket No. 1 for BFI No. 2 – Last 3 monthly tasks completed 01/04/08.* 2. *You should also comment on the maintenance standard being followed, relevant tasks not being completed and disparities between the records and observations during the site visit.*		

Electrical Maintenance Register - Document Inspection Report		
ID	*Record here the local identifier e.g. Building Number*	
Tasks checked:		
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
DSEAR compliance survey completed?		
Is there a Hazardous Area classification diagram available in accordance with the requirements of DSEAR?		
Are all the above tasks being completed? Are the tasks completed at the correct frequency? Are all the tasks dated correctly? Are all the tasks signed off?		
Is the equipment shown as satisfactory/not satisfactory? If “not" does the register record the reasons? Is incidental or repair work recorded in the register?		
Are appropriate earth checks completed?		
Are cable continuity checks completed?		
Are cable insulation tests completed?		
General comments: 1. *You should record the maintenance tasks that you have checked and the dates that they were last completed. E.g. Jacket No. 1 for BFI No. 2 – Last hazardous area electrical test completed 01/04/08.* 2. *Include comments on any other issues or observations here.*		

ANNEX E MMO ANCILLARY TANK INSTALLATION DECLARATION

All ancillary tank installations comply with current legislation, which include the Control of Pollution (Oil Storage) (England) Regulations 2001 or The Water Environment (Oil Storage) (Scotland) Regulations 2006 along with associated guidance for above ground storage tanks (ASTs); and the Groundwater Regulations 1998 along with associated guidance for underground storage tanks (USTs).

With the exception of:

Tank Location	Tank ID	Construction	Size (litre)	Product	Deficiencies

An action plan is in place to carry out the remedial works listed above which should be completed by {*date*}

An appropriate maintenance regime is in place and implemented for all ancillary tank installations.

The following ancillary tank installations do not comply with current legislation, no funding has been released from the client following the previous inspection and these installations are to be included within the main inspection regime completed in accordance with the extant Practitioner Guide for the Inspection of Petroleum Installations and Flammable Dangerous Goods Stores.

Tank Location	Tank ID	Construction	Size (litre)	Product	Deficiencies

Signed: Date:

{*Name*}

{*Position*}

{*Company Name*}

ANNEX F ANCILLARY INSTALLATIONS ASSET LIST

Ancillary Installations Above ground storage tanks (ASTs) – Underground storage tanks (USTs)											
Asset / building number	**Installation / Product**	**Tank size (Capacity) Litres**	**Date installed**	**Type**	**Material**	**Compliance Assessments / inspections/ integrity tests completed No, Not Known or date completed**				**Remedial works required**	**Comment**
						ASTs	**USTs**	**Underground pipework**	**PPM task**		
Local identifier	*Serving a boiler or generator and product*			*Horizontal, cylindrical above ground etc.*	*Steel, fibreglass, HDPE etc.*						

Ancillary Installations
Above ground storage tanks (ASTs) – Underground storage tanks (USTs)

Asset / building number	Installation / Product	Tank size (Capacity) Litres	Date installed	Type	Material	Compliance Assessments / inspections/ integrity tests completed No, Not Known or date completed				Remedial works required	Comment
						ASTs	USTs	Underground pipework	PPM task		

General comments:

Has the MMO completed a tank inspection declaration (Annex E)?

Is the tank declaration acceptable (Annex E)?

The asset list on the pre-planned maintenance data base, MIS IFS, requires updating: ……

The above asset list is complementary to the Spill Plan for…… USRP annex G – which has a comprehensive list of the petroleum tank installations for the sites, but does not include the Flammable Dangerous Goods Stores (FDGS).
AST = Above ground storage tank. UST = Under-ground storage tank. HDPE = High Density PolyEthylene (Plastic). PPM = Pre-Planned Maintenance.
Tanks within buildings and underground storage tanks (USTs) do not have to comply with SI 2001 No 2954 and the respective Pollution Prevention Guides (PPGs); however integrity and control must still be maintained in accordance with the Ground Water Regulations. USTs should be assessed in accordance with the extant Practitioner Guide for the Inspection of Petroleum Installations and Flammable Dangerous Goods Stores.

The following also requires to be referenced: -
OFTEC Standards: OFS T 100 - plastic tanks; OFS T 200 - steel tanks; T 19 tank base construction
CIRIA publications: CIRIA 163 bunds; CIRIA 535 above ground tanks
DEFRA: Guidance document: Ground Water Protection Code (Water Resources Act and Groundwater Regulations)
(Note reference required as pipework may be sited under-ground)
There are a number of British Standards, for sectional steel tanks, USTs, ASTs, steel cylindrical tanks, GRP tanks and rigid plastic tanks etc. Most of which are referenced in the above, and would be applicable to the manufacturer and their manufacturing processes.
B.S. 5410 part 1. – Domestic < 45kw; B.S. 5410 part 2. – Industrial / commercial > 45kw. B.S. 799 – Steel tanks

ANNEX G SMALL BORE BURIED STEEL FUEL PIPELINE ASSESSMENT
(Nominal Bore of 50mm or Less)

Small Bore Buried Steel Fuel Pipeline Assessment		
Pipeline identification/asset ref.		
Pipe length		
Pipe diameter		
Wall thickness		
Product carried by pipeline		
Fill line or draw off line		
	Yes, No, Not Applicable or Not Known	**Comment Reference No.**
Has Level 1 assessment been undertaken?		
Has Level 2 integrity test of the pipework been undertaken?		*Any fill pipe, draw off pipe or overflow pipe must be positioned, or other steps must be taken, so as to minimise any risk of damage by impact so far as is reasonably practicable and-* *(a) if above ground, must be properly supported;* *(b) if underground-* *(i) must have no mechanical joints, except at a place which is accessible for inspection by removing a hatch or cover;* *(ii) must be adequately protected from physical damage;* *(iii) must have adequate facilities for detecting any leaks;* *(iv) if fitted with a leakage detection device which is used continuously to monitor for leaks, the detection device must be maintained in working order and tested at appropriate intervals to ensure that it works properly; and* *(v) if not fitted with such a device, must be tested for leaks before it is first used and further tests for leaks must be performed, in the case of pipes which have mechanical joints, at least once in every 5 years and, in other cases, at least once in every 10 years; and* *(c) if made of materials which are liable to corrosion, must be adequately protected against corrosion".*
Is further assessment recommended?		
Pipe Material:		

Mild Steel Galvanised steel Copper/Sleeved Durapipe Other Not Known		
Jointing Method: Welded Threaded Socket Not Known		
External Coating: Bitumen Enamel Tape Wrap Fusion bonded epoxy (FBE) Extruded polyethylene None Not known		
Is the pipe electrically isolated from above ground equipment by isolating joints or insulated flanges?		
Cathodic Protection: Sacrificial anodes Impressed current None Not Known		
Do monitoring records show the pipework is fully cathodically protected?		
Have any coating surveys/inspections been undertaken?		*Insert Coating survey (specify type), excavation inspections (No. /Date)*
Corrosion found from above survey/inspection?		
Has the pipe ever leaked?		*If yes, give details*
Local Ground Conditions: Local Soil type Cohesive (clay) Chalk Loam Sand Peat Other (specify) Not Known		
Is area well drained?		
Depth of water below ground level in metres, along the pipeline route Not Known Pipe Depth		
General comments: *1. Include comments on any other issues or observations here.*		

ANNEX H FLAMMABLE DANGEROUS GOODS STORE (FDGS) ASSET LIST

Flammable Dangerous Goods Store (FDGS) asset list				
Explosive stores are not included for this report. Main petroleum installations will be reported individually.				
		Asset listings / recorded		
Asset number	Description / ownership	Planned Maintenance ref	Electrical Inspection ref	Comment
FDGS = Flammable Dangerous Goods Stores; which can also be named – Inflam Stores, Hazardous or Haz stores.				
Store construction:				
Asset listing defects:				
Actions:				

ANNEX I PRE- INSPECTION SITE CHECK LIST

Date of Inspection		Establishments / group	

Order reference/s, against installations to be inspected		
MMO		
Contact name/s		
Full Postal Address		
MMO contact information / telephone numbers		e-mail
Establishment representative / SETL		e-mail
F&L representatives / Operating Authority		e-mail
SHEF /SEPO		e-mail
FGSR		e-mail
DIO		e-mail

Item No	Description	Yes	No	Responsibility	Last Document / Certificate Date	Comments
DOCUMENTATION AND MAINTENANCE						
1.	Separator Type, Capacity, Location.			Aquatrine Service Provider ASP		Site contact Aquatrine Authority Liaison Representative ALR
2.	Interceptor Type, Location.			ASP		Site contact Aquatrine Authority Liaison Representative ALR
3.	Drainage Plans.			ASP		Site contact Aquatrine Authority Liaison Representative ALR
4.	Consent to Discharge.			ASP		Site contact Aquatrine Authority Liaison Representative ALR. If Class 1 Separator installed – no requirement
5.	Oil Pollution Control Facilities – separators.			ASP		Site contact Aquatrine Authority Liaison Representative ALR
6.	Planometric Diagrams, Operation and Instruction manuals. On display and at site.			OA/MMO		***OA require operating instructions.*** MMO require maintenance instructions. (Normally issued by installer / manufacturer)
7.	Petroleum installations asset list.			*Establishment / OA / MMO*		***See also Annex G of the USRP*** PPM asset / task list PG asset / task list MACR listing
8.	Tank Capacities and Grades.			*Establishment / OA / MMO*		***See also Annex G of the USRP*** PPM asset / task list PG asset / task list ***MACR listing***
9.	JSP375 Volume 3 Chapter 5, Petroleum document register			*MMO AP*		***Installation list; significant ppm records, including meter calibration & electrical test certificates.***

Item No	Description	Yes	No	Responsibility	Last Document / Certificate Date	Comments
10.	Licensed installations > Fuel & Gas Safety Regulator (FGSR)			*FGSR / OA / Establishment*		***Copies of all licenses should be held by the OA, and displayed at each installation***
11.	RAF Log-book Form 6816 FWS & FM in use			***OA / AP***		***Held by OA, and inspected by the AP*** JSP 317 4-1-A-1
12.	RAF Log-book Form 315 Daily occurrence record			***OA***		***Kept at each BFI control room***
13.	(PG Report), last action plan updated.			*MMO*		Evidence of completion of remedial works
14.	Electrical systems. Copy of latest inspection certificate.			*MMO*		Areas. HSG 41 para 244 refers APEA / IP 'Blue Book' DSEAR regulations BS 60079 10 / 14/ 17
15.	Earthing of Installations, LPS.			*MMO*		***Annually.*** ***BS 7430; BS 62305***
16.	Metering pumps and dispensers – calibration.			*MMO*		***12 Monthly for Aviation BFI dispensers.*** ***6 monthly for MTFI (kerbside) dispensers***
17.	Storage tanks – level 1 risk assessments carried out on all underground metallic tanks (USTs).			MMO		Is a level 2 assessment required / integrity testing of the tank? UST = Underground Storage Tank.
18.	Storage tanks, gauging, alarms and high level shut off valves. SIL compliance. Testing and details.			MMO		For BFIs this will require input from the OA. Specialist / manufacturer diagnostic testing, integrity level assessment. 'Buncefield' requirements.
19.	Storage tanks (USTs) – integrity / tightness test certification.			MMO		Risk assessment, wet stock management & interstitial space monitoring– after 20 years

Item No	Description	Yes	No	Responsibility	Last Document / Certificate Date	Comments
						and then every 5 years, after 30 years every 2 years. (See the extant Practitioner Guide for the Inspection of Petroleum Installations and Flammable Dangerous Goods Stores). Not applicable to Aviation, BFIs – mounded tanks (subject to the extant Practitioner Guide for The Inspection, Maintenance and Testing of Equipment Installed at Petroleum Installations Mechanical and Electrical) and above ground tanks.
20.	Ancillary fuel oil installations Boilers – FFO Generators – diesel Others – Class II and III fuels and waste oil MMO Ancillary tank installation declaration Ancillary installations asset list			Establishment / MMO		Compliance assessments completed (re: PPG2, DEFRA guidance, under-ground pipework etc). PPM tasks completed, annual e.g. OFTEC inspection) See Annex E and Annex F.
ENVIRONMENTAL						
21.	Does the unit have a Unit Spillage Response Plan (**USRP**)? Completion of required annexes.			***Establishment***		JSP 317 part 5. Has the USRP been practised in last 12 months? Also completion of annex G – register of hazardous areas and hazardous products held
22.	Does the USRP comply with current legislation? To include the reporting procedure of spillages to FLC?			Establishment requirement		JSP 317 part 5. Section 5.9.
23.	Is the USRP site specific?			Establishment		JSP 317 part 5

Item No	Description	Yes	No	Responsibility	Last Document / Certificate Date	Comments
				requirement		.
24.	Does the unit hold a Minor Spillage Incident Log or a Tier 1 Spillage Register?			***Operating Authority / UEO Ask to see.***		JSP 317 part 5