5 Petroleum Installations

Contents

Preface

1. This Chapter of JSP 375 Volume 3 was prepared under the patronage of the Ministry of Defence (MOD) Director General of Defence Safety Authority (DSA) and is to be read in conjunction with JSP 375 Volume 3 Chapter 2 – Common Requirements. These Safety Rules and Procedures are mandatory for adoption by the Commanding Officer, Chief Executive or Head of Establishment, into their site safety plans, to secure compliance with the Health and Safety at Work Act and to aid the safe conduct of works activities.

2. The adoption of the document into the site safety plan will influence the conduct of many organisations and personnel, including those whose responsibilities are defined in the Common Requirements, as follows:

a. Establishment Safety Officer;
b. Senior Estate Facility Manager;
c. Estate Facility Manager;
d. Establishment Works Consultant (where this duty is still extant);
e. Works Service Management organisation and other Maintenance Management Organisations, other Contractors and Sub-contractors;
f. Facilities Managers, Project Sponsors, Project Managers and contractors for projects;
g. designers of facilities and installations; and
h. operators of fuel installations.

3. Technical advice and assistance on the application of this document can be obtained from the Senior Authorising Authority (Petroleum).

4. Amendments to this publication will be advised by a Defence Information Notice or a Defence Infrastructure Organisation (DIO) Policy Instruction issued to MOD Top Level Budget Holders, DIO and organisations managing the MOD Safe Systems of Work. It is the responsibility of persons using this publication on any MOD Establishment to check with the Facilities Manager or Project Sponsor to ascertain if amendments have been issued.

5. JSP 375 Volume 3 has been devised for the use of the MOD and its contractors in the execution of works in relation to the MOD estate. The Crown hereby excludes all liability whatsoever and howsoever arising (including, and without limitation, negligence on the part of the Crown its servants or agents) for any loss or damage however caused where the Standard (JSP 375 Volume 3) is used for any other purpose.

6. Compliance with either this Chapter or Chapter 2 Common Requirements does not of itself confer immunity from legal obligations. In the case of conflict between these Safety Rules and Procedures and a Statutory Requirement becoming evident, DHSEP and the SAA Petroleum are to be informed. Contact addresses are given below.

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Amendment Sheet

Date	Change	Author
February 2018	Various alterations and additions to text for clarification	G Ward (DIO)
November 2020	Formatting and style	DSA-DSPA

Introduction

General

7. These Safety Rules and Procedures provide instruction on how work on 'Petroleum Installations' is to be managed on sites and in work situations which are under the control of the Ministry of Defence (MOD). They are to be read in conjunction with the related chapters of MOD Safety Rules and Procedures JSP 375 Volume 3 and JSP 317, Parts 1 and 2.

8. For the purpose of these Safety Rules and Procedures, 'Petroleum Installations' incorporate those detailed in paragraphs 15 to 20 (Scope and Limitations).

9. This document provides a system for:

a. controlling work on Petroleum Installations;

b. minimising the risks associated with working on Petroleum Installations;

c. defining the roles and duties of key individuals to manage, oversee and perform any such work; and

d. the application of these Safety Rules and Procedures.

10. The Authorising Engineer (AE) is to obtain written approval for any deviation or for the use of a local version from the Senior Authorising Authority (SAA).

Concept of Operations

11. These Safety Rules and Procedures mandate the establishment of key individuals with specific responsibilities for the management and / or execution of work on Petroleum Installations. Further guidance on the roles and duties of these appointments is given in JSP 375 Volume 3 Chapter 2 – Common Requirements.

12. The line manager of the Fuels and Lubricants section hereby known as the Operating Authority (OA) has delegated authority for the installations, in accordance with the current version of JSP 317. Authority must be given by the Operating Authority before any works can be undertaken on a Petroleum Installation.

13. The application of these rules is the responsibility of all those operating, working on, testing, decommissioning, ordering, specifying and designing Petroleum Installations or associated equipment.

14. Further reference should also be made to the current version of JSP 317, The Storage and Handling of Fuels and Lubricants.

Scope and Limitations

15. These Safety Rules and Procedures are designed for use on MOD Establishments, both in the UK and overseas. It should however be noted that where ambient temperatures are higher than UK (30 deg C) that the AE must consider if the class of products is still applicable or requires adjustment.

16. These Safety Rules and Procedures include and are not limited to the following permanent fixed installations:

a. packed stock storage – Including flammable dangerous goods stores;

b. Mechanical Transport fuelling installations;

c. aviation fuelling and distribution installations;

d. marine ship to shore fuelling;

e. petroleum supply depots;

f. Class II boiler and generator fuels;

g. Class III boiler and generator fuels;

h. waste petroleum product storage; and

i. hot fire training rigs using Class II Fuel.

17. The Petroleum Installations listed above may include the following:

a. storage tanks;

b. product receipt pipelines and filtration;

c. transfer pipelines including floating hoses and subsea pipelines;

d. dispense / receipt points to road vehicles;

e. rail facilities;

f. pump house / filter water separators and filter monitors;

g. roads, vehicle hard standing / interception and drainage oil separators;

h. valve pits;

i. hydrant distribution systems; and

j. pipe line end manifolds.

18. Ancillary installations (Class II and III) serving boilers and generator houses involving low risk activities are not within the scope of this Chapter. Low risk activities on boiler fuel

oil installations unless these have their own demarcation agreements in place shall be managed under JSP 375 Volume 3 Chapter 4.

19. All work shall be risk assessed. Activities identified as high risk such as hot work or confined space entry shall be deemed as being within the scope of this Chapter.

20. Petroleum Installations concerning Service Family Accommodation are outside the scope of this Chapter. Such installations should comply with building regulations and all work shall be risk assessed and managed under current industry standards and guidance.

Definitions

21. Within this Chapter the terms Authorising Engineer and Authorised Person refer to 'Authorising Engineer' (Petroleum) and 'Authorised Person' (Petroleum) and no other related specialism. Other related specialism's will be written out in full e.g. Authorised Person (Electrical).

22. Other relevant definitions are provided in JSP 375 Volume 3 Chapter 2.

Roles and Duties

General

23. This section discusses the principal roles and duties of those involved in the management of the Safe System of Work. These are identified as follows:

a. the Co-ordinating Senior Authorising Authority (CSAA);

b. the Senior Authorising Authority (SAA);

c. the Co-ordinating Authorising Engineer (CAE);

d. the Authorising Engineer (AE);

e. the Authorised Person (AP);

f. the Person in Charge (PiC);

g. the Skilled Person (SkP);

h. Works Team; and

i. Operating Authority (OA).

24. Unless otherwise defined in this Chapter the general roles and duties of all individuals listed in paragraph 23 above are covered in JSP 375 Volume 3 Chapter 2 (with the exception of the OA, whose general roles and duties are contained in JSP 317). The purpose of this section is to identify any specific and / or additional roles and duties connected with the management of work on Petroleum Installations.

Authorising Engineer

25. The role of the AE is to implement, administer, monitor and audit these Safety Rules and Procedures.

26. Duties of the AE are detailed in JSP 375 Volume 3 Chapter 2. In addition, duties of the AE include:

a. approval of the site notification regime;

b. specify the procedure required to allow the ‘exceptional circumstance’ of two AP’s being on duty at the same time on systems within the same document centre;

c. approval of the requirement for multiple work activities in one hazardous area;

d. approval of the use of Single valve Block and Bleed as a final isolation method; and

e. approval of the use of devices other than blanks, plugs or caps to seal the ends of open pipework to enable pressure testing or work activities to take place.

Authorised Person

27. The AP is to implement this Safe System of Work on Petroleum Installations for which they have been appointed.

28. Duties of the AP are detailed in JSP 375 Volume 3 Chapter 2. In addition, duties of the AP include:

a. communication with the OA of the Petroleum Installation at the work planning stage;

b. preparing an AP Risk Assessment;

c. preparing a Safety Programme to ensure adequate control of a Petroleum Installation prior to the issue of any Permits to Work for that installation;

d. defining the condition of the petroleum installation that is required immediately before planned works can commence;

e. acceptance of a Petroleum Installation from the OA for the purpose of planned works;

f. handing over of a Petroleum Installation to the OA on completion of work;

g. production of a Site Review; and

h. provide an overview to operators of fuel installations (in relation to JSP 317 - Certificate of competence for personnel operating bulk aviation fuel installations) of the MoD Safety Rules and Procedures Petroleum, with specific reference to the roles and duties of the AP Pet and Operating Authority.

Person in Charge

29. The role of the Person in Charge (PiC) is to directly supervise (or carry out) work on a Petroleum Installation for which they are in receipt of a Permit to Work or Standing Instruction.

30. Duties of the PiC are detailed in JSP 375 Volume 3 Chapter 2. In addition to these duties the PiC shall monitor and record gas levels in accordance with the requirement of each Permit to Work.

Work Team & Skilled Person

31. The PiC must be a SkP for the installation for which the Permit to Work or Standing Instruction is to be issued. Duties of a SkP are detailed in JSP 375 Volume 3 Chapter 2.

32. The full work team does not necessarily need to completely comprise of registered SkPs.

33. Duties of the work team include:

a. complying with these Safety Rules and Procedures as set out in this chapter;

b. taking reasonable care of the health and safety of themselves and duty of care of any other person who may be affected by their actions or omissions;

c. only using equipment for which they have been trained and in the manner in which they have been trained;

d. reporting to the PiC / AP any defects found in the tools, plant and equipment to be used in the works;

e. reporting to the PiC / AP any defects identified with the equipment being worked on;

f. being conversant with petroleum hazards; and

g. understanding the management hierarchy relating to the site installations.

Operating Authority

34. The OA has the authority delegated by the Commanding Officer, Head of Establishment or Officer in Charge for one or a number of Petroleum Installations. The OA is required to exercise duty of care over all activities at the installations and ensure that petroleum and base wide operations are fully taken into account before the AP is given authority to undertake work.

35. Duties of the OA include:

a. agree a Notification Regime procedure with the AP;

b. inform their staff of the work, any limitations imposed by the work and carry out any actions required of the OA by the AP prior to handing over the installation or equipment;

c. sign the Safety Programme as the final authorisation for the work to proceed;

d. sign the Safety Programme to confirm the return of the installation for normal operations;

e. implement a key access procedure to areas under their control;

f. co-ordinate tasks on Petroleum Installations carried out by organisations other than the MMO;

g. link all activities undertaken in the Petroleum Installations with the establishment wide system for safe control and co-ordination of operations and works activities; and

h. sign the Standing Instruction for the work to proceed.

General Arrangements

General

36. Compliance with these Safety Rules and Procedures is mandatory for work on Petroleum Installations, under the control of the Ministry of Defence (except where agreed with the SAA) from initial specification and design, through installation, operation and eventual de-commissioning. The design must incorporate adequate means for safe isolation and draining of the equipment. Consideration must be given to the needs of the operator, AP and maintainer of the plant to enable safe working. Changes made to the original design, as a result of site alterations, must not compromise safe working and preserve the ability for safe isolation. The Project Manager in charge of the works is to ensure that any alterations made on site do not affect the application of these Safety, Rules and Procedures.

Site Review

37. A record of Petroleum Installations on an establishment that are subject to the application of these Safety Rules and Procedures is to be provided and held in the Petroleum Installation Document Register (PIDR). An appraisal is to be undertaken by any new AE, or APs as part of their familiarisation. A review of this record is to be undertaken following any changes or modifications to the Petroleum Installations. The review is to be recorded in the Petroleum Installations Operating Record (PIOR).

38. The review is to consider the classification and hazards for each installation. This should be undertaken in conjunction with the decision tree detailed in Section 4. Should the AE consider that a higher level of control is required on a particular installation, this should be detailed within the PIOR, documented in the PIDR and communicated to the APs. The following areas should be considered:

a. product;

b. flammability;

c. toxicity;

d. location;

e. size;

f. quantity of product held;

g. complexity;

h. potential environmental impact;

i. maintenance regime;

j. operational duties;

k. age;

l. condition;

m. records, drawings and instructions;

n. outstanding remedial works; and

o. is ambient temperature exceeding UK (30 deg C).

39. Implementation of these Safety Rules and Procedures (e.g. aviation fuel systems test houses, engine test houses and unclassified fuels). Details of these additional systems are to be recorded and filed in the PIDR and included on the APs appointment.

Demarcation Agreements

40. These Safety Rules and Procedures shall apply on all works where there remains a petroleum hazard, unless these installations have their own demarcation agreements in place. Where it has been agreed that no petroleum hazard remains, the works may fall outside of Chapter 5. Those controlling the work are to note that all works must be risk assessed and other sections of JSP 375 may apply.

Management Arrangements

Petroleum Installations Document Centre

41. The requirements for the Document Centre are detailed in JSP 375 Volume 3 Chapter 2.

Petroleum Installations Document Register

42. The Petroleum Installations Document Register (PIDR) is the principal source of management information for Petroleum Installations within the site, location or geographical area and is to be maintained by the APs.

43. The PIDR will contain the following information where it is relevant:

a. an index;

b. a detailed record of Petroleum Installations / systems subject to the application of these Safety Rules and Procedures – Site Review;

c. details of all redundant or abandoned tanks on site;

d. Demarcation Agreements agreed and accepted by the AE;

e. planned maintenance regime;

f. a schedule of Personal Protective Equipment (PPE), Respiratory Protective Equipment (RPE) and Safety Equipment held and maintained by the AP relating to the Petroleum discipline;

g. OA notification regime and OA details;

h. Safety Data Sheets (product or material SDS);

i. relevant, current publications (MoD, HSE, Industry standard);

j. records of the examination / calibration of PPE, RPE and other Safety Equipment;

k. the number of hours in use of all PPE, RPE for all AP site held equipment;

l. duplicate Permits to Work (can be held in pad);

m. completed Safety Programmes and Risk Assessments;

n. Standing Instructions (can be held in pad);

o. cancelled Permits to Work;

p. cancelled Standing Instructions;

q. copies of Professional Inspection reports;

r. any previous reports which may assist in assessing whether the petroleum system is safe to operate;

s. relevant information on repairs;

t. Petroleum system schematics, DSEAR risk assessments, hazardous zone drawings and valve identification charts where determined necessary by the AE;

u. any relevant Policy Instruction, Defence Instruction Notice (DIN), Operational restriction, Safety Alert, AE Instruction, as directed by the AE;

v. Unit Spillage Response Plan;

w. AE / AP appointment information;

x. Skilled Person Register and assessment information; and

y. AE audit reports.

44. Where documents noted above are held elsewhere, their location is to be identified in the relevant section of the Document Register.

45. Safety Documentation is to be retained for a minimum period of three years.

Petroleum Installations Operating Record (PIOR)

46. For each site, location or geographical area, as determined by the AE, a PIOR is to be prepared. This is to be in the form of a bound book, with pages sequentially numbered. The book is to be clearly and indelibly marked with the name of the site / location or geographical area to which the records relate.

47. The AE may determine that it be preferable to have a separate PIOR for distinctly separate installations.

48. Entries are to be made within the PIOR of any activity undertaken with respect to a Petroleum Installation (as defined by these Safety Rules and Procedures). These entries are to include:

a. the relinquishing and acceptance of responsibility between APs;

b. the isolation of any Petroleum Installation (or part of a system) in accordance with a Safety Programme and Risk Assessment; this is to make reference to the Safety Programme and Risk Assessment and not repeat all steps from the Safety Programme;

c. when Multiple Gas Indicators (both AP and PiC) are response tested, to include the make and serial number of the instrument, and a satisfactory or non-satisfactory result;

d. the issue, suspension, re-affirmation and cancellation of each Permit to Work or Standing Instruction;

e. the loss of a Permit to Work or Standing Instruction;

f. the withdrawal of a Permit to Work or Standing Instruction including the reason for withdrawal;

g. the re-instatement of any Petroleum Installation (or part of a system) following the completion of all works and the closure of the Permit to Work or Standing Instruction;

h. details of any reportable disease, injury, dangerous occurrence, near miss and spill reports associated with work on Petroleum Installations where controlled by the AP;

i. any change of the product in a petroleum storage system;

j. AE visit, audit or inspection;

k. SAA visit, Assurance audit or inspection;

l. receipt of relevant Policy Instruction, Defence Instruction Notice (DIN), Operational Restriction, Safety Alert, AE Instruction and resulting action taken in response to the receipt; and

m. transfer of responsibility and agreement to or cancellation of demarcations.

49. Entries in the PIOR are to be made in chronological order, each entry being ruled off with a horizontal line across the page. A sample format for the PIOR is given in Model Forms.

50. Completed PIORs are to be retained in the Petroleum Installations Document Centre for a minimum period of three years after the date of the last entry.

Keys & Key Security

51. The use of safety key boxes, safety locks and other types of locks in the management of these Safety Rules and Procedures are detailed in JSP 375 Volume 3 Chapter 2.

Management of Remote Sites

52. Refer to JSP 375 Volume 3 Chapter 2.

Notification Regime

53. A formal notification regime is to be implemented between the OA and the APs. For each site the AE is to approve the notification regime to ensure control and co-ordination is achieved on current and planned works requiring the application of these Safety Rules and Procedures. The regime is to be formally agreed by the MMO and OA. Details of the regime are to be held in the PIDR.

Co-ordination and Co-operation of Activities

54. Where work involves APs from different disciplines, the AP Petroleum is to co-ordinate the activities of the APs of all other disciplines.

55. With the prior written approval of the AE and in exceptional circumstances the following process may be acceptable. Where it is beyond the capacity of the Duty AP to raise all the required safety documents necessary to complete all required works within the operationally essential window then a second AP may raise safety documentation and take responsibility for additional work on the same site. The following co-ordination arrangements are to apply as a minimum:

a. the AE must be satisfied that there will be no conflict between activities;

b. the AE is to specify the time period over which these ‘exceptional circumstances’ can be applied, which should be the minimum period required to bring work back to a level that can be controlled by the Duty AP alone;

c. the Lead AP is to identify in a written document the extent of the work the second AP is to cover;

d. the second AP is to be familiar with the extent of the works already being managed by the Lead AP, and is to ensure that the relevant safety documentation for the task (Task RA, AP RA, SP) is in place and is all suitable and sufficient for the task;

e. the lead and second AP’s are to countersign each other’s safety programmes;

f. the second AP is to sign on in the PIOR making a clear note that there are now two APs on duty and clearly state the extent of the work for which he is taking responsibility; this entry is to be countersigned by the duty AP;

g. the second AP is also to annotate the AP Notice Board with his name, and the installation, under “Second AP”;

h. once the requirement for a second AP is complete, the appropriate AP is to sign off in the PIOR, making a clear note of the name of the remaining AP and informing that AP accordingly, and remove his name from the AP Notice Board; and

i. for longer term requirements a demarcation process should be considered whereby separate documentation and demarcation agreements are placed into use forming a separate document centre.

Petroleum Safety Rule Book

56. The Petroleum Safety Rule Book has been prepared for the benefit of all persons involved in working on Petroleum Installations for which the Ministry of Defence is responsible.

57. All persons who are issued with the Petroleum Safety Rule Book are to have it available for reference whenever they are working on Petroleum Installations.

58. The AP is to ensure that all appointed SkP are in possession of a Petroleum Safety Rule Book.

Operational Procedures

General

59. This Section describes the documents to be used and the operational procedures to be adopted when controlling work on any Petroleum Installation defined in these Safety Rules and Procedures.

Risk Assessment

60. Risk Assessment is covered in JSP 375 Volume 3 Chapter 2.

61. For the purposes of these Safety Rules and Procedures there are two distinct types of risk assessment: an AP Risk Assessment and a Task Risk Assessment.

62. The AP Risk Assessment is required to be produced by the AP to address the hazards exhibited by the installation / system in relation to the task. It is to include information concerning the methodology for isolation and / or control of the task.

63. The Task Risk Assessment is required to cover the risks encountered in carrying out the task. The Task Risk Assessment is to be completed by the Contracting Organisation carrying out the task and also the person / persons carrying out the task. This is to include local hazard information supplied to the individual by the Area Custodian as detailed in JSP 375 Volume 2.

64. The Task Risk Assessment is to be submitted to the AP prior to the requirement for a Permit to Work or Standing Instruction, within a reasonable timeframe to allow the AP time for review.

65. The AP is to review the Task Risk Assessment and determine if it is consistent with the method of control. Should the AP consider the Task Risk Assessment inadequate, a Permit to Work or Standing Instruction is not to be issued. If the AP is in doubt as to the suitability of the Task Risk Assessment, they are to refer to the AE for further guidance.

66. During the task the AP Risk Assessment is to be retained with the Safety Programme, and the Task Risk Assessment is to be retained with the associated Permit to Work or Standing Instruction.

67. Contents of all Risk Assessments must be communicated to all parties involved in the task.

68. A model form ‘PET 02’ to record the findings of the AP Risk Assessment is provided within the document. This does not restrict the use of other model forms that are used to record risk assessments for the purpose of complying with the Management of Health and Safety at Work Regulations.

Method Statement

69. The Method Statement is a written procedure that specifies the works to be done that is produced by those undertaking the work. A Method Statement for the task is to be completed and submitted to the AP at the start of the planning process to enable an AP Risk Assessment to be developed. All activities that necessitate the issue of a Permit to Work or Standing Instruction are to be supported with an appropriate Method Statement which is to include the following as a minimum:

a. a description of the task and location;

b. the sequence and method of work;

c. the hazards identified during the risk assessment;

d. the skills required to deal with the hazards;

e. the precautions necessary to control the hazards;

f. references to specific safety procedures covering known hazards;

g. details of tools and equipment to be used;

h. method of disposal of waste and debris;

i. details of the state or condition in which the plant or equipment will be left at the end of the activity;

j. Emergency and Rescue Plan for confined space entry;

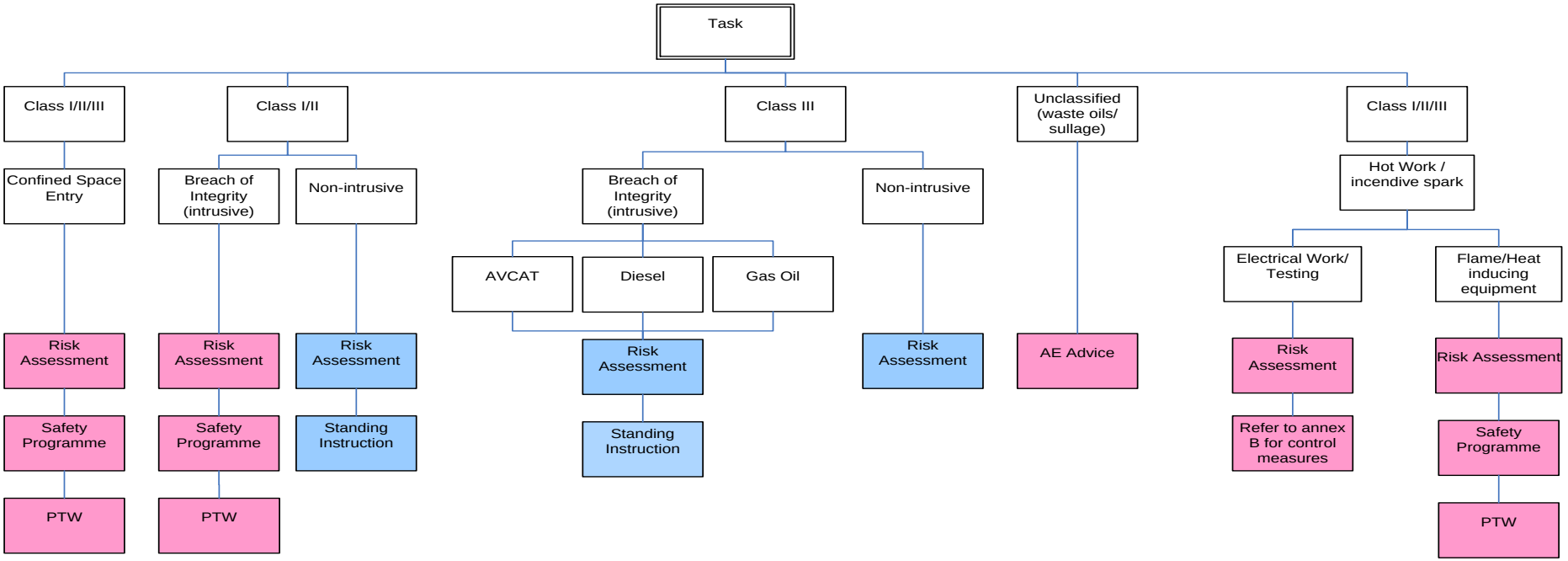
k. any maximum or minimum levels for flammable gases, toxic gases and oxygen content requirements for the task; and

l. any RPE and PPE required for the task.

Determining the Level of Control

70. The decision tree provides guidance on the minimum level of control to be applied for common elements of tasks likely to be found on Petroleum Installations on the MOD estate. The AE should be consulted for advice where tasks fall outside of this guidance.

Petroleum Main Decision Tree



Definitions:
Breach of integrity involves the exposure of product in liquid or vapour form.
Non-intrusive works are those where no breach of integrity takes place for example Inspections, painting etc
Risk Assessment – Refers to both AP and Task Risk Assessments are required

Note: see Annex E for specific guidance on requirements for Grass cutting

High Risk

Low Risk

Updated 16/01/2018

71. The level of control exercised, as determined from the required risk assessments over work on Petroleum Installations, will take the form of one of the following:

a. Standing Instruction; or

b. Permit to Work.

72. If work is planned simultaneously at multiple Petroleum Installations, a separate, risk assessment, method statement, Safety Programme and Permit to Work must be raised for work at each installation.

73. Normal practice should be to limit the number of Permit to Work issued for a hazardous area to one at any point in time. There may be occasions where multiple work activities in one hazardous area cannot be avoided requiring more than one Permit to Work, on such occasions the agreement of the AE to proceed must be sought. Work activities, their co-ordination and control shall be identified in the planning process, the AP Risk Assessment and detailed clearly within the PIOR.

74. Guidance on the requirements of the Standing Instruction and Permit to Work is given in paragraphs 90 to 113 and 114 to 134.

Restricted Area

75. This is an area in which there is an increased risk of fire, explosion, asphyxiation or poisoning, due to spillage, defects or the nature of the work to be undertaken. Before a restricted area can be set up all operations must cease, and all personnel withdrawn. A restricted area is to be set up when class I or II petroleum products are exposed in liquid or vapour form and where class III is exposed in a vapour form, when there is a requirement to enter confined spaces, there is a need for hot work to be undertaken or as a result of the AP Risk Assessment. Further guidance is detailed in Annex F.

76. When an area is restricted by the implementation of a Permit to Work, only one Permit to Work may be in use at any one time in that particular Restricted Area. Deviations from this are to be approved by the AE.

Safety Programme

77. A Safety Programme (SP) is to be implemented before the issue of any Permit to Work, unless specified elsewhere within this Chapter.

78. The SP cannot be closed until all Permits to Work raised against it are complete and the integrity of the system / installation has been verified by the AP. This may be through visual inspection and / or successful integrity testing.

79. A SP is to have a format similar to the model form ‘PET 03’ detailed within the document of these Safety Rules and Procedures. Each sheet of the SP is to bear the same pre-printed serial number on the original and duplicate copies.

80. The SP is to include the necessary steps for control of the complete task. This is to include the issue of Permits to Work and general steps to completion of the work and reinstatement.

81. The SP is to include:

a. the location of the installation;

b. AP Risk Assessment serial number;

c. the type of installation, which the proposed work sequence will make safe to work on;

d. cross-reference to other relevant certificates and permits by their serial numbers and titles.

e. OA authorisation and contact details;

f. the alarm settings for flammable and toxic gas concentrations applicable to the type of work to be undertaken;

g. permissible oxygen level minimum of 19% and a maximum of 22% at the point of work;

h. whether RPE and / or PPE and other safety equipment are be used;

i. the point(s) of work, which is / are to be made safe;

j. arrangements to isolate product and / or electricity supplies;

k. the name and signature of the originating AP (and where applicable the countersigning body);

l. a schematic diagram with the points of the isolation, draining arrangements, points of Work, other safety measures and equipment; and

m. the works sequence to be undertaken indicating:

(1) the location at which each operation is to be performed;

(2) the identity of each valve or component part to be operated;

(3) the operation to be performed;

(4) the reason for the operation;

(5) the alarm settings for gas concentration;

(6) any items (e.g. keys, locks, signs) required;

(7) any inspection / testing required to verify system integrity; and

(8) steps required for reinstatement.

82. The diagram required as part of the SP may either be a hand drawn or a CAD drawing (or section of one) or a copy of the relevant schematic stapled to the SP. Such drawings are to incorporate a title block, which includes the SP number, the name and signature of the AP, the name and signature of the PiC and is to be dated upon issue of the SP.

83. When the SP has been produced, including the work sequence, and is ready to be implemented, the AP is to obtain OA authorisation for the work to proceed by having them sign the SP. The AP is then to issue the OA a copy of the front page of the SP for their reference.

84. The requirement for a second confirming signature (counter-signature) endorsing the safety programme, already signed by the originating AP, remains within the judgment of the AE. There is however a mandatory requirement in the case of two APs being on duty at any one time.

85. Each isolation point is to be secured with a Safety Lock (where practical) and a Safety Sign fitted.

86. Upon completion of any initial isolations in the work sequence, the AP is to place any Safety Keys used into a Safety Key Box.

87. The AP is responsible for the safekeeping of the original of the Safety Programme (SP) throughout the works.

88. Once system / installation isolations have been made or removed the actions are to be recorded in the PIOR by reference to the SP Serial number, item number and time of the sequence of operation entry contained within the SP.

89. When all work associated with a SP has been completed and all associated Permits to Work have been completed or stopped, the AP is to verify system integrity and cancel the original SP. The installation is to then be returned to the OA who confirms return on the SP. The original is then to be filed in the PIDR for a period of not less than three years.

Permit to Work

90. A Permit to Work (PTW) is required as determined by the Decision Tree and AP Risk Assessment.

91. A PTW is to have a format similar to the model form ‘PET 04’ detailed in these Safety Rules and Procedures. Each sheet of a permit is to be identified by the same pre-printed serial number on the original and copy. Sets of consecutively numbered forms are to be used.

92. Before the issue of the PTW the AP and prospective PIC are to carry out joint gas monitoring with two gas detectors, the highest reading of the two being recorded on the front page of the PTW together with the lowest oxygen reading.

93. The AP is to issue the PTW immediately before work is to commence and it is to remain in force until the work is completed or the PTW has been reaffirmed a maximum of seven times.

94. Where work is to continue over a number of days and the PTW will require reaffirming, the PTW is to be suspended at the end of each working day. The AP and PiC are to confirm that the work has been suspended, carry out gas monitoring and record on the PTW to confirm a safe condition prior to leaving site.

95. Whilst a PTW is in force a sign is to be displayed at the point of work clearly identifying that a PTW is in force and giving contact details of the AP and the PTW (this may form part of the Temporary Restricted Area Signage).

96. A PTW is to state precisely and legibly:

a. the installation to be worked on;

b. the location of the installation;

c. the proposed work;

d. the serial number of the Safety Programme;

e. where applicable, the serial number of any related safety documentation (i.e. Electrical PTW); and

f. validity period.

Issue, Acceptance, Suspension, Reaffirmation and Cancellation of Permits to Work

97. A PTW to be issued only at the point of work. The issue, suspension, re-affirmation and cancellation of every PTW is to be recorded in the PIOR.

98. The AP is to issue the original PTW only to a SkP on the AP's Register of SkPs.

99. Before the issue of a PTW the AP is to demonstrate to the SkP:

a. the identity of the petroleum installation and the component parts to be worked on;

b. any initial isolations in accordance with the SP;

c. the safety arrangements at the place of work and at points of isolation; and

d. any special instructions and / or safety measures.

100. Before the issue of a PTW the AP is also to ensure that the SkP is in possession of and understands the Task Risk Assessment and the Method Statement for the task.

101. Before accepting the PTW the prospective PiC is to:

a. read the PTW and the Safety Programme and sign the drawing(s);

b. agree the extent of the work;

c. agree the safety precautions; and

d. be prepared to supervise or undertake the work.

102. The SkP is to sign the relevant section of the PTW to accept the responsibilities of the PiC. On signing for acceptance of the PTW the SkP authenticates the permit as valid and becomes the PiC of the permitted work. The PiC is then to take the original PTW and take control of the Safety Key Box PiC Key.

103. The acceptance of a PTW identifies the PiC as personally responsible for supervising or undertaking the defined work.

104. While the work is in progress, the PiC is not permitted to leave the site or to undertake any other work or tests. If for any reason the PiC has to leave the point of work, then during that temporary absence work is to be halted. The PiC is to ensure that suitable safety precautions are taken, and the AP informed, before leaving the point of work.

105. Where a change of AP and / or PiC is required, the incoming AP / PiC are to carry out the joint checks and are to sign the PTW to accept control of the work and any restrictions and controls laid down in the safety paperwork. The change is to be recorded in the PIOR.

106. On completion of the work the PiC is to:

a. inspect the work to ensure that it is complete and that system integrity has been restored;

b. withdraw all persons, equipment, tools and instruments from the point of work;

c. advise all persons under their control that they are no longer permitted to work on the petroleum installation;

d. complete and sign the relevant section of the original PTW; and

e. return the original PTW and PiC Key to the Safety Key Box to the AP.

107. The AP is to confirm that the work has been completed satisfactorily by a visual check whilst also carrying out final gas monitoring with the PiC and record on the original PTW, to confirm safe condition prior to cancelling the PTW.

108. The AP is to cancel the PTW by signing the original, filing in the PIDR and recording the cancellation in the PIOR.

109. If the AP decides that it is necessary to stop the work, the PTW is to be withdrawn and cancelled. The withdrawal is to be noted with reasons on the copy of the PTW and any actions taken are to be noted in the PIOR. A new PTW is required before re-starting work.

110. The PTW is to be cancelled or suspended if during the period of validity, any of the following conditions apply (including but not limited to):

a. at the end of the working day;

b. the conditions under which it was issued change beyond the stipulated limits e.g. gas concentration and oxygen percentages;

c. a change of work is necessary which is not authorised on the original PTW;

d. any personnel or contractors disregard the conditions of the PTW / or the MOD Safety Rules and Procedures;

e. there is a failure of safety equipment;

f. prolonged absences of the AP or PiC;

g. the OA requests the discontinuation of the work;

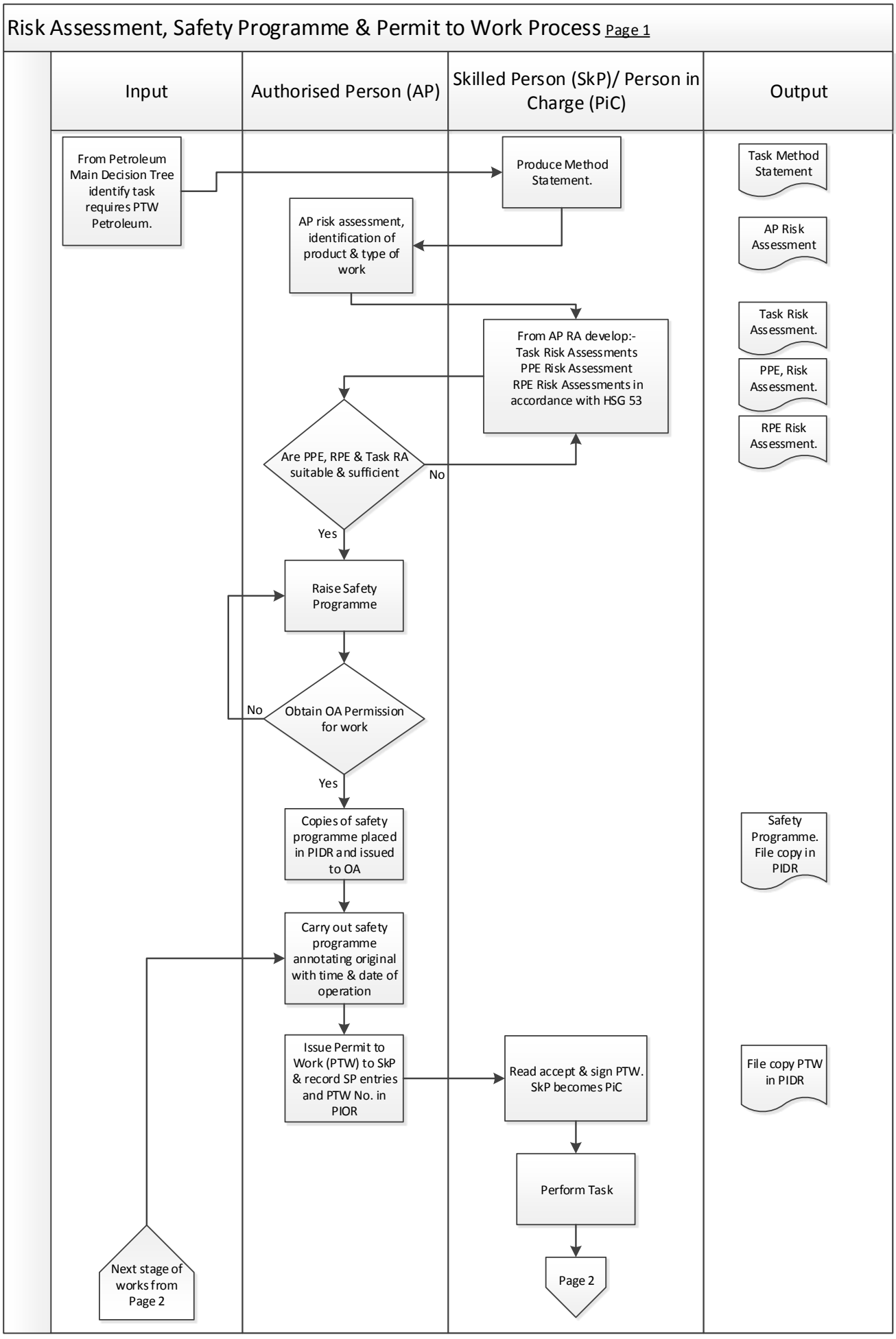
h. should any accident or incident occur. For example, injury to personnel, damage to equipment or plant or spillage of product; and

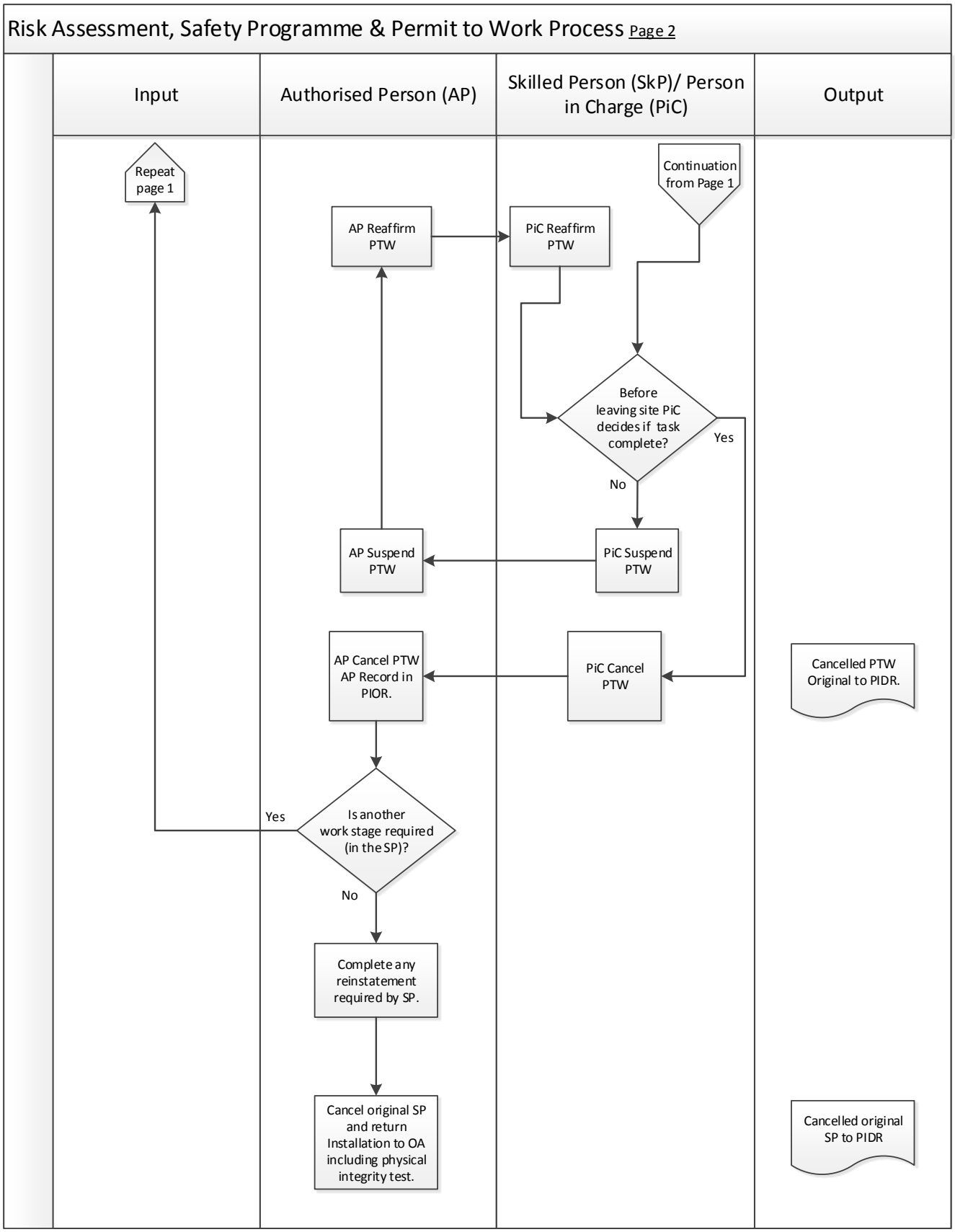
i. electrical storm.

111. Where the work is stopped and the PiC has returned the original PTW, the AP is to annotate the original Safety Programme to highlight that work may not be complete. This serves to prevent removal of the isolations until all associated work is complete and the integrity of the system has been restored.

112. If the PiC has lost the original PTW, the loss is to be recorded by the AP in the PIOR. The copy of the PTW is then to be used in place of the original and cancelled in accordance with the above paragraphs. The PiC is to countersign the statements in the PIOR to confirm and acknowledge the loss of the PTW.

113. All original PTWs, together with their associated Risk Assessments and Safety Programme are to be retained in the PIDR for a minimum period of three years after the cancellation date.


Risk Assessment, Safety Programme & Permit to Work Process Page 1
Input
Authorised Person (AP)
Skilled Person (SkP)/ Person in Charge (PiC)
Output
From Petroleum Main Decision Tree identify task requires PTW Petroleum.
Produce Method Statement.
Task Method Statement
AP risk assessment, identification of product & type of work
AP Risk Assessment
From AP RA develop:- Task Risk Assessments PPE Risk Assessment RPE Risk Assessments in accordance with HSG 53
Task Risk Assessment.
PPE, Risk Assessment.
RPE Risk Assessment.
Are PPE, RPE & Task RA suitable & sufficient
No
Yes
Raise Safety Programme
Obtain OA Permission for work
No
Yes
Copies of safety programme placed in PIDR and issued to OA
Safety Programme. File copy in PIDR
Carry out safety programme annotating original with time & date of operation
Issue Permit to Work (PTW) to SkP & record SP entries and PTW No. in PIOR
Read accept & sign PTW. SkP becomes PiC
File copy PTW in PIDR
Perform Task
Page 2
Next stage of works from Page 2


Risk Assessment, Safety Programme & Permit to Work Process Page 2
Input
Authorised Person (AP)
Skilled Person (SkP)/ Person in Charge (PiC)
Output
Repeat page 1
Continuation from Page 1
AP Reaffirm PTW
PiC Reaffirm PTW
Before leaving site PiC decides if task complete?
Yes
No
AP Suspend PTW
PiC Suspend PTW
AP Cancel PTW AP Record in PIOR.
PiC Cancel PTW
Cancelled PTW Original to PIDR.
Is another work stage required (in the SP)?
Yes
No
Complete any reinstatement required by SP.
Cancel original SP and return Installation to OA including physical integrity test.
Cancelled original SP to PIDR

Standing Instruction

114. A Standing Instruction (SI) can be issued by the AP to a SkP for both one-off and repetitive tasks on Petroleum Installations where the AP risk assessment has determined that the task is low risk and a Permit to Work is not appropriate.

115. An SI is required as determined by the Decision Tree and the AP Risk Assessment.

116. Non-intrusive work on Class I and II installations may be defined as low risk maintenance tasks, not including any task which exposes petroleum products in liquid, gas or vapour form, introduction of a source of ignition, or involves confined space entry. Examples of these non-intrusive tasks are:

a. external painting;

b. adjusting machinery, equipment and metering;

c. adjustment and tightening of valve glands (excluding repacking);

d. maintenance tasks of valve gear equipment; and

e. minor adjustment or replacement of instruments and equipment.

117. Intrusive works on Class III installations may be defined as low risk maintenance tasks. Electrical work and testing on all Class III installations may be defined as a low risk task.

118. An SI is to contain the following information:

a. validity period of SI;

b. location and Identity of equipment;

c. task or operation to be undertaken;

d. detail of tasks to be carried out;

e. special instructions or safety measures applicable;

f. originating AP;

g. name of SkP; and

h. employer.

119. SI's must be specific to a system and must contain sufficient detail with respect to the procedure required to be undertaken by the SkP to ensure that the facilities and installations are safe before commencement of work. The Process Chart at the end of this section details the procedure for issuing a SI.

120. All risks and hazards associated with the work to be carried out under a SI and the controls identified to manage them must be fully communicated to the PiC prior to commencement and issuing of a SI. All work on Petroleum Installations will be co-ordinated by the AP to ensure that the petroleum related risks are fully taken into account. For all petroleum tasks undertaken by a SI, a Task Risk Assessment and Method Statement will be produced by the PiC and reviewed by the AP.

121. SI's Electrical issued by the AP Electrical for electrical work are outside the scope of these Safety Rules and Procedures and are covered in JSP 375 Volume 3 Chapter 3.

122. A SI is to have a format similar to the model form SRP PET 05 of these Safety Rules and Procedures. Each sheet of a SI is to be identified by the same unique serial number on the original and duplicate copies.

Issue, Acceptance and Cancellation of Standing Instructions

123. Having determined the level of control from the AP Risk Assessment and the Decision Tree, the AP may raise a SI for the defined or repetitive task(s). The AP must detail:

a. the task or operation to be conducted on the equipment;

b. specified circumstances under which the task may be conducted; and

c. any special instructions or safety measures.

124. The AP authorises the SI by signing of the document.

125. The AP then informs the OA of the proposed issue of the SI, detailing the task to be undertaken, advising of the effect that the task may have on operations (such as loss of any service). The OA will acknowledge the issue of the SI by signing Part 2.

126. Having acknowledged the instruction(s) and being prepared to undertake the task(s), the SkP is to sign and accept the SI by signing Part 3. On signing for acceptance of the instruction a SkP authenticates the instruction and becomes the PiC of the permitted task(s). Notwithstanding that the PiC has been authorised to undertake the task, he must comply with the notification regime and instructions on the SI before conducting the task on each occasion.

127. The issue of an SI is to be recorded in the PIOR. The original copy of the SI is to be issued to the SkP who then becomes the PiC. A duplicate copy is to be retained in the PIDR.

128. When an AP is appointed or returns to duty the AP is to review the PIOR to check for any SI in force.

129. On completion of the tasks outlined in the SI or on reaching the expiry date, the PiC is to return the instruction to the AP for cancellation. The AP is to cancel the SI by destroying the duplicate copy and completing the cancellation section at Part 4 of the original document.

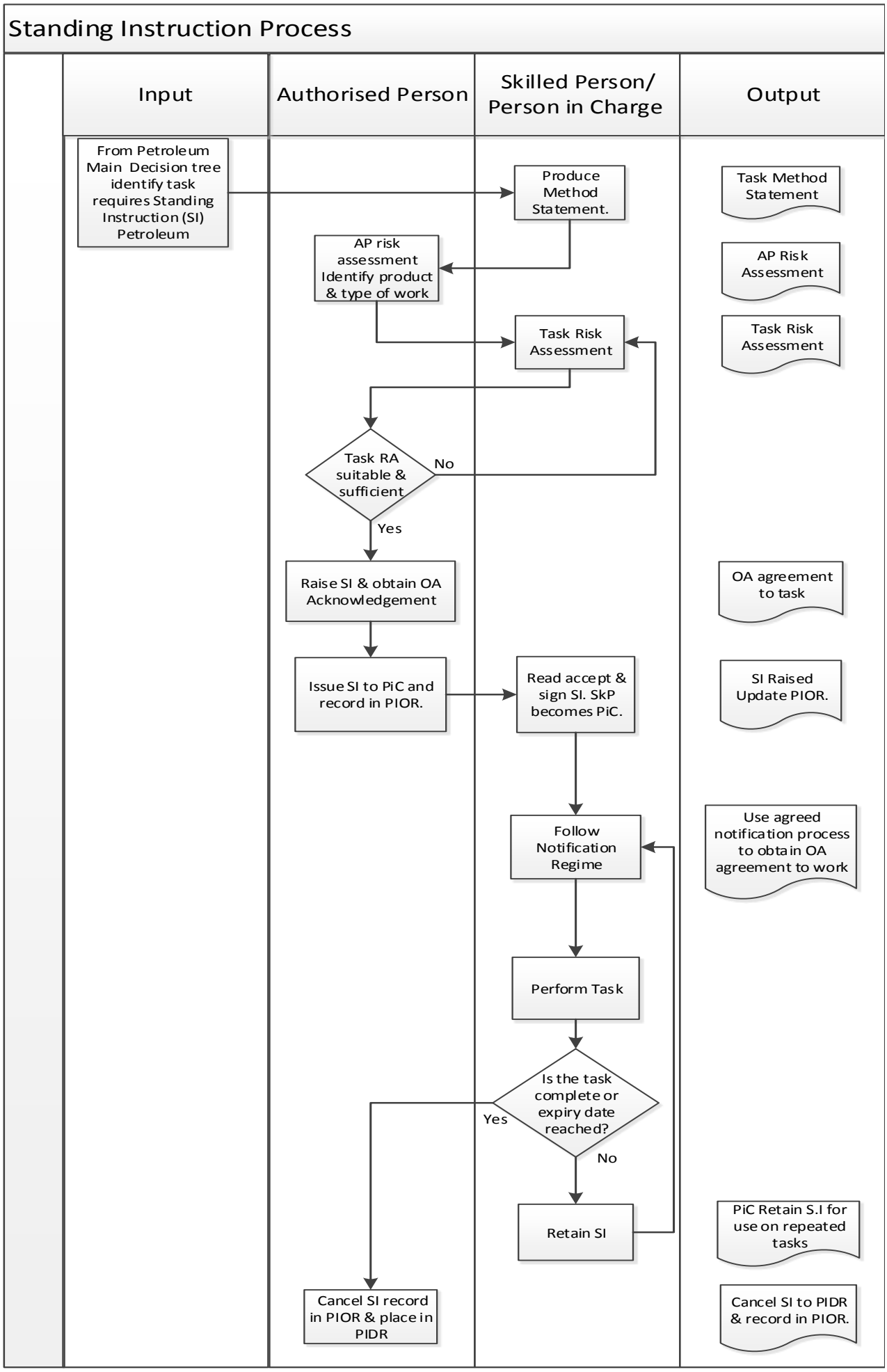
130. Alternatively, the AP may cancel an SI at any time by retrieving the original from the PiC and destroying the duplicate and completing the cancellation section at Part 4 of the original document.

131. The cancellation of a SI is to be noted in the PIOR.

132. If the PiC has lost the original SI, the loss is to be recorded by the AP in the PIOR. The copy of the SI is then to be used in place of the original and cancelled in accordance with the above paragraphs. The PiC is to countersign the statements in the PIOR to confirm and acknowledge the loss of the SI.

133. An SI is not to be transferred from one PiC to another.

134. A SI is to be valid for not more than three years and must be reviewed by an AP at intervals of not more than twelve months or following any change or modification to the system; the review of the SI is to be recorded in the PIOR.


Standing Instruction Process
Input
Authorised Person
Skilled Person/ Person in Charge
Output
From Petroleum Main Decision tree identify task requires Standing Instruction (SI) Petroleum
Produce Method Statement.
Task Method Statement
AP risk assessment Identify product & type of work
AP Risk Assessment
Task Risk Assessment
Task Risk Assessment
Task RA suitable & sufficient
No
Yes
Raise SI & obtain OA Acknowledgement
OA agreement to task
Issue SI to PiC and record in PIOR.
Read accept & sign SI. SkP becomes PiC.
SI Raised Update PIOR.
Follow Notification Regime
Use agreed notification process to obtain OA agreement to work
Perform Task
Is the task complete or expiry date reached?
Yes
No
Retain SI
PiC Retain S.I for use on repeated tasks
Cancel SI record in PIOR & place in PIDR
Cancel SI to PIDR & record in PIOR.

Training

Introduction

135. This Section deals with the technical training requirements for those involved in the conduct or management of work on Petroleum Installations.

136. The requirements for general training for APs and AEs are given in JSP 375 Volume 3 Chapter 2 and are not discussed further within this section.

137. It is a pre-requisite for both the AP and AE candidates to have undertaken on-site familiarisation training and to be in possession of an up-to-date personal Logbook prior to attending the training stipulated below. In addition, they should be familiar with:

a. the concept of Risk Assessments, Safety Programmes and other safety documentation;

b. behavioural interviewing techniques; and

c. the safety documents held on the establishments for which they are to be appointed.

Authorising Engineer

138. AEs for the petroleum discipline must achieve the same technical training standards as given in paragraph 141 for an AP.

139. The AE for a site is to be involved in the selection and training requirements of APs intended for appointment on that site.

Authorised Person

140. The AP training aims to ensure that, on completion, participants can demonstrate a thorough and practical understanding of the Safe Systems of Work and associated procedures contained within this Chapter of JSP 375 Volume 3.

Training Content

141. Training will cover:

a. an introduction to petroleum products, their characteristics and classifications;

b. an overview of associated statutory regulations;

c. an overview of petroleum systems and the types of fuel installations on the MOD Estate;

d. an introduction to MOD Petroleum Safety Rules and Procedures;

e. the scope of the Petroleum Safety Rules and Procedures;

f. an overview of operational appointments;

g. the specific roles and responsibilities of appointed personnel with respect to Petroleum the Petroleum Safety Rules and Procedures;

h. hazards and risks associated with petroleum products (fire, explosion, asphyxiation, poisoning, environmental) and petroleum infrastructure (confined spaces, working at height, electricity);

i. isolation methodology;

j. overview of Personal and Respiratory Protective Equipment;

k. overview of test and safety equipment;

l. electrical work in petroleum areas;

m. management, application and control of Petroleum Safety Rules and Procedures Documentation;

n. implementation of the Safety Rules and Procedures on site and to tasks;

o. associated MOD and commercial documents; and

p. any additional specialist training identified by the AE, such as confined space awareness.

Learning outcomes

142. On completion of the course, candidates shall be able to:

a. list and differentiate petroleum products;

b. demonstrate an understanding of the classification of fuels;

c. identify installations and equipment within the scope of JSP 375 Volume 3, Chapter 5;

d. list the roles and responsibilities of those parties with operational appointments relating to JSP 375 Volume 3, Chapter 5;

e. identify hazards, risks and control measures associated with working with petroleum products and installations;

f. identify the different test and safety equipment available; understand their use and limitations and inspection requirements;

g. demonstrate knowledge of the AP Petroleum requirements for electrical work in petroleum areas;

h. demonstrate a knowledge of the management, application and control of Petroleum Safety Rules and Procedures documentation;

i. demonstrate an understanding of the planning required prior to start of works including AP Risk Assessments and Safety Programme and how they should be applied;

j. produce suitable and sufficient AP Risk Assessments for typical tasks on Petroleum Installations;

k. prepare Safety Programmes, Permits to Work and Standing Instructions in accordance with these Safety Rules and Procedures;

l. state the action to take when there are conflicting requirements listed in statutory regulations, these Safety Rules and Procedures and any local rules; and

m. demonstrate an understanding of the requirement for demarcation agreements.

Assessment

143. In the case of refresher training, this shall be suitable and sufficient for the relevant AE / AP.

Acknowledgements

144. These revised Safety Rules and Procedures have been produced by a joint Industry / Ministry of Defence Working Group comprising representation from the following contributing companies, organisations and individuals:

a. Interserve Central Government & Defence Ltd;

b. Sodexo;

c. Amey Defence Ltd;

d. Defence Infrastructure Organisation;

e. Morsafe; and

f. Develop Training.

Isolation Methodology

1. The isolation methodology used on the MOD Estate is to be based on the risk exhibited by the system and in the Health and Safety Executive publication ‘The Safe Isolation of Plant and Equipment’ HSG 253. This is the lead reference when determining isolation and control.

2. All isolation methods can fail. The potential for human failure is a major factor affecting the reliability of an isolation method. The performance of an isolation depends not only on the integrity of the isolation hardware, but also on the adequacy of the arrangements to identify each isolation point, secure the isolation, prove / monitor the isolation and maintain total control of the work. When selecting an isolation method, consideration should be given for the potential of both mechanical and human failure.

3. Security during the intrusive task is provided by the final isolation. An initial isolation may also be required to enable this final isolation to be installed. A range of isolation techniques are detailed in A10. The choice of final isolation method should be based on risk assessment. In the instance where an isolation of higher integrity is available, and where it is reasonably practicable to use, it should be used, except where this would not reduce risk.

Stages of Isolations

4. Installation of isolations can, involve two stages:

   a. an initial isolation; and

   b. a final or full isolation.

5. The initial isolation, which is usually a valve, enables draining and the insertion of downstream positive isolation once depressurised and drained. Positive isolation can take the form of a blank, spade or spectacle plate and can be accompanied by the removal of pipework sections. The safety of this initial isolation must be considered when selecting your final isolation method. A key requirement during the initial isolation is to identify whether valves being used provide an acceptable level of isolation. Physical disconnection should be used wherever reasonably practicable.

6. The final isolation protects those carrying out the work, and those who might otherwise be affected from a release of fuel or vapour from the system. For tasks involving confined space entry or where isolations are to be in place for an extended period of time positive isolations must be used where practicable.

7. When using valves for pipeline isolation, you should aim to achieve a double block and bleed isolation. Suitable blank flanges and / or plugs should be used to close off any open pipework. These should be appropriately rated and properly installed with the correct gaskets and securing bolts so that they can withstand the system pressure and product characteristics.

8. Localised isolation of pipelines can involve various techniques or combinations, e.g. valves, removable spool pieces, pipe freezing, line plugging, pipe stoppers, bags, high friction pigs or spheres, use of 'slugs' of inert fluids and flooding sections of pipeline with water.

9. Devices other than blanks, plugs or caps that are proposed to be used to seal the ends of open pipework to enable pressure testing or work activities will require a specialised assessment and approval by the AE. This includes specialised systems that provide local isolation as detailed on page A8.

Isolation Techniques

10. Positive isolation - Complete separation of the plant / equipment to be worked on from other parts of the system. For example - Physical disconnection (e.g. spool removal).

11. Valved isolation - to an appropriate standard is required to enable positive isolation. For Example - Double block, bleed (DBB) and spade; or Single block and bleed (SBB) and spade.

12. Proved isolation - The effectiveness of the valved isolation can be confirmed via vent / drain points before intrusive work commences. Within this isolation category the level of mechanical security is greatest for DBB and lowest for SBB. Proved isolation - The effectiveness of the valved isolation can be confirmed via vent / drain points before intrusive work commences. Within this isolation category the level of mechanical security is greatest for DBB and lowest for SBB.

13. Example - Double block and bleed; Double seals in a single valve body with a bleed in between; and Single block and bleed.

14. SBB should not normally be used as a final isolation method; approval by the AE should be obtained where the use is considered justified and where the risk assessment has shown it to be acceptable.

15. Non-proved isolation - The effectiveness of valved isolation cannot be confirmed by vent / bleed points before intrusive work commences. For example – Double Valve; Single Valve.

16. Proposals to use non-proved isolation are to be agreed by the AE.

17. Further guidance is available in ‘HSG 253 ‘The Safe Isolation of Plant and Equipment’.

18. It should be noted that if the point of work is in line then appropriate isolation is required either side of the point of work.

Electrical Isolation

19. Electrical isolation for the purpose of petroleum maintenance may be made without reference to the AP (Electrical) when the isolation is via a switch or circuit breaker, and the switch or circuit breaker can be locked in the ‘off’ position by use of a safety lock. Where there is uncertainty of appropriate electrical circuit / system isolation the AP Electrical should be consulted.

20. When the isolation requires the removal of fuses or the disconnection of cable terminations the isolation is to be made by an appointed Skilled Person (Electrical) or an Authorised Person (Electrical).

Fuel Oil Isolation

21. Suitably competent personnel working for the MMO may isolate and carry out maintenance on a fuel oil supply pipework to an item of equipment provided that the fuel in question is Class II or III and that the work is within the confines of a boiler house, plant room or generator house.

Electrical Works in Petroleum Hazardous Areas

Introduction

1. This annex covers work on or the testing of electrical equipment and systems within the defined hazardous area, as identified in accordance with the Dangerous Substances and Explosive Atmosphere Regulations (DSEAR), zonal classification drawings and associated risk assessments for Petroleum Installations on the MOD estate, which should be read in conjunction with the main Safety Rules and Procedures.

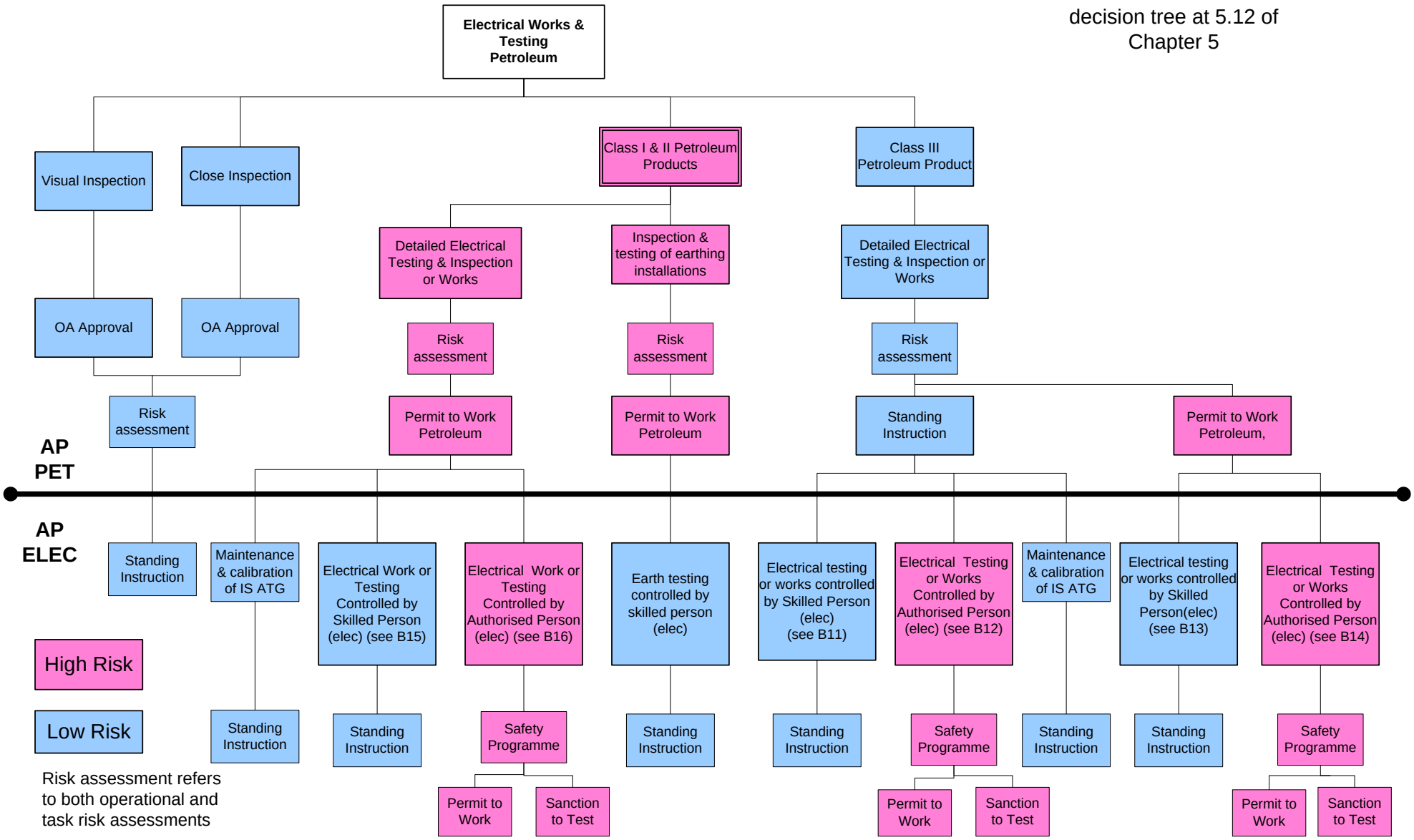
General

2. The management of Electrical work and testing in petroleum hazardous areas is to be under the overall control of the Authorised Person Petroleum.

3. This will require an AP and PiC Risk Assessment. A Petroleum Safety Programme will not normally be required for electrical works unless the AP Petroleum identifies a requirement for isolation of petroleum product.

4. The main petroleum decision tree on page 15 and the decision tree in this annex provides guidance on the level of control to be applied under these Safety Rules and Procedures and JSP 375 Volume 3 Chapter 3 Electricity. The AE Petroleum should be consulted for advice where works fall outside the scope of this guidance.

Electrical Works & Testing within Petroleum Installations



Aspects of Electrical Work and Testing on Petroleum Installations

5. There are six aspects of electrical work (incl. testing) on Petroleum Installations to be considered to enable the petroleum related risks to be controlled, by these Safe Systems of Work described in this guidance. These aspects are in addition to the general requirements for the control of the electrical danger:

a. the integrity of the concept of protection of electrical equipment subject to maintenance must be restored when the maintenance is complete, and the integrity must be appropriate for the DSEAR hazardous zone classification for any new equipment installed. No alteration that will invalidate the certificate or other approval document relating to the concept of protection of the electrical equipment or system is to be made;

b. equipment must not be opened, or the protection disturbed, until it is electrically isolated and a gas free condition established, where identified as a control measure within the TRA and in accordance with the gas monitoring regime as detailed in B.15 and B.16 or where there is a risk of vapour draft from class I or II petroleum installation prior to proving dead;

c. electrical testing can cause induced currents and voltages throughout an installation, due to earth bonding and lightning protection systems. To reduce the risks from incendive sparks and where identified as a control measure on the TRA, electrical testing is to be carried out under the control of a gas monitoring regime as detailed in B.15 and B.16;

d. electrical testing within the hazardous areas is defined within BS EN 60079 part 17 as one of the following:

(1) Visual Inspection, inspection undertaken without the use of tools or access equipment

(2) Close Inspection undertaken with the use of tools and access equipment and may include minor repairs. Example of what is considered as minor repairs are:

(a) tightening of external loose bolts and fixings;

(b) painting of enclosures and equipment;

(c) re-termination of external earth bonds;

(d) tightening of external earth connection;

(e) cleaning, removal of accumulation of dust and dirt;

(f) replacement of external cable ID tags; and

(g) re-fixing of cables to cable trays and supports.

(3) Visual and Close inspections are to be controlled by the AP's (PET) RA, the TRA and Method Statement. Detailed inspections are to be controlled by the AP Petroleum's RA, TRA, Method Statement and PTW / Standing Instruction

(Petroleum) in accordance with requirements of JSP 375 Volume 3 Chapter 3 and JSP 375 Volume 3 Chapter 5 Decision Tree within this annex.

e. inspection and testing of earthing system and lightning protection (LPS) in accordance with BS 7430 and BS EN 62305 can cause stray voltages and currents during testing resulting in incendive sparks occurring; and

f. the maintenance of electrical equipment in hazardous areas shall be carried out by SkP Electrical having adequate training, experience, and theoretical knowledge to be considered as a competent person on electrical equipment installed in hazardous atmospheres.

Planning and Co-ordination

6. The planning of electrical work and testing at Petroleum Installations requires the AP Petroleum, AP Electrical (Hazardous Areas) and Operating Authority (OA) to co-operate and co-ordinate when defining the task, and deciding on the appropriate work method and when completing an AP (PET and Elec) RA, with particular emphasis on:

a. the elimination of the risk of creating a source of ignition within the hazardous area whilst undertaking the work or test;

b. identification of the potential for the following:

(1) product exposure;

(2) product atomisation due to elevated pressures;

(3) vapour drift ;

(4) elevated temperatures (either surface or ambient);

(5) creation of an incendive spark; and

(6) loss of safety critical electrical systems.

c. electrical isolations as appropriate (to include control systems); and

d. control of the Safe System for electrical Work which is the responsibility of the Authorised Person Electrical (Hazardous Areas).

Responsibilities of the Authorised Person Electrical

7. The Authorised Person Electrical (Hazardous Areas) is responsible for:

a. compliance with the Safety Rules and Procedures Electrical;

b. assessing and registering suitably qualified and experienced Skilled Persons (Electrical) to work on or test electrical equipment in petroleum hazardous areas; and

c. co-ordination with the Authorised Person Petroleum, to include.

(1) determining the requirement for Electrical Safety Documentation; and

(2) ensuring that the TRA and Method Statement are available and have been reviewed.

Responsibilities of the Skilled Person

8. The principle adopted is that of using SkPs appointed under the Electricity Safety Rules and Procedures to undertake the electrical task. SkPs are:

a. to have sufficient training, knowledge, experience and understanding of the petroleum hazards;

b. to confirm by their signature that they have completed the works / tests correctly and document in accordance with BS EN 60079 part 14 and 17. The electrical equipment has been restored to the correct level of concept of protection, and the installation is suitable to be returned to service; and

c. to carry out gas monitoring of the environment as required.

Responsibilities of the Authorised Person Petroleum

9. The Authorised Person Petroleum is responsible for:

a. co-ordinating the electrical work or test with, and seeking the authorisation of, the OA;

b. implementing any control measures required as a result of the AP Petroleum RA; and

c. assess suitably qualified and experienced Skilled Persons (Electrical) to become SkP (Petroleum) for working on or testing electrical equipment in petroleum hazardous areas.

Works Control

Detailed Electrical Inspection, Testing or Works in a Class III installation

Standing Instruction (Petroleum) and JSP 375 Volume 3 Chapter 3 Table HAZ 3

10. Where there is clear and certain identity of the point of electrical isolation for the equipment to be worked on and / or tested and whereas a result of the AP Petroleum's review there is no foreseeable risk of ignition the method of control is detailed below.

11. Electrical work / test is to be controlled by a Standing Instruction Petroleum and table HAZ 3 of JSP 375 Volume 3 Chapter 3 providing the following criteria are met:

a. those undertaking the task are to confirm with the OA the cessation of product receipt, transfer and dispense and be satisfied that the residual risk would not result in the ignition of product;

b. Table HAZ 3 of JSP 375 Volume 3 Chapter 3 is to be used where the clear and certain identity of the points of isolation of the equipment to be worked on is established; and

c. there is no foreseeable risk of ignition through:

(1) exposure of product, atomisation of product, vapour drift (including from a higher classification product); or

(2) elevated temperatures (either surface or ambient), and a source of an incendive spark.

Standing Instruction (Petroleum) and JSP 375 Volume 3 Chapter 3 Table HAZ 1 and 2

12. Where it cannot be established that there is clear and certain identity of the point of electrical isolation for the equipment to be worked on or tested and where as a result of the AP Petroleum's review there is no foreseeable risk of ignition the method of control is:

a. Authorised Person Petroleum to issue a Standing Instruction Petroleum;

b. those undertaking the task are to confirm with OA the cessation of product receipt, transfer and dispense and be satisfied that the residual risk would not result in the ignition of product; and

c. Authorised Person Electrical (Hazardous Areas) is to control in accordance with electrical Safety Rules and Procedures tables HAZ 1 and HAZ 2 of JSP 375 Volume 3 Chapter 3.

Permit to Work (Petroleum) and JSP 375 Volume 3 Chapter 3 Table HAZ 3

13. Where there is clear and certain identity of the point of electrical isolation for the equipment to be worked on and / or tested and where as a result of the AP Petroleum's review there is a foreseeable risk of ignition the method of control is:

a. Authorised Person Petroleum is to issue a PTW Petroleum and carry out the initial gas monitoring checks in accordance with Annex C. The PiC will be responsible for the continuous gas monitoring and the recording in accordance with Annex C; and

b. Skilled Person Electrical is to control in accordance with electrical Safety Rules and Procedures table HAZ 3.

Permit to Work (Petroleum) and JSP 375 Volume 3 Chapter 3 Table HAZ 1 and 2

14. Where it cannot be established that there is clear and certain identity of the point of electrical isolation for the equipment to be worked on and / or tested and whereas a result of the AP Petroleum's review there is a foreseeable risk of ignition the method of control is:

a. Authorised Person Petroleum is to issue a PTW Petroleum and carry out the initial gas monitoring checks in accordance with Annex C. The PiC Electrical will be responsible for the continuous gas monitoring and the recording in accordance with Annex C; and

b. Authorised Person Electrical (Hazardous Areas) is to control in accordance with electrical Safety Rules and Procedures tables HAZ 1 and HAZ 2 of JSP 375 Volume 3 Chapter 3.

Detailed Electrical Inspection, testing or Works in a Class I and II installation

Permit to Work (Petroleum) and JSP 375 Volume 3 Chapter 3 Table HAZ 3

15. Where clear and certain identity of the point of electrical isolation for the equipment to be worked on and or tested is established and where as a result of the AP Petroleum's review there is no foreseeable risk of ignition the control method is:

a. AP Petroleum is to issue a PTW Petroleum and carry out the initial gas monitoring checks in accordance with Annex C. The PiC will be responsible for the continuous gas monitoring and the recording in accordance with Annex C; and

b. Skilled Person Electrical is to control in accordance with electrical Safety Rules and Procedures table HAZ 3 of JSP 375 Volume 3 Chapter 3.

Permit to Work (Petroleum) & JSP 375 Volume 3 Chapter 3 Table HAZ 1 & 2

16. Where clear and certain identity of the point of electrical isolation for the equipment to be worked on and / or tested cannot be established and whereas a result of the AP Petroleum's review there is no foreseeable risk of ignition the method of control is:

a. Authorised Person Petroleum is to issue a PTW Petroleum and carry out the initial gas monitoring checks in accordance with Annex C. The PiC will be responsible for the continuous gas monitoring and the recording in accordance with Annex C; and

b. Authorised Person Electrical (Hazardous Areas) is to control in accordance with electrical Safety Rules and Procedures tables HAZ 1 and HAZ 2 of JSP 375 Volume 3 Chapter 3.

Visual & Close Inspection in a Class I, II & III installation

Operating Authority Approval & JSP 375 Volume 3 Chapter 3 Table HAZ 3

17. Where inspection does not involve the compromise of any electrical or petroleum related equipment, where the AP Petroleum review identifies that there is no need for additional protective measures and the system can remain operational throughout, the method of control is:

a. those undertaking the task are to confirm with the OA that the inspection can go ahead, and that OA is satisfied that the inspection will not result in the ignition of product; and

b. Skilled Person Electrical is to control in accordance with electrical Safety Rules and Procedures table HAZ 3 of JSP 375 Volume 3 Chapter 3.

Works outside DSEAR Hazardous Zones

18. Works and or tests at the control room or the standby generator house of Petroleum Installations, that are wholly outside of the DSEAR classified hazardous zones will not require a SI or PTW Petroleum and are to be managed in accordance with the Electrical Safety Rules and Procedures. This is to be determined at the planning stage by the Authorised Person Electrical (Hazardous Areas).

19. OA permission will be required for access and this shall be co-ordinated by the Authorised Person Petroleum.

20. Note: there are many examples of Petroleum Installations at which the security fence encloses both areas classified as hazardous, and also a wider non-hazardous area which may contain such installations as control rooms and standby generator rooms. Works on such installations are usually in close proximity to the petroleum installation, and as they are within the security fence, is to be controlled as a minimum by the formal petroleum access procedures agreed for the establishment.

Gas Detection and Monitoring

General

1. It is a requirement of these safety rules and procedures to detect the presence, and concentration of flammable gases, oxygen and other hazardous substances identified in the AP Risk Assessment. This is needed to exercise the correct control over work within the petroleum hazardous areas. For this purpose, a Multiple Gas Indicator (MGI) is to be used. Testing for the presence and concentration of flammable gasses, oxygen and other hazardous substances is a requirement of these Safety Rules and Procedures when the need is identified by the AP Risk Assessment. Appropriate MGIs shall be used in conjunction with Table C1.

2. Readings are to be taken before the commencement of any work, and during the work, to check that the gas concentrations and other levels are within the limits stipulated on the Permit to Work, as determined from this document and the Safety Programme.

3. There will be a requirement for individual readings by the PiC, and joint readings carried out by the AP and the PiC. These joint readings must be taken simultaneously with separate instruments and recorded on the original PTW only.

4. Test frequencies and responsibilities shall be in accordance with Table C.2.

5. Individual MGIs must be maintained, calibrated and used in accordance with the manufacturer's instructions and a Quality Assurance System. All records of calibration are to be kept for reference purposes.

6. Those using gas detectors must be appropriately trained, competent and understand their limitations.

7. Permits to Work must stipulate the maximum gas concentrations applicable to the type of work to be undertaken. A separate Permit to Work must be issued for each part of the work where working practices or requirements alter the maximum permissible gas concentration e.g. changes from cold work to hot work.

Flammable Gas

8. The maximum permissible flammable gas concentration levels for differing work activities are contained in Table C.1.

Other Gases

Oxygen

9. The safe range for Oxygen percentage is 19 – 22%.

Hazardous Substances

10. Historical information concerning products utilised previously and details of the current product (Safety Data Sheets, manufacturer's information) should indicate whether other hazardous substances could be present. The hazardous nature of any substances that are introduced into the work area as a result of the requirements of the particular task and any possible reactions (the hazards of these substances must be identified to ensure that they do not react adversely with any other products present) must also be considered. The AP Risk Assessment should consider this information to determine if other hazardous substances require monitoring. This may include Volatile Organic Compounds, Carbon Monoxide or Hydrogen Sulphide. The HSE document EH40, Workplace Exposure Limits (in conjunction with the Control of Substances Hazardous to Health Regulations (COSHH) (as amended)) contains the required limits for hazardous substances.

11. Tanks, vessels or confined spaces, which contain residual fuel oil, sullage, or waste fuels, may be contaminated by Hydrogen Sulphide. If the AP Risk Assessment identifies this risk, then it should be monitored and managed appropriately.

Response testing of MGI

12. Instruments are to be "response tested" (sometimes known as a "bump test" or "field check") before use (as a minimum unless manufacturer's instructions are more stringent), in clear air conditions at or near the site of work to confirm their ability and response to expected gasses. This is done by exposing the MGI to a gas concentration that exceeds the high alarm set points. It should be done by applying a specific test gas to the MGI. The detail of the requirements for this test will vary between instruments; in all cases HSE requirements and manufacturer's recommendations are to be followed.

Initial readings

13. An Initial reading must be taken as follows:

    a. immediately before issue of the PTW;

    b. immediately before the associated work / inspection;

    c. before entry into storage tanks or confined spaces;

    d. when reaffirming the PTW; and

    e. when the AP decides it is necessary.

Readings for open space work

14. Readings should be taken at the location of the work, at any low lying locations such as drains, ducts, and excavations in the vicinity of the work. Readings should be taken at any temporary perimeters set up for the duration of the work; which must take into account the wind direction.

Reading within tanks or confined spaces

15. Readings must be taken through the access point before entry. The AP is to be aware of the possibility of stratification of gases within undisturbed confined spaces.

16. On entering the confined space, areas liable to have higher gas concentrations e.g. pipeline entries, drain sump and low bottom plate levels on tanks, should be checked to confirm they are within the limits stipulated on the Permit to Work.

17. Pockets of combustible gas can be trapped under rust patches especially on the bottom plates of tanks. Any such patches should be removed by safe methods (determined by additional Task Risk Assessment) and further readings taken. The Work Team must continuously monitor the gas concentration whilst work is in progress within the confined space

Readings for gas freeing operations

18. There are two main purposes for taking gas readings during gas freeing operations:

a. to confirm that the tested area is free from all hazardous and flammable gases; and

b. to establish whether normal minimum safety distances require extension. The aim is to achieve less than 1% of LEL (the hot work alarm level) at the boundary of the marked Restricted Area. If higher readings are recorded, the boundary must be extended.

19. If there is any wind, the readings to establish if a concentration less than 1% of LEL (the hot work alarm level) exists should be made at the Downwind Boundary (DWB) of the Restricted Area. In still air conditions, readings must be made all around at the normal safety distance from the point of vapour emission and the restricted area boundary moved out if readings are not satisfactory.

20. The figures recorded on the Permit to Work and if necessary, the Gas Concentration Continuation Sheet, are for the Down Wind Boundary (DWB), not the levels inside the confined space being ventilated.

21. It is the PiC's responsibility to monitor what is happening inside the confined space being ventilated and record their findings in accordance with local arrangements.

22. When ventilating confined spaces, it may be necessary to switch off any ventilation arrangements (e.g. fans), before taking a reading in order for the atmosphere to stabilise. This will avoid the possibility of reading the gas concentration only in the ventilated air stream.

PiC monitoring

23. The PiC must continuously monitor the gas concentration whilst work is in progress.

Recording of readings

Recording of initial reading

24. The highest initial reading obtained, simultaneously by the AP and the PiC using two instruments will be recorded immediately.

Repeat readings

25. The minimum frequency for recording readings is given in Table C 2.

26. These readings will be recorded on the reverse of the original Permit to Work or when necessary on the Gas Concentration Monitoring Sheet.

27. The highest intermediate LEL / ppm readings required to be taken will be recorded by the PiC and the highest and / or lowest Oxygen readings.

28. The highest confirmatory LEL / ppm readings required to be taken will be recorded by both the AP and the PiC and the highest and / or lowest Oxygen readings.

Final readings

29. For staged works the AP and PiC must carry out and record final readings. Final readings must be in accordance with the percentage gas readings required for the next stage of work.

30. Both the AP and PiC must carry out final readings, and they must agree that the combustible gas level is below 1% LEL (the hot work alarm level) before dismantling Restricted Areas.

Table C.1 Flammable Gas Concentrations for Activities

TYPE OF ACTIVITY	READING (% of LEL)	REMARKS
(a)	**(b)**	**(c)**
Entry to tanks, confined spaces and vessels, for visual inspection	Less than 20%	Entry of personnel for visual inspection only and use of tools is not permitted.
Sludge removal from tanks, confined spaces and vessels	Less than 20%	Entry of personnel for the removal of leaded or otherwise contaminated sludge.
Cold Work	Less than 10%	Any mechanical works where the tool or work piece temperature remain below 100°C
Hot work	Less than 1%	See definitions.
Electrical work / test	Less than 1%	Any intrusive work on electrical equipment in hazardous areas which can induce current and voltage to flow with the possibility of incendive sparks.
Grass Cutting at Class I and II installations	Less than 1%	Use of mechanically driven grass cutting devices in hazardous areas

Table C.1.a Flammable gas concentrations in ppm using PID sensor.

31. This table is used in conjunction with table C.1 'Flammable Gas Concentrations for Activities' where a Multiple Gas Indicator uses a Photoionisation Detector.

32. Note! Lower Explosive Limit has been based on worst case available over a number of available suppliers rather than BS EN 60079-20-1:2010, the ppm is generated from this value.

Generic designation	Joint Service Designation	NATO designation	Brief description	Other designation	Lower Explosive Limit (LEL)	Lower explosive limit (ppm)	ppm at 20% LEL	ppm at 10% LEL	ppm at 1% LEL
Gasoline	ULGAS (BSEN228)	F-67	Unleaded gasoline / petrol	BSEN 228 Gasoline 95 RON	1% by volume in air	10000 by volume in air	2000	1000	100
	AVGAS-100LL	F-18	Aviation gasoline 100 octane low lead	Blue gas (dyed blue)					
	AVTAG-FSII	F-40	Aviation Turbine fuel Wide Cut with Fuel System Icing Inhibitor (Gasoline & Kerosene)	JP-4 & Jet B.					
Kerosene	AVTUR-FSII	F-34	Aviation Turbine fuel with Fuel System Icing Inhibitor	JP-8	0.5% by volume in air	5000 by volume in air	1000	500	50
	AVTUR	F-35	Aviation Turbine fuel	Jet A-1					
	AVCAT	F-44	Aviation Turbine fuel High Flash type with Fuel System Icing Inhibitor.	JP-5					
	KERO / A	F-58	Flue less burner fuel Class C1	BS2869 Class C1 'Pink Paraffin'					
	None	None	Domestic Heating Oil 28 Sec.	BS2869 Class C2 Kerosine.					
Diesel	DIESO MT (BSEN 590)	F-58	Commercial Diesel	BSEN 590	0.5% by volume in air	5000 by volume in air	1000	500	50
	DIESO F-76	F-76	Fuel Naval Distillate	Not known					
	DIESO UK	N/A	Diesel Fuel general purpose	BS2869 Class A2. Red Diesel. This includes other grades and products such as Class D Gas Oil.					

Table C.2 Minimum frequencies of recording readings

TYPE OF WORK	READING RECORDED BY	MINIMUM FREQUENCY THAT READINGS ARE RECORDED
(a)	**(b)**	**(c)**
1. HOT WORK		
a. Before commencement	AP and PiC	Initial and before start of work daily
b. 2nd reading	AP and PiC	Ten minutes after starting
c. Intermediate readings whilst work proceeds	PiC	Hourly
d. Confirmatory test whilst work proceeds	AP and PiC	2 Hourly
2. ELECTRICAL WORK		
a. Before Commencement	AP and PiC	Initial and before start of work daily
b. Intermediate Readings whilst work proceeds	PiC	Hourly
c. Confirmatory test whilst work proceeds	AP and PiC	2 Hourly
3. CONFINED SPACES		
a. Before commencement	AP and PiC	Initial and before entry daily
b. Intermediate readings whilst work proceeds	PiC (taken by entrant and communicated to PiC)	2 Hourly
c. Confirmatory test whilst work proceeds	AP and PiC	4 Hourly

TYPE OF WORK	READING RECORDED BY	MINIMUM FREQUENCY THAT READINGS ARE RECORDED
(a)	**(b)**	**(c)**
4. GRASS CUTTING CLASS I INSTALLATIONS		
a. Before commencement	AP and PiC	Initial and before work starts daily
b. Confirmatory test whilst work proceeds	AP and PiC	Continuous testing with records for each potential point of release made at 15 minute intervals
5. GRASS CUTTING CLASS II INSTALLATIONS		
a. Before commencement	AP and PiC	Initial and before start of work daily
b. Intermediate readings whilst work proceeds	PiC	4 Hourly
c. Confirmatory test whilst work proceeds	AP and PiC	8 Hourly
6. COLD WORK		
a. Before commencement	AP and PiC	Initial and before start of work daily
b. Intermediate readings whilst work proceeds	PiC	3 Hourly
c. Confirmatory test whilst work proceeds	AP and PiC	6 Hourly

TYPE OF WORK	READING RECORDED BY	MINIMUM FREQUENCY THAT READINGS ARE RECORDED
(a)	**(b)**	**(c)**
7. GAS FREEING CLASS I AND II TANKS AND CONFINED SPACES		
a. At commencement	AP and PiC	Initial and before start of work daily
b. 2nd Reading	AP and PiC	Ten minutes after starting
c. Intermediate readings whilst gas freeing	PiC	Hourly
d. During first 8 hours of gas freeing	AP and PiC	2 Hourly
e. After the first 8 hours e. Intermediate readings whilst gas freeing	PiC	3 Hourly
f. Confirmatory test whilst work proceeds	AP and PiC	6 Hourly
In addition to the above readings, the PiC must monitor the gas concentration continuously whilst work is in progress		

i. The frequency of readings may have to be increased in changeable weather conditions particularly when Class I products are involved.

Equipment requirements for gas monitoring

33. The monitor is to be selected from petroleum industry standard equipment, with proven effective use in the industry in similar application areas.

34. The equipment must be robust and suitable for use as a tool to aid maintenance operations, not simply a laboratory type scientific instrument, and must be portable.

35. The temperature and humidity range over which the instrument is required to operate should be specified to the manufacturer, who in return should state the operating range for their instrument.

36. A risk assessment should be conducted by the AP to determine the particular type of gases / products to be detected. This can form part of the initial site review.

37. The sensors must be suitable for the particular products to be monitored.

Performance requirements

38. The following features are considered to be a minimum requirement:

a. audible and / or visual alarm, (minimum 85 db(A) at 1m, or above ambient sound levels), for the following items:

(1) % LEL – Flammables;

(2) % Oxygen;

(3) PPM H2S (instant, TWA, STEL);

(4) fault;

(5) low-level battery; and

(6) PPM PID – VOC.

b. LEL, H_2S and O_2 display;

c. continuous monitoring of product;

d. an appropriate level of explosion protection for the potentially explosive atmospheres that it is to be subjected to;

e. an appropriate level of environmental protection for the hazardous environment that it is to be subjected to;

f. confidence beep (normally every 30 seconds);

g. robust outer casing to protect the instrument;

h. remote sampling probe;

i. backlit display;

j. scale calibrated in % for LEL;

k. scale calibrated in % for Oxygen;

l. scale calibrated in parts per million (ppm) for Hydrogen Sulphide; and

m. scale calibrated in ppm for Volatile Organic Compounds (VOC) Photoionization Detector (PID).

39. When switched on, the following messages on the instrument should be displayed:

a. due date for next calibration;

b. battery life remaining;

c. self-diagnostics check;

d. display product selected for LEL; and

e. display product selected for VOC.

40. Instruments should display the following marking:

a. CE mark;

b. explosion protection and type of protection;

c. gas group;

d. temperature class; and

e. ATEX Classification.

41. Time weighted average (TWA) for any other Hazardous Substance or gas identified by the AP risk assessment and in accordance with EH40.

42. Lower Explosive Limit setting shall be adjustable over the desired range via Multiple Gas Indicator keypad or PC / Laptop, access via user password.

Docking Station

43. Where the MGI use a docking station to perform the bump / response testing and on-site calibration of the MGI it shall be capable of storing the follow information:

a. the results of bump / response test, including MGI serial No, date and time of test;

b. the results of on-site calibration and calibration certificates, including MGI serial No, date and time of test; and

c. set parameters of MGI via data transfer from a suitable PC or laptop using the manufactures software.

44. The manufactures / supplier's calibration certificates for the response gases shall be filed within the appropriate section of PIDR.

Inspection requirements

45. Prior to use, the AP must check that the Multiple Gas Indicator selected for use is fit for purpose. These checks include:

a. the instrument is of the correct type for the gases to be monitored;

b. the total condition is acceptable e.g. no apparent damage and / or suitable for hazardous environment;

c. indicator is within calibration date and an in-date certificate of calibration is available;

d. indicator has been response tested in accordance with manufacturers recommendations;

e. correct Lower Explosive Limit, Gas or Hazardous Substance Alarm setting has been applied; and

f. suitable remaining battery life remains for the proposed task.

46. If there is doubt over the suitability of the proposed Multiple Gas Indicator, then an alternative indicator must be used.

Personal Protective Equipment and Respiratory Protective Equipment

Personal Protective Equipment (PPE)

1. The provision of PPE must be in accordance with the requirements of the Personal Protective Equipment at Work Regulations, 1992 (Health and Safety Executive ACOP L25). It is the employer's responsibility to ensure that suitable equipment is provided and must be selected as a result of risk assessments by the AP and the PiC. The minimum requirements for the type of PPE to be worn are stipulated in Table D2. The type required must be stated within the work sequence of the Petroleum Safety Programme.

2. The materials of any PPE for use where the risk is petroleum products must be certified by the supplier as fit to afford protection from exposure to the petroleum products or other harmful substances which are likely to be encountered. The suit, gloves and boots used in potentially explosive atmospheres must also be made from anti-static material.

3. The risk of exposure to petroleum products and the risk associated with regards to harmful chemical compounds vary depending on the task being undertaken, the petroleum product being exposed and the location. The class of PPE to be worn is to be in accordance with risk assessment.

4. There are a number of classes of PPE and these are outlined below:

   a. Non Gas Tight Type 2 - A full suit with integral pressure hood all of light coloured material which meets the requirements of BS EN 943 part 1 Type 2 non-gas tight for connection to a continuous breathable air supply by PVC hose which are to the requirements of BS EN 14594. The suit shall meet the permeation by petroleum product in accordance with BS EN 14325 and BS EN 17491. The gloves are of light coloured and met the requirements of BS EN 374. Type 2 Personal Protective Equipment is completed with boots, which are to meet the requirements of BS EN 13832;

   b. Type 3 and Type 4 - Overalls complete with hood are to meet the requirement of BS EN 14605. Type 3 and type 4 and can be used with a separate air hood or blouse for use with air line mask fed from air bottles' or with fall face mask to BS EN 137 the selection of RPE is to be in accordance with HSG 53. Gloves which meet the requirements of BS EN 374 and are to be suitable for the task they are applied to. Knee high boots which are to meet the requirements of BS EN ISO 20345.

   c. basic PPE - Flame retardant overalls correct to BS EN ISO 11612 and gloves which meet the requirements of BS EN 374 and are suitable for the task being undertaken.

Wearing and Cleaning

5. The requirements of this document must be observed when dressing into, removing, and cleaning Personal Protective Equipment. The requirements for washing after use of the equipment are to be in accordance with manufacturer's recommendation**.**

Maintenance

6. The employer and employee are responsible for Personal Protective Equipment and other Safety Equipment (e.g. harnesses, rescue lines). For example, the Authorised Person Petroleum must ensure that equipment provided by the MMO is regularly inspected to ensure that it is safe for use.

7. Equipment must be inspected daily whilst in use, and otherwise, at monthly intervals. A record of the monthly inspection and any servicing is to be kept in PIDR where the equipment is provided by the MMO.

Respiratory Protective Equipment (RPE)

Classification

8. There are two distinct types of respiratory protective equipment devices:

   a. filtering devices - These purify the ambient air to be breathed using filters able to remove contaminates in the air; and

   b. Positive Pressure Breathing Apparatus - These supply the wearer with breathable air from either compressed air line or compressed air cylinders worn by the wear from an uncontaminated source and shall comply with the requirements of BS EN 12021 regarding quality of the air.

Equipment Standards

9. All RPE must conform to the legislative requirements of BS EN 529:2005 and HSG 53 Respiratory Protective Equipment at Work or any subsequent updates.

10. All breathable air shall be from sources which have been tested in accordance with BS EN 12021.

11. It is the responsibility of the equipment owner to ensure that the equipment complies with the above, and to provide written evidence of compliance. If written evidence cannot be provided, the equipment must not be used.

Correct Grade of RPE

12. The correct grade of RPE is to be selected and worn as a result of RPE assessments completed by the PiC or MMO for self-delivery in accordance with HSG 53.

13. The PiC or the person within the MMO organisation responsible for managing / supervising the works activity shall provide to the AP, the completed RPE assessments based on the current Material Safety Data Sheet (MSDS) for the product being exposed and any materials or chemical compounds identified as requiring RPE. The assessment shall take into account the points identified at D.28 of this document.

14. These assessments shall be produced either using the on-line RPE selection tool available from NHS Health Scotland (http://www.healthyworkinglives.com/rpe-selector) or by the RPE equipment manufacture / supplier.

15. The minimum requirements for the type of RPE to be worn are stipulated in Table D.2. The type required must be stated within the work sequence of the Petroleum Safety Programme.

Training in the Use of RPE

16. The employer should ensure that supervisors, wearers and others involved in the maintenance and use of the devices receive suitable training. Refresher training should be provided as necessary, this should be at least annually unless otherwise decided by individual risk assessment.

Wearing of RPE with Spectacles and Beards

17. A good face seal cannot be achieved with the face piece by a person wearing normal spectacles or facial hair. Alternative RPE such as a full suit and or hood; is to be used when a poor seal is indicated. Fitting should be undertaken in accordance with HSG 53.

Disinfection of RPE

18. All RPE must be cleaned and disinfected after use in accordance with manufacturers' instructions. The equipment should be stored in accordance with the manufacturer’s instructions.

Use of Cylinders

19. Compressed air cylinders in use in a confined space must be provided with a protective cover. This removes a possible source of a spark particularly from steel cylinders and prevents accelerated corrosion of any damaged areas of the cylinders. The protective covers can normally be supplied by the cylinder supplier.

20. A system of control must be in place for the use of Breathing Apparatus supplied from cylinders or other containers, in order to ensure that work is contained within the limited available supply period.

Maintenance of RPE

21. Where RPE is provided for use, a system of inspection and maintenance must be put in place in accordance with HSG 53. The system should include inspection for correct functioning before and after each occasion of use, and also at monthly intervals. A record of the monthly inspections and servicing shall be made available to the AP. Where the equipment is the property of the MMO, then adequate maintenance and usage records are to be maintained in accordance with the requirements of HSG 53

22. Servicing is to be limited to that detailed in the manufacturer's user manual, and no attempt is to be made to replace components or make adjustments or repairs beyond the manufacturer's recommendations. Valves and regulators must be returned to the manufacturer at the intervals stipulated for servicing, repair and calibration. Evidence of fitness for use must be available for each set of RPE for presentation to the AP on request.

23. The AP must ensure that the above system is in place for equipment which he issues. It is important to note that any site maintenance conducted on RPE must be carried out by a competent person.

Canister Filters

24. Canister filters conforming to BS EN 14387 (Specification for gas filters and combined filters used in RPE), for use with full face masks, fall into two general types:

a. A – Single use – A fresh filter canister is to be unwrapped and fitted to the full-face mask each time it is used; and

b. A2 – Replace on judgement – Used for a maximum of 30 hours in the contaminated environment or 6 months after removal from packaging, or if the wearer feels any adverse effects. Records are to be kept to establish the usage of this type of canister.

Air hoses

Examination

25. All air hoses are to be examined daily before and after use for physical deterioration, e.g. cracks, holes or thinning of walls due to abrasive wear. Hoses found to be defective must be immediately withdrawn from service and repaired or discarded as applicable. Any such withdrawals, repairs or disposal should be recorded.

Recording of Use

26. A record must be kept of the number of hours air hoses are used on leaded tanks. After 100 hours use on leaded tanks, the hoses should be scrapped, and this should be recorded. Hoses must be disposed of as hazardous waste.

Use of contractors' air hoses and compressors

27. Where employees are required to use Contractors' air hoses and air compressors, they are to obtain written confirmation before using the equipment, from the PiC that the equipment conforms to the requirements of HSG 53, BS EN 529:2005, BS EN 14594, BS EN 14593 and the air quality has been tested in accordance with BS EN 12021.

Guidance in the use of RPE and PPE

Selection of RPE and PPE

28. In selecting RPE and PPE the following factors should be taken into consideration:

a. types of work to be undertaken;

b. period of time the PPE is exposed to ‘Wet’ work with the product or chemical compounds;

c. frequency of use;

d. quantities and type of suitable equipment;

e. suitability / range of application of equipment; and

f. health precaution detailed with MSDS (R or H phrases).

Use of Open Circuit Breathing Apparatus

29. In the circumstances described in the preceding paragraph, the use of Positive Pressure Open Circuit RPE when used with Type 3 and 4 PPE, with air bottles carried by the wearer, or from bottles mounted on a cradle, should be considered. This type of equipment obviates the need for compressors, and air and water filters which are required when constant flow type apparatus is used.

Conditions Requiring the Use of Type 2 PPE

30. Type 2 PPE which incorporates RPE must be used for cleaning and maintenance work in tanks currently storing leaded fuels.

31. Appropriate quantities of this type of equipment should be kept for such conditions. In assessing the appropriate quantities, the following circumstances should be taken into consideration:

a. changeover from Aviation Leaded Gasoline fuels to AVTUR; and

b. entry into leaded fuel tanks is much less frequent for other tasks, with the main exception of tanks at large MOD installations, and the periodic inspection of AVGAS installations.

Respiratory Protective Equipment for Work Outside Tanks

32. The criteria for renewal of the filters is subjective, the wearer must leave the contaminated area, and remove the RPE and replace the filter when there is an indication of the onset of additional breathing effort. There is a need to record the period of use of RPE used for gas or vapour elimination. It is necessary to change filters before they become saturated with the gas or vapour, rather than attempt to rely on the user's sense of smell to detect the onset of saturation.

33. Such equipment must not be used by personnel who have a temporary or permanent problem with their sense of smell. The filter media is detailed in HSG 53 and annex C to BS EN 529:2005 or any subsequent updates and the manufacture of the filter cartridges.

Table D1: Combinations of PPE and RPE

PPE	RPE
Non-Gas Tight Type 2	
Type 3 & 4	**By Assessment in accordance with HSG 53**
Basic PPE	**By Assessment in accordance with HSG 53**

Table D.2: Hazardous situations and minimum requirements of RPE and PPE

HAZARDOUS SITUATION	RPE GRADE	COMMENTS ON PPE
Entry to a Class I petroleum product tank for work.	Type 2	Gas tight suit enclosing the entire body, anti-static
Risk of exposure to a major spillage of Class I petroleum liquid.	Type 2	Gas tight suit enclosing the entire body, anti-static
Leaded or other toxic sludge in tanks.	Type 2	Gas tight suit enclosing the entire body, anti-static
Leaded sludge outside of tanks.	Determine by RPE Assessment	Type 3 and 4 chemical resistant suit, anti-static
Exposure to FSII within FSII tanks.	Type 2	Gas tight suit enclosing the entire body
Entry to AVTUR-F34 and AVCAT – F44 tank which has water bottom (possible high FSII concentration)	Type 2	Gas tight suit enclosing the entire body, anti-static
Exposure to AVTUR-F34 and AVCAT – F44, for example, working on drained but open filter vessels, including the handling of elements.	Determine by RPE Assessment	Likelihood of dripping, splashing or spraying liquid petroleum product will determine grade of PPE required by risk assessment.
Entry to any tank with a gas reading of over 1% LEL for the purpose of cleaning or work for extended periods.	Type 2	Gas tight suit enclosing the entire body, anti-static
Inspection of tanks or work of short duration (less than 15 minutes) when the gas level is above 10% of LEL	Determine by RPE Assessment	Likelihood of dripping, splashing or spraying liquid petroleum product will determine grade of PPE required by risk assessment.

HAZARDOUS SITUATION	RPE GRADE	COMMENTS ON PPE
Entry to fully drained, clean and well-ventilated tank or confined space with gas concentration reading less than 1% LEL, and with an oxygen level within permissible limits.	Breathing Apparatus may not be required. However, Working in Confined Spaces Regulations 1997 still apply.	The RPE is the principal requirement, determine grade of PPE required by risk assessment.
Exposure to petroleum products in outside conditions where the gas concentration is above 1% LEL	Determine by RPE Assessment	Likelihood of dripping, splashing or spraying liquid petroleum product will determine grade of PPE required by risk assessment.
Exposure to petroleum products in outside conditions where the gas concentration is below 1% LEL	Breathing Apparatus may not need to be worn, but may be required at hand in case of elevated gas concentrations during work	Likelihood of dripping, splashing or spraying liquid petroleum product will determine grade of PPE required by risk assessment.
Exposure to FSII additive outside the tank, working on injection equipment and pipework.	Determine by RPE Assessment	Likelihood of dripping, splashing or spraying liquid petroleum product and additive will determine grade of PPE required by risk assessment.

Guidance on Grass Cutting

Introduction

1. Grass and vegetation, especially in dry conditions, represent an increased risk of fire at Petroleum Installations. Wherever possible they should be permanently removed from the hazardous area; where this is not possible the procedures in this annex must be followed.

2. This annex provides guidance for grass cutting within the defined hazardous areas of Petroleum Installations on the MOD estate and should be read in conjunction with part 1 of this Chapter.

Procedures

3. Grass cutting is to be controlled by the use of a Permit to Work and the appropriate gas monitoring regime as detailed in table C2 to Annex C.

Works planning

4. Planning of works prior to grass cutting is required by the AP and prospective PiC.

5. This will require an AP Risk Assessment. A Safety Programme will not normally be required for grass cutting unless the AP identifies a requirement for isolation in which case the task will be treated as work.

6. It is acceptable for the prospective PiC to use a generic Task Risk Assessment and Method Statement grass cutting providing the following requirements are met:

a. only one service provider has been contracted to undertake grass cutting within the petroleum hazardous areas for a specific site;

b. the PiC has been appointed as a SkP;

c. Task Risk Assessment and Method Statement are provided by the Contractor and reviewed by the AP prior to the issue of a Permit to Work;

d. should the AP consider the Task Risk Assessment and Method Statement inadequate a Permit to Work will not be issued until these documents have been amended to the satisfaction of the AP;

e. the AP is to record in the PIOR that the Task Risk Assessment has been reviewed and is acceptable;

f. Task Risk Assessment provided defines relevant hazards, risks and control measures to be taken against each Method Statement. Method Statement must cover the procedure to be followed for grass cutting on each class and type of fuel installation within the site;

g. the Contractor is to revise the generic Method Statements should work practises alter; and

h. copies of the generic Task Risk Assessments and Method Statements are to be retained in the PIDR.

Points of gas readings

7. Prior to commencement of grass cutting the AP and the prospective PiC are to walk the area where the grass is to be cut, to identify any hazards that may restrict the grass cutting operation. This would include potential fuel leaks, and incomplete works by others such as open trenches; any additional hazards identified may require a separate risk assessment to be raised.

8. The AP is to undertake readings at any high-risk areas which exist in close proximity to sources of vapour release such as tank vents. Low points such as fuel pits are to be inspected and tested for vapour. All gas readings must be below 1% of the LEL (the hot work alarm limit).

9. The AP and prospective PiC must record the highest reading of the two MGIs used on the Permit to Work; repeat readings are to be taken in accordance with table C.2 to Annexe C.

10. If during repeat gas tests a reading of 1% LEL (the hot work alarm level) or above is experienced then work is to cease, and grass cutting equipment is to be withdrawn. The team other than the PiC must also withdraw until such time as the readings reduce to below 1% LEL (the hot work alarm level).

Grass cutting on Class I Installations

11. With Class 1 petroleum products the possibility of vapour drift from potential sources of release must be assumed during grass cutting, even when all transfer operations have stopped.

12. Internal combustion engine driven grass cutters can be used providing the following procedure can be followed:

a. all petroleum transfer operations that could cause a vapour hazard are to cease;

b. all OA's personnel are to be withdrawn from the hazardous area; and

c. combustible gas levels remain below 1% LEL (the hot work alarm level).

13. Where the procedure in E.12 cannot be followed internal combustion engine driven grass cutters cannot be used.

14. Electrically driven grass cutters are not to be used.

15. The AP and PiC must remain on site whilst grass cutting is in progress.

16. The AP and PiC must monitor and record combustible gas readings at the risk locations as per table C.2.

Grass cutting on Class II Installations

17. Class II petroleum products are less volatile than Class I and internal combustion engine driven grass cutters can be used providing the following procedure can be followed:

a. all petroleum transfer operations that could cause a vapour hazard are to cease;

b. all OA's personnel are to be withdrawn from the hazardous area; and

c. combustible gas levels remain below 1% LEL (the hot work alarm level).

18. Where the procedure in E.17 cannot be followed internal combustion engine driven grass cutters cannot be used.

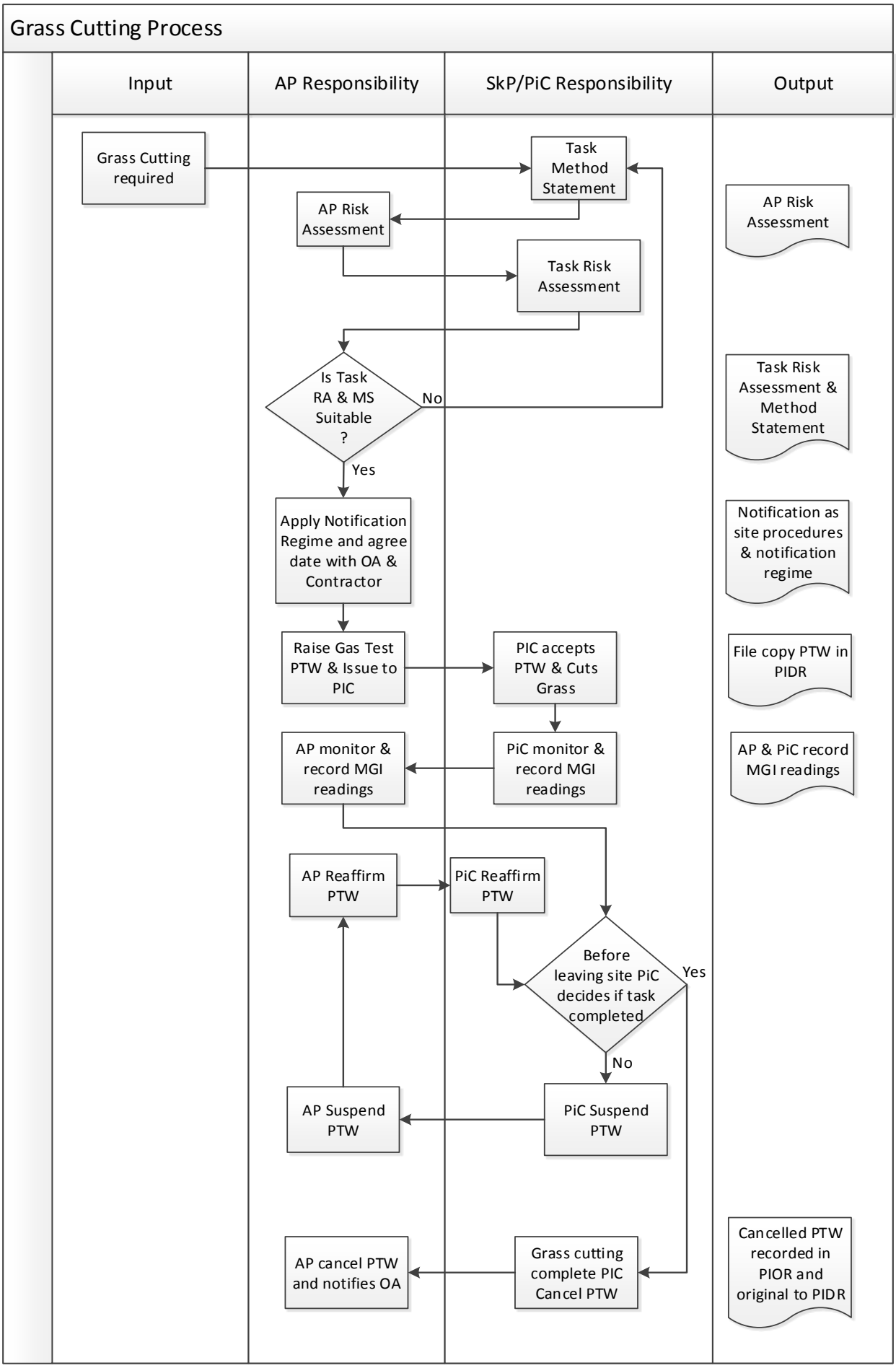
19. Electrically driven grass cutters are not to be used.

20. The PiC must remain on site whilst grass cutting is in progress.

21. The PiC and AP must monitor and record combustible gas readings at the risk locations as per table C.2.

Grass cutting on Class III Installations

22. There are no requirements to control grass cutting under these Safety Rules and Procedures at installations containing Class III fuel products and no restriction on grass cutting equipment as long as the products remain unheated.


Grass Cutting Process
Input
AP Responsibility
SkP/PiC Responsibility
Output
Grass Cutting required
Task Method Statement
AP Risk Assessment
AP Risk Assessment
Task Risk Assessment
Is Task RA & MS Suitable ?
No
Yes
Task Risk Assessment & Method Statement
Apply Notification Regime and agree date with OA & Contractor
Notification as site procedures & notification regime
Raise Gas Test PTW & Issue to PIC
PIC accepts PTW & Cuts Grass
File copy PTW in PIDR
AP monitor & record MGI readings
PiC monitor & record MGI readings
AP & PiC record MGI readings
AP Reaffirm PTW
PiC Reaffirm PTW
Before leaving site PiC decides if task completed
Yes
No
AP Suspend PTW
PiC Suspend PTW
AP cancel PTW and notifies OA
Grass cutting complete PIC Cancel PTW
Cancelled PTW recorded in PIOR and original to PIDR

Guidance on Restricted Areas

Determination of Restricted Areas

1. The extent of safety distances at different types of petroleum installation and the distances from uncontrolled areas are clearly defined for hazardous areas depending on the class of petroleum product handled and the type of installation concerned. These distances are determined by the OA.

2. In restricted areas there may well be variables, depending upon the type of work carried out and the particular circumstances prevailing, that make it impractical in all cases to follow the same precise distances defined for the boundaries of hazardous areas. The extent of a restricted area requires individual interpretation on a case to case basis. The guidance given in this Annex relates to the principal factors involved and is intended to assist those responsible for determining the extent and any special requirements of a restricted area.

Dispersal of Gas

3. The dispersal of flammable gas in air, to the extent that it ceases to be flammable, must be considered in relation to sources of possible ignition. It is essential that all factors that may influence the assessment of a restricted area are fully examined to ensure that the likely simultaneous existence of flammable gas / air mixture, together with a source of ignition, cannot occur. This can best be achieved by logical and progressive analysis taking into consideration all of the possible factors which may be involved.

Setting Up a Restricted Area

4. Normally a Restricted Area is established to accomplish a planned task. However, the possibility exists for such an area to be established in an emergency.

Planned Work

5. A restricted area must be set up when the works are being controlled under a Permit to Work or when excavation works are being undertaken and there is a risk that petroleum liquid or vapour may be present in the surrounding ground.

Emergency Situations

<u>Sources of escape of Petroleum</u>

6. All means must be taken to avoid sources of release and to prevent accidental escape. Whenever possible, any unavoidable escape of flammable liquid should be limited to the minimum quantity thus limiting the associated vapour, vapour spread, and risk. Where accidental releases occur, a Restricted Area will be required to control the area where the release has taken place

<u>Cessation of Operations</u>

7. Many sources of release of vapour and spillage of liquid petroleum can occur at installations during normal operations. Typical sources of release include: release from vents on tank filling, filling of lorries and containers, and leaks from seals of pumps. For this reason, all operations must be stopped in a restricted area, and personnel removed

from the area, to avoid the reintroduction of a petroleum risk to an area that has been made safe. There is also the basic safety requirement that operations must cease to permit isolation, and to prevent accidental releases during maintenance.

8. Consideration must also be given to any contingent operation carried out by the OA adjacent to the restricted area, which could result in a release of gas into the area or introduction of a source of ignition. Such operations depending on circumstances must be stopped, to enable the works activities to be conducted safely.

Site and Weather Conditions

9. These can play an important part in the safety of works and the safety consequences of works action. Consideration must be given to both site and weather conditions including the following:

a. type of petroleum product involved;

b. presence of valve and drainage pits, drains and ducts;

c. excavations and nature of ground surfaces and gradients;

d. proximity of public thoroughfares; and

e. proximity and nature of adjacent operations.

10. In assessing weather conditions, account should be taken of wind direction, velocity and the potential for electrical storms. The AP should be prepared to react to changes in conditions. A change in wind direction may cause a change in the boundary of the restricted area.

11. Escaped petroleum gas, although heavier than air, may be carried upwards by wind currents, and in still air conditions, may linger. The latter presents a very serious risk at low levels. The potentially hazardous area that can be formed may therefore vary during the period of the planned work or the emergency situation and must be monitored. Wind direction and strength should be determined by the use of a wind indicator located at high level, or in an exposed position free from shelter from the wind in any direction.

12. Wind direction must also be determined so that sources of air required for Breathing Apparatus and other equipment can be situated in an up wind location.

Extent of Restricted Area

Method of Measurement

13. Normally the minimum extent of areas will be as for hazardous areas and be measured at a radius prescribed horizontally from the outer limits of the location when a hazardous atmosphere could occur and should be defined as follows:

a. Class I product installations - 15 metres;

b. Class II and for hot work on Class III installations - 6 metres; and

c. Class I and II Filling and Service Stations metering pumps / dispensers - 4.25metres (For hot work a minimum of 6 metres is required).

14. The minimum extent of the restricted area should be measured from the source of petroleum release or the edge of a potential spillage area.

Extent of Areas for Gas Freeing

15. The large volume of petroleum gas and air mixture released during gas freeing operations, particularly when highly volatile Class I product is involved, may result in gas concentrations above 1% of Lower Explosive Limit spreading beyond normal safety distances in certain weather conditions. This situation is unlikely when Class II petroleum is involved but could occur in certain conditions such as when gas freeing above ground tanks in hot climates.

16. In still air conditions, gas concentrations above 1% of Lower Explosive Limit are more likely to spread at low level beyond the normal hazardous area safety distances. This situation is therefore the most hazardous for gas freeing operations.

17. Gas concentrations must be carefully monitored at the boundaries of normal Restricted Areas, particularly at the commencement of gas freeing operations, and during the first 8 hours (see Annex 5.C). Action must be taken before commencement of gas freeing operations to eliminate any possible sources of ignition as far as reasonable and practicable in the immediate areas surrounding the normal safety distance for the hazardous area, including downwind boundaries in windy conditions.

18. Additional warning signs and markings must be readily available should extension of the Restricted Area be required.

Conditions during Gas Freeing Operations

19. Maintenance, operation or any other type of work is not permitted in a restricted area whilst the gas freeing of Class I and II Petroleum Installations is in progress.

Removal of Sources of Emission of Gas

20. In circumstances where it is not practicable to meet the safety distances from the source of emission of gas described in paragraph 13 of this Annex, it may be possible to move such a source to a safe distance through extension to vents and pressure release valves. The AE should be contacted for guidance where safety distances cannot be met.

Health Risks from Petroleum Vapour

21. The presence of petroleum vapour can present a health risk, as well as an ignition risk. The AP must be aware of the potential risks of exposure of personnel to petroleum vapour and provide direction to the PIC on the Permit to Work. Particular care is required with Class I products due to the risks of exposure to highly volatile organic lead compounds (toxicity), as well as the risk of the petroleum vapour (flammability).

22. In cases of doubt on the matters described in the setting up and assessment of Restricted Areas, the AE should be consulted.

AP Petroleum Risk Assessment

Introduction

1. This annex provides guidance on Petroleum risk assessment.

Classification of Principle Petroleum Products

2. The principle petroleum products found on the MOD estate and their classification are controlled under these safety rules and procedures. Should there be doubt on product identification or class, after referencing the safety data sheets then the AE should be contacted for further guidance.

3. The AP should ensure the availability of the safety data sheets for the petroleum products for their installations being controlled under this Chapter. The safety data sheets and all relevant COSHH information shall be made available by the site OA. This information will form a basis for the risk assessment and the determination of the level of control of the works activity. Current safety data sheet should be held in the PIDR.

4. There may be conditions or countries where ambient temperatures are high enough for the handling temperature of Class II or Class III petroleum products to be above the respective flash point classification. In these circumstances the condition must be assessed and where necessary the product classification raised. Where petroleum products of different classes are mixed, the mixture is classified as the liquid having the lower flash point, unless flash point determination tests show otherwise.

Hazards

5. The principal hazards associated with conditions and procedures covered by these Safety Rules and Procedures are:

a. petroleum liquid product;

b. petroleum vapours;

c. static electricity;

d. electricity;

e. electrical storms;

f. Hydrogen Sulphide;

g. Micro-Biological contamination;

h. Confined Spaces;

i. additives; and

j. other hazards should be considered which may include but not limited to; access and egress, moving vehicles and working at height.

Risks

6. The principal risks associated with the above hazards are:

a. fire / explosion - As well as from residual product, a fire and explosion hazard may also arise from the work process. For example, if solvents are utilised for cleaning purposes, or coatings applied to steel work which may be oil based or any other flammable material which may give off sufficient vapours to form a flammable mixture;

b. respiratory - respiratory hazards can be present in many forms, including toxic vapours, particles from welding, painting and other procedures undertaken. These can result in potentially serious pulmonary conditions and other ill health problems;

c. asphyxiation - Through inflow of fluids or oxygen deficiency;

d. Oxygen deficiency / enrichment;

(1) Oxygen deficiency (below 19% by volume) can be caused by the presence of other gases (inert gases), the rusting of bare metal surfaces and microbial action depleting the oxygen level. Damp or humid conditions in a tank and the use of naked flames can also reduce oxygen levels; and

(2) Oxygen enrichment (above 22% by volume) can be caused by operations which involve equipment using oxygen, e.g. oxy-acetylene cutting, when leaks from equipment or supply hoses can occur. The release of oxygen to the confined space must be avoided, through proper equipment maintenance and correct operating procedures.

e. poisoning / toxicity - can be from direct handling of the product and ingestion resulting from poor personal hygiene, incorrect use of RPE / PPE or inadequate RPE / PPE. This can result in breathing problems from inhalation and dermatitis / skin disease or complaints from direct contact;

f. dermatitis skin disease or complaints - Medical checks, personal hygiene and PPE (controls not risks). Can be from direct handling of the product, incorrect use or inadequate PPE;

g. environmental - environmental contamination of the soil and of water courses can result from release of product if not suitably contained. Mitigation measures should be considered at the planning phase and include careful isolation and draining and following spillage procedures;

h. electricity - All electrical equipment must be isolated (to minimise risk of electrical burns, shock or death);

i. Micro-Biological:

(1) Micro-Organisms, when present in petroleum products, can proliferate when in contact with water or sludge at tank bottoms. There is also a possibility of microbiological growth in the form of slime on the tank walls at the interface of the water bottoms and underlying water itself; and

(2) when such contamination is suspected or found, an additional risk assessment must be carried out.

j. temperature - heat stress risks can develop through elevated temperatures when working within confined spaces, working in PPE / RPE and / or created by the work process itself.

Considerations

7. The following is a summary of areas to be considered when preparing the AP Risk Assessment:

a. biological;

b. chemical (chemicals present, chemical reactions);

c. electrical (electric shock, plant isolation, incendive sparks);

d. environmental (spillage, contamination);

e. explosion (ignition sources, flammable mixture);

f. fire (ignition sources, vapour, gases, fire appliances);

g. flow (plant isolation);

h. plant (weight, size, location, access / egress);

i. poisoning;

j. pressure (uncontrolled release, controlled release);

k. temperature (of fluids and equipment / plant items);

l. emergency Procedures including Rescue (access, egress, equipment);

m. type of fuel:

(1) Hydrogen sulphide may be present;

(2) may contain additives, e.g. ‘FSII’, which is a toxic additive in aviation fuel; and

(3) Flash Point.

n. type of storage tanks - entry points, area of work, pipework connections, heating coils, suction points, floating arms, top hatches, side entry doors and cathodic protection fitted;

o. ancillary equipment:

(1) pump units, electrical and mechanical isolation;

(2) tank gauging systems, temperature gauges, alarm and level control devices; and

(3) remote operated valves.

p. work methods - type of cleaning method.

Cathodic Protection Systems

8. Where works are carried out on fuel installations installed with a cathodic protection system the following must be considered during the planning stage:

a. before any break is made in cathodically protected metallic pipelines or plant, the impressed current system is to be switched off and disconnected 24 hours before commencement of the work; and

b. both sides of the intended pipeline break are to be electrically bonded together and earthed. It is important that electrical continuity is maintained throughout cathodically protected pipelines or plant to prevent the formation of incendive sparks during maintenance.

Electrical Storms

9. The likelihood of electrical storms should be checked prior to commencement of, and during, work, as when they occur, all work must be stopped and all personnel, tools, plant and equipment withdrawn from the area. When there is a high risk of electrical storms prior to start of work, consideration should be given to the risks posed in commencing the task.

Fire Precautions

10. When hot work is to be conducted at Petroleum Installations, risk assessments shall consider the necessary fire precautions relevant to the site. Co-ordination of works activities between the OA, AP and the base or local authority fire and emergency services shall be undertaken.

Confined Spaces

11. When entry to a confined space is required on a petroleum installation, risk assessments shall consider the necessary precautions that need to be taken to enable safe access, working and egress. This will depend on the confined space and the works to be undertaken. The AP and PiC shall also ensure an emergency and rescue plan forms part of the risk assessment process.

Tank Cleaning

12. Tank entry, gas freeing and internal cleaning of the tank are probably the most hazardous works undertaken on a petroleum installation. The decision to proceed with any work requiring tank entry, and the prerequisites prior to tank entry must be properly planned and include the reinstatement of the installation to its normal operating condition.

Petroleum Works Safety Checklist

13. A checklist (PET 06) to assist APs undertaking tank entry works is included in Part 3. It does not cover work on tanks containing other chemical products in their concentrated form such as anti-freeze compounds, icing inhibitors and specialist compounds.

Medical Requirements

1. There are two aspects for medical requirements when working on Petroleum Installations on the MOD Estate:

   a. medical or health fitness of the personnel carrying out the work; and

   b. medical or health surveillance of all personnel.

2. The referenced regulations require all work to be risk assessed by a competent person; there is a requirement on the employer to consider the health, fitness and condition of an employee to perform a particular task.

3. Assessing the hazards to health for personnel in Petroleum Installations is particularly important when working in tanks.

4. The following factors should be considered for the wearers of personnel protective and respiratory protective equipment:

   a. total fitness of wearer;

   b. lung-function;

   c. respiratory disorder;

   d. tendency to claustrophobia; and

   e. mobility and agility.

Total Fitness for RPE Use

5. Everyone who wears RPE must be endorsed medically fit prior to commencement of work and is to produce certification to that effect with their competence documentation. The medical certification must be completed by a qualified medical practitioner.

Surveillance

6. All personnel who are exposed to substances hazardous to health should have in place, as identified by the risk assessment, a health surveillance programme. This should be drawn up by the employer, with guidance from the occupational health adviser.

Signs, Notices and Posters

Poster

1. The requirement for the provision of a Petroleum Safety Poster has been removed and is replaced by a Petroleum Safety Rule Book, which is extracted from JSP 375 Volume 3 Chapter 5 Petroleum Installations.

Permanent Notices

Hazardous Areas

2. It is the responsibility of the OA to ensure that permanent notices, warning of petroleum hazards and risks are prominently displayed on all approaches to Petroleum Installations, to warn all those entering the facility of the hazards and control measures. This will be the OA / Hazardous Area Manager / Establishment defined hazardous area, usually fenced or enclosed with access control; as opposed to the DSEAR Hazardous Area, defined by its respective zones.

3. JSP 317 - Joint Service Safety Regulations for the Storage and Handling of Fuels and Lubricants details that whenever petroleum products are stored or handled, even in small quantities, hazardous conditions can arise. The extent of all hazardous areas is therefore to be clearly indicated by the use of notices such as for Class I installations 'PETROLEUM SPIRIT – HIGHLY FLAMMABLE – NO SMOKING – NO NAKED LIGHTS' conspicuously displayed in the appropriate languages, with other appropriate hazard warning and supplementary signs conforming in shape, size and colour with the requirements of the Health and Safety (Safety Signs and Signals) Regulations. Examples of the appropriate signage may be found in the current edition of JSP 317 and DEFSTAN 05-52 Part 1 and 2.

Leaded Fuel Tanks

4. A permanent notice must be displayed for all those tanks which have contained leaded fuel and fall within the leaded fuel tank definition. Such tanks include those which currently contain leaded or unleaded gasoline, and those tanks which have contained leaded or unleaded gasoline in the past and have not been treated to establish a lead-free condition. The notice currently employed (see Figure I.1) is as detailed below with the wording "Danger this tank has contained leaded gasoline" and, "Do not enter unless prescribed regulations are complied with".

Figure I.1 Example sign – Leaded Tanks Temporary Notices
Restricted Area Notices

5. Temporary notices are to be displayed at the points of access at all locations where restricted area maintenance work is being conducted.

6. Temporary notices are to be held at each location with a responsibility for maintenance of Petroleum Installations. The notice currently employed (see Figure I.2) is as detailed below with the wording "DANGER - RESTRICTED AREA MAINTENANCE WORK IN PROGRESS - NO ADMITTANCE WITHOUT AUTHORITY"

Figure. I.2 Example sign – Maintenance Work in Progress

Works Organisation at Product Receipt Enclosures

1. The Product Receipt Enclosure (PRE) contains the equipment associated with the termination of the off-base supply pipeline to the base. Previously known as the Government Pipeline and Storage System (GPSS) it is owned, operated and maintained by a third party.

Defining Responsibility for Equipment

2. As defined the PRE should be an enclosed area (although there are examples where this is not the case). In addition, there can be on base facilities which are the responsibility of the base for operation and maintenance, located in the PRE.

3. There is a need to formally establish the lines of demarcation of the facilities, the operational and maintenance responsibilities, and the co-ordination and co-operation of all parties when works are required.

4. A written statement should be secured from the pipeline operator, defining the equipment which is their responsibility. The operating agency is required to notify the customer when works are to take place at the PRE, so that the implications of such works for the base / establishment can be assessed. Equally, it is necessary to advise the pipeline operator when works are planned on fuel installations in the proximity of or directly related to the PRE.

Communications prior to Works at the PRE

5. Strong operating links are required between the Establishment, and the pipeline operating company. Formal communication between the pipeline operator and the Establishment should be engaged at the planning stage for all works activity at the PRE, and for all works activity on-base facilities which have an impact on the PRE, due to the proximity of the works or otherwise. The aim of this communication in the works context is to ensure that unsafe conditions are avoided. For example, gas freeing an airfield tank, whilst hot work is being performed at a nearby PRE.

6. The pipeline operating company will control works at the PRE using their standard safe system of work.

Management of the Risks of Works at the PRE

7. The Establishment must have time and opportunity to consider the effect of the works at the PRE on other petroleum installation works on site, with co-operation between all stakeholders. The details / consequences of the works for an assessment of the general effect on operations at the establishment must be provided to those with total base operational and safety responsibilities.

Definitions

General – Common Requirements

1. Refer to the abbreviations and definitions within JSP 375 Volume 3 Chapter 2.

Specific definitions for the Petroleum Chapter

AE Petroleum (AE PET)

2. As defined with JSP 375 Volume 3 Chapter 2, but with specialism in petroleum.

Alarm Level

3. The level of vapour / gas in %LEL or ppm at which the MGI should be set to produce an audio visual alarm warning.

AP Petroleum (AP PET)

4. As defined with JSP 375 Volume 3 Chapter 2, but with specialism in petroleum.

Bulk Fuel Installation (BFI)

5. An installation where large quantities of fuel, normally aviation fuel, are stored, quality checked and dispensed to a consumer.

Classes of Petroleum Products

6. The following are in accordance with current guidance:

   a. Class I: liquids that have a flash point below 21 degrees C;

   b. Class II: liquids that have a flash point from 21 to 55 degrees C inclusive;

   c. Class III: liquids that have a flash point above 55 degrees C up to and including 100 degrees C;

   d. unclassified: liquids that have a flash point above 100 degrees C; and

   e. see annexes G and H for further examples and guidance; always reference the specific safety data sheet (SDS or MSDS) for the product handled.

Cold Work

7. Cold work includes the use of tools for erection, dismantling and cleaning, which are not liable to produce incendive sparks, and work such as drilling, tapping and cutting carried out in such a way as to limit the heat produced and keep the temperature of the tools and work area below 100 degrees C.

Combustible

8. Combustible refers to any substance solid, liquid or gas that is able to catch fire and burn easily.

Confined Space

9. A confined space is any place, including any chamber, tank, vat, silo, pit, trench, pipe, sewer, flue, well or other similar space in which, by virtue of its enclosed nature, there arises a reasonably foreseeable Specified Risk. “Specified Risk" means a risk of:

a. serious injury to any person at work arising from a fire or explosion;

b. without prejudice to paragraph (a):

(1) the loss of consciousness of any person at work arising from an increase in body temperature;

(2) the loss of consciousness, or asphyxiation of any person at work arising from gas, fume, vapour, or the lack of oxygen.

c. the drowning of any person at work arising from an increase in the level of liquid; or

d. the asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid.

Dangerous Fumes

10. Fumes in a concentration, or mixture with air, of an obnoxious, harmful or dangerous nature, arising from gases or vapours generated from products and materials, from welding and the use of heat-generating tools or the application of protective coatings, particularly in unventilated spaces.

Dangerous Occurrence

11. An incident that may give or has given rise to; injury to person or damage to plant and / or equipment, as defined by RIDDOR.

Demarcation

12. Reference should be made to: JSP 375 Volume 3 Chapter 2 - Allocation of Responsibilities and Demarcation Agreements and Chapter 5 Demarcation Agreements.

13. A demarcation is defined as the transfer of control of the significant risk from one organisation to another, which then gives the term the ‘demarcation point’. Demarcation agreements should be established, defined by drawings or other means and recorded; the demarcation document should be signed and dated by all affected parties.

Down Wind Boundary (DWB)

14. Furthest point of the restricted area and located down wind of the point of work or release of petroleum product, point of monitoring with MGI / CGI to ensure that there is no explosive vapour.

Electrical Testing

15. Electrical testing within hazardous areas is defined within BS EN 60079 part 17; a summary of the three inspection criteria is given below:

a. visual inspection - inspection which identifies, without the use of access equipment or tools, those defects, such as missing bolts, which will be apparent to the eye;

b. close inspection - inspection which encompasses those aspects covered by a visual inspection and, in addition, identifies those defects, such as loose bolts, which will be apparent only by the use of access equipment, for example steps, (where necessary), and tools (Note: Close inspections do not normally require the enclosure to be opened, or the equipment to be de-energised); and

c. detailed inspection - inspection which encompasses those aspects covered by a close inspection and, in addition, identifies those defects, such as loose terminations, which will only be apparent by opening the enclosure, and / or using, where necessary, tools and test equipment

Flammable (Synonymous with Inflammable)

16. Refers to any substance, be it a solid, liquid, gas or vapour, which in the presence of air, is easily ignited. The addition of the prefix ‘non’ shall indicate that the substances are not readily ignited but does not necessarily indicate that they are non-combustible. See also ‘Combustible’.

Flashpoint

17. The lowest temperature at which a liquid gives off sufficient vapour in air to form a flammable mixture which can be ignited momentarily in prescribed laboratory apparatus. The flashpoint of a liquid is an important and practical flammability characteristic and is one of the main properties used to determine fire and explosion hazard. The flashpoint is defined as, the lowest temperature, corrected to a pressure of 101.325 kPa, at which a liquid evolves vapours, under the conditions defined in the test method, in such an amount that a flammable vapour / air mixture is produced in the test vessel. It should be noted that at the flashpoint, continuous combustion does not occur; this takes place at a higher temperature commonly referred to as the ‘fire point’. (HSE Guidance Note CS24, now replaced by ASRM MNL72).

Gas

18. A term used in accordance with the practice of the Petroleum Industry and MOD, for example, in gas detection. The term is also used to describe petroleum vapours, and the residual vapour in tanks that must be removed before tank entry.

Gas Concentration

19. A concentration of gas expressed as a percentage of the Lower Explosive Limit.

Gas detector

20. An indicator designed to measure the concentration of Hydrocarbons, Oxygen, and other gases, such as Hydrogen Sulphide (H_2S), depending on the requirement and the type of sensors fitted. This will encompass a number of variations of meters available, including Multiple Gas Indicators (MGIs), combustible or flammable gas indicators (CGIs). See also ‘response test’.

Gas-Free

21. An environment is said to be gas free when the following conditions are all met:

a. a gas test shows that the concentration of gas is below 1% of the Lower Explosive Limit;

b. when it is free from all fuel and residues; and

c. when it is free from vapour drift from any source.

Hazardous Area (because of petroleum explosive vapour atmospheres)

22. The term ‘hazardous area’, on the MOD Estate, can be used in a context to define two separate states with regard to a petroleum asset:

a. the area surrounding a location or petroleum asset as defined and specified by the OA / Hazardous Area Manager / or other representative of the establishment and which is indicated by fences, notices or other means. Within this boundary will be contained the DSEAR ‘Hazardous Area’ and possibly areas that would be deemed non-hazardous. This area will normally be subject to access control measures and key control; or

b. Hazardous Areas are defined in DSEAR as "any place in which an explosive atmosphere may occur in quantities such as to require special precautions to protect the safety of workers". Work in this area will require control measures put in place to control the risk, such as a permit to work.

Non-hazardous area (because of explosive gas atmospheres)

23. An area in which an explosive gas atmosphere is not expected to be present in quantities such as to require special precautions for the construction, installation and use of equipment. Examples of sub-assets within the fenced area but outside the physical hazardous area may be the control / rest room within a bulk fuel installation (BFI). Refer also to ‘Restricted Area’. The ‘Restricted Area’ may extend beyond the defined or fenced area of a petroleum installation. For example, when tank venting.

Hazardous Area Manager

24. A person having control of works and other defined responsibilities within a petroleum hazardous area. Refer also to OA.

Hot Work

25. This includes welding, the use of any flame or electric arc, and the use of any equipment likely to cause heat, flame or incendive sparks including non-certified electrical equipment. It also includes caulking, chipping, drilling, riveting and any other heat-producing operation, unless it is carried out in such a way as to keep the temperature of the tools and the work below 100 degrees C, whilst also preventing the creation of incendive sparks.

Hydrogen Sulphide, H_2S

26. A gas which is very toxic on inhalation and highly flammable.

Incendive Spark

27. A spark of sufficient temperature and energy to ignite a flammable gas / vapour.

Lead

28. A toxic alkyl compound (tetraethyl lead or tetra methyl lead), which may be present in gasoline and is still added to aviation gasoline, refer to the Manufacturer's / Material Safety Data Sheet (MSDS).

Lead-Free

29. Any tank, vessel or equipment that at no time has contained gasoline. Note that so-called unleaded gasoline contains lead, and tanks that contain that product can therefore not be classed as lead free.

30. Any tank, vessel or equipment which has contained leaded fuel and the whole of which has been blast cleaned and internally epoxy coated and is free from damage.

Lower Explosive Limit (Synonymous with Lower Flammable Limit), LEL, LFL

31. The percentage by volume of gas in a mixture of gas and air below which no explosion will take place, the minimum concentration needed for ignition, hence below this will not ignite with the application of an ignition source. Refer also to Flash point and upper explosive limit.

Joint checks

32. This is a specific requirement for the monitoring of combustible gases, oxygen levels and other gases by both the AP and the PiC with two appropriate gas indicators / monitors and recording of the highest reading of the two readings on the permit or other document as required.

Mechanical Transport Fuelling Installation (MTFI)

33. Filling and Service Stations (Kerbside Pump Installations), installations for the receipt, storage and issue of petroleum products directly into the fuel tanks of vehicles for the sole use of those vehicles, and for the occasional filling of portable containers.

Multiple Gas Indicator, (MGI)

34. See Gas Detector.

Operating Authority, (OA)

35. Used to represent the line manager (either RN, RAF, Army, USVF or civilian body) having total control of the operation of a petroleum installation, filling and service station or plant storage facility. Refer to JSP 317.

Personal Protective Equipment, (PPE)

36. Overalls, headgear, eye protection, footwear, gloves, and other equipment intended for the protection of personnel against contamination by petroleum products. Type and grade subject to task being undertaken and risk assessment in accordance with' Personal Protective Equipment at Work Regulation 1992' and Annex 'D'.

PET

37. General abbreviation for petroleum used throughout this document, for example, AP Petroleum, and petroleum installation, to emphasise the source of the hazard to maintenance operations. May also be known as POL – Petrol Oil Lubricant.

Petroleum Installations Operating Record (PIOR)

38. A site record listing significant events associated with Petroleum Installations in a chronological order.

Petroleum Installations Document Register (PIDR)

39. A site-specific register containing relevant details associated with the Petroleum Installations and safe system of work on the establishment – this forms part of the document centre.

Petroleum Safety Rule Book

40. A booklet that is to be issued to all skilled persons to help them to become familiar with the requirements of the MOD Safety Rules and Procedures and act as a reference when conducting works in hazardous areas (petroleum). This booklet should not be used as a standalone document and should be read in conjunction with this Chapter.

Parts Per Million (ppm)

41. Just as percentage means out of a hundred so parts per million means out of a million. It is normally used to describe the parts of one substance present in another, for it to be of use both substances must be identified.

Product Receipt Enclosure (PRE)

42. Enclosure normally located at the site boundary where fuel is received in to the site via cross country Pipeline or Sub-sea pipeline from tankers.

Response test

43. This is the testing prior to use of the gas detector (MGI), used to check a space is free from flammable gas, correct oxygen level and other duties as required. The response test will be carried out using a known selection of gases. Manufacturer's instructions must be followed.

Restricted Area

44. A temporarily defined area, normally but not necessarily in a hazardous area, in which, owing to the nature of the work to be undertaken, a release of petroleum product or liquid is possible thus giving rise to an increased risk of:

a. fire;

b. explosion;

c. asphyxiation; and

d. poisoning from toxic sludge, fumes, gas or dust.

Respirator

45. See RPE equipment.

Respiratory Protective Equipment, (RPE)

46. Respiratory Protective Equipment selection of type equipment subject to assessment in accordance with 'Personal Protective Equipment at Work Regulation 1992' and 'HSG 53', for further information refer to Annex 'D', all equipment must have Health and Safety Executive approval and CE marked.

Rescue Line

47. A line used in conjunction with a safety rescue harness.

Resuscitation Apparatus

48. A portable apparatus for supplying oxygen, to assist resuscitation; for use only by specifically trained personnel.

Safety Rescue Harness

49. A harness worn when working in a tank or confined space to facilitate the removal of the wearer in an emergency. Used in conjunction with a safety line.

Senior Authorising Authority Petroleum (SAA Pet)

50. As defined within JSP 375 Volume 3 Chapter 2, but with specialism in petroleum.

Sullage

51. Also known as 'Bilge Water' collects from a ships deck and may contain water, fuel, oil, urine, detergents, solvents, chemicals, pitch, particles, and so forth and should be regarded as hazardous. A main hazard may be Hydrogen Sulphide (H_2S).

Upper Explosive Limit (UEL or UFL)

52. Also known as upper flammability limit, where the concentration of gas reaches its highest concentration in air to burn when introduced to an ignition source. Once this concentration is exceeded the gas mixture will not burn, as the gas concentration in air is too rich. See also flash point and lower explosive limit.

Model Forms

Model Forms

1. The following Model Forms have been developed for use with these safety rules and procedures as an aid to compliance.

2. Each of the Model Forms may be freely copied or otherwise reproduced in electronic or another printed format. However, where this is done, acknowledgement must be given to the Ministry of Defence as the source.

3. Use of the Model Forms is not mandatory, in the implementation and operation of these safety rules and procedures. Companies, organisations and individuals who adopt these safety rules and procedures are therefore free to develop their own systems and method of compliance. However, where a company, organisation or individual chooses to adopt their own system, the information content of any documentation produced must not be less than that provided for in these Model Forms.

PET 01 - Petroleum Installation Operating Record (PIOR)

Date & Time of Operation	Location & Identity of Equipment	Event or Operation and Reason	Signature

Rule off each entry Page No

PET 02 - AP Risk Assessment

RISK ASSESSMENT & CONTROL					Risk Assessment No: *Unique reference number*	
Site:	Location:				Sheet No: of	Date
Activity: *Description of work to be carried out*						
Significant Hazards	Applicable To (Persons affected)	Risk Rating Before Control Measure		Control Measures	Risk Rating After Control Measure	
		High (tick)	Low (tick)		High	Low
Significant Hazards listed here	*Person at risk – consider all person at risk not just those*			List those control measures in place to mitigate the identified		
including any other work being	*carrying out the work*			hazards		
undertaken in the vicinity.						

Further Considerations:					
Task Method Statement Required	Yes [ ]	No [ ]	OA permission Required	Yes [ ]	No [ ]
COSHH Assessment Required	Yes [ ]	No [ ]	Manual Handling Assessment Required	Yes [ ]	No [ ]
Confined Spaces Assessed	Yes [ ]	No [ ]	Electrical Permit Required	Yes [ ]	No [ ]
Other – Please specify	Yes [ ]	No [ ]	Asbestos insulation or gaskets	Yes [ ]	No [ ]

Assessment carried out by:	I have read, understood and will implement all control measures indicated on this Risk Assessment
Signed: Name: Date:…… For ……	Signed:…… Name:…… Date:…… For and on behalf of……

Book No.….(PRE-PRINTED)

Serial No.….(PRE-PRINTED)

PET 03 - Safety Programme

Site:		Location:		AP Risk Assessment No:	

Part 1 To be completed by the Authorised Person (Petroleum):

The type of installation

The proposed works are on the following installations and equipment:

The proposed time and date for start and completion of work:

Start Time & Date		Completion Time & Date:	

Product		Class		Leaded	Yes/No*	Toxic	Yes/No*
Maximum Permissible Gas Concentration	Identified in Work Sequence	Permissible Oxygen Level	Min 19% - Max 22%				
Other Gas Identified…… Maximum Permissible Gas Concentration		Associated Safety Documentation					
Respiratory Protective Equipment required	Yes / No*	Type identified in Work Sequence	Personal Protective Equipment required		Yes / No*	Type identified in Work Sequence	
Ventilation required	Yes / No*	Type identified in Work Sequence	Additional Safety Equipment		Yes / No*	Type identified in Work Sequence	

* Delete as necessary

Signed:	(AP)	Time & Date:	
Name (Print):		Telephone:	
In the employ of:			

Counter Signature

Signed:		Time & Date:	
Name (Print):		Telephone:	
In the employ of:		Appointment	

Part 2 Authorisation

As Operating Authority I declare that the work can be carried out.

Name (Print):		Signed:		Time & Date	

Part 3 Work sequence

Additional Items required		Date & Time of Operation		Entry No		Location & Identity of Installation, Valve or Component Part		Event or Operation & Reason		Alarm Level.		RPE		PPE		Items required		Date & Time of Operation	

Entry No	
Location & Identity of Installation, Valve or Component Part	
Event or Operation & Reason	
Alarm Level.	
RPE	
PPE	

Part 4 Cancellation

As Authorised Person Petroleum I declare that permits associated with this safety programme have been completed or stopped and have been cancelled and the system has been visually inspected for integrity.

This Safety Programme is hereby cancelled.

Name (Print):	Signed:	Time & Date

Part 5 Return of Installation

As Operating Authority I confirm the return of the installation for normal operations.

Name (Print):	Signed:	Time & Date

NOTES

(a) The Operating Authority is to authorise the work by signing at part 2 of the Safety Programme.

(b) The Operating Authority is the duty holder for the petroleum installation in accordance with JSP 317.

(c) The Safety Programme is not complete until the proposed work sequence has been implemented and dated.

(d) A copy of this Programme is to be issued to the Operating Authority on authorisation and retrieved at completion of task.

(e) The cancelled original of this Programme is to be filed in the Document Register.

(f) Unused lines in the Work sequence are to be marked through with diagonal lines.

Permit Book No….(pre-printed)..
Permit Serial No…(pre-printed)..

PET 04 - Permit to Work Petroleum

Site:	Location:	Equipment:

Safety Programme No:	Safety Programme Line Entry No.	Task Risk Assessment No:	Safety Key Box No:

Associated Safety Documentation:

Validity from:	hrs	Date:	Validity to:	hrs	Date:
Contact No.	Fire:	Med:	OA:	AP:	PiC:

Part 1 Authorisation

The works to be carried out are as follows ……..…….……

……..

……..

……..

……..

……..

Initial Gas Concentration Monitoring

Gas alarm level	%LEL / ppm*	Oxygen level Permissible	19-22%	Other Gas ……	
Initial Gas level POW	%LEL / ppm*	Initial Oxygen POW	%	Other Gas POW	
Initial Gas level DWB	%LEL / ppm*	Initial Oxygen DWB	%	Other Gas DWB	

I am in receipt of and have reviewed the above Task Risk Assessment including the control measures and the task method statement. Where necessary I have carried out, with the Person in Charge, initial gas concentration checks at the Point of Work (POW) and where a restricted area has been set up the Down Wind Boundary (DWB). I confirm that the work can be carried out as authorised above in accordance with the MOD Safety Rules and Procedures, subject to these conditions being maintained.

Name (print) ……. Signature……..…… Time & Date…….

Authorised Person

Part 2 Acceptance

I accept responsibility for controlling the works detailed in Part 1. I have reviewed the above Safety Programme and have been shown all aspects of the isolation and have been issued the Safety Box Key. Where necessary I have carried out with the Authorised Person, initial gas concentration checks at the Point of Work (POW) and

where a restricted area has been set up at the Down Wind Boundary (DWB). I confirm that no attempt will be made by me or any person under my control to carry out work not authorised on this permit.

Name (print) ……. Signature…….……..…… Time & Date…….

Person in Charge

Part 7 Completion

I declare that all persons, equipment, tools and instruments under my control have been withdrawn and that the works detailed in Part 1 have been:

***(a) satisfactorily completed.**

***(b) stopped and abandoned and that the system has been made safe pending further works, the reasons for stopping the work and the actions taken are detailed in Part 6 overleaf.**

Name (print) ……..…… Signature…….……..…… Time & Date…….

Person in Charge

Part 8 Cancellation

I declare that the works detailed in Part 1 have been completed/stopped* and that the permit is cancelled.

Name (print) ……. Signature…….……..…… Time & Date…….

Authorised Person

* Strikethrough as appropriate

Part 3 Gas Concentration Monitoring

Repeat Test	Test Location	Time	Date	Gas Level LEL / PPM	O_2 % Level	Other Gas ……..	AP Signature PiC Signature
Test 1							
Test 2							
Test 3							
Test 4							
Test 5							
Test 6							
Test 7							
Test 8							
Test 9							
Test 10							

Continued on Gas Concentration Monitoring Form(s)……...

Part 4 Suspension

The Authorised Person & Person in Charge are to ensure the site is left in a safe condition and record the date and time of the suspension.

Date	Time	PiC Signature	AP Signature	Date	Time	PiC Signature	AP Signature

Part 5 Handover / Reaffirm

If the Authorised Person or the Person in Charge are to change or if the job is to re-start after an overnight shutdown, then joint checks must be carried out and recorded (including gas reading) to establish that the conditions at part 1 of this permit can still be met.

Once the joint checks are completed satisfactorily the oncoming Authorised Person and Person in Charge must sign below to affirm the authorisation and acceptance of safety rules and procedures appertaining to this permit.

The AP & PIC are to ensure familiarity with the MS & RA's associated with the work and any isolations in place prior to signing.

This Permit is Reaffirmed				Authorisation of AP		Acceptance by PiC	
From		To					
Time	Date	Time	Date	Name	Signature	Name	Signature

Part 6 Stopped Works

The following are reasons for stopping the work and the actions taken:

……..

……..

……

……..

PET 05 - Standing Instruction Petroleum

Site / Establishment: ……..	**Serial No:** Pre-Printed) ……..……

Person in Charge: ……. In the Employ of:……

Issue Date: …….. Expiry Date: ……..……. (Not more that 3 years from issue)

Location and identity of the petroleum equipment: ……

Part 1 Authorisation

Tasks and/or Operations to be undertaken on the equipment specified above:

1) ……..

2) ……..

3) ……..

4) ……..

Circumstances, under which the above tasks or operations are to be undertaken, and any special instructions or safety measures (including task risk assessment and method statement numbers):

……..…….

……..…….

Signed: …… (Originating Authorised Person)

Name (print): …….. Time & Date …….

In the employ of: …… Contact Tel No. ……..

Part 2 Acknowledgement

I hereby acknowledge that the above Person in Charge can carry out the tasks or operations listed on this Standing Instruction, subject to compliance with MOD Safety Rules and Procedures.

Signed: …… (Operating Authority)

Name (print): …….. Time & Date: ……

In the employ of: …….. Contact Tel No: ……..

Part 3 Acceptance

I accept receipt of this Standing Instruction:, I have been shown the installation to which this Instruction refers and confirm that I fully understand the tasks listed above and the circumstances under which they are to be undertaken.

Signed: …….. (Person in Charge)

Name (print): …… Time & date ……..…

In the employ of: …… Contact Tel No. …….

Part 4 Cancellation

I hereby declare that the work/task has been completed and the Standing Instruction is cancelled

the original instruction has been returned / lost *(delete as appropriate)* with an entry having been made in the Petroleum Installation Operating Record.

Signed: …… (Authorised Person)

Name (print): …… Time & date ……..

In the employ of: …… Contact Tel No. ……..

PET 06 – Tank Entry Safety Checklist

This checklist is intended to be used as an aid. Consideration should be made of any other relevant safety, technical and MOD publications; also manufacturers' instructions for completeness to enable production of required risk assessments and method statements.

	If there are any deviations from the task plan or work method, then the work must be stopped; the fault/error is to be rectified prior to recommencing work.	**Yes**	**No**	**N/A**
1.	Has the scope of work been clearly specified?			
2.	Is the Building or Area Manager / Operating Authority (OA) aware of the work?			
3.	Area, operational or system activities reviewed, and operations agreed to cease during the work period.			
4.	Details of installation, tank/s, drawings, operating and maintenance instructions available.			
5.	Details of product handled, Safety Data Sheet (SDS) available. Fuel classification (0, I, II, III or unclassified), additives within fuel (toxicity). Leaded product history for tank available.			
6.	AP risk assessment completed			
7.	Task risk assessment and method statement completed, by the contractor/s undertaking the work.			
8.	Safety Programme completed. Isolations clearly defined.			
9.	Safety arrangements, emergency arrangements agreed. Establishment / site safety instructions reviewed, and any other authorities informed of the forthcoming planned works. First aid, emergency resuscitation, fire fighting equipment, emergency and rescue plan and Establishment Unit Spill Response Plan (USRP).			
10.	Work period, permit validity to be agreed by all parties.			
11.	Arrangements in place for removal of product, including final tank bottoms.			
12.	Cathodic protection to tank or pipework – ensure isolation applied in accordance with manufacturer's instructions.			
13.	Isolations appropriate for the task, clearly specified on the Safety Programme. This includes mechanical (valves / blanks / spades) and electrical isolations (pumps and heaters).			
14.	Isolations correctly implemented.			
15.	Are the right people aware of the isolated equipment?			

	If there are any deviations from the task plan or work method, then the work must be stopped; the fault/error is to be rectified prior to recommencing work.	**Yes**	**No**	**N/A**
16.	Named person to be Person in Charge, as submitted by the employing company, including all certification and stated as competent to carry out the task by the employing company. Petroleum / Confined Space training Medical Fire Training First Aid			
17.	Work Team, as submitted by the employing company, including all certification and stated as competent to carry out the task by the employing company. Petroleum / Confined Space training Medical Fire Training First Aid			
18.	Skilled Persons' assessment and registration procedures completed. Safety rule book checked.			
19.	Actions required in case of emergency, telephone numbers and points of contact.			
20.	All tools and equipment to be used, listed and accompanied with appropriate certification as fit for use, as issued by the contractor / end user, which will include, but not limited to, the following: - PPE. Clothing, footwear, non-static, including under garments. RPE. Face masks, hoses, cylinders, canisters. Compressor for breathing air, diesel driver and its fuel. Safety equipment, rescue harnesses, life-lines, tripod. Multiple gas indicators (MGIs / CGIs). Warning notices. Lighting equipment.			
21.	Site layout, access and egress routes agreed. Clearly defined restricted areas, wash down areas, dirty and clean clothing areas and welfare facilities.			
22.	Wash down facilities, and welfare facilities correctly placed.			
23.	All cross-bonding / earthing in place and satisfactory.			
24.	Weather, wind direction considered.			

	If there are any deviations from the task plan or work method, then the work must be stopped; the fault/error is to be rectified prior to recommencing work.	**Yes**	**No**	**N/A**
25.	Drains, sewers blanked. Interceptors fit for purpose.			
26.	Are users briefed on the permit-to-work, and have they acknowledged understanding of requirements.			
27.	Tank / valve pit or other confined space (petroleum) entry – access point (manhole) acceptable, all procedures in place and working area ventilation suitable.			
28.	Ensure housekeeping and hygiene standards remain satisfactory.			
29.	Procedures in place for removing arisings / sludge.			
30.	Procedures in place for disposal of arising/sludge – waste transfer note(s) – copy to be placed on AP file.			
31.	Records kept on the use of RPE and PPE; e.g. breathing apparatus canisters.			
32.	Repair works, risk assessment, method statement.			
33.	Tank entry - Method of cleaning appropriate for the tank.			
34.	Tank entry - Removal of tank internals / equipment required.			
35.	Tank entry - All persons undertaking tank entry, standby persons and supervisor – appropriate certification received, medicals and submitted as competent by the employing company.			
36.	Tank entry - Tank ventilation is always kept running when persons are in the tank.			
37.	Tank repairs - Cleaning fluids, applications and compounds used for tank lining repair – risk assessment, COSHH assessment carried out.			
38.	Hot work, (welding, grinding) permission required.			
39.	Installation reinstatement. Process for reinstatement documented. All equipment (electrical and mechanical) to be reinstated and signed off as fit for continued use by the PiC.			