Ministry of Defence

SAFETY RULE BOOK

FOR

PERSONS IN CHARGE

OF WORK ON

PETROLEUM INSTALLATIONS

SAFETY RULES AND PROCEDURES – PETROLEUM SAFETY RULE BOOK

Contents

FOREWORD

Petroleum Safety Rule Book

The Safety Rule Book is a brief summary of the safety rules and procedures and other information contained within JSP 375 Volume 3 Chapter 5 Petroleum Installations. It has been prepared for the benefit of all persons involved in working on or testing of Petroleum Installations for which the Ministry of Defence (MOD) is responsible.

All persons issued with this Petroleum Safety Rule Book are to have it available for reference whenever they are working on, or testing within, Petroleum Installations.

In the event of any queries or disputes about the interpretation of this summary of the safety rules, the Authorised Person Petroleum should be consulted, and reference made to the full version of the published Safety Rules and Procedures: JSP 375 Volume 3 Chapter 5 – Petroleum Installations, and JSP 375 Volume 3 Chapter 2 – Common Requirements.

1 Introduction

1.1 General

1.1.1 This Safety Rule Book is provided as guidance to Skilled Persons (SkPs) for work on 'Petroleum Installations'. For further information and detail - reference should be made to JSP 375 Vol. 3 Chapter 5: Petroleum Installations.

1.1.2 In the case of conflict between this Safety Rule Book and Statutory Requirements or relevant Standards, the SkP is to seek guidance from the Authorised Person (AP).

1.2 Scope and Limitations

1.2.1 The Petroleum Installations 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 degrees Celsius) the SkP should consult the AP to ensure no adjustment to the product class has been implemented.

1.2.2 These Safety Rules and Procedures include, and are not limited to, the following petroleum 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.

1.2.3 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 sub-sea 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 installations; and
j. pipeline end manifolds.

1.2.4 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 shall be managed under JSP 375 Volume 3 Chapter 4.

1.2.5 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.

1.2.6 Service family accommodation Petroleum Installations are outside the scope of this Chapter. All such installations should comply with Building Regulations and all work shall be risk assessed and managed under current industry standards and guidance.

1.3 Definitions

1.3.1 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)). Other relevant definitions are provided in JSP 375 Vol 3 Chapter 2. Roles & Duties**.**

2 AUTHORISED PERSON (AP) PETROLEUM

2.1 General

2.1.1 A key role of the AP is to oversee and certify the isolation of Petroleum Installations for which they have been appointed.

2.1.2 The general duties of the AP are detailed in the 'Common Requirements' chapter of 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 of the MoD Safety Rules and Procedures Petroleum to operators of fuel installations (in relation to JSP 317 – Certificate of competence for personnel operating bulk aviation fuel installations, with specific reference to the roles and duties of the AP Petroleum and Operating Authority.

2.2 Person in Charge (PiC) (Petroleum)

2.2.1 The general duties of the Person in Charge / SkP are detailed in Chapter 2 of JSP 375 Volume 3 – Common Requirements.

2.2.2 In order to act as a Person in Charge (PiC) an individual must have been assessed as competent by the AP for the work or task, registered as a SkP and be in receipt of written authority.

2.2.3 The PiC is to:

a. follow the AP's instructions and work in accordance with the appropriate sections of JSP 375 Volume 3. The PiC is to take all safety measures necessary to prevent danger, injury and damage to equipment; and

b. not leave the place of work until the work or test is completed. If the PiC has to leave the place of work, the work or test is to be suspended (with adequate safety precautions taken to prevent danger), and the work or test is not to be resumed until the PiC has returned and deemed it safe to continue.

2.2.4 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 a SI.

2.2.5 The PiC must be a registered SkP for the installation for which the Permit to Work or SI is to be issued.

2.2.6 Duties of PiC for work on Petroleum Installations include:

a. ensuring that adequate emergency arrangements are in place before commencing the works;
b. ensuring that the contents of the Task Risk Assessment and Method Statement for the task are suitable, sufficient and communicated to all members of the work team;
c. ensuring that all necessary safety equipment is available and suitable for use prior to work;
d. ensuring that all members of the work team are adequately trained, fit and able to carry out the work required;
e. being fully conversant with and able to ensure compliance with the conditions set out in the Permit to Work or SI and the agreed Safety Programme;
f. ensuring that all members of the work team are aware of the method of work set out in the agreed Method Statement for the task, the means of communication, the emergency arrangements and the requirements of these Safety Rules and Procedures;
g. ensuring that the only work carried out is that for which the Permit to Work or SI is valid;

h. stopping work and withdrawing all personnel, tools, plant and equipment if for any reason the conditions of the Permit to Work or SI cannot be met;
i. reporting to the AP any accident, dangerous occurrence, defects found or other exceptional incidents occurring whilst working under the Permit to Work or SI;
j. always be present at the work site when any work is being carried out; and
k. to monitor and record gas levels in accordance with the requirement of Permit to Work.

2.3 WORK TEAM

2.3.1 A SkP will form part of the work team.

2.3.2 Duties of the work team include

a. complying with these Safety Rules and Procedures as set out in Chapter 5.
b. taking reasonable care of the health and safety of themselves and 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.

2.3.3 A SkP must only work on Petroleum Installations for which he/she has been appointed.

2.4 OPERATING AUTHORITY

2.4.1 The Line Manager of the Fuels and Lubricants section, hereby known as the Operating Authority (OA) throughout this document, 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 both exercise duty of care over all activities at the installations, and ensure that petroleum and base-wide operations are fully considered before the AP is given authority to undertake works tasks.

2.4.2 Duties of the OA include:

a. agree a Notification Regime procedure with the AP;
b. informing 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 - representing the final authorisation for the work to proceed
d. sign the Safety Programme after the works or tests are complete - to confirm the return of the installation for normal operations;
e. implement a 'key access' procedure for areas under their control;
f. coordinate tasks on Petroleum Installations which are 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 (SI) for the work to proceed.

2.5 COOPERATION AND COMMUNICATION.

2.5.1 For specific details regarding duties under this heading refer to the 'Common Requirements' chapter of JSP 375 Volume 3. Also refer to the establishment / site rules and regulations, and, ensure that a site induction briefing is undertaken for all work.

3.0 MANAGEMENT ARRANGEMENTS

3.1 KEYS & KEY SECURITY Safety Locks, Safety Keys & Safety Key Boxes

3.1.1 Safety Keys are keys to Safety Locks. These are used to:

a. lock isolation valves in the ‘Open’ or ‘Closed’ position as appropriate;
b. isolate electricity supplies;
c. lock by-pass valves in safe positions; and
d. lock open drainage points and secure venting arrangements.

3.1.2 A Safety Lock is a padlock indelibly painted red and having only one unique key. When the safety locks are in use under a Safety Programme, the Safety Keys are to be kept in a Safety Key Box.

3.1.3 Safety Key Boxes are secure boxes with either one or two unique locks and the facility to fit a multi-hasp.

3.1.4 For standard Safety Key Boxes, each of the two unique locks are to have only one key, one labelled ‘Safety Key Box—Person in Charge’, and the other ‘Safety Key Box—Authorised Person’. Both locks on the Safety Key Box must be released before access can be gained to the box.

3.1.5 For Safety Key Boxes which have a multi-hasp facility, the unique lock is to have only one key, labelled: ‘Safety Key Box—Authorised Person’. When in use the multi-hasp facility must have a multi-hasp fitted and each Permit to Work issued against the Isolation must have a corresponding unique padlock fitted to the multi-hasp. The key for each padlock in the multi-hasp must be retained by each Person in Charge and the padlock is not to be removed from the multi-hasp until the corresponding Permit to Work has been closed out.

Access Keys

3.1.6 Access Keys are keys to locks that control access to: petroleum installations, control rooms, pump houses, flammable dangerous goods stores and compounds that contain Petroleum Products.

3.1.7 For petroleum installations controlled and operated by the OA, that individual will be deemed responsible for the management of all access keys - on each site relevant to those installations.

3.2 CO-ORDINATION OF ACTIVITIES ACROSS THE SITE

3.2.1 Reference should be made to the ‘Common Requirements’ Chapter 2 of JSP 375 Volume 3 for general definitions. The obligations under these duties will be covered under the establishment / site induction.

3.2.2 Where work involves APs from different disciplines, the AP (PET) will coordinate the actions of the APs for all other disciplines.

4.0 OPERATIONAL PROCEDURES

4.1 RISK ASSESSMENT

4.1.1 Prior to any work being undertaken on a Petroleum Installation suitable and sufficient Risk Assessments must be produced.

Authorised Person Risk Assessment (AP RA)

4.1.2 The AP is required to provide an AP Risk Assessment (AP RA) 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 works task, which will then be detailed within the Safety Programme.

Task Risk Assessment (TRA)

4.1.3 The TRA is required to cover the risks encountered in carrying out the task. The TRA is to be completed by both the Contracting Organisation and the person/persons carrying out the task. It should include local hazard information supplied to the individual by the Area Custodian, as detailed in JSP 375 Volume 1 Chapter 34.

4.1.4 The TRA is to be submitted to the AP prior to raising a Safety Programme or SI. This must be within a reasonable timeframe (to be agreed with the AP/SkP) prior to the requirement for a Permit to Work or SI being issued - this approach will enable the AP to allow sufficient time for review of the TRA.

4.1.5 The AP is to review the TRA and determine if it is consistent with the method of control. Should the AP consider the TRA inadequate, a Permit to Work or SI is not to be issued. If the AP is in doubt as to the suitability of the TRA, they are to refer to the Authorising Engineer (AE) for further guidance.

4.1.6 During the task the AP RA is to be retained with the Safety Programme document, and the TRA with the associated Permit to Work or SI.

4.1.7 The contents of all Risk Assessments must be communicated to all parties involved in the task.

4.2 METHOD STATEMENT (MS)

4.2.1 The Method Statement (MS) is a written procedure that specifies the works to be done and is to be produced by those undertaking the work. A MS for the works 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 SI are to be supported with an appropriate MS, 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 & PPE required for the task.

4.3 ISOLATION

4.3.1 The method of isolation will be determined by the AP Risk Assessment.

4.3.2 The method of isolation will be agreed and accepted by the Person in Charge.

4.3.3 The Selection Criteria, Methods of Isolation and further guidance are detailed in Chapter 5 and are based on the Health and Safety Executive (HSE) publication: The Safe Isolation of Plant and Equipment HSG 253.

4.3.4 ELECTRICAL ISOLATION

4.3.5 Electrical isolation (for the purpose of petroleum / mechanical maintenance) may be made without reference to the AP (Electrical) when:

a. the isolation is via a switch or circuit breaker, and
b. the switch or circuit breaker can be locked in the ‘off’ position by use of a safety lock.

When the isolation requires the removal of fuses or the disconnection of cable terminations; the isolation is to be made by either an appointed SkP (Electrical) or an AP (Electrical).

4.4 RESTRICTED AREA

4.4.1 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 personnel withdrawn. A restricted area is to be set up as indicated by the AP Risk Assessment (usually when petroleum products are exposed in liquid or vapour form), when there is a requirement to enter confined spaces or there is a need for hot work to be undertaken.

4.5 SAFETY PROGRAMME (SP)

4.5.1 A Safety Programme (SP) is to be implemented before the issue of any Permit to Work, with some exceptions such as grass cutting, and electrical works where product is not exposed (see Chapter 5) for further detail.

4.5.2 The SP cannot be closed until all Permits to Work raised against it are complete, and the system/installation has been visually inspected for integrity by the AP (this may be through visual inspection and/or successful integrity testing).

4.5.3 A SP is to have a format similar to the Model Form detailed in JSP 375 Volume 3 Chapter 5 Model Form PET 03. Each sheet of the SP is to bear the same pre-printed serial number on both the original and duplicate copies.

4.5.4 The SP is to include the necessary steps for control of the complete task including the issue of a Permit to Work, and making note of the general steps being taken to completion of the work task and reinstatement.

4.5.5 The SP is to include:

a. the location of the installation;
b. AP Risk Assessment number;
c. the type of installation that 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. Grades of RPE and PPE and other safety equipment to 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:

i. The location at which each operation is to be performed;
ii. The identity of each valve or component part to be operated;
iii. The operation to be performed;
iv. The reason for the operation;
v. The alarm settings for gas concentration;
vi. Any item (e.g. keys, locks, signs) required;
vii. Any inspection/testing required to verify system integrity and
viii. Steps required for reinstatement.

4.5.6 The diagram required as part of the SP may be either a hand-drawn or 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.

4.5.7 When the SP has been produced, including the work sequence, and work 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 with a copy of the SP for reference.

4.5.8 During implementation of the SP, the AP is to record the time and date of each operation on the original paperwork.

4.5.9 Each isolation point is to be secured with a Safety Lock (where practical) and a safety sign fitted.

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

4.5.11 When a SP has been implemented the AP is to file the original in the Petroleum Installations Document Cabinet - this provides a record of the isolation as implemented.

4.5.12 Once isolations have been made, or removed, the actions are to be recorded in the Petroleum Installation Operating Record (PIOR) by reference to the SP Serial number, item number and time of the sequence of operation entry (contained within the SP).

4.5.13 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 Petroleum Installation Document Register (PIDR) for a period of not less than three years.

4.6 PERMIT TO WORK (PTW): REQUIREMENTS

4.6.1 The AP will issue the Permit to Work (PTW) immediately before work is to commence and it is to remain in force until the work is completed.

4.6.2 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 from the two detectors being recorded on the PTW.

4.6.3 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 Permit to Work (this may form part of the Temporary Restricted Area signage).

A PTW(Petroleum) will 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 document; and
f. Validity period.

4.7 ISSUE, ACCEPTANCE, SUSPENSION, REAFFRIMATION AND CANCELLATION OF PERMITS TO WORK (PTW)

4.7.1 A PTW will be issued only at the point of work.

4.7.2 Before the issue of a PTW, the AP will demonstrate to the SkP:

a. the identity of the Petroleum Installation and the component parts to be worked on;
b. that the Petroleum Installation or component part has been isolated;
c. the safety arrangements at the place of work and at points of isolation;
d. any special instructions and/or safety measures; and
e. that the point(s) of work is/are de-pressurised, vented and drained, and that it is safe for the work to proceed.

4.7.3 Before the issue of a PTW the AP will also ensure that the SkP is in possession of and understands the tasks Risk Assessment and the Method Statement for the task.

4.7.4 Before accepting the PTW the prospective PiC is to:

a. read the PTW and the Safety Programme;
b. understand the extent of the work;
c. understand the safety precautions; and
d. be prepared to undertake the work.

The SkP is to sign the relevant section of the PTW - to accept the responsibilities of the Person in Charge (PiC). On signing for acceptance of the Permit to Work the SkP authenticates the permit as valid and becomes the PIC of the permitted work. The PiC is then to either take control of the PiC Key from the Safety Key Box, or is to attach a unique padlock to the multi-hasp on the Safety Key Box and take control of the key to that padlock.

4.7.5 The acceptance of a Permit to Work identifies the PiC as personally responsible for supervising or undertaking the defined work.

4.7.6 The PiC is not permitted to leave the site or to undertake any other work or tests while the current work is in progress. . During any necessary temporary absence of the PIC from the point of work - the work is to be halted. Before leaving the point of work - the PIC is to ensure that suitable safety precautions are taken, and the AP informed.

4.7.7 Where a change of AP and/or PiC is required, the incoming AP/PiC are to carry out the joint checks and 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.

4.7.8 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 Permit to Work and
e. Return the original Permit to Work and PiC Key to the Safety Key Box to the AP.

4.7.9 The AP will confirm that the work has been completed satisfactorily and close the Permit to Work.

4.7.10 If the AP decides that it is necessary to stop the work, the Permit to Work will be withdrawn and cancelled. A new Permit to Work is required before re-starting work.

4.7.11 The Permit to Work 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 Permit to Work;
d. any personnel or contractors disregard the conditions of the Permit to Work/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, involving injury to personnel, damage to equipment or plant, or spillage of product; and
i. electrical storm.

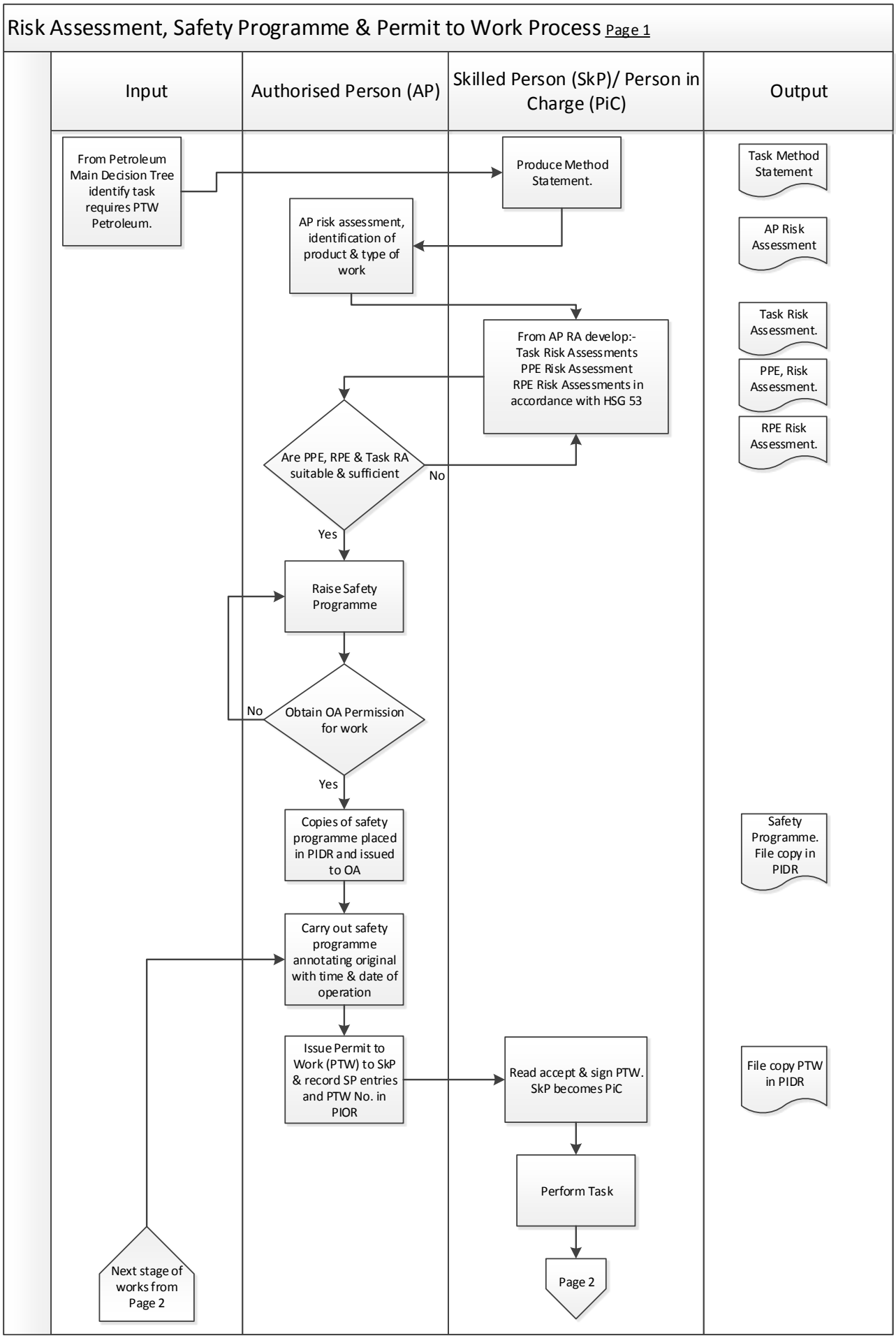
4.7.12 Where the work is stopped and the PTW cancelled. The PiC is to:

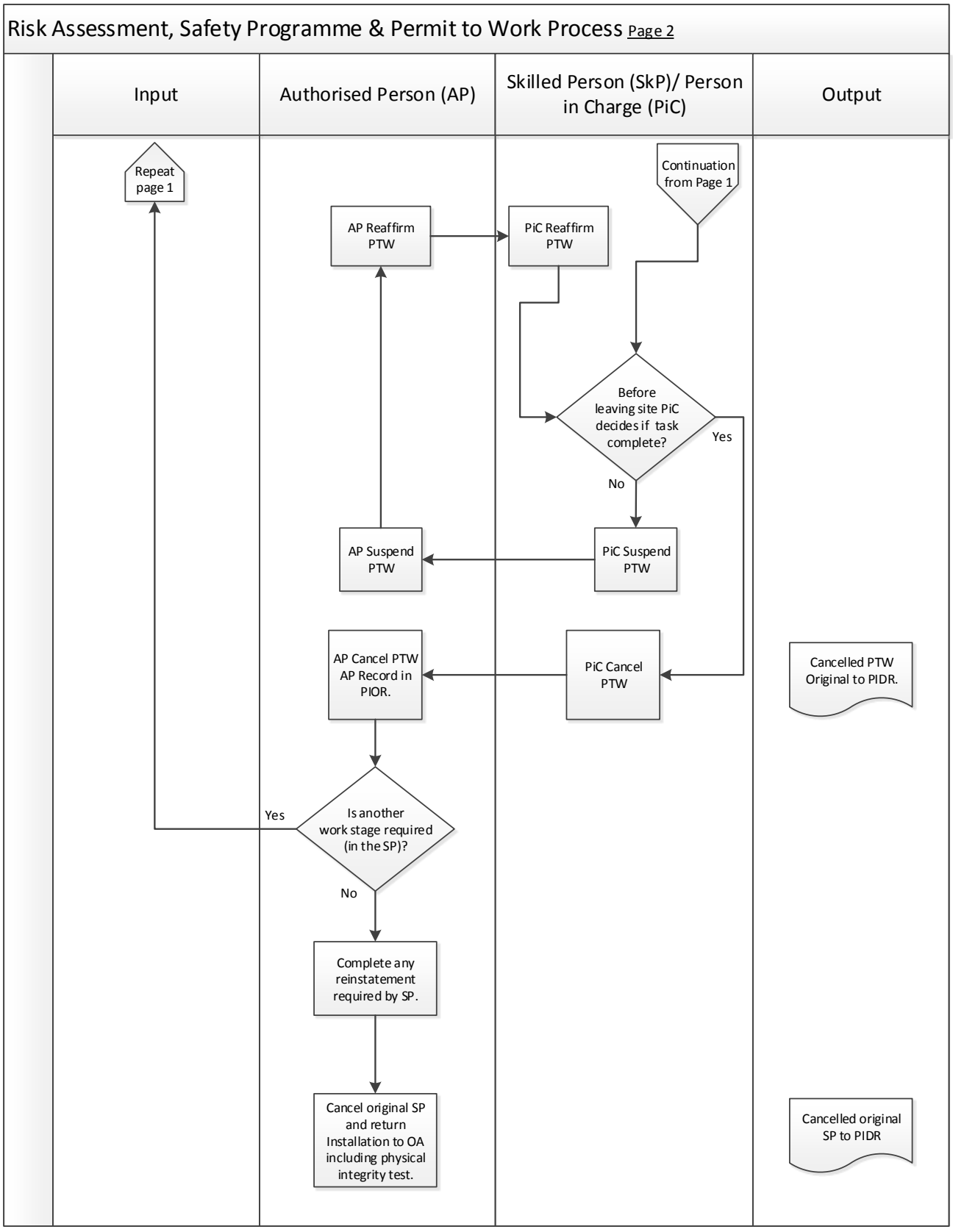
a. withdraw all persons and if appropriate all equipment, tools and instruments from the place of work;
b. advise all persons under his or her control that they are no longer permitted to work on the installation;
c. amend the relevant section of the original Permit to the effect that the work is incomplete and the point of work has been made safe;

d. return the original Permit to Work to the AP; and
e. return the PiC Key or remove the unique padlock from the multi-hasp.

4.7.13 Where the work is stopped and the PiC has returned the 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 installation has been restored.

4.7.14 If the PiC has lost the original Permit to Work, the loss is to be recorded by the AP in the PIOR. The duplicate 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 Permit to Work.


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
Next stage of works from Page 2
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.
Yes
Is another work stage required (in the SP)?
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 (SI)

4.7.15 Where a PTW is not appropriate, Standing Instructions (SIs) are issued by the AP to all SkPs, for both one-off and repetitive tasks on Petroleum Installations.

4.7.16 Examples of tasks for which an AP may issue a SI :

a. non-intrusive work on Class I and II installations where not involving Hot Work or requiring entry into Confined Spaces;
b. intrusive work on Class III installations - excluding tank entry and
c. electrical Work and Testing on Class III installations.

4.7.17 Non-intrusive work on Class I and II installations may be defined as low-risk maintenance tasks which do not include 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.

4.7.18 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.

4.7.19 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.

4.7.20 SIs will detail the procedure to be undertaken by the SkP to ensure that the point of work is safe to work on. This may be in the form of an attached procedure detailing the method for isolation and require liaison with the OA. There could be several such procedures supporting an SI as it may cover more than one item of equipment such as: kerbside installations, pumps, controls and tanks.

4.7.21 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 the SI. All work on Petroleum Installations will be co-ordinated by the AP to ensure that the petroleum related risks are fully considered. 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.

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

4.8 ISSUE, ACCEPTANCE AND CANCELLATION OF STANDING INSTRUCTIONS (SI's)

4.8.1 Having understood the instruction(s) and being prepared to undertake the task(s), the SkP is to sign and accept the SI . On signing for acceptance of the instruction a SkP authenticates the instruction as valid and becomes the PiC of the permitted task(s).

a. The SI will detail the following: -

i. the task or operation to be conducted on the equipment;
ii. specified circumstances under which the task may be conducted; and
iii. any special instructions or safety measures.

4.8.2 In accordance with local or other MOD procedures the AP will ensure that, where appropriate:

a. the PiC is provided with a written instruction of the arrangements;
b. the PiC informs the Maintenance Management Organisation (MMO) of any task to be undertaken which may result in any loss of service;
c. the PiC obtains permission from the MMO before taking Petroleum Installations out of service and
d. the PiC informs the OA before conducting any task.

4.8.3 The original copy of the SI will be issued to the SkP.

4.8.4 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). On each occasion, and notwithstanding that the PiC has been authorised to undertake the task, he must comply with the notification regime and instruction on the SI before conducting the task.

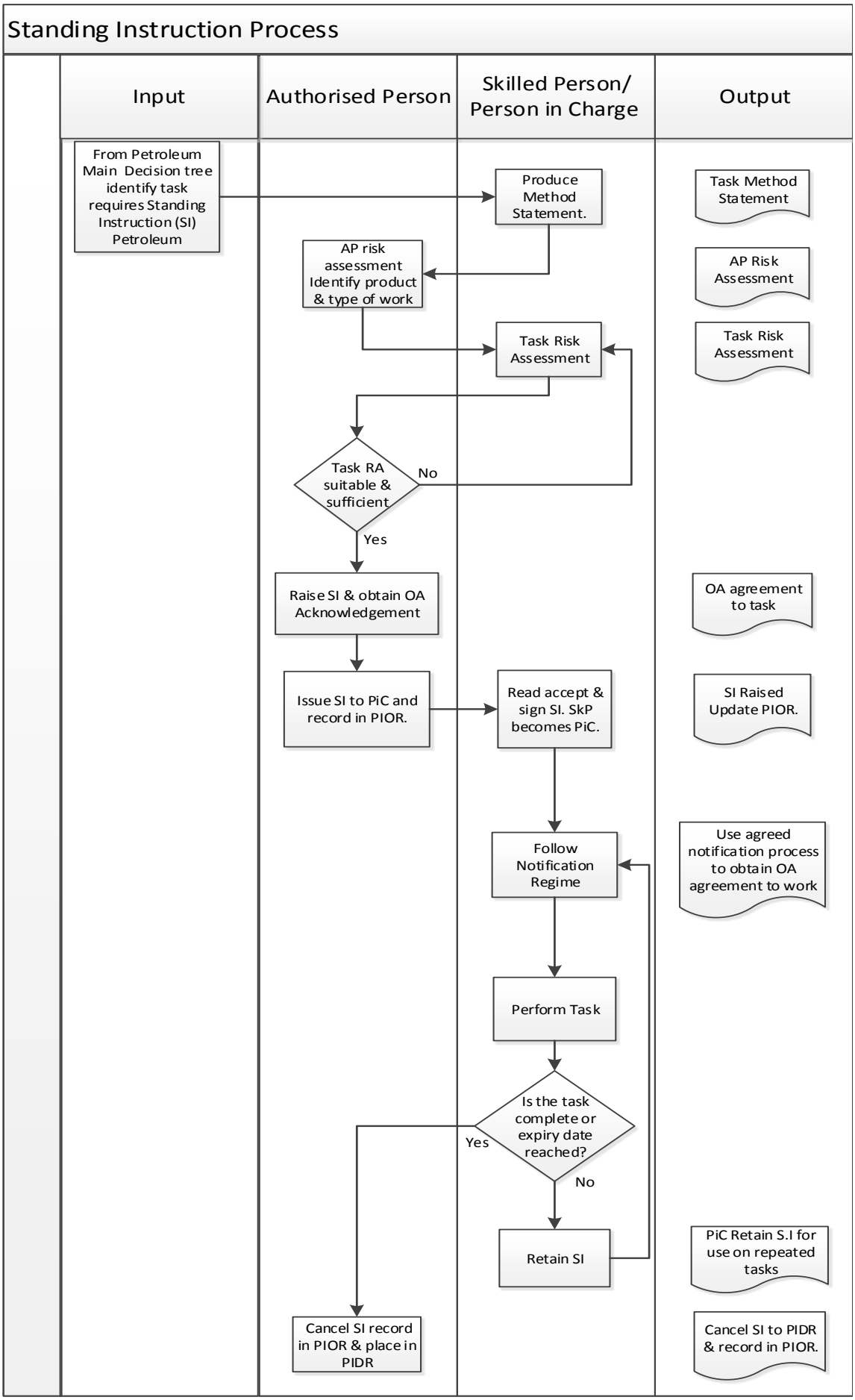
4.8.5 The AP may cancel a SI at any time.

4.8.6 On completion of the tasks outlined in the SI or (for repetitive tasks) on reaching the expiry date, the PiC is to return the instruction to the duty AP for cancellation. All SIs are to include an expiry date.

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

4.8.8 A SI cannot be transferred from one SkP to another.

4.8.9 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.

5.0 TRAINING

5.1 SKILLED PERSONS (SkPs)

5.1.1 To be eligible, prospective SkPs are to meet the competency criteria as detailed in Chapter 2 of JSP 375 Volume 3 Common Requirements. . They are to have an appropriate qualification in a relevant discipline and are required to have successfully undertaken technical training, as endorsed by their employer, to meet both the needs of the site and the task.

5.1.2 The suitability of a specific qualification will depend on:

a. the work to be undertaken and
b. the type of Petroleum Installation.

5.1.3 The SkP's appointment becomes valid when they are added to the appropriate SkP Register.

5.1.4 SkPs are to: -

a. be able to demonstrate competence to undertake the work activities required;
b. be familiar with the types of installation, equipment or location that they are required to work in/on or test;
c. possess the necessary technical knowledge, skill and experience relevant to the nature of the work activities, in order to prevent danger or injury;
d. have successfully undertaken technical training in the required discipline, training which has been administered by the organisations or bodies as specified for the particular specialism, or an equivalent form of training and experience acceptable to the appropriate AP or AE;
e. have an adequate knowledge of; the relevant parts of JSP 375 Volume 3, any agreed local variations, and those associated regulations and documents which are applicable to the installations, equipment or locations having significant risk (on or within) which work or tests are to be undertaken; and
f. have a letter from their employer attesting to their competence.

6.0 SUPPORTING GUIDANCE

6.1 For further reference and specific details, refer to the annexes within Chapter 5 of JSP 375 Volume 3 which are as follows:

Annex A: Isolation Methodology
Annex B: Electrical works in Petroleum Hazardous Areas
Annex C: Gas Detection and Monitoring
Annex D: RPE and PPE
Annex E: Guidance on Grass Cutting
Annex F: Guidance on Restricted Areas
Annex G: AP Petroleum Risk Assessment
Annex H: Medical Requirements
Annex I: Signs, Notices and Posters
Annex J: Works Organisation at Product Receipt Enclosure
Annex K: Definitions

7.0 Safety Rule Book Definitions

Area Custodian: See 'Operating Authority'

Authorising Engineer Petroleum (AE PET): as defined with JSP 375 Volume 3 Chapter 2, but with specialism in petroleum.

Authorised Person Petroleum (AP PET): as defined with JSP 375 Volume 3 Chapter 2, but with specialism in petroleum.

Bulk Fuel Installation (BFI): an installation where large quantities of fuel are stored and dispensed to a consumer.

Classes of Petroleum Products:

The following are in accordance with current guidance:

- **Class I:** Liquids which have a flash point below 21 degrees Celsius.
- **Class II:** Liquids which have a flash point from 21 to 55 degrees Celsius inclusive.
- **Class III**: Liquids which have a flash point above 55 degrees Celsius, up to and including 100 degrees Celsius.
- **Unclassified**: Liquids which have a flash point above 100 degrees Celsius.

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

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 keeping the temperature of the tools and work to below 100 degrees Celsius.

Confined Space: a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen). See JSP 375 Vol 3 Chapter 5 for more detail of this definition.

Dangerous Fumes: 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, application of protective coatings, particularly in unventilated spaces.

Dangerous Occurrence: An incident which may give or has given rise to injury to person or damage to plant and/or equipment, as defined by RIDDOR. Any occurrence that puts the Person in Charge or any other person in danger shall, without delay, be reported by the Person in Charge to the AP or, if that is not practicable, to the person supervising the work.

Down Wind Boundary (DWB): Furthest point of the restricted area which is located downwind of the work or release of petroleum product, used for monitoring flammable vapour, measured LEL is to be zero
.
Explosive Gas-Air Mixture: a mixture of flammable gas or vapour with air under atmospheric conditions in which, after ignition, combustion spreads throughout the unconsumed mixture

Flashpoint: 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. For further detail see the definition contained in JSP 375 Vol 3 Chapter 5
.
Gas Concentration: a concentration of gas expressed as a percentage of the Lower Explosive Limit.

Gas Detector: 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: an environment is said to be gas free when all the following conditions are met:

a. A gas test shows that the concentration of gas of 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 (due to petroleum explosive vapour atmospheres): 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:

1. 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.

2. 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, such as a PTW, put in place to control the risk.

Non-hazardous Area: an area in which an explosive gas atmosphere is not expected to be present in such quantities 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: a person having control of works and other defined responsibilities within a petroleum Hazardous Area. See also: Operating Authority.

Hazardous Substance: materials that can cause harm to human health if the risk(s) associated with it are not properly controlled during the course of work. The hazards from petroleum installations include flammability, toxicity, asphyxiation, bodily harm (e.g. dermatitis) and hazards arising from the operation and maintenance of the installation.

Hot Work: 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: a highly flammable gas which is very toxic by inhalation.

Incendive Spark: a spark of enough temperature and energy to ignite a flammable gas/vapour.

Joint checks: 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.

Lead: 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:

a. any tank, vessel or equipment which has never contained gasoline. Note that so- called 'unleaded gasoline' contains lead, and therefore tanks which contain that product cannot be classed as lead free.

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

Lower Explosive Limit (Synonymous with Lower Flammable Limit), LEL, LFL: 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'.

Maintenance Management Organisation: the Maintenance Management Organisation is the organisation responsible for planning, organising and managing the operation, maintenance and repair of systems and equipment and may include the design and construction of new works.

Manufacturers' or Material Safety Data Sheet (MSDS): see - Safety Data Sheet (SDS).

MTFI – Mechanical Transport Fuelling Installation: 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);see - Gas Detector.

Operating Authority (OA):the term is used in two related contexts, one use is to represent the line manager (either RN, RAF, Army, USF or civilian body) having overall control of the operation of a petroleum installation, filling and service station or plant storage facility. Refer to JSP 317. In this context the OA is the officer with delegated authority for the operation of the petroleum installation. The alternative use of the term is to describe the overall Service Operating Authority which defines the rules for handling petroleum at Service installations. The OA is also responsible for the management of site fuel installations and associated work area's including the management of fuel movement, fuelling operations and replenishment of the fuel holding. Ensures fuel quality is maintained in accordance with JSP 317.

Personal Protective Equipment (PPE): 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 '.

PET: 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.

Respiratory Protective Equipment (RPE): Respiratory Protective Equipment selection of type equipment subject to assessment in accordance with Personal Protective Equipment at Work Regulation and HSG 53, for further information refer to Annex 'D' of JSP375 Vol 3 Chapter 5, all equipment must have Health and Safety Executive approval and CE marked.

Response Test: this is the testing, prior to use of the gas tester, used to monitor 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 gases. Manufacturer's instructions must be consulted. Often referred to in industry as 'bump' testing.

Restricted Area: 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.
d. Poisoning from toxic sludge, fumes, gas or dust.

Risk: the likelihood and consequence of a hazard being realised
.
Safety Data Sheet (SDS): the law requires that a SDS is produced in accordance with the European Regulations. This is covered under the CLP Regulations and the REACH Regulations These Regulations include requirements for the supplier of a dangerous chemical to:

a. identify the hazards (dangers) of the chemical. This is known as ‘Classification’:
b. give information about the hazards to their customers. Suppliers usually provide this information on the package itself (e.g. with a label); and
c. package the chemical safely.

Spillage Plan (Unit Spill Response Plan (USRP): developed by the occupying department in accordance with JSP 317 and is a detailed plan on how a spillage and the subsequent clean-up will be managed on-site.

Upper Explosive Limit (UEL) or Upper Flammability Limit (UFL): 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.

Gas Detection and Monitoring

8.1 General

Excerpts from JSP 375 Vol 3 Chapter 5 Annex C: Gas Detection and Monitoring and the associated tables have been provided here for direct reference by the PiC.

8.1.1 It is a requirement of these safety rules and procedures to detect the presence, and concentration of the 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.

8.1.2 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.

8.1.3 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.

8.1.4 Test frequencies and responsibilities shall be in accordance with Table C2.

8.1.5 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.

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

8.1.7 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.

8.2 Flammable Gas

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

8.3 Other Gases

8.3.1 Oxygen

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

8.3.2 Hazardous Substances

8.3.2.1 This may include Volatile Organic Compounds, Carbon Monoxide or Hydrogen Sulphide. The AP Risk Assessments should consider relevant information to determine if other hazardous substances require monitoring. If the AP Risk Assessment identifies this risk, then it should be monitored and managed appropriately.

8.4 Response testing of MGI

8.4.1 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.

8.5 Initial readings

8.5.1 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 tanks or confined spaces
d. when reaffirming the PTW
e. when the AP decides it is necessary

8.6 Readings for open space work

8.6.1 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.

8.7 Reading within tanks or confined spaces

8.7.1 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.

8.7.2 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.

8.7.3 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.

8.8 Readings for gas freeing operations

8.8.1 There are two main purposes for taking gas readings during gas freeing operations;

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

8.8.2 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.

8.8.3 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.

8.8.4 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.

8.8.5 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.

8.9 PiC monitoring

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

8.10 Recording of readings

8.10.1 Recording of initial reading

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

8.10.2 Repeat readings

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

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

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

8.10.2.4 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.

8.11 Final readings

8.11.1 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.

8.11.2 Both the AP and PiC must carry out final readings, and they must agree that the combustible gas level is below 1% LEL before dismantling Restricted Areas.

Table 8.1 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 - 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 remains below 100°C
Hot Work	Less than 1%	See definitions.
Electrical work/test	Less than 1%	Any intrusive work in hazardous areas on electrical equipment which can induce current and voltage to flow with the possibility of incendive sparks.
Grass Cutting at Class I and Class II installations	Less than 1%	Use of mechanically driven grass cutting devices in hazardous areas

Table 8.1a Flammable gas concentrations in ppm using PID sensor

This table is to be used in conjunction with table C1 'Flammable Gas Concentrations for Activities' where a Multiple Gas Indicator uses a Photoionization Detector.
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 Kerosene.					
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 8.2 below shows the 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
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

TYPE OF WORK	READING RECORDED BY	MINIMUM FREQUENCY THAT READINGS ARE RECORDED
(a)	**(b)**	**(c)**
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
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 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 Person in Charge must monitor the gas concentration continuously whilst work is in progress		

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

8.14 Inspection requirements

8.14.1 Prior to using, the PiC 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. the correct Lower Explosive Limit, Gas or Hazardous Substance Alarm setting has been applied; and
f. there is suitable remaining battery life for the proposed task.

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