APPROVED BY:

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INSTRUCTIONS FOR SAFE EXECUTION OF HOT AND GAS-HAZARDOUS WORK

1 General provisions

1.1 These instructions establish the requirements for hot and gas-hazardous works in the territory of VKG OIL AS.

1.2 The requirements of these instructions apply both to work carried out by unit employees and to work carried out by outsourced employees.

1.3 The instructions include the following annexes and forms:

- Form 1 Permit to carry out hot works;
- Form 2 Permit to carry out gas-hazardous works;
- Form 3 List of hazardous works;
- Form 4 Knowledge test report;
- Form 5 Shift extension of work permits;
- Form 6 Emergency hot work permit;
- Annex 1 Guidelines for issuing IFS work permits.

A. Hot works

1.4 Hot works include:

- gas welding works;
- electric welding works;
- cutting metal with a flammable liquid;
- cutting metal with a disk cutter;
- heating and use of bitumen and other flammable mastic;
- use of a gas flame;
- other activities that use flames, sparks, or temperatures that can ignite surrounding flammable materials, resulting in a real fire hazard.

1.5 Hot works are carried out only in places where possible fire and explosion hazards are taken into account and measures are taken to avoid these hazards.

1.6 Employees (including employees of third-party organisations) who have been trained to perform hot works and hold a valid hot works certificate have the right to perform hot works at the enterprise.

1.7 Hot work sites are divided into permanent and temporary sites.

1.8 **A permanent site** for conducting hot works (hereinafter referred to as a Permanent Site) is a place specially designed or adapted for conducting hot works, which, by its boundaries, is separated and protected from an adjacent room, building or ground area so that hot works can be carried out safely and the spread of fire outside the work area of the Permanent Site is excluded.

1.9 Permanent Sites are approved by an order of a Member of the Management Board.

1.10 Permanent Sites must meet the following requirements:

- constructions, platforms and fences of the hot work site are made of non-flammable material or are protected from fire;
- no storage or handling of flammable materials;
- fireproof separation from rooms where flammable material is stored or where activities are carried out that may entail a risk of fire and explosion;
- the presence of at least 2 fire extinguishers that contain at least 6 kg fire extinguishing agent;
- a sign is installed indicating the size of the working site (the placard is installed in such a way that the dimensions of the site in relation to the sign are indicated) and the name of the person responsible for the Permanent Site of hot works.

1.11 Hot works may be carried out in metalwork workshops of repair shops and subdivisions under the following conditions:

– welding and gas-cutting works are carried out only at specially equipped work stations;
– there are no flammable materials (lubricants used in plumbing work must be kept in closed cabinets to prevent sparks from getting there).

1.12 **A temporary site** for hot work (hereinafter referred to as a Temporary Site) is a place that does not meet the requirements for permanent hot work sites, but where measures are taken to prevent the ignition of flammable materials. To prevent the ignition of flammable materials, a temporary place is prepared in accordance with the requirements specified in Section 4 of these Instructions.

1.13 Hot works are carried out at a permanent hot work site. If it is impossible or inexpedient to carry out hot works at a permanent site, then a temporary hot work site may be used for these purposes.

1.14 Carrying out hot works at a Temporary Site is only allowed with an issued hot work permit (Form 1 to these Instructions). Upon the performance of hot works in the territory of the enterprise without an issued work permit, the performer of hot works and the person who allowed him to work at the unit are responsible.

1.15 At temporary hot work sites, it is necessary to exclude the possibility of open flame and sparks getting outside the zone of the work being carried out and/or below the height mark of the working zone (see Table No. 1). Places where hot works are to be carried out must be limited by means of non-flammable materials and supervision of the hot works must be organised.

Table No. 1 Minimum radius of the area to be cleared of flammable materials

Height of hot work point above floor level or adjacent territory, m	0	2	3	4	6	8	10	over 10
Radius of zone, m	5	8	9	10	11	12	13	14

B. Gas-hazardous works

1.16 Gas-hazardous works are works carried out in the presence or possible presence of increased gas content in the working area, as well as work in places with oxygen content in the air of less than 20%.

1.17 Depending on the hazard level, gas-hazardous work operations are divided into 2 groups:

- **Group I**
  - work involving depressurisation of process equipment and utilities, from which hazardous, explosive and fire-hazardous substances have not been removed or the possibility of their release has not been excluded;
  - work in sludge pits, sumps, wells and other similar places;

- work carried out in closed equipment (inside apparatuses, containers, reservoirs, boilers, tanks), pipeline manifolds, gas tanks of furnaces, and other such places where the content of harmful vapours and gases may rise above the limits of the working environment or the oxygen content is less than 20%.

- **Group II** – periodically recurring works that are an integral part of the technological process and are characterised by similar conditions of their performance, the constancy of the place and nature of the work, and the same performers of work.

  The main works that belong to this group are:

  - taking samples from tanks, reservoirs and cisterns;
  - manual level measurement in tanks, reservoirs and cisterns;
  - unloading and loading flammable and toxic liquids from and into tank trucks and rail tank cars on trestle bridges;
  - visual on-site monitoring of the operation of equipment located in buried water recycling pumps and sewerage systems;
  - other similar hazardous work that is stipulated in the technical instructions for workplaces (for example, operations for unloading coke from coke ovens, cleaning and repairing coke ovens and gas generators, except for 1,000-tonne generators).

  Note: (1) when carrying out gas-hazardous works of Group II, a second employee shall be appointed by the senior operator / shift supervisor to supervise the safe conduct of work; (2) taking samples from reservoirs in the dark time of the day is prohibited.

1.18 To carry out gas-hazardous work of Group I, a work permit is issued (Form 2 to these instructions), which stipulates the measures for the preparation and safe conduct of work. Gas-hazardous work of Group II may be carried out without issuing a work permit, but safety measures for such work must be outlined in the workplace instructions or in special instructions developed taking into account the requirements of these instructions.

1.19 The results of an air analysis (if necessary), performed before carrying out gas-hazardous work of Group II, shall be recorded in the logs of the shift supervisor / senior operator or other documentation (for example, a cleaning log).

1.20 Gas-hazardous work shall be carried out in cases where it cannot be mechanized, automated or carried out without the direct presence and participation of people.

Measures shall be taken at the enterprise to reduce the number of gas-hazardous works and increase the level of their safety by improving technological processes and their instrumentation, introducing modern diagnostic methods, means of hydraulic, mechanical, chemical cleaning of technological equipment and communications, equipping technological systems with reliable means of blocking individual units and devices, etc.

1.21 A list of gas-hazardous works must be developed (Form 3 to these Instructions) at the enterprise, in each structural unit. The list should include all gas-hazardous works, regardless of the group. The main activities for the preparation and conduct shall be indicated only for gas-hazardous works of Group II.

1.22 The list of gas-hazardous works shall be developed by the head of the structural unit and agreed with the workshop manager and the working environment specialist and approved by the technical director. The agreement and approval of the document is carried out in the WD electronic environment, usually by digital signature.

The list of gas-hazardous works must be periodically reviewed at least once a year. If the list of gas-hazardous works does not need to be changed, the period for the next inspection in WD shall be extended.

1.23 Group I gas-hazardous works may be carried out by persons who have a permit to work independently in their main area of specialisation, who have been specially trained (in the

scope of these Instructions) and who have passed the knowledge test for carrying out gas-hazardous work of Group I. The knowledge test is carried out by testing in the Edutizer electronic environment, with an entry made on the occupational safety training card. If the results of the knowledge test are dissatisfactory, a repeated oral knowledge test shall be carried out, a report shall be drawn up (Form 4 to these Instructions) and an entry shall be made on the occupational safety training card. The repeated knowledge test shall be conducted under the supervision of the head of the structural unit with the participation of a working environment specialist.

1.24 Engineers and technicians who are responsible for preparing and carrying out gas-hazardous works, as well as engineers and technicians who perform internal inspections of apparatuses should also undergo knowledge testing for the right to carry out gas-hazardous works of Group I.

1.25 Periodic knowledge tests shall be carried out once a year, similarly to the initial knowledge test.

1.26 If gas-hazardous works are carried out by a third party company, the management of the third party company shall arrange for an instruction by a working environment specialist within the scope of these Instructions.

Gas-hazardous work may not be carried out by employees who have not been trained in the scope of these Instructions.

1.27 Gas-hazardous work involving the use of rebreathers may be carried out only by persons who have undergone special training in the use of such apparatuses.

1.28 Gas-hazardous works related to the localisation of an accident and preventing the development of an emergency situation shall be carried out in accordance with the emergency action plan or workplace safety instructions.

2. Obligations and responsibilities

2.1. **The head of a structural unit** is obligated to:

- organise the development of measures for the preparation and safe conduct of work and supervision over their implementation;
- appoint persons responsible for the preparation and conduct of work;
- according to the production need, appoint additional persons responsible for the preparation and conduct of work;
- coordinate work permits with the related structural divisions (if applicable);
- together with the person responsible for the preparation of work, determine the personal protective equipment, set the mode of operation, the duration of stay in protective equipment, breaks in work, the frequency of air sampling, etc.

2.2. **The person responsible for the preparation of work** is obligated to:

- develop measures for the preparation and safe conduct of work;
- organise the implementation of measures for the preparation and safe conduct of work, including the shutdown and disconnection of equipment;
- notify and agree with the shift supervisor (senior operator / shift supervisor) on carrying out the work;
- check the completeness and quality of the implementation of the measures set forth in the work permit;
- ensure the timely air analysis at the work site and in the hazardous area;
- conduct, together with the person responsible for carrying out the work, the instruction of the performers of the work on the main hazards and risks at the workplace (including the specific features of the performance of work at the facility and the specific hazards that may arise during the work);

- when organising gas-hazardous work, together with the person responsible for carrying out the work, determine the actions of the supervisor in emergency and non-standard situations and fix them in the work permit.

  Note: the actions of the supervisor may be specified and recorded in a free format in an annex to the work permit (against signature) at the stage of personnel admission.

2.3. **The person responsible for carrying out the work** is obligated to:

- together with the person responsible for the preparation of the facility, check the completeness of the implementation of preparatory measures, the readiness of the facility for work;
- supervise the work and monitor compliance with safety measures by employees;
- instruct the personnel in safe work practices for the specific work. In order to conduct the instruction, the person responsible for carrying out the work shall have the right to involve a competent specialist from the structural unit to conduct the instruction;
- when carrying out gas-hazardous work, appoint a supervisor and instruct them to perform previously defined actions in emergency and non-standard situations. In the course of work, the supervisor may change and everyone must be informed about their actions;
- agree with the shift supervisor on the actions of operating personnel in the event of an emergency or non-standard situation of gas-hazardous works;
- check the availability and serviceability of the personal protective equipment, tools and appliances of the operators, their compliance with the nature of work in progress;
- before carrying out hot works, check the availability of hot work certificates to the operators;
- inform the shift supervisor about readiness of the operators to work;
- organise and supervise the implementation of measures for the safe conduct of work as set forth in the work permit;
- take all necessary measures to prevent access to the place of work by persons not involved in its performance and not performing supervisory functions;
- stay on site periodically (constantly if required), supervise the operators, check the safety conditions of the work site and make sure that the safety conditions are not violated, and prevent the resumption of work if the safety conditions are violated;
- according to the terms of the work permit, ensure the air quality at the work site and stop work if necessary;
- supervise the work site in accordance with the requirements of the work permit;
- in the case of any hazard or if the operator’s health deteriorates, immediately stop all work, inform the head of the structural unit and jointly take all necessary measures to ensure work safety;
- upon the completion of work, check the completeness of work with the help of the shift supervisor.

2.4. **Workers** are obligated to:

- hold a hot work certificate when carrying out hot works;
- be instructed about explosive and fire hazardous properties of the given site / for safe conduct of work and confirm the receipt of instruction with their signature on the work permit;
- get acquainted with the conditions, nature and scope of work at the place where the work is to be carried out;
- when carrying out gas-hazardous work, agree the conditional signals with the supervisor;
- start work only when instructed to do so by the person in charge of the work;

- carry out the work only to the extent and in the quality specified in the work permit;
- comply with all safety precautions set forth in the work permit and instructions, as well as those specified during instruction;
- follow the commands of the supervisor*;*
- use protective equipment and comply with the safety precautions set forth in the work permit;
- carry out work with tools and safety equipment in good working order;
- in the event of fire, take measures to localise the fire;
- know the location of communication equipment and alarms, the procedure for evacuation from the danger zone;
- check the work site during the entire period of work;
- stop the work if any hazardous situation arises or if his/her own health deteriorates or signs of illness are found among members of the team and immediately inform the person in charge of the work;
- at the end of work, report to the shift supervisor and the person in charge of the work;
- after completion of work, tidy up the work site, remove tools, devices, debris, etc.

2.5. **The supervisor** (when performing gas-hazardous work) is obligated to:

- before starting work, receive instructions on how the supervisor shall behave in case of emergency or non-standard situations (ways of communication, contact persons (whom to contact));
- agree signals with the persons carrying out the work;
- remain at the workplace at all times and observe the signals and behaviour of the persons carrying out the work;
- if it is necessary to leave the workplace, instruct the person carrying out the work to stop the work and leave the device;
- check the condition and location of the air intake system;
- if necessary, using the previously agreed communication methods and signals, call the rescue team responsible for the work to the work site;
- be prepared to take part in the evacuation of an employee from confined space.

2.6. **The shift supervisor (senior operator / shift supervisor)** is obligated to:

- notify the shift personnel about the performance of work at the site and record information on the work at the site in the report;
- organise and ensure the safe execution of preparatory work;
- ensure that the technological process is carried out in such a way as to prevent any fire, explosion or injury to workers while the work is in progress;
- carry out periodic inspections of the work site;
- notify the person in charge of the work and the operators of any deviations in production work at which work must be stopped;
- in the case of any operational deviations which may pose a hazard to employees, suspend work on the basis of the work permit and inform the persons in charge thereof;
- check the readiness of the site for the work, as well as the completeness and quality of the works upon completion;
- coordinate, with the person in charge of the work, the actions of the operational personnel in the event of an emergency or non-standard situation during the gas-hazardous work;
- upon the completion of hot work operations, ensure supervision over the hot work site for at least 4 hours by the shift personnel.

3. Work permit for hot works / gas-hazardous works

3.1. A **work permit** is a work order created in the IFS electronic environment that specifies the scope of work, the place of work, the personnel of work, the date and time of start and end of work, as well as preparatory work and its sequence and, if necessary, additional security measures (PPE, special tools, operating modes, etc.).

3.2. A work permit is issued by an engineering and technical officer of the unit in accordance with these Instructions (Annex 1 to these Instructions) for the period required to complete the scope of work specified in it. The specified period shall correspond to the actual scope of work, but no more than 30 calendar days.

3.3. Persons responsible for the preparation and execution of work shall be appointed by the head of the structural unit or a person replacing him/her.

3.4. The scope and content of preparatory works, the sequence of their performance, the procedure for checking the air quality and safety measures during the works, determined by the person responsible for the preparation, and the layout of the work site, are agreed in the IFS by the head of the structural unit, the head of the workshop and the work environment specialist of VKG OIL AS.

3.5. Engineers and technicians of the unit may be appointed as responsible for the preparation for work.

3.6. Both the engineering and technical personnel of the unit and the personnel of the repair departments of the enterprise and of a third party company (if the work is to be carried out by a third party company) may be appointed as responsible for carrying out the work. When carrying out gas-hazardous work, only an engineer or technician may be appointed as the personnel of the repair departments of the enterprise responsible for the work.

3.7. If the work is carried out by a third party company, the person responsible for the work may be a chief engineer of the company who knows the safety rules for carrying out the work, has been instructed in the explosive and fire hazardous properties of the site where the work is to be carried out and has been instructed in the scope and content of these Instructions. The fact of the instruction shall be recorded in the Instruction Log of the structural unit. Also in this case, the entire responsibility for the professional qualifications of the performers of the work, for the performance of the work and for supervision during the performance of the work lies with the third party.

3.8. A work site layout plan shall be attached to the work permit. If work needs to be carried out work on technological devices and communications, the layout plan shall indicate the methods of cleaning, degassing, places of steam supply for steaming, condensate release, places of air sampling and places of plug installation for disconnection from the operating pipelines and devices. The approval of the work permit in the IFS also indicates the approval of the layout plan. Without the layout plan, the work permit is invalid.

3.9. After all the steps of recording have been completed in the IFS, the form of the work permit and the layout plan shall be printed on paper and given to the person responsible for preparation.

3.10. After checking the implementation of all preparation activities, the persons responsible for the preparation and conduct of work shall sign the work permit.

3.11. The composition of the team carrying out the work shall be recorded in the work permit, indicating the date and time of instruction.

3.12. Before starting work, the person responsible for preparation, together with the person responsible for carrying out the work, shall instruct the performers about the explosive and fire hazardous properties of the site and about safety measures during the performance of work. The instruction shall be recorded in the work permit with the signatures of the performers and the person responsible for preparation. If additional members are added to the team, the newly introduced worker shall be given similar instruction.

3.13. Upon the completion of the activities specified in the work permit, the head of the structural unit shall give permission for the work to be carried out, which shall be confirmed by his signature in the work permit. In exceptional cases, permission may be granted by electronic means of communication in a written reproducible format. When extending the work permit, the participation of the head of the structural unit is not required.

If the person responsible for preparation and the person responsible for carrying out the work is the same person, the participation of the head of the structural unit is mandatory when extending the work permit.

3.14. A work permit shall be issued for each individual work site.

3.15. The following is considered as one work site:

- work in one apparatus, tank, tunnel, collector, sump, gas duct, inter-workshop or workshop well, in one tank, sludge pit, etc.;
- work on one flare or process pipeline, flare stack, tank, apparatus or other type of equipment, one tank, etc.;
- installation of plugs for disconnecting pipeline sections, a single apparatus or other type of equipment, unit, section, process system or installation as a whole.

3.16. If the work has not been completed and the conditions have not deteriorated and the nature of the work has not changed, the work permit may be extended (within the dates specified in the work permit) for the next shift of the same team with confirmation of the work possibility for each subsequent shift with the signatures specified in the work permit.

If necessary, Form 5 to these Instructions may be used as the work extension form.

3.17. In the case of production necessity, the head of the structural unit shall have the right to appoint other persons responsible for the preparation and execution of work, having re-executed the admission procedure in the work permit form, having entered the name of the newly appointed person in the appropriate lines of the form and having confirmed in it the fact of reassignment with their signature.

3.18. If it is necessary to change the type of work, to increase the scope of work, or to expand the work area, a new work permit shall be issued.

3.19. The head of the structural unit shall agree the work permit, if necessary, with the head of the structural unit of the subsidiary or structural unit of the company in whose territory the work is to be carried out.

3.20. The issued work permit shall be stored at the central control station of the unit for the period of work. If the work is performed outside the territory of the unit, the work permit shall be transferred to the person performing the work and shall be stored at the place of work.

3.21. Upon the completion and acceptance of the entire scope of work, the person responsible for carrying out the work shall transfer the work permit to the head of the structural unit. The work permit shall be stored with the head of the structural unit for one month.

3.22. When issuing a work permit for hot work inside tanks, apparatuses, wells, reservoirs, etc., all safety measures must be taken into account, both for hot work and gas-hazardous work. Provided the apparatus is disconnected and cleaned, there is no gas content, and the oxygen content in it is not less than 20%, the work shall be carried out on the basis of the work order for repairs and in these cases the execution of the work order for gas-hazardous work is not required.

3.23. When carrying out hot work operations to prevent an emergency situation or eliminate an accident, a work permit shall be issued in accordance with Form 6 in one copy with the signature of the person responsible for the preparation and execution of work, indicating the result of the air quality analysis.

An emergency situation is a combination of conditions and circumstances that create a risk of accidents and other incidents that can lead to an explosion, fire, poisoning, death or injury of people, or loss of material assets.

The person responsible for preparing and carrying out the work shall instruct the performer on the hazards involved in carrying out the work. The performer of the work shall confirm by his/her signature in the work permit that he/she has received the instruction and is familiar with the activities. In this case, hot work shall be carried out under the direct supervision of the head of the structural unit or, with his/her permission, under the supervision of the person responsible for the work appointed by him/her (engineering technician of the unit, shift supervisor). In exceptional cases, the authorisation and appointment of the person responsible shall be made by phone. One employee may be appointed as responsible for the preparation and performance of the work. All hot works carried out in the specified mode shall be registered in the logbook of VKG Oil AS and in the shift logbook of the senior operator or shift supervisor of the structural unit where the work is carried out, before the start of work.

4. Preparatory work

4.1. Preparatory work includes all types of work related to the preparation of the site, equipment and communications for work, as well as the instruction of the employees assigned to the work.

4.2. Site preparation shall be carried out by the personnel of the structural unit under the supervision of the person responsible for preparation, and, if necessary, with the involvement of repair personnel.

4.3. To prepare a site for work, the entire range of preparatory measures set forth in the relevant instructions and the work permit shall be performed. Apparatuses, tanks, pipelines and other equipment on which work will be carried out shall be stopped, emptied from explosive, flammable and toxic products, taking into account the risk of pyrophoric deposits, and isolated from the operating apparatuses and communications (the installation of plugs should be recorded in the IFS) or otherwise prepared for work.

If it is not possible to install a plug, a work plan must be developed as an annex to the permit, or additional measures must be developed and specified in the preparation measures.

4.4. A hot work site within the radius specified in subsection 1.15 of these Instructions shall be cleaned or covered against flammable materials with flame retardant material. Platforms, metal structures, structural elements of galleries, etc., which are located at the hot work site must be cleaned of explosive and flammable products (dust, tar, oil, etc.). Structures and barriers made of flammable materials located within the radius specified in subsection 1.15 of these Instructions shall be covered against fire or sprinkled with water and kept wet during the entire period of work.

4.5. To assess the quality of preparatory measures, before starting work at the locations with the potential presence of harmful, explosive and flammable substances, a laboratory analysis of air quality should be carried out, directly at the work site, for oxygen content (in the case of work in a closed apparatus), as well as for harmful, explosive and flammable substances, with the results recorded in the work permit. In closed containers, apparatuses, etc. the analysis shall be carried out with the use of a laboratory probe. If necessary, the frequency of sampling the air quality or the use of portable gas analysers shall be indicated in the permit.

4.6. The content of flammable substances shall be zero. If flammable substances are observed in the air, the environment is considered explosive and work is not allowed.

4.7. Drain funnels and other devices which are connected to sewerage and in which flammable gases and vapours may be present shall be sealed off. When carrying out hot work near such places, measures shall be taken: sewerage wells within the radius

specified in subsection 1.15 of these Instructions, but not less than 10 m from the hot work site, shall be covered with a fireproof cloth and sprinkled with a layer of sand of at least 10 cm.

4.8. At the hot work site, measures shall be taken to prevent the scattering of sparks beyond the boundaries of the prepared area.

4.9. Hot work sites shall be provided with fire extinguishing equipment, at least 2 fire extinguishers that contain at least 6 kg of extinguishing agent and, if necessary, supplied with water or steam. Fire extinguishing equipment must be located no further than 10 m from the work site, accessible and ready for immediate use.

In the case of roofing work involving the heating of bitumen or other flammable material, in addition to the 2 x 6 kg fire extinguishers there must be at least 2 more fire extinguishers that contain at least 6 kg of extinguishing agent or one fire extinguisher that contains 12 kg of extinguishing agent.

4.10. The use of water instead of fire extinguishers is permitted if the hazardous flammable material at the site can be extinguished with water. It is permissible to replace fire extinguishers at a temporary hot work site with a fire hose system. Before starting work, the hose equipped with a barrel must be laid towards the work site. The system must be in a state of readiness for extinguishing.

5. Performance of work

A. Hot works

5.1. Responsibility for the safe performance of hot works in accordance with the requirements of these Instructions lies with the performer of hot works.

5.2. Performers shall have the right to start work only with the permission of the person responsible for hot works.

5.3. When carrying out hot works, it is prohibited to:

- allow employees not admitted for independent work and/or having no qualification certificates (certificates for hot works) access to hot works;
- perform work in a team of less than 2 employees (at a temporary site);
- carry out other work simultaneously with hot works, in the course of which flammable and hazardous substances may be released or flammable liquid or flammable gas may be used, which may lead to a risk of fire or explosion;
- use overalls with traces of oil, grease, gasoline or other flammable liquids;
- work with technically defective equipment;
- carry out welding or cutting work on freshly painted (with undried paint) structures;
- heat devices used for hot work and cylinders for storing flammable gases (oxygen, propane, etc.) using an open flame or other fire hazardous method;
- leave cylinders for storing flammable gases near hot equipment (at least 1 meter) or in direct sunlight during the warm period of the year;
- manually transport gas cylinders, or transport oxygen cylinders and cylinders with flammable gases together, except for transporting two cylinders on a special trolley;
- allow electrical wires to come into contact with compressed gas cylinders;
- use uninsulated or poorly insulated wires, use defective electrical equipment;
- carry out hot work on a tank, pipeline and other equipment that:
  - is filled with flammable materials or their residues;
  - is filled with non-flammable liquid, gas, steam or air, which are under pressure;
  - is under tension.

In exceptional cases and in non-standard situations, it is allowed to carry out hot works on tanks, pipelines and other equipment that is under excessive pressure, if the specific situation is described and additional safety measures (including the method of work) are specified in the work permit. To describe the method of work performance, relevant qualified specialists shall be involved.

5.4. During hot works, the metal part or component to be treated must be cooled down to avoid excessive heating, if this could create a fire hazard by means of heat conduction or radiant heat. After the work is completed, the metal part or component to be treated as well as the equipment elements heated at the work site shall be cooled down.

5.5. Apparatuses and containers in which electric welding work is carried out must be grounded.

5.6. If flammable substances are present in the hazardous area, inside the apparatus or pipeline, hot works must be stopped immediately. These operations may be resumed only after the elimination of the causes of gas pollution and the restoration of a normal air environment.

5.7. During preparations for hot work, operational personnel shall take measures to exclude the possibility of release of explosive and flammable substances into the hot work site, into the air environment.

At the work site, it is prohibited to (considering the wind direction):

- open hatches and covers of devices;
- unload, reload and discharge products;
- load through open hatches,
- perform other operations that can lead to fires and explosions due to gas and dust in places where hot work is carried out.

5.8. The remains of used electrodes should be collected in a special container/box.

5.9. During hot works, the distance:

- between the gas burner and the cylinders with oxygen and flammable gas must be at least 10 m;
- between oxygen and gas cylinders must be at least 5 m.

5.10. Hot work must be stopped immediately upon the detection of deviations from the requirements of these Instructions, non-compliance with the safety measures set forth in the work permit, as well as in the event of a dangerous situation.

5.11. Supervision of the hot work site shall be carried out by the performers during the entire period of hot works. If the performance of hot works entails a risk of fire in an adjacent room, on lower floors or in other places, supervision shall also be ensured. Section 10 of the work permit indicates the position of the person supervising during the hot work and thereafter.

5.12. Upon the completion of hot works:

- the performer carefully shall inspect and clean the work site, cool the metal part or components treated, cool the equipment elements heated at the work site, and, if necessary, sprinkle these with water, and eliminate the identified violations that can lead to fire, injuries or accidents;
- the head of the structural unit shall organise supervision over the hot work site for at least 4 hours until the fire hazard has subsided.

B. <u>Gas-hazardous works</u>

5.13. Gas-hazardous works should be carried out by a team of at least two people, and in wells – at least 3 people (when using a system for evacuation from a well – a tripod with a winch – two workers are allowed, one in the well and one outside). The team members

must be provided with appropriate personal protective equipment, overalls, footwear, tools, devices and auxiliary materials.

5.14. As a rule, one person is allowed to stay inside an apparatus or a tank. If it is necessary for more workers to be in the apparatus or tank, safety measures shall be developed, specified in the work permit, and additional safety measures shall be implemented, providing for an increased number of supervisors, order of entry of workers, order of placement of hoses, availability of means of communication and signalling at the work site, etc.

5.15. The choice of personal respiratory protective equipment and the duration of work in it must meet the requirements of standards and specifications for such equipment. To protect the respiratory organs of those working inside apparatuses and containers, an insulating device must be used. The use of filtering respiratory protective equipment is permitted only in conjunction with gas analysers and with an oxygen content of at least 20%.

5.16. Work inside apparatuses and tanks may be carried out without the use of personal respiratory protection equipment in accordance with the work permit, if the presence of oxygen of at least 20% is ensured in the apparatus or tank, the content of harmful vapours and gases is not higher than the standard limits, the possibility of their ingress from outside or their release from deposits, linings, etc. is excluded and if this fact is indicated in the work permit.

Measures to ensure the safety of work inside an apparatus without personal respiratory protection must be set out in the instructions for the type of work and in the work permit, and must include:

- continuous guaranteed supply of fresh air into the apparatus to ensure a normal air environment in the apparatus;
- continuous monitoring of the air environment by means of portable gas analysers;
- the presence of breathers in the “ready” position for each person working and supervising in the apparatus (if the conditions of the work permit specify that there is no possibility of the occurrence of harmful substances and constant ventilation of the apparatus is ensured, breathers may not have to be in the “ready” position).
- the availability of signalling and communication equipment (light, sound, radiotelephone) near the work site.

5.17. The period of consecutive use of a breather by a worker shall be specified in the work permit, but should not exceed 30 minutes.

5.18. The performance of gas-hazardous works of Group I may only be commenced after:

- checking the readiness of the site (equipment, communications, etc.) of gas-hazardous work by a working environment specialist and confirming the possibility of carrying out work with their signature in the work permit;
- the written registration of the work procedure order and additional safety measures, drawn up as an annex to the work permit;
- workers of the team have been acquainted with the work order against their signature;
- appointing a supervisor;
- coordinating the actions of the supervisor in the case of emergency and non-standard situations;
- obtaining the permission of the head of the structural unit.

5.19. Drawing up a work order and developing additional security measures is necessary if the preliminary inspection reveals that the actual conditions do not correspond to the measures specified in the instructions for this type of work.

5.20. In order to avoid massive emissions of hazardous and fire-explosive products to the work site while performing work on inter-workshop structures, sewerage networks, in wells, tunnels and similar structures, the heads of adjacent departments shall be notified about it in the work permit, in order to take appropriate safety measures.

5.21. Gas-hazardous work shall be commenced in the presence of the person in charge of the work. The need for their constant presence at the work site or the frequency of inspections shall be specified in the work permit.

To check compliance with the safety measures set forth in these Instructions, operators may be involved who are authorised to carry out gas-hazardous work and are not engaged in the technological process. They shall inform the person in charge of the work on compliance with safety requirements.

5.22. Work in settling tanks and other open underground structures of a large area, where the possibility of the release of harmful, explosive or fire-explosive substances is or is not excluded, as well as work in the reception chambers of industrial waste and sludge, and in wells must be carried out taking into account the requirements for work in closed apparatuses and containers.

5.23. For the period of work, open hatches of wells must be surrounded with a fence and illuminated at night.

5.24. For lighting in closed apparatuses, it is necessary to use portable lamps with a voltage not exceeding 12 V or rechargeable lamps appropriate for the category and group of the explosive mixture.

5.25. Repair works on gas pipelines and equipment with explosive atmospheres must be carried out with spark-free tools and explosion-proof rechargeable lamps or explosion-proof portable lamps must be used for additional lighting.

5.26. Heated apparatuses and containers must be cooled down to a temperature not exceeding 40 °C before people are allowed to enter them. In exceptional cases, if it is necessary to work at a higher temperature, additional safety measures shall be developed to exclude the impact of high temperature on the human body.

5.27. In any case of working at a height in an apparatus, employees are obligated to use fall protection equipment. An employee using fall arrest equipment must be trained in its proper use.

5.28. In the absence of visual communication between the worker and the supervisor, a system of situation signals shall be established using a signal-rescue rope or means of communication.

The supervisor must constantly be at the hatch (manhole) of the apparatus or tank in the same equipment as the worker, carrying a breather in the “ready” position, and be ready to take part in the evacuation of the worker from the apparatus (if required in the work permit).

5.29. If there are any deviations from the usual behaviour of the person working inside the apparatus (signs of feeling unwell, an attempt to remove the mask, no response to the signal transmission by means of communication or a signal rope), as well as in the case of other circumstances that threaten his/her safety, the work should be stopped immediately, assistance (employees to participate in the evacuation and first aid, rescue team responsible for carrying out the evacuation, or the shift supervisor) should be called using the previously agreed available means of communication. Before the arrival of help and the coordination of actions, entry into the apparatus is prohibited.

5.30. Upon work in closed apparatuses, tanks, equipment, wells, etc., a safety net similar to the system used to protect against falls from a height shall be used to secure (evacuate) the worker inside, but with a rescue rope. The rescue rope must be fastened with carabiners to the designated points on the rescue rope system. The rescue rope is used at workplaces where it is possible to pull the evacuee without hindrance to the point of

entry into the apparatus by the rescue rope. Evacuation methods shall be considered before starting work and taken into account when instructing the supervisor.

5.31. Portable ladders used for lowering a worker into an apparatus or tank, working inside it and lifting the worker from the apparatus or tank must be in good order and comply with safety requirements. Checking the serviceability, stability and reliability of fixing a ladder at a work site is carried out in the presence of the person responsible for carrying out the work.

5.32. When descending into and coming out of an apparatus or tank, the worker should not hold any objects in his/her hands. All the tools and materials required for work must be fed into the apparatus or tank in a way that prevents them from falling or sparking and injuring the workers.

5.33. Methods of safe descent into an apparatus or tank, the tools and materials as well as methods of quick evacuation of workers from the apparatus or tank shall be determined by the person responsible for carrying out the work.

5.34. When simultaneously working at different heights, continuous protective decks of sufficient strength need to be installed to prevent the workers from getting injured if tools and materials fall from upper heights, and the necessary conditions for evacuating the victims shall be ensured.

5.35. When applying protective coatings on the internal surfaces of apparatuses and tanks, the performance of which entails the emission of flammable and hazardous vapours, their forced removal from the apparatus and tanks should be ensured.

5.36. After the completion of work inside an apparatus or tank, the person in charge shall before closing the hatches personally make sure that no people, tools, materials or foreign objects are left in the apparatus or tank and record this in the work permit.

(Endorsed in the WD)
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