

Pursuant to Article 7 paragraph 2 and Articles 27a and 59 of the Law on Exploration and Production of Hydrocarbons (Official Gazette of Montenegro 41/10 and 62/13), the Ministry of Economy adopted

## **Rulebook on Requirements for Drilling of Wells and Construction of Facilities for Hydrocarbons Exploration and Production**

### **Subject-matter Article 1**

Operations of drilling of wells and designing and construction of facilities for exploration and production of hydrocarbons carried out by a Concessionaire directly executing hydrocarbons operations (hereinafter referred to as the Operator), registration of wells, development and contents of drilling plans and programs, reporting on drilling operations and collecting and providing samples shall be carried out in line with the requirements and in the manner stipulated by this Rulebook.

### **1. DRILLING OF WELLS**

#### **General Requirements for Drilling and Wells Article 2**

Drilling of wells and other Well activities shall be carried out in a safe and proper manner, which entails:

- 1) Undertaking measures preventing the interruption of Upstream operations;
- 2) Operating and maintenance of equipment in accordance with technical specifications and operating and maintenance instructions;
- 3) Undertaking operational measures to prevent fires, explosions, pollution, and any other accidents;
- 4) Designing, developing and installing well casings in the way adequate to the environment where they are undertaken and which ensure control at all times;
- 5) Installing safety equipment in accordance with law and the requirements of the planned activities;
- 6) Examining the seabed prior to commencement of drilling or prior to the construction or replacement of Facilities or equipment required for drilling a Well to ensure that the external environment will not cause damage to Facilities;
- 7) Preparing plans for emergency response, in accordance with law, prior to commencement of drilling or Well related activities, designed to achieve rapid and effective emergency response in the event of an incident or accident causing a blow-out or fire, discharge, waste or loss of Hydrocarbons or damage to Hydrocarbons bearing strata, Facilities or endangering the environment.

#### **Registration of Wells Article 3**

- (1) Prior to the commencement of drilling, the application for registration of the wells shall be submitted no later than 14 days preceding the day planned for commencement of drilling.
- (2) At the time of registration of a well, the Well shall be classified, a registration number shall be issued, a Well path designation of each separate Well or Well path shall be determined, designations for data collection and exploration shall be determined, including track surveys and subsurface surveys.
- (3) In case of a change of a Well designation, reclassification of the well shall be carried out, and/or for a side tracking to a new Well target a new Well path designation shall be issued.
- (4) Registration procedure referred to in paragraph 2 of this Article shall also determine the classifications for well surveys, including track surveys and subsurface surveys.

### **Designation of Wells, Deposits and Facilities**

#### **Article 4**

- (1) Wells designation shall be determined in such a manner that each Well and each Deposit is marked with a hyphen and the word "Deposit", and if there are more than one Well within a Deposit, the geological unit shall be stated as additional information.
- (2) A Discovery shall be marked in accordance with paragraph 1 of this Article, while to each individual Well a hyphen and the word "Discovery" will be awarded.
- (3) A Discovery or a collection of Discoveries, at the request of the Operator, may be named, and it shall be designated in accordance with paragraph 1 of this Article.
- (4) The marking of the Discovery Well of one or several Deposits, which make up the Discovery, shall be placed before the name.
- (5) If a Discovery is located in the near vicinity of an existing field and is connected with the existing field, in accordance with a Hydrocarbons Development and Production Program, the existing field's name shall be used provided that it has the same Concessionaire.
- (6) Facilities that are placed in function of development and production shall be designated by Block number of the awarded area and letters from A to Ž for each Production Field or Block, and if needed, the designations AA, AB, etc. may be used.
- (7) An Operator shall propose a name of the Field by the submission of the Program for Development and Production of Hydrocarbons at the latest, and such name shall be used from its approval or from the approval of the Program for Development and Production of Hydrocarbons.

## **Risk Management related to Drilling of Wells**

### **Article 5**

- (1) For the purpose of risk management related to drilling of Wells, the Operator shall:
  - a) prepare plans and procedures for drilling and operation of Wells;
  - b) carry out risk analysis to identify situations where Well pressure control may be lost or other adverse effects may occur;
  - c) Establish the operational limits applicable to drilling and Well activities undertaken within the same Facility;
  - d) Determine the position of the Well;
  - e) Establish plans for a relief Well in case of loss of Well pressure control.
- (2) In the event of any release, discharge or escape of Hydrocarbons, blow-out, fire, pressure loss, waste or loss of Hydrocarbons, or damage to Hydrocarbons bearing strata, the Operator shall notify competent authorities in accordance with law.

## **General Requirements regarding Drilling-related Activities**

### **Article 6**

- (1) Drilling related activities shall be carried out in accordance with law and the best available industry, safety and environmental standards.
- (2) Prior to drilling and during the Well-related activities, it shall be ensured that no single failure may entail life-threatening situations or injury for the personnel, third party, damage to Facilities, material, property, or endanger the environment.
- (3) The provision referred to in paragraph 2 of this Article shall also apply to operational errors and failures related to Facilities directly used in drilling, as well as to equipment with auxiliary functions.
- (4) Work environment in the areas where drilling and Well-related activities are undertaken must be organised in such manner to ensure safety for personnel and operations, and especially during storage, assembly, disassembly and suspension of drill pipes, drill collars and casings in the rotary table, as well as to the transport of such equipment between the storage location and the drilling unit.
- (5) In case of probability of encountering shallow gas, the necessary measures to ensure that operational activities are safely carried out shall be undertaken.
- (6) In accordance with safety and operational criteria, oil based and synthetic oil based drilling fluids shall be used only when such use is required, where fluid volumes shall be verified prior to, during and subsequent to the removal of equipment from the Well and procedures shall be established to remove the unintentional influx of fluids from the Well, as well as to maintain pressure control in the event of pressure loss.

- (7) Formation testing, including drilling, hydraulic fracturing, acid treatment or other physical or chemical treatment of the Well shall be done according to this Rulebook and special regulations, as well as in line with best practices of the Hydrocarbons industry.

### **Establishing Barriers**

#### **Article 7**

- (1) At least two independent and tested barriers shall be in place in order to prevent an accidental flow of hydrocarbons from the Well during drilling, as well as other Well-related activities.
- (2) For each projected activity to be carried out from a Facility it shall be necessary to plan establishing of barriers.
- (3) If one barrier loses its function, Well related activities may proceed only after restoration of its function.
- (4) The Operator shall define operational requirements with regard to the drilling capability of equipment and to its control, as well as to operative and mobilization capability, as well as other systems and components used during drilling in order to comply with the planned barrier plan.
- (5) The Operator shall ensure that Well control equipment is periodically tested, and especially examined under pressure as to verify barrier functions.

### **Drilling Plan and Well-related Operations Plan**

#### **Article 8**

- (1) Drilling plan and Well-related operations plan shall be prepared for all drilling and Well related operations.
- (2) The plans referred to in paragraph 1 of this Article shall contain comprehensive information relevant to the Well or drilling relevant to the Hydrocarbons Production Concession Contract.
- (3) The plans referred to in paragraph 1 of this Article shall be submitted to the Administration Authority in accordance with the law.
- (4) For drilling activities planned to be carried out during the Production Phase, the drilling plan shall be submitted along with the Hydrocarbons Development and Production Program.
- (5) Operator shall immediately notify the Administration Authority of substantial changes in relation to the Well plan.

**Drilling Program Content**  
**Article 9**

- (1) Based on the plans referred to in Article 8 of this Rulebook, a drilling program shall be prepared for each Well to be drilled, which shall include:
- 1) Production Concession Contract number;
  - 2) Name and contact details (telephone number, email and similar) of the Operator and of the party carrying out the drilling, including its organization chart showing positions;
  - 3) Accurate information about the location of the drilling activities, including location of Facilities and equipment, as well as water depth, which are submitted along with geographical coordinates and in map format;
  - 4) Brief history of the previous activities under the Production Concession Contract;
  - 5) Description of the regional geology in the area including relevant information about geological and technical features of the Deposit, such as: an outline of the prospect and Well location, lithological column with depths, formations with explanatory text, pressure and temperature;
  - 6) The prospect(s), including maps (time and depth), geological description, velocities, intersecting seismic lines through the Well, and at least one geo-seismic section;
  - 7) The estimated initial, but undiscovered volumes of Hydrocarbons in each strata or Deposit, a description of risked volume estimates and recoverable hydrocarbons volume estimates which can be produced and the method of estimation;
  - 8) Proposal for classification of the Well;
  - 9) Schedule of the drilling, including date of commencement and conclusion of the drilling;
  - 10) Drilling methods to be used, including specification of all equipment;
  - 11) Description of the planned sequence of drilling and associated well operations specifying the well diameter, mud used, logging and borehole testing operations, casing design, cementing operations, possible Production tests and Well completion procedures;
  - 12) Description of Facilities, and other devices that are to be used during the drilling including the name, call signals, IMO numbers and origin;
  - 13) Planned calls into Montenegro territorial waters;
  - 14) The plan referred to in Article 2 item 7 of this Rulebook, including plan for relief Well;
  - 15) Information related to protection of persons, safety and protection of the environment in accordance with the law;
  - 16) Data acquisition program with criteria for Data acquisition pursuant to this Rulebook, and table showing planned formation evaluation;
  - 17) Management documents and management systems relevant for drilling;
  - 18) Extract from the environmental impact assessment study;
  - 19) Evaluation of impact of planned drilling to other activities in the surrounding area;
  - 20) Information related to insurance of Drilling and Well related activities;
  - 21) Information related to requests submitted to other authorities in accordance with the law;

- 22) Other information relevant to the drilling activities that the Administration Authority requires in accordance with the law.
- (2) The program referred to in paragraph 1 of this Article shall be submitted along with the request for approval of drilling, which is to be submitted in accordance with the law, along with the proposed name of the well and registration number.

### **Notification on Well-related Activities**

#### **Article 10**

- (1) The Operator shall notify the Administration Authority about activities that could lead to the physical change of a Well path or wellbore two days before the commencement of such activities.
- (2) The activities referred to in paragraph 1 of this Article shall include:
- a) Well testing;
  - b) Well completion;
  - c) Suspension, plugging and abandonment of a Well;
  - d) Re-entry into an existing Well; and
  - e) Well intervention.
- (3) The notification referred to in paragraph 1 of this Article shall contain details on the method and procedure to be applied, and the proposed schedule for carrying out the planned activities.
- (4) The Operator shall immediately notify the competent authority in accordance with law, if either a Well integrity hazard has been identified, or there has been a significant increase in an existing risk in relation to a Well.
- (5) A report shall be submitted about repairs, modifications, re-completion, production testing, plugging, or suspension of a Well in accordance with paragraph 1 of this Article.

### **Data Acquisition Requirements**

#### **Article 11**

- (1) Samples such as cuttings, conventional cores, sidewall cores, liquid and gas samples, logs and test data shall be collected during drilling and other Well-related activities in accordance with this Rulebook and the Production Concession Contract.
- (2) Samples of cuttings shall be collected in the following manner:
- a) In Wells drilled for the purpose of making a Discovery or an appraisal of reserves of oil or gas deposit, samples of cuttings shall be taken from all penetrated geological formations drilled and the sampling shall commence as soon as return of drilling fluid has been established;
  - b) In Wells drilled for Production purposes as determined by the Administration Authority, samples of cuttings shall be taken of all penetrated geological formations;

- c) The interval between the samples may not exceed 10 meters; and
  - d) The interval between the samples in potential Hydrocarbons bearing strata of Wells drilled for the purpose of making a Discovery or appraisal of a Discovery shall not exceed 3 meters if conventional cores are not taken.
- (3) Taking of cores shall be carried out in the following manner:
- a) In exploration Wells at least one conventional core shall be taken from all zones containing Hydrocarbons;
  - b) Cores shall be taken of all potential source rock and rock types from the Deposit itself;
  - c) From the Wells drilled for the purpose of assessing the size of a Discovery or for the purpose of Development or Production of a Deposit, as determined by the administration authority, conventional cores shall be taken from the entire section of the Deposit;
  - d) Sidewall cores shall be taken to the extent this is necessary for better understating of the hydrocarbon potential.
- (4) Fluid samples shall be taken in connection with formation testing and formation test logging.
- (5) Logging shall be carried out in the following manner:
- a) Well logs shall be run in all Wells and Well paths, in such manner to be possible to correlate them and shall at least enable an interpretation of lithology and estimation of porosity and water saturation, hydrogen index and fluid typing;
  - b) Formation logging shall be carried out in Wells drilled for the purpose of making a Discovery or an appraisal and verification of a Discovery in order to establish pressure gradient, type of fluids and fluid contacts in a formation, and of its Production capability.

### **Labelling, format and packaging of submitted samples**

#### **Article 12**

- (1) All samples shall be clearly marked by water resistant agents.
- (2) Marking of samples shall contain identification reference of the relevant Production Concession Contract and Operator's name, date of sampling, name of the person carrying out the sampling, the Well designation and the depth, or depth interval, from which the samples have been collected.
- (3) In addition to requirements referred to in paragraphs 1 and 2 of this Article, marking of samples shall be carried out in the following manner:
- a) Samples from tested formations and formation test logging shall be marked with the test number, test type, flow period and type of fluid;
  - b) Fluid samples shall be placed in standard aluminium sample containers with screw cap of a type giving the lowest possible loss of Hydrocarbons;
  - c) Samples of cuttings shall be packed in leak proof bags or in high-density polyethylene containers, while unwashed samples from intervals containing oil based drilling fluid shall be kept in high-density polyethylene containers. The

overall exterior dimensions of the containers shall be as follows: 14 cm high, 27 cm wide, 90 - 110 cm long;

- d) Conventional cores shall be delivered in solid, rigid boxes with the following exterior dimensions: 10 cm high, 40 cm wide, 90 - 110 cm long.

### **Periodic reports on Drilling operations and Well-related activities**

#### **Article 13**

- (1) During drilling and other Well-related activities, daily and/or weekly reports shall be submitted to the Administration Authority.
- (2) Daily or weekly reports referred to in paragraph 1 of this Article shall be prepared and submitted electronically.
- (3) The daily report referred to in paragraph 1 of this Article shall contain:
- a) Number of the Production Concession Contract;
  - b) Name and contact details of the Concessionaire and Operator;
  - c) Designation of the Well;
  - d) Location and coordinates of the Well;
  - e) Activity carried out, including Well depth;
  - f) Well profile table and drawing;
  - g) Lithology of formations penetrated;
  - h) Indications of Hydrocarbons presence;
  - i) Borehole geometry;
  - j) Results of surveys made in the wellbore;
  - k) Any incidents; and
  - l) Well deviation reports.
- (4) Weekly report referred to in paragraph 1 of this Article shall contain:
- a) Number of the Production Concession Contract;
  - b) Name and contact details of the Concessionaire and Operator;
  - c) Designation of the Well;
  - d) Location and coordinates of the Well;
  - e) Summary of daily drilling reports and other well-related activities.
- (5) The Operator shall inform the Administration Authority of any changes related to drilling program or its implementation, and the Administration Authority may order postponing of the Well drilling activity until another drilling program has been approved.

### **Submitting Data and materials after completion of drilling and other Well-related activities**

#### **Article 14**

- (1) The Operator shall submit samples and preparations from samples to the Administration Authority in the manner stipulated by the Administration Authority, including inter alia thin sections from each individual Well or Well path.



- (2) Samples and data collected shall be submitted to the Administration Authority within six months following the completion of drilling of the Well and other Well-related activities.
- (3) Data or samples connected for cuttings shall be submitted in the following manner:
- a) From exploration Wells, samples from all rock types in all penetrated geological formations drilled shall be submitted;
  - b) From the first Production Well of the Production Field, cuttings from the whole wellbore, and if the drilling is subsequently carried out in formations not computed by the first Well, cuttings shall be submitted from the whole Deposit interval going through the Deposit itself;
  - c) From unwashed cuttings, at least 1 kg of dried material shall be submitted from each sampling interval. Unwashed cuttings shall be dried at 400<sup>o</sup> C or lower. If the quantity of cuttings is limited, as a result of slim hole drilling or similar reasons, at least half the collected cuttings shall be submitted, limited to 1 kg.
- (4) Core samples shall be submitted in the following manner:
- a) Where conventional cores are taken, a complete longitudinal section shall be submitted, which comprises at least one quarter of the core from Wells drilled for the purpose of making a Discovery of deposit or reserve verification and one half of the core from Development or Production Wells. If the core diameter is less than 7.6 cm at least one half of the core shall be submitted from Wells drilled for the purpose of making a Discovery or reserve verification;
  - b) If full diameter cores are used for the purpose of special core analyses, the Operator may make an application for individual core intervals to be kept temporarily as full diameter cores and be treated for use in special core analyses;
  - c) Colour photographs of the cores shall be submitted together with conventional cores. The photographs are to be taken immediately after cutting, and shall show Well path designation, core number, depth, orientation and scale.
- (5) Fluid samples from formation testing and formation test logging shall be submitted in the following manner:
- a) 2 x 1/2 litres of each individual fluid oil, condensate, formation fluid are taken from each interval or a set of intervals tested, which make representative Deposit conditions. If a test yields less than 2 x 1/2 litre smaller quantities may be submitted;
  - b) For all test types the fluid shall be sampled at ordinary ambient service conditions at the surface, i.e. ca. 101.3 kPa (1 Atm) and 20<sup>o</sup> C;
  - c) Sampling shall be carried out in a way that ensures that the sample is as representative as possible of the formation fluid;
  - d) While sampling, real time fluid analysis shall be conducted; and
  - e) Standard sample bottles shall be used and shall be filled to a maximum of ca. 85 percent of the total bottle volume.
- (6) Palynological preparations shall be submitted in the following manner:
- a) Duplicate of palynological, and micropaleontological preparations from cuttings, side wall cores and conventional cores shall be submitted;
  - b) Contents of preparations must be representative of the sample; and

- c) Preparations shall be made with a permanent mounting substance of plastic polymer.

### **Notification on Well Testing Article 15**

- (1) Notification regarding planned Well testing shall be submitted to the Administration Authority no later than three days prior to commencement of the Well test activities.
- (2) Notification regarding planned Well testing shall contain inter alia:
  - a) Purpose and proposed plan for implementation of the test, cost breakdown, and estimate of income from sale of Hydrocarbons extracted as a result of the test, if any;
  - b) Duration of testing periods and shut-in periods;
  - c) Volumes of hydrocarbons for flaring or venting to air;
  - d) Evaluation of consequences to the environment;
  - e) Planned volume of Deposit fluid to be taken out and analyses intended to be carried out on the Deposit;
  - f) Planned Production logging; and
  - g) Preliminary log evaluation in true vertical depth with the scale 1:500 and 1:200.

### **Permanent plugging of Wells Article 16**

- (1) Information on the method and procedure planned for the permanent plugging of a Well shall be submitted and the necessary logs shall be made directly available to the Administration Authority 24 hours prior to commencement of the activities.
- (2) The Operator shall ensure that the zone depths with their respective flow potential are identified prior to temporary or permanent plugging of a Well, to prevent any eruption or leakage of Hydrocarbons or other formation fluids.

### **Final report after drilling, as well as other Well-related activities and Report on interpretation of results Article 17**

- (1) A final geological and technical report about the Deposit in respect of each Well or Well path shall be submitted to the Administration Authority in accordance with the law.
- (2) The Report referred to in paragraph 1 of this Article shall contain:
  - 1) Number of the Production Concession Contract;
  - 2) Name and contact details of the Operator carrying out the activities;
  - 3) Name of the drilling unit used;
  - 4) Designation of the Well;

- 5) Location and coordinates of the spud point and termination point of the Well;
  - 6) Depth of water in which the Well was drilled;
  - 7) True vertical depth and measured depth of the Well;
  - 8) Commencement and conclusions of the drilling;
  - 9) Statement whether the Well was completed as a producing Well, suspended as a potential producing Well, or plugged and abandoned;
  - 10) Results of formation fluid sampling tests, production tests and analyses carried out;
  - 11) Description of equipment installed in the Well;
  - 12) Cementing operations carried out;
  - 13) Descriptions of geological samples such as cuttings, sidewall and conventional cores;
  - 14) All surveys and measurements made in the Well, including any detailed interpretations;
  - 15) Geological interpretation of the observations made;
  - 16) Interpretations of all wireline log Data, including: full processed survey results, and computer processed interpretation logs;
  - 17) Where other surveys have been carried out: information or material as requested by the Administration Authority, in accordance with law;
  - 18) Where available, interpretation of all fluid sample analyses;
  - 19) Reports on cores and cuttings recovered.
- (3) The Operator shall submit interpretations and data analysis of the Well produced after the submission of the report referred to in paragraph 1 of this Article to the Administration Authority.

## **2. FACILITIES**

### **General requirements related to design and construction of Facilities**

#### **Article 18**

- (1) Facilities and work sites shall be planned, designed, built, equipped, and set up in the way that Upstream activities can be performed safely and efficiently in accordance with best Hydrocarbons industry practices and best pipeline practices.
- (2) Facilities and work sites shall be designed in line with the law and best available international codes and standards, and the list of standards and codes shall make an integrated part of the Hydrocarbons Development and Production Program.
- (3) Facilities and work sites must be in accordance with applicable Montenegrin and international standards and codes, where it should be considered that different standards could not be applied within the same area.
- (4) A person independent from the designer shall carry expert supervision of the design implementation.
- (5) If standards with different specifications are used in designing, the expert supervision must in accordance with applied standards.

- (6) In order to achieve the objectives of the Facilities' management system in accordance with this Rulebook, when planning new Facilities and reconstructing existing Facilities the available equipment and new technologies shall be taken into account, while risks that may trigger danger or incident situations must be removed during the Development and Production phases.
- (7) Functional requirements of the Facilities must be documented and should be aligned with the operating lifetime of the production, for which purpose possible variations in flow rates, pressure conditions, temperatures, composition and nature of fluids shall be taken into account.
- (8) The operating and maintenance requirements of the Facilities shall be defined and documented during the Facilities' design phase in order to provide the grounds for the preparation of corresponding procedures.
- (9) While designing it is necessary to ensure the access to the Facilities for their inspection supervision in accordance with the law.
- (10) Facilities shall be equipped in such manner to reduce the consequences of fire and explosion, while the systems and components of Facilities should minimize the probability of blow out, starting and expanding of fire and explosions, preventing injury to persons and damage of equipment as well as possibility of effective fire fighting. Appropriate detection systems for fire and gas must be installed in the Facilities and they shall be in accordance with the best available international petroleum industry practice.
- (11) The Operator shall classify parts of Facilities according to explosion risk and divide them into zones of possible danger.
- (12) Facilities or structures containing Hydrocarbons must be ventilated.
- (13) All Facilities and work sites must be kept in a proper and safe working condition during construction activities.

### **Facility Operational Risk Analysis**

#### **Article 19**

- (1) Mandatory risk analyses of operational risk of facilities and related activities shall be carried out in order to identify the consequences of single or group failures in operation of Facilities that may occur to life and health of persons, property and the environment, including financial interests.
- (2) For the purpose of risk analyses referred to in paragraph 1 of this Article the design of the Facility, planned activities and operations, equipment, work processes and training of personnel engaged in the activity shall be particularly taken into account.

- (3) Risk analyses referred to in paragraph 1 of this Article shall be performed for each phase of Upstream operations.
- (4) Risk analysis results shall be incorporated into operating manuals, procedures and reporting requirements.
- (5) Measures to eliminate or reduce the risks identified through risk analyses referred to in paragraph 1 of this Article shall be implemented during all the phases of Upstream operations.

### **Control Systems** **Article 20**

- (1) During the phases of design, installing and operation of control systems, the Facility or equipment, safety zones and the safety and emergency plans prepared in accordance with the law shall be taken into account.
- (2) The control systems shall be operable by independent panels that must be conveniently located.
- (3) The risk of failures occurrence or consequences of such failure shall be taken into account in the process of outlining or designing of control systems in order to minimize the same.
- (4) The control system components with critical functions must remain in good working conditions even in the event of failure of the control system.

### **Facilities, vessels and watercrafts** **Article 21**

- (1) Floating or fixed Facilities used offshore shall be designed and equipped in such a manner to ensure the stability or safe operation and the capacity to withstand the projected loads, in accordance with the law and marine standards.
- (2) The docking gear, the anchorage system and the dynamic positioning system for vessels, watercrafts or floating Facilities used offshore shall be dimensioned and operated in accordance with the law and best available international petroleum industry practices and marine standards.
- (3) Floating facilities, vessels and watercrafts shall meet other requirements stipulated by the special law.

### **Requirements for Equipment and Material for Drilling Facilities and Wells** **Article 22**

- (1) Equipment and materials used in the implementation of drilling and Well-related activities shall be in line with the best available international standards and protected from anomalous loads.
- (2) Separate Well intervention units and equipment shall be designed, built, installed, tested, used and maintained in accordance with the law, this Rulebook and best available international standards.
- (3) The drilling and Well equipment and Facilities shall enable control of the Well, undisturbed and safe work of personnel or shutting down the Well in case of an uncontrollable influx into the Well.
- (4) In the event of equipment failure, if the Well is in an uncontrolled flow situation, mobile Facilities shall be repositioned onto a safe area.
- (5) A blowout preventer shall consist of an emergency blind ram and a shutdown valve installed at the top of a Well as well as a hydraulic system capable of closing over the space around the drilling tube despite high pressure. A blowout preventer must prevent the escape of liquids or gases from a Well, and shall be designed and installed in such manner to preserve its capability to function as a barrier and must be operational during the initial phase of the Facility's activity.
- (6) Pressure exposed equipment shall be designed, built, tested and maintained in accordance with the law, this Rulebook and the best available international technical standards.
- (7) Safety devices shall be tested in accordance with the Operator's established procedures, also applicable to testing of equipment functionalities and testing of leaks or spills of hydrocarbons.
- (8) When safety devices are activated, the pressure control system shall be implemented to avoid injuries to personnel, third party property, damages to Facilities, material, the environment pollution, damage or loss of assets and financial interests.
- (9) Valves and actuators of the Christmas tree type Well and safety valves shall be installed in a sufficient number and in such a manner as to preserve their barrier functions and shall be individually and collectively tested in accordance with established procedures, as well as with a test program.
- (10) The Facility must be equipped with tanks with sufficient capacity to support the quantity of drilling fluid necessary to ensure full control of the Well and to contain, at all times, sufficient quantities of drilling fluids and other substances. The drilling fluid system must have adequate capacity to support a rapid increase of drilling fluid in an active system, as well as capacity for the increasing weight of the drilling fluid in the case of Well instability; while a reconditioning system with the necessary equipment for the separation of drilled out formation, cuttings and Hydrocarbons from drilling fluid shall be implemented in order to ensure the required quality of the drilling fluid.

- (11) The composition of the drilling fluids and completion fluids must ensure that the required properties of the fluid are preserved. It is necessary ensure continuous monitoring of the fluids which comprise a barrier or that form part of the barrier's elements.

### **Equipment for Registration of Data Article 23**

Facilities must be equipped with instruments for registration of data which are deemed important for management, monitoring and control of Upstream operations.

### **Facilities' structures and structural elements Article 24**

- (1) Structures and structural elements of Facilities must:
- a) Perform satisfactorily under normal conditions in view of, among other factors, deteriorations, displacements, foundations and vibrations;
  - b) Have adequate safety mechanisms to resist accidents caused by their wearing out;
  - c) Safely prevent ruptures or large inelastic displacements and similar deformations;
  - d) Have adequate safety mechanisms against situations of potential risk or accident; and
  - e) In case of floating structures, safely resist free drifting, capsizing and sinking.
- (2) Structural elements of Facilities, including its features and components, should be designed in such manner to:
- a) Show optimum ductile properties and minor susceptibility to local damage;
  - b) Enable a uniform distribution of deformations;
  - c) Resist corrosion and other types of deterioration relative to its function; and
  - d) Allow simple monitoring, maintenance and repair activities.
- (3) The importance of each component to the safety of the structure of Facilities shall be taken into account during controls and testing of components.

### **Corrosion and Erosion Protection Article 25**

- (1) It is necessary to protect Facilities and appurtenant equipment from external and internal corrosion and erosion during all phases of Upstream operations.
- (2) Systems, equipment and procedures for permanent monitoring of corrosion and erosion shall be developed and installed to ensure safe usage throughout the lifetime of the Facilities and appurtenant equipment.

- (3) Systems for protection from corrosion and erosion shall be in line with international standards and special regulations in the area of protection of the sea against pollution from watercrafts.

### **Equipment, electrical systems, instruments and telecommunications**

#### **Article 26**

- (1) Equipment, electrical systems and instrumentation shall be designed and installed to reduce explosion risks to minimum, to avoid personnel injuries, to ensure safe operations in case of emergency situations and to maintain Production regularity.
- (2) Equipment, electrical components in, on or as part of Facilities must comply with the appropriate classification, as well as with Montenegrin and best available international standards for Facilities.
- (3) Instruments for monitoring and registration of data regarding safety conditions and telecommunication systems must be connected to an emergency source of power in case of emergencies.
- (4) Facilities shall be equipped with adequate telecommunications systems for ensuring safety and operation in compliance with the law and best available international standards.

### **Oil Lifting Equipment and Devices**

#### **Article 27**

- (1) The installation of lifting equipment or appliances is mandatory and their operation shall be carried out in the way to prevent errors or operational failures from developing into danger or accident situations.
- (2) Technical, operational or procedural measures to prevent, limit and mitigate risks of hazards when lifting oil shall be implemented in order to reduce and avoid incidents, accidents or damages.
- (3) The Operator shall continuously carry out risk analysis to identify the probability and consequences of the occurrence of single or sequential failures during oil lifting operations and shall take into account measures to avoid, reduce and mitigate risks.
- (4) Design, operation and maintenance of oil lifting appliances and gear shall be carried out according to climate conditions, as well as in accordance with Montenegrin and best available international standards.
- (5) Prior to the commencement of operation, as well as after repair or reconstruction, an authorised body must examine oil lifting appliances and lifting gear and issue a certificate of compliance, in accordance with special regulations.



- (6) Testing of oil lifting appliances and lifting gear shall be carried out at least once a year.
- (7) The Operator shall ensure that personnel engaged in oil lifting operations have the necessary qualifications for the safe operation of equipment.

### **Physical working environment**

#### **Article 28**

- (1) During the design phase of the Facilities, a working environment program shall be prepared outlining the manner in which safe working environment requirements will be achieved, and persons tasked with safety-at-work shall take part in the preparation of the program.
- (2) Work areas and recreation areas, access to Facilities, transport routes and lifting oil appliances shall be designed so that all operations, including the moving of personnel, equipment and goods, may be carried out in an undisturbed and suitable manner.
- (3) Workplaces, equipment and work operations shall be organized in order to enable personnel to safely perform their work, especially to:
  - a) enable personnel to achieve, on an individual basis, reasonable effectiveness of their work efforts;
  - b) prevent injury, sickness or disease of personnel;
  - c) enable a correct work posture on an individual basis;
  - d) design and organize equipment for monitoring, control and supervision of Production processes, technical appliances or work operations in accordance with ergonomic principles deemed adequate for a proper man-machine interaction; and
  - e) make appropriate use of hand tools and work equipment to prevent injuries, sickness and diseases of personnel.
- (4) Safety appliances for machinery shall be designed so that personnel are safeguarded from contact with dangerous equipment parts or being injured during their operation.
- (5) The workplace lighting shall be such to:
  - a) emphasize terrain discrepancies, physical objects, and protruding parts; and
  - b) Lighting poles enable preventing of accumulation of dust and corrosion, and safe maintenance and change of light sources.
- (6) Living quarters and recreational areas shall be designed, equipped and located in accordance with health, safety, and environment standards.
- (7) Premises referred to in paragraph 6 of this Article must be separated from drilling and auxiliary systems and Production Facilities, and their capacity and content shall be designed in accordance with the needs of personnel.

### **Safety measures during construction of Facilities**

#### **Article 29**

- (1) Materials that are harmless both in isolated use and in combination with other materials or gaseous components shall be used in construction of Facilities.
- (2) Usability of materials shall be evaluated based on their characteristics with regard to emissions of dusts, gases or vapours capable of causing adverse health effects, exposure to fire or excessive heat, as well as to other characteristics that could have effects on the working environment and the wellbeing of personnel.
- (3) Chemical exposure capable of causing adverse health effects, during storage, use, handling and disposal of chemicals during work operations or processes that produce chemical substances must be minimized to the extent possible.
- (4) Personnel exposure to noise shall be minimized to the extent possible by means of the use of best available technology, especially by:
  - a) Aligning noise levels within the Facilities' areas with the levels that are attained with the application of the best available technological standards;
  - b) Not exposing any employee to noise levels which may harm his health;
  - c) Posting warning signs at the entrance of divisions or zones with a noise level harmful to health of employees.
- (5) Vibration causing whole-body vibration and hand-arm vibration must be avoided to the maximum extent possible.
- (6) In case of weather conditions that require restriction or suspension of work that is performed outdoors the Operator shall define and prescribe conditions for closing or abandonment of Facilities.
- (7) Safety signs shall be posted in accordance with the best available international standards at the entrance of divisions and areas close to equipment capable of causing injuries or harmful health effects to personnel.

### **Design of Transportation and Storage Facilities and Systems**

#### **Article 30**

- (1) The Transportation and storage Facilities or systems consisting of several such Facilities shall be designed in the way to ensure integrity and serviceability required will be secured during the design lifetime of the system, which entails that:
  - a) Representative values for loads and system resistance are selected in accordance with sound engineering practice;
  - b) Analytical, numerical or empirical analysis models, or a combination of these methods;
  - c) Safety standards based may be implemented in accordance with utility and serviceability principles; and

- d) All relevant sources of insecurity of loads and of resistance thereto shall be considered by applying adequate statistical data for their assessment.
- (2) The requirements for the operation and maintenance of the Transportation and storage Facilities or system of Facilities shall be implemented and documented to lay the outline for the design and preparation of the operating and maintenance procedures.
- (3) During the design phase of the Transportation and storage Facilities or system of Facilities loads which may cause, or contribute to, damages or inoperability of the systems shall be determined and considered.
- (4) Loads referred to in paragraph 3 of this Article may be operable, environmental, construction or accidental.
- (5) Transportation and storage facilities or systems of facilities shall have a system for leakage control and be equipped with appliances that enable maintenance of equipment, use of mechanical devices, as well as inspection control in accordance with the law.

### **Safety of Transportation and Storage Systems**

#### **Article 31**

- (1) Transportation and storage Facilities or system of Facilities shall be designed and constructed in accordance with the law and, if applicable, international standards.
- (2) The Operator shall prepare a safety study involving identification of potential hazards caused by human activity alongside Transportation and storage Facilities and for which purpose the following shall be applicable:
- a) Safety zones, and the restrictions to be implemented therein in respect of construction, transit and use of transport and storage facilities;
  - b) Selection for the location of onshore Facilities, and appurtenant equipment shall be made in accordance with the law and best international practice standards;
  - c) Dimensions of each segment of the Transportation and storage Facilities or system of Facilities shall be measured, and based on such measurements and on the performed risk analyses, be compliant with the best available standards.
- (3) Based on the performed safety studies, Transportation and storage systems shall be divided into sections through the use of valve stations.
- (4) Emergency shutdown valves shall also be operated by remote control.
- (5) The location of compressing and pumping stations shall be chosen to minimize the consequences of potential accidents with regard to the Transportation and storage Facilities and surrounding areas as much as possible.
- (6) Administrative areas and living quarters shall be as a rule located outside the safety zones as established under the safety study.

- (7) If premises referred to in paragraph 6 of this Article are located within the safety zone, they shall be designed and constructed in such manner to ensure adequate protection of personnel during risk involving situations or until such personnel may be evacuated onto a safe area.

### **Transportation System Route Article 32**

- (1) The route of pipelines, cables and other Facilities or equipment comprised by a Transportation system to be used for Upstream activities, shall be surveyed prior to construction, placement and commissioning.
- (2) In the selection of the Transportation system route the following criteria shall be taken into account:
- a) Public and operational safety;
  - b) The environmental impact during construction and within the expected lifetime of the Transportation system;
  - c) The environmental impact and safety aspects of potential for discharge or leakage of fluids, emission or discharge of gaseous components;
  - d) Impact on Third party property and activities;
  - e) Geo-technical, hydro-geological and hydrological conditions;
  - f) Construction, operations and maintenance requirements for Transportation systems;
  - g) Planned Exploration.

### **Construction and Operation of Transportation and Storage Systems Article 33**

- (1) Pipeline, umbilicals, cables, wires and other components of a Transportation or storage Facility or system of Facilities shall be placed in a safe, environmentally acceptable manner in order to prevent damage, and to reduce or prevent interference with other activities.
- (2) The depth of Transportation systems shall be such that cannot be damaged by the activities carried out within a safety zone. Aboveground sections shall be additionally secured to prevent access by non-authorized personnel.
- (3) Pressure resistance, leakage and emissions testing shall be carried out prior to the filling of the Transportation or storage system.
- (4) A Transportation or storage system must be monitored by two independent control and verification systems, as follows:
- a) An integrated control system; and
  - b) A protection and alarm system.

## **Requirements for Hydrocarbons Processing Facilities and Auxiliary Facilities**

### **Article 34**

- (1) Hydrocarbons processing facilities and auxiliary systems shall be designed and located in such way that the risk to personnel, to the environment, property, and to assets and financial interests does not exceed the degree of risk set forth by the operational risk analysis.
- (2) Prior to the selection of design solution for Processing and auxiliary systems the following features shall be particularly taken into account:
  - a) regularity of planned operations;
  - b) The degree of qualifications of personnel;
  - c) Maintenance strategy;
  - d) Changes to operating conditions;
  - e) Potential changes to current operating conditions and future needs;
  - f) Personnel qualification requirements; and
  - g) Environmental protection issues.
- (3) In the process of designing the system referred to in paragraph 1 of this Article considered shall be the qualifications of personnel, appropriateness of work and planned maintenance, and instruments and control equipment for Processing systems and auxiliary systems must be utterly reliable.
- (4) The selection of materials for Hydrocarbons Processing systems and auxiliary systems shall particularly take into account the following features:
  - a) The loads and environmental conditions that Processing and auxiliary systems may be exposed to during construction, placement, maintenance and operation; and
  - b) Potential changes in operating conditions.
- (5) The principles behind the selection of critical materials shall be documented.
- (6) Before new materials are introduced, they shall be subject to examinations, calculations and tests in order to ensure that these comply with the applicable safety criteria.
- (7) Establishment of flow levels and the hydrocarbons processing system capacity shall be done based on consideration of the reaction times, capacity and reliability of control systems, and operational aspects such as vibration, noise levels, oscillations, pressure, and water related effects.
- (8) If Processing and auxiliary systems are fixed on mobile infrastructures, consideration shall be given to the possibility of movement of the Facility in order to ensure that safe and efficient operation is achieved under the specified operational conditions.
- (9) The Deposits for formation and drained water shall be equipped with:
  - a) one closed drainage system for formation water;
  - b) one open drainage system for areas which stand the risk of explosion; and
  - c) one open drainage system for non-hazardous areas.

- (10) Power systems shall have sufficient capacity to supply power to all simultaneous consumers on the Facility, and the start-up of the main power consumers shall be possible without the main power system becoming overloaded and creating the risk of shutdown, taking into account quantity of simultaneous consumers.

**Safety of Processing Facilities and Auxiliary Facilities**  
**Article 35**

- (1) The areas of classification of processing systems and auxiliary systems shall be considered in conjunction with each other, while machinery and auxiliary equipment must conform to the area classification in which the equipment is to be installed.
- (2) Pressure chambers with foundations, rotating machinery, piping systems, including supporting structures and appliances for penetration into zones containing Hydrocarbons, or other potentially dangerous means, and in accident situations, must be resistant to fire and exploding loads.
- (3) Processing systems and auxiliary systems shall be equipped with pressure control devices capable of ensuring protection against abnormal pressure situations, while drainage devices must prevent accidental outflow of Hydrocarbons.
- (4) Area classification and results of risk analyses shall be included in the specifications of ventilation systems and they shall ensure that the concentration of smoke, particles, steam and gaseous components is kept below the specified limit values.
- (5) The ventilation system shall be designed in the way to ensure its capabilities of cooling and heating the equipment, as well as to ensure greater ventilation to areas containing sources of ignition and bearing the risk of gas ingress.
- (6) In the case of modification to Hydrocarbons Processing systems and auxiliary systems, risk analyses shall be carried out and measures shall be undertaken to maintain or improve the original ventilation conditions.
- (7) Areas with natural ventilation shall have sufficient air circulation to ensure that gas concentrations and pollution levels are kept within specified limit values, and closed and partly closed spaces with natural ventilation must comply with the best available standards with regard to the size of openings in walls, floors and ceilings.
- (8) In areas without sufficient natural ventilation, mechanical ventilation must be assured or motorized fans and other spark-preventing accessories in the ventilation facilities.
- (9) Boilers with a heating unit must comply with the best available technical standards and the heating unit for boilers shall be supplied with combustion air from non-hazardous areas.

- (10) The exhaust gases shall be transported to the safe area in the way not to be of inconvenience for the personnel and not to cause hazardous situations for helicopter traffic or supply vessels, while exhaust gas ducts must be designed in the way to prevent possible combustion sparks from becoming a source of ignition.

### **Design of Processing systems and Facilities**

#### **Article 36**

- (1) In the areas bearing the risk of hydrate or ice formation, the Processing systems shall be equipped with appliances capable of injecting glycol or methanol or other similar measures.
- (2) The risk of self-ignition or of pyrolysis shall be assessed in connection with the selection of materials, with inspection and maintenance procedures being prescribed, and all components shall be fitted with thermal insulation.
- (3) Separation appliances must have sufficient capacity to separate the components of the Well stream, whilst designing separation appliances, the consequences of changes in the Well stream in the course of time shall be projected, as well as prevention of negative effect of appliances on the equipment located downstream.
- (4) The separation appliances must be capable of removing and draining sand separating Hydrocarbons from formation water and ensure purity of Hydrocarbons.
- (5) Pressurized containers and containers with normal atmospheric pressure shall:
- a) Be designed and used in accordance with the law and best available international standards;
  - b) When containing Hydrocarbons, be fitted with two separate devices for protection against high pressure;
  - c) Be designed in the way that deformation or damage to internal equipment does not affect high pressure protection devices;
  - d) Be equipped with pressure and vacuum valves of sufficient capacity; and
  - e) Endure the incorporation of equipment in their interior without such undertakings causing any deformation or damage thereto.
- (6) Control and maintenance conditions of containers shall be defined during the design and construction phases.
- (7) Piping design, construction or installation shall be done in accordance with the law and best available international standards, whereby loads caused by abnormal conditions (water effects and similar) shall be taken into account.
- (8) The following shall particularly be observed in the analyses of load effects referred to in paragraph 7 of this Article:
- a) The loads transferred to associated equipment;
  - b) Piping subject to great oscillations, deformations and oscillation of Facilities under specified environmental conditions;

- c) The control and maintenance conditions shall be defined during the design and construction phases.

### **Valves and Actuators**

#### **Article 37**

- (1) Valves and actuators shall be designed in the way to withstand the loads to which they may be exposed to in accordance with the law and best available international standards.
- (2) Valves and actuators that are part of an emergency shutdown system must be able to resist fire, explosion and loads to which they may be exposed to.
- (3) Safety valves must be tested in accordance with established procedures and with the corresponding test program, including operating, leaks and spills tests.

### **Design of Auxiliary Facilities**

#### **Article 38**

- (1) Rotating compressors shall be fitted with the surge control equipment and necessary pressure relief.
- (2) Piston compressors must be fitted with necessary equipment to control and reduce the variation of the pressure pulsation.
- (3) Liquid separators must:
- a) Ensure that drainage of liquid takes place in a safe and prudent manner;
  - b) Protect the compression unit;
  - c) Be equipped with mechanisms capable of shutting down the compression unit in the event of an increase of fluid level in excess of limit values;
  - d) Possess a discharge valve for drainage that automatically closes in the event of an decrease of fluid level in excess of specified limit values; and
  - e) Be capable of, in all operating conditions, to efficiently collect into the compressors the liquid drops and the liquid freed from the Hydrocarbons flow.
- (4) Facilities using Hydrocarbons as fuel shall, for the purpose of achieving the best possible operational regularity, be supplied by fuel in sufficient quantities, in accordance with established pressure, temperature and pollution limits.
- (5) Pneumatic systems for providing air to working instruments shall be designed in accordance with the best available technical standards for vessels, pipes and compressors, and must have sufficient capacity to ensure stable operating conditions and compliance with the specified air values.
- (6) Limit values for dew point, purity, pressure variations and temperature of the air shall be defined.



- (7) Rotating machinery must comply with the law and relevant best available international standards, and in the selection of rotating machinery consideration shall be given, particularly to reliability, energy economy, ease of operation and maintenance, previous experience with the machinery and new technologies.

### **Inert Gas Facilities**

#### **Article 39**

- (1) Inert gas Facilities shall be designed in accordance with the best available technical standards for vessels, watercrafts, pipes and compressors, including the standards for the transport of gas containing vessels.
- (2) The selection of the location of inert gas equipment shall especially take into account the consequences of potential leaks, emissions, discharges, and instrumentation for its detection and must ensure protection of structures that may be cooled down by leakage from vessels or crafts containing inert gas in liquid form.
- (3) Hoses and couplings used for liquid inert gas must be suitable for this purpose and shall be designed and marked in the way not be confused with air couplings or those of other nature.

### **Chemicals-using Facilities**

#### **Article 40**

- (1) Chemical using Facilities must be capable to ensure adequate receiving, storing and distributing of chemicals.
- (2) Facilities referred to in paragraph 1 of this Article must have fixed storage for storage tanks and piping.
- (3) The location of such Facilities referred to in paragraph 1 of this Article shall take into account personnel safety, transfer operations from tanks used for transport or supply vessels, and the risk of fire and explosion.
- (4) Where piping is connected to Facilities containing Hydrocarbons or systems under high pressure, check valves shall be fitted as close to the injection point as possible.

### **Safety Systems**

#### **Article 41**

- (1) Facilities shall be equipped with adequate safety systems and designed in the way to avoid that potential defects or failures endanger health and life of people, the environment or assets and financial interests.
- (2) Safety systems shall include, among others, the following:
- a) Fire alarm;

- b) Evacuation alarm;
  - c) Adequate emergency lighting;
  - d) Safety shut-down systems;
  - e) Systems of safety and control during operations;
  - f) Gas leakage detection system;
  - g) Emergency power system; and
  - h) Fire extinguishers.
- (3) The safety systems must be operational at all times, be subject to regular maintenance and must retain individual operational capability for the period of time during an incident.
- (4) Systems and components must be resistant to the environmental loads to which they may be exposed.

### **Fire fighting and Fire Detection Systems**

#### **Article 42**

- (1) Systems capable of detecting fire or inflammable and noxious gases shall be installed in the areas of the Facility where the occurrence of an accidental risk of fire, gas leak or discharge has been identified.
- (2) The systems referred to in paragraph 1 of this Article must ensure a rapid and reliable detection of fire, leak or discharge of gas, trigger the corresponding alarm, indicate the location of the accident, whether it pertains to real or potential fire, and parallel to triggering the alarm, measures to prevent or to limit the consequences of fire and gas leak or discharge shall be implemented automatically.
- (3) The systems referred to in paragraph 1 of this Article must:
- a) Be independent of other systems, in order to prevent negative influence by failure in other systems;
  - b) Include components capable of withstanding fixed loads so that their operational capability is maintained for a specific period of time; and
  - c) Be designed in the way to enable their control, maintenance, testing and modifications.
- (4) Facilities, workspaces, living and recreational quarters involved in or exposed to Upstream activities must be equipped with highly reliable warning systems for the events of fire and the need to evacuate.
- (5) The activation of the fire alarm system shall be done from the control centre and, if possible, from other relevant positions.
- (6) The activation of the evacuation alarm shall be done from the radio room or from the control centre.
- (7) Manual activation of fire-fighting systems must set off the fire alarm.

### **Control of testing and Safety of Systems**

#### **Article 43**

- (1) Facilities with a Hydrocarbons Processing unit must be equipped with a reliable control system that provides safe control and regulation of the Hydrocarbons Processing units and auxiliary systems.
- (2) Components and equipment incorporated in the control system must be suitable for the loads to which they may be exposed to.
- (3) Facilities equipped with or connected to Hydrocarbons Processing units must be fitted with a Processing safety system, which must be reliable, capable of detecting operating conditions which may entail danger and of preventing such conditions from turning into hazardous situations.
- (4) The safety system for Hydrocarbons Processing shall be designed in the way to operate independently of other systems with the same level of safety as other systems.
- (5) Emergency shutdown valves may be used as the Hydrocarbons Processing safety system valves.
- (6) Components incorporated in the Hydrocarbons Processing safety system must be suitable for the loads which they may be exposed to.
- (7) Sensors activating shutdown functions must give a warning signal when activated.
- (8) Testing of the Processing safety systems shall be carried out without interrupting operations.
- (9) Blocking valves incorporated in the system must be fixed in the precise position.

### **Exhaust Systems**

#### **Article 44**

- (1) Exhaust systems must be installed in order to eliminate inflammable and noxious gases from the Facility, and manual activation at a safe distance that guarantees protection for the personnel, the Facility and equipment need to be ensured.
- (2) Activation of the exhaust system must ensure gas discharge onto a location where such discharge is safe and quick depressurization of the equipment.
- (3) The system referred to in paragraph 1 of this Article shall be designed in such manner that exhaustion does not cause injury to personnel or damage to the environment or to assets and financial interests, as well as for maintenance and functional testing to be expediently carried out without interrupting operations.

- (4) In order to ensure control of the condition of the components of the exhaust system, its monitoring needs to be ensured.

### **Emergency Power, Lighting and Shutdown Systems** **Article 45**

- (1) Facilities must be equipped with an appropriate emergency power system which shall be independent from other power supplying sources and provide sufficient power to safety systems and to other vital equipment for the necessary period of time in the event of failure of the main power system.
- (2) Uninterrupted power supply to emergency circuits shall be ensured during changeover from the main power system to the emergency power system.
- (3) The emergency power systems' principle engines shall have as few potential interruptions in operation as possible as to ensure its continuous operation.
- (4) The emergency power system must be arranged and protected in the way to remain operative in the event of the occurrence of an incident and testing shall be possible without interrupting operations.
- (5) Facilities with equipment containing Hydrocarbons must have a highly reliable emergency shutdown system, which shall prevent or limit the consequences of Hydrocarbons leakage and shall eliminate potential ignition sources.
- (6) The Processing unit shall have valves that will enable that the overall system is divided into sections so each isolated system section would be capable to resist fire.
- (7) Activating the emergency shutdown system must ensure the safe conditions for operation of the Facility and its equipment, and manual emergency shutdown devices must be strategically located, demarcated and protected against accidental activation. The emergency shutdown system must be able of being activated manually or activated in other way.
- (8) Components incorporated in the power system must be independent or supplementary to other systems. Emergency shutdown valves may also be used as Processing safety valves. The emergency shutdown system shall not be affected by failures in other systems. The valves, when installed, shall have the function of emergency shutdown valves, and they may be:
- a) Valves in Production and injection tubing or designated as sub surface safety valves;
  - b) Valves in Production and injection wing or wing valve of the Christmas tree;
  - c) Main automatic valve;
  - d) Valves combined in a so-called Christmas tree used in relation to injection of chemicals or to enable gas lifting; and
  - e) Valves of the process of isolating into sections.

- (9) Components incorporated in the emergency power system shall be designed for the maximum loads to which they may be exposed, and appropriate testing of the systems shall be done without interrupting operations.
- (10) Any accessible emergency shutdown valves shall be designed in the way to be easily accessible and equipped with a position indicator. The information on the status of every executed action shall be automatically transferred to the control centre.
- (11) The installation of emergency shutdown valves shall be effected in a safe and controlled manner.
- (12) Work and residential facilities shall be equipped with emergency lighting activated automatically in case of failure in regular power supply and capable of ensuring sufficient lighting within the facilities in danger and accident events.

### **Safety equipment Article 46**

In addition to the equipment stipulated by this Rulebook, the Operator shall, when needed, install additional safety equipment such as fire equipment, life boats, oil barriers, vessels, standby boats or aircrafts, close to or on Facilities and on the main equipment engaged in the Upstream operations.

### **Entry into Force Article 47**

This Rulebook shall enter into force on the eighth day following the day of its publication in the Official Gazette of Montenegro.

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**MINISTER  
Vladimir Kavarić, PhD**