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Rules of ensuring industrial safety for hazardous production facilities of oil and gas industries

(as amended on 02-10-2025)

Chapter 1. General provisions

1. These rules of ensuring industrial safety (further - Rules) are developed for hazardous production facilities of oil and gas industries according to subitem 94-13) of Item 16 of the Regulations on the Ministry of Emergency Situations of the Republic of Kazakhstan approved by the order of the Government of the Republic of Kazakhstan of October 23, 2020 No. 701 and determine procedure for ensuring industrial safety for hazardous production facilities of oil and gas industries.

2. In these rules the following basic concepts are used:

1) accident - destruction of buildings, constructions and (or) technical devices, uncontrollable explosion and (or) emission of dangerous substances;

2) abnormally high reservoir pressure - deposit pressure with coefficient of anomaly of 1,5 and more hydrostatic pressure of column of drilling mud fluid in well;

3) the work permit - task for the works which are drawn up when carrying out construction and (or) repair work in the territory of operating plant when there is available or can be production danger proceeding from operating plant;

4) production schedules - the document determining technology of conducting process or its separate stages (transactions), the modes and the production technology of products, safe working conditions, approved by the technical lead;

5) ridging - construction in the form of earth shaft or the protecting wall for protection against spill of liquid dangerous substances.

Chapter 2. Procedure for ensuring industrial safety in case of project development of arrangement of oil, gas and gas-condensate fields

3. And gas is developed by each organization operating fields of oil extraction the project documentation on arrangement of oil, gas and gas-condensate fields (further - the project documentation) and the project documentation on construction of wells (further - the project on construction of wells).

Paragraph 1. Procedure for ensuring industrial safety when designing objects of oil, gas and gas-condensate fields

4. Buildings and constructions with the explosion-fire-hazardous processes emitting hazardous and combustible substances, sources of possible emergency emissions are designed taking into account the prevailing direction of wind, land relief, climatic and seismic conditions. The minimum safe distances of infrastructure facilities of oil and gas fields (further - NGM) from buildings and constructions are given in appendix 1 to these rules.

5. When designing hazardous production facility the choice of the equipment and pipelines, is made depending on corrosion and aggressive properties of the transported substances.

6. In the project documentation actions for the prevention of impact on the equipment, pipelines, personnel and the population in selitebny zone, dangerous and harmful production factors are developed (further - OVPF).

7. In the project documentation places and routes for collection and evacuation of personnel, means of collective protection (further - SKZ) working, stations of control of gas contamination of the environment, posts of gas safety, wind indexes, check-points shall be specified.

8. Actions in the field of industrial safety during the designing and construction of surface facilities of the field of hydrocarbons shall provide measures for safe functioning of these objects, localizations and minimization of effects of possible emergencies and to provide:

1) arrangement of objects of NGM taking into account safe distances;

2) reasons to the choice of the equipment regarding safe operation;

3) system of collection, preparation and transportation of products of wells, utilization of hazardous substances and associated gas;

4) industrial control system (further - industrial control system);

5) system of antiemergency protection, blocking, safety and signaling devices according to the prevention dangerous and emergencies;

6) means of the automated control system of the air circle and the alarm system, for early detection of dangerous factors;

7) organization of permanent production and autonomous system of emergency communication and notification;

8) automation and telemetric control of objects;

9) providing personnel with individual and collective remedies;

10) neutralization and utilization of production waste, combustible, hazardous and toxic substances;

11) conditions of safe drilling, development, testing, researches, preservation and liquidation of wells, objects;

12) methods and technology of testing;

13) assessment of probability of origin dangerous and emergencies, taking into account object vzryvopozharopasnost indicators;

14) application of methods of nondestructive control and anticorrosive protection of the equipment, pipelines, metal designs.

9. Underground laying of pipelines in buildings, constructions, rooms is not allowed.

10. Production and household facilities are provided with ventilation, heating, water supply and the sewerage.

11. For factory buildings and the territory of installations systems of the closed industrial sewerage for withdrawal of technology drains, ground and storm waters are designed.

On network of the industrial sewerage the hydraulic locks located in wells shall be provided.

12. The projectable equipment, instrumentations and automatic equipment (further - instrumentation and automated control systems), devices of lighting, the alarm system and communication, held for use in explosive zones, are provided in explosion-proof execution.

13. The project documentation including use of inert gases for replacement of combustible vapors and gases of aggressive and toxic liquids shall provide methods and control facilities behind content of oxygen and prevention of formation of dangerous concentration in technology circles.

14. The project documentation shall provide exception of possibility of irreversible technogenic changes of the environment including in case of emergency emissions of hazardous substances, reasons for assessment of reliability and zero accident rate of production processes and the equipment, risk assessment of origin and possible effects of the predicted emergencies, the decisions directed to prevention, the localization, accident elimination and protection working and the populations from dangerous production factors.

15. Before development of the project documentation by the general designer the sizes of sanitary protection zones are determined (further - the SPZ).

16. As a part of the project documentation on arrangement of the field calculations of threshold limit values (further - maximum allowable concentration) hazardous substances on hazardous production facilities are in full represented.

17. Calculations and reasons for the SPZ are carried out taking into account maximum (on amount and duration) the predicted emergency emissions of hazardous substances. In the territory of the SPZ accommodation of the population is not allowed, to place sports constructions, parks, schools, child care facilities, treatment-and-prophylactic and improving organizations public. In case of shift method of work on the field it is allowed to take place working in field camps.

18. In the project documentation on arrangement of the field specific types and the number of devices, materials and the equipment, the place (construction) for their storage and preparation for work are proved and are determined.

Paragraph 2. Procedure for ensuring industrial safety in case of project development on construction of wells

19. In the specification on designing among parameters content of hydrogen sulfide in formation fluid of the field is specified.

20. Are in addition provided in the project documentation:

- 1) the short analysis of the actual content of hydrogen sulfide in separate wells;
 - 2) requirements to corrosion protection of the equipment and pipes;
 - 3) actions for the prevention of emergence of oil and gas fountains.
21. In case of detection in formation fluid of the first exploratory well of high content of hydrogen sulfide its further deepening and drilling of the following exploratory wells on this square is allowed after establishment of the SPZ.
22. In projects shall be specified construction of wells in addition:
- 1) durability of upsetting columns, columns of pumping and compressor pipes (further - NKT) the providing possibility of closing (sealing) of the mouth in case of the open fountain (further - OF);
 - 2) methods and review frequency of depreciation and control of corrosion condition boring, leading, NKT and elements of pipe columns;
 - 3) types of columned heads, methods of their testing and installation (without application of welded connections);
 - 4) types of converters, methods and technology of neutralization of hydrogen sulfide in drilling mud fluid, consumption of reagents for these purposes on all process of well-drilling;
 - 5) control methods of content of hydrogen sulfide and reagent - converter in drilling mud fluid;
 - 6) conditions of additional processing of drilling mud fluid reagent - converter;
 - 7) methods and means of airing of the working area of the platform boring, podvyshechny space and rooms boring, including rooms of the pumping block and purification of drilling mud fluid;
 - 8) actions for protection of people and the environment in the course of drilling, testing and development of well;
 - 9) methods and control facilities of content of hydrogen sulfide in air of the working area;
 - 10) technology of department of gas from drilling mud fluid with the subsequent branch on burning;
 - 11) technology of installation of the emergency cement bridge;
 - 12) types of inhibitors, their potrebny amount;
 - 13) actions for the prevention and early detection of oil and gas water manifestations;
 - 14) procedure for collection and storage of liquid products in the closed reservoirs before neutralization and further utilization;
 - 15) control method of filling of well when raising the tool;
 - 16) control method of the solution which is forced out from well during descent of the tool;
 - 17) the grouting mixes resistant to effect of hydrogen sulfide and answering to geological specifications, for cementation of upsetting columns;
 - 18) standard schemes of binding of the mouth of well of air defense or the locking equipment in case of construction, testing and development.

Chapter 3. Procedure for ensuring industrial safety in case of construction and start-up of objects

23. The territory which is taken away under construction of production facilities is built up according to the project documentation.

To build up the territories of mountain branches under oil, gas and gas-condensate fields with the high content of hydrogen sulfide with the production facilities which are not connected with oil extraction, gas and gas condensate it is not allowed.

Limitation and methods of protection of the territory of construction of hazardous production facilities are established by the organization performing construction, and after commissioning by the organization operating object.

24. The under construction, repaired and operated hazardous production facilities (drilling rigs, wells, group zamerny installations, installations of preparation of oil and gas, reservoirs, pumping and compressor stations, terminals) are provided with reliable and permanent transport connection (entrances, roads) with bases of material logistics and places of dislocation of production services of the organization, fire and professional rescue services in the field of industrial safety (further - ASS).

25. No. 872 is excluded according to the Order of the Minister of the industry and infrastructure development of the Republic of Kazakhstan of 22.11.2019

26. In rooms where there are personnel, the organizations approved by the head shall be hung out:

1) technology schemes (symbolic circuit) of arrangement of the equipment and pipelines with indication of on them instrumentation and automated control systems, safety, locking adjusting devices, the scheme of installation of sensors of hydrogen sulfide and arrangement of points of control of the air circle;

2) the scheme of object with indication of arrangement of emergency warehouses, islands of gas safety, remedies of workers, the main and reserve traffic routes of people and transport, the directions of distribution and places of accumulation of hydrogen sulfide in air in emergency, means of communication and the notification;

3) the scheme of the notification with indication of phone numbers of territorial subdivision of department of authorized body in the field of industrial safety, territorial authority of authorized body in the field of civil protection, health service and ASS;

4) operational part of the liquidation plan of accident (further - PLA).

27. Signs of safety and texts provide production facilities, gas dangerous places and the territory adjoining to them (including sidings), the trasses operating gazo-oil and condensate drain lines.

28. On workplaces and the territory of hazardous production facility where impact of OVPF is possible precautionary signs and texts are established, dangerous sites of works are protected or designated by signs of safety and texts.

29. Production facilities and rooms are located from the windward side on "wind rose" in relation to source of possible release of hydrogen sulfide.

30. Workplaces, objects, drives and approaches to them, passes and transitions to night-time are provided with lighting.

31. The industrial platform, production rooms shall not have cellars, burying, trenches and channels.

32. Carrying out hot work in radius less 50th meter from the place of application and warehousing of the materials containing flammable or explosive substances and in the absence of fire extinguishing means is not allowed.

33. Before performance of works in places where there is danger of gas contamination and impact of OVPF exceeding admissible regulations, including in the isolated rooms, the closed reservoirs, wells, trenches and holes, the analysis of the air circle is carried out and the work permit is drawn up. In case of detection of gas contamination works in this place stop and resumed after elimination of gas contamination.

34. Objects where raising of the worker on height to meter 0,75 is required, are equipped with steps, and meter 0,75 ladders with handrail is one height higher.

35. In places of transition of people over pipelines establish transitional planked footway with the covering excluding sliding, width meter 0,65 suffices, with handrail height meter 1,0 suffices.

36. Production rooms where the spill of the liquid containing hydrogen sulfide is possible are equipped with devices for washout by its large amount of water and branch in the closed system of the sewerage.

37. Rooms of drilling rigs, production facilities are equipped with permanent supply and exhaust ventilation with automatic inclusion from hydrogen sulfide sensors in case of achievement of maximum allowable concentration.

38. In rooms with periodic stay of service personnel gas-signaling devices and ventilating installations with manual inclusion from the outer side of the room are established.

39. The personnel working within the field are provided with reliable two-way telephone or radio communication.

40. No. 872 is excluded according to the Order of the Minister of the industry and infrastructure development of the Republic of Kazakhstan of 22.11.2019

41. The geophysical equipment (laboratories, the elevator) for research of well establish at distance at least 25th meter from the mouth of well.

Chapter 4. Procedure for ensuring industrial safety in case of well-drilling

Paragraph 1. Commissioning of the drilling rig

42. Drilling of well can be begun in case of the drilling rig finished with installation and acceptance by its commission appointed by the order on the company. The representative of territorial subdivision of department of authorized body in the field of industrial safety takes part in

work of the commission. The message on date of work of the commission goes to territorial subdivision of department of authorized body in the field of industrial safety in 5 calendar days prior to work of the commission.

In case of absence of the representative of territorial subdivision of department of authorized body in the field of industrial safety, the commission performs acceptance of the drilling rig without its participation.

43. The drilling rig prior to drilling is completed with chisels, boring pipes, casing pipes under the conductor and the first intermediate column (if before its descent less than 30 days), devices of small-scale mechanization, set of hand tool, instrumentation and automated control systems blocking and safety devices, the lovilny tool, fire-proof stock, the alarm system, intercoms, remedies, and also inventory of high-wear parts and nodes, materials and chemical reagents for preparation of drilling mud fluid under the conductor and the first intermediate column. Reservoirs for drilling mud fluid shall provide the 2nd multiple amount of well.

44. The boring organization shall have available the project on well construction, the geological and technical job specification on production of drilling operations, the main technical documentation on drilling equipment, acts of testing of the installation works of tower which are carried out after the termination according to the instruction of manufacturing plant, the sketch of configuration of bottom of boring column, the scheme of installation of drilling equipment, the scheme of communications, power supply networks and the grounding devices.

45. Readiness for start-up is drawn up by the act of commissioning of the drilling rig in form according to appendix 2 to these rules.

Paragraph 2. Well-drilling

46. Preparatory work for drilling of well, the equipment of talevy system, drilling and the equipment of hole are carried out according to these rules.

47. Drilling of well begins in the presence of the approved project on construction of well, the geological and technical job specification and act of starting conference.

48. In case of recovery of the idle wells of operational fund, reconstruction of the wells connected with posting of new trunk with subsequent change of design and its appointment the project on well construction is developed.

49. On the drilling rig magazines are kept:

- 1) shift;
- 2) geological;
- 3) parameters of drilling mud fluid;
- 4) accounting of doliv in case of hoisting transactions (further - SPO) and expenses of chemical reagents;
- 5) accounting of engine hours of work of diesels;
- 6) measurements of boring column;
- 7) working off of chisels;

8) practices of trolley rope;

9) accounting of consumption of technical water and boring industrial drains;

10) control of the gas environment.

Maintaining magazines according to subitems 5) is allowed; 6); 7); 8); 9) in electronic format.

50. In the course of drilling of well its researches on refining of the geological characteristic, availability of the water, oil and gas horizons, reservoir and steam pressures on all stratigraphic horizons are conducted.

51. In the course of drilling parameters are controlled:

1) weight on hook with registration on the chart;

2) compliance of drilling mud fluid geological technically to the job specification;

3) consumption of drilling mud fluid on entrance and exit from well;

4) pressure in the manifold of boring pumps;

5) solution level in reception reservoirs when drilling and on the mouth of well in case of idle time and SPO;

6) torque on rotor;

7) indications of concentration of gases in drilling mud fluid.

52. Methods and the modes of drilling, types of chisels shall be chosen taking into account geological specifications of posting of wells and providing qualitative indexes on intervals of drilling and in general on well.

The choice of types of chisels, methods and modes of well-drilling are performed on the basis of the data obtained when posting geological and nearby wells (areas).

53. Before opening (for 50-100 meters) layers with the fluids containing hydrogen sulfide and for the entire period of their opening:

1) around the territory boring (on sidings, in places of possible pass on the territory boring) safety signs are established;

2) operability of devices of control of content of hydrogen sulfide in air of the working area, availability and readiness of individual protection equipment (further - SIZ), individual protection equipment of respiratory organs (further - CEESE AUDE), is checked by SKZ;

3) drilling mud fluid is processed by converter;

4) the examination by personnel of PLA and skills of application of SIZ, first-aid treatment, with instructing logging is carried out;

5) on boring the inventory of the materials and chemical reagents neutralizing the hydrogen sulfide sufficient for processing of drilling mud fluid in number of at least two amounts of well is created;

6) routes for exit of workers from the danger area in case of emergencies are determined. In case of search, prospecting, appraisal drilling, it is in addition necessary: establishment of the station of geological and technology researches (further - GTI); the organization of the round-the-clock watch of representatives of ASS, transport for evacuation of personnel; ensuring availability on boring in permanent availability for service of cementing aggregates; creation on boring cement inventory in amount for installation of the cement bridge. Testing of cement for terms of skhvatyvaniye and durability are carried out once in 10 days.

54. Before opening of the productive horizons check of readiness for liquidation gas, oil and water shows is made (further - GNP), precautionary posters and signs of safety are established.

55. Members of watch every shift check security status of the workplaces, the driller draws up entries in the shift log.

56. The head of crew constitutes the daily report.

57. The driller in the course of work controls indications of devices, operability of technical means and action of workers for observance of Rules. In case of detection of violations reports the works manager and takes measures for safety of the equipment, processes and actions of personnel for instructions of the works manager.

58. In case of emergency PLA becomes effective, sealing of the mouth and evacuation of personnel uninvolved in accident liquidation is made.

59. The drilling rig is provided with the closed circulating system of drilling mud fluid, system of sewage disposal and the slime excluding environmental pollution.

60. The platform for the drilling rig is planned taking into account natural bias of the area and ensuring movement of sewage towards settling reservoirs.

61. On the working platform stationary or portable planked footway and racks with emphasis shall be established. The sizes of racks are determined from condition of possibility of safe stacking of pipes and bars, for this well.

62. Length of reception mostk on flooring shall be at least 14,0 of meters, width is at least 2,0 of meters, height of no more 0,5 of meter. Use of smooth metal is not allowed. Racks are established with condition of stacking of pipes and bars without deformation, shall have the folding metal racks protecting pipes from raskatyvaniye and to have at least two passes on the reception bridge on each party with ladders with handrail.

63. The platform is provided with safety signs, lighting and barrier of the danger area. Before drilling technical condition of the rock cutting tool, bottomhole engine, configuration of boring column, instrumentation and automated control systems is checked. In case of failure detection drilling is not allowed.

64. Drilling of hole under the leading (working) pipe is made with use of the special device. Height of the upper part of hole over the level of flooring of the working platform constitutes meter 0,5-0,8. It is not allowed to establish the leading pipe in hole with emphasis it on bottom.

Mechanization devices are used to installation of the leading pipe.

65. The brake lever is provided with the fixer. In case of manual giving the safety device fixed with flooring of the platform of the driller is used.

66. In the course of drilling it is not allowed to remove barrier, to turn off blocking and safety devices.

67. When drilling it is not allowed to exceed permissible loads and pressure of circulation of drilling mud fluid.

68. Control of engineering procedure is made with registration of the mode of drilling and indications of concentration of gases in drilling mud fluid on charts. Parameters of drilling mud fluid and time of measurement are specified in the magazine of parameters of drilling mud fluid.

69. In case of impossibility of observance of the mode of drilling, detection of signs of dangerous situation and violation of safety, the driller notifies the works manager. Workers perform the subsequent operations according to its instructions.

In case of stop of works measures for the prevention of accidents are taken.

70. In case of long stop of drilling the boring tool climbs specifying of the head of object in interval of the lowered upsetting column with sealing of the mouth.

Periodic shablonirovaniye, washing and study with logging of measurement of boring column are made for the prevention of complications in open trunk.

71. In the course of drilling of well control of well trunk trajectory is exercised. The amount and frequency of measurements is determined by mining-and-geological conditions of drilling, the project on construction of well and the actual trajectory of trunk of well. When drilling vertical wells the variation from vertical shall not exceed 3-5 degrees.

72. Drilling of directed and horizontal trunks are carried out using system of telemetric control.

73. When drilling in productive gas layer the mechanical speed of driving is limited to values in case of which decontamination of drilling mud fluid is provided.

74. In case of emergencies on the wells which are in drilling when application of methods of liquidation is not effective the zaburivaniye of the second and the subsequent trunks is performed.

75. Opening of layers with hydrogen sulfide is made after check and establishment of readiness of the equipment, personnel to work, checks of accomplishment of actions for protection of personnel and the population in zone of possible gas contamination in case of GNP or dangerous situation.

Results of check are drawn up by the act with indication of condition and readiness of object and personnel for opening of the horizons with hydrogen sulfide.

When drilling the layers containing hydrogen sulfide availability of hydrogen sulfide and sulfides in flushing liquid is controlled. In case of detection of hydrogen sulfide are processed drilling mud fluid by converter, actions for safety are carried out.

76. Drilling of the productive horizons is made with installation in configuration of spherical cranes in anticorrosive execution, in the presence of the reserve crane and backpressure valves with the device for opening.

On planked footway there is pressured-up pipe, on diameter and strength characteristics corresponding to the upper section of boring column. The pipe is painted in red color with the established spherical crane which is in open provision.

77. For early detection of GNVP shall control of direct and indirect signs on indicators is exercised:

- 1) concentration of gases, availability of sulfides and density of flushing liquid;
- 2) the mechanical speed of drilling and pressure in the delivery line;
- 3) the level of flushing liquid in well in case of circulation stop;
- 4) the level of flushing liquid in reception reservoirs;
- 5) expense and amount of circulation of flushing liquid;
- 6) change of loading when drilling well.

78. Under GNVP the mouth of well is pressurized, and further works are conducted according to PLA. Primary actions of boring watch in case of detection of GNVP and emergence of OF in case of construction of oil and gas wells are given in appendix 3 to these rules.

79. When opening the gas, oil and water horizons with abnormally high pressure, and also in the presence of hydrogen sulfide (with volume content to six percent) on the mouth of well at least three preventers, including one universal are established.

When opening layers with abnormally high pressure and volume content of hydrogen sulfide more than six percent are established at least four preventers, including one preventer with the cutting-off dies and one universal.

80. Carrying out any experimental and pilot works during the drilling and development of productive layer is allowed according to the program approved by the technical lead of the organization.

81. In case of approbation of well the check mode excluding possibility of pass on the territory of strangers and vehicles is set.

82. Before extraction of core from the core receiver, the personnel which are not connected with this work leave from the reception bridge.

83. The personnel performing work on extraction and processing of core are provided with the isolating gas masks and rubber gloves.

84. Samples of core keep within the sealed containers manufactured of hydrogen sulfide-resistant materials.

85. Kernokhranilishche is equipped with stationary gas-signaling device and system of ventilation.

85-1. In case of performance of works on preparation and processing of drilling mud fluid (flushing liquid) the remedies ensuring safety of personnel from impact of chemical reagents are applied.

85-2. Density of drilling mud fluid (if it is not caused by the necessity of ensuring stability of walls of well) in intervals of compatible conditions of drilling is determined at the rate of creation by column of drilling mud fluid of the hydrostatic pressure in well exceeding bedded (steam) at size:

- 1) 10-15% - for wells up to 1200 m in depth (intervals from 0 to 1200 m inclusive), but no more 1,5 of MPa (15 kgfs/cm 2);
- 2) 5-10% - for wells up to 2500 m in depth (intervals from 1200 to 2500 m inclusive), but no more 2,5 of MPa (25 kgfs/cm 2);
- 3) 4-7% - for wells more than 2500 m in depth, but no more 3,5 of MPa (35 kgfs/cm 2).

85-3. The variation of density of the drilling mud fluid which is in circulation more, than on ± 20 kgfs/cm³ is not allowed (g/cm 0,02 3).

85-4. The compounding and technique of preparation, processing, weighting and purification of drilling mud fluid are controlled by specialists of designer's service of construction of wells.

85-5. In the course of drilling and washing of well parameters (properties) of drilling mud fluid are controlled with frequency - density and viscosity in 10-15 minutes, temperature, filtering, sand content, content of colloid phase, rn, CHC1/10 and rheological indicators (effective viscosity and dynamic resistance of shift) - each 4 hours. When drilling the gas horizons density of the drilling mud fluid which is coming out well and after decontaminator is measured every 5 minutes, other indicators with the frequency stated above. In case of absence at the boring gas-logging station two times are carried out control of drilling mud fluid on saturation to change it by gas. Parameters of drilling mud fluid register in the magazine.

85-6. If volume content of gas in drilling mud fluid exceeds 5%, then it is necessary to take measures for its decontamination, identification of the reasons of saturation of solution gas (layer work, intake of gas with vyburennyy breed, foaming and others) and to their elimination.

85-7. Increase in density of the drilling mud fluid which is in well, by pumping of separate portions of the weighted solution with long breaks for procurement new is not allowed. Weighting of drilling mud fluid is made in case of its circulation in the course of all cycle.

85-8. The maximum admissible pressure in case of circulation of drilling mud fluid does not exceed the size of pressure of hydraulic fracturing of layer and absorption.

Paragraph 3. Design of wells

86. The design of well shall provide:

- 1) No. 872 is excluded according to the Order of the Minister of the industry and infrastructure development of the Republic of Kazakhstan of 22.11.2019;
- 2) No. 872 is excluded according to the Order of the Minister of the industry and infrastructure development of the Republic of Kazakhstan of 22.11.2019;
- 3) conditions of safe operation without accidents and complications at all stages of construction and operation of well;
- 4) No. 872 is excluded according to the Order of the Minister of the industry and infrastructure development of the Republic of Kazakhstan of 22.11.2019;

5) No. 872 is excluded according to the Order of the Minister of the industry and infrastructure development of the Republic of Kazakhstan of 22.11.2019;

6) the maximum unification on standard sizes of casing pipes and trunk of well;

7) carrying out testing for durability and hermeticity;

8) on fields with availability of hydrogen sulfide, hazardous and aggressive substances the casing pipes, grouting cements and materials steady against impact of corrosion and sulphidic corrosion cracking are applied;

9) compliance to the actual geological specifications of construction and operation of wells.

87. The optimum number of upsetting columns, depth of their descent is determined by quantity of zones incompatible with drilling conditions on gradients of reservoir pressures and pressure of hydraulic fracturing (durabilities and stability of breeds, zones with intensive absorption).

To establish boot of the last column (before descent of operational column) blocking the breeds inclined to flowability or to plastic deformations below their sole.

Before opening of the productive and pressure head water-bearing horizons descent of at least one intermediate column or the conductor up to the depth excluding possibility of gap of breeds when sealing the mouth is provided.

88. Difference of diameters between walls of well and couplings of upsetting columns are chosen most providing free descent of each column up to the depth of the well provided by the project on construction and their high-quality cementation.

89. The elections of casing pipes are held taking into account the excessive expected outside and internal pressures, axial loads of pipes and aggressions of fluid, both at construction stages, and in case of operation of well.

90. When drilling vertical wells by rotor method through 50-60 flights of boring column, inclined and directed and horizontal wells through 40-50 flights of boring column to measure depreciation of upsetting column by geophysical methods for the purpose of determination of its residual resource.

91. Durability of upsetting columns with the estuarial equipment and the protivovybrosovyy equipment (further - air defense) shall ensure safety in case of:

1) sealing of the mouth and zadavka of well in case of liquidation of GNVP, emission, OF;

2) impact of hydrostatic and dynamic pressure of drilling mud fluid, the maximum density which is in column;

3) impact of the maximum rumpling loads in case of GNVP, OF, zones of absorption and flowability;

4) impact of vertical loads of stretching and smyat.

92. The structure of the mouth of well and columned head for the purpose of the prevention and accident elimination and GNVP provide:

- 1) suspension bracket with settlement stretch of intermediate and operational columns taking into account compensation of temperature deformations at stages of work of well (column), and suspension bracket of column of boring pipes on air defense;
- 2) control of flyuidoproyavleniye of upsetting columns;
- 3) possibility of emergency zadavka of well.

Paragraph 4. Fixture of trunk of well

93. Preparation of trunk of well and casing pipes for descent, descent and cementation of upsetting columns is carried out according to the plan of the organization of works (further - POR). Basic data for calculation of column, coefficients of margin of safety of column, results of calculation of column and its cementation, the analysis of cement, the act of readiness of the drilling rig for descent of column are applied to POR.

94. Before descent of upsetting column in trunk of well the complex of electrometric and research works for implementation of engineering procedure of fixture is performed. Conduct geophysical surveys and preparation of trunk of well for fixture in the presence of GNPV or absorption of drilling mud fluid before their liquidation it is not allowed.

95. Calculation of upsetting columns on durability is made under the maximum expected excessive pressure determined taking into account solution substitution depth by formation fluid or gas-liquid mix under GNPV or Office.

For other wells depth of substitution is established taking into account reliability degree for each group of wells at creation of the project on well construction.

96. The project on construction of well provides raising of grouting solution:

- 1) for the conductor - to the mouth of well;
- 2) behind intermediate columns - taking into account overlapping of boot of the previous column at least 100 meters;
- 3) behind operational columns;
- 4) oil wells - taking into account overlapping of boot of the previous column at least 100 meters;
- 5) for gas and delivery wells - to the mouth.

When using in gas and delivery wells of casing pipes with node of sealing of threaded connections like "metal-metal" raising of cement in boot of the previous column at least 100 meters is performed.

The directions, conductors, secret columns, the lower and intermediate steps in case of step cementation, the lower and intermediate sections of section columns are cemented at all length.

97. The minimum height of raising of grouting solution over the flyuidosoderzhashchy horizons, over roof of underground gas storages and oils, over the device of step cementation (joint of sections) of the upper step (section) of upsetting columns constitutes at least 150-300 meters for oil and 500 meters for gas wells.

98. The maximum length of not cemented upper part of column is accepted at the rate of its complete unloading in case of the equipment of the mouth of well by columned head.

99. Devices of step cementation and joints of sections of upsetting columns shall be located:

1) in the surrounded well trunk the previous column above her boot is at least, than on 50 meters; the same treats "head" of secret column;

2) in not surrounded part of well - in the range of steady breeds with diameter of trunk close to nominal, below to the upper bound of interval at least 30-50 meters and above the lower bound at least 50-75 meters.

100. Height of raising of grouting solution over roof of flyuidosoderzhashchy layers when downloading in one step happens no more than in case of which:

1) exceeding for 2 percent of at least hydrostatic pressure of compound column of drilling mud fluid and liquid of zatvoreniye of cement over the maximum reservoir pressure is provided;

2) the possibility of hydraulic fracturing or intensive absorption of drilling mud fluid at the end of pro-crush is excluded;

3) column durability when unloading on cement ring for installation of columned head is provided.

101. It is not allowed to start descent of upsetting column in the well complicated by absorption of drilling mud fluid with simultaneous flyuidoproyavleniye, taluses, collapses, tightenings and landings of boring column before liquidation of complications.

102. Before descent and cementation of upsetting columns the works manager, the driller and specialists perform technical condition of derrick (mast), the basis, the winch, talevy system, the hoisting equipment and the tool, the power drive, condition of the reception bridge, platform, numbering and stacking of pipes, flooring, availability of barriers, blocking and safety devices, operability of instrumentation and automated control systems of the drilling rig and the station of control of cementation, readiness of cementing aggregates, availability of cement and chemical reagents, availability of means of lighting, safety areas and distances of arrangement of the equipment and personnel, installation of signs of safety, appointment of heads and contractors, establishment of the mode and the working schedule, availability of individual and collective means for protection of personnel, introduction of access control on the object territory.

By results of check the statement of readiness of object for descent and cementation of upsetting column is drawn up.

In case of failure detection of the equipment, its elimination prior to works on descent and cementation is made.

In case of variation from POR the works manager is notified, the technical lead of the organization and further operations are performed on their specifying, additional measures for safety are taken.

103. Check on hermeticity of intermediate column and air defense is made in the presence of the representative of ASS, and operational column and gushing armature - in the presence of ASS and the customer with the subsequent execution of the act.

104. Before descent of upsetting column the shablonirovaniye and preparation of trunk of well according to POR is made.

105. Descent of upsetting columns is made with use of means of mechanization, spider, elevators of the corresponding loading capacity and keys.

106. Safety rings and nipples unscrew keys and keep within outside the working area of the platform.

107. Before descent check by template of each casing pipe, condition of carving and outside surface is made. In case of discrepancy the pipe is rejected with drawing tag paint.

It is not allowed to be at the lower part of casing pipe in case of shablonirovaniye.

108. During descent the driller controls complete navorot carvings of each casing pipe, the indication of the indicator of weight, having added wells, amount and parameters of the forced-out drilling mud fluid, the indication of concentration of gases in drilling mud fluid.

109. After descent of casing pipes preparation of the platform and mouth is made for the grouting equipment.

For safe servicing of cementing aggregates, cement and mixing machines, stations of control of cementation are established distances:

- 1) from the mouth of well to block manifolds at least 10-12 meters;
- 2) from the block - manifolds to the cementing aggregate at least 5-10 meters;
- 3) between the cementing aggregate and the cement and mixing machine is at least meter 1,5.

Cabins of portable aggregates are located in the direction from the mouth of well.

110. The cementing head before installation on column is pressured up with the gradual increase in pressure exceeding the maximum, settlement pressure for cementation of well, with coefficient of safety of 1,5 also endurance at least 5 minutes are multiple.

111. Pipelines and manifolds from the cementing aggregate to cementing head are pressured up on the maximum pressure expected in the course of cementation of wells, with coefficient of safety of 1,5 also endurance at least 5 minutes are multiple.

112. The well is allowed to be cemented in the presence of the checked safety valves and manometers on aggregates, the manometer on cementing head.