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Republic of Kazakstan

**OIL AND GAS REGULATION
A WESTERN APPROACH**

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PREFACE

This is a first-round draft report outlining a Western Approach for Oil and Gas Regulations in Kazakstan. The present work was preceded by a review and revision of Kazakstani oil and gas regulations in December of 1995, but our work at that time was grafted on several sets of partial regulations the Kazakstani Government had provided us. The problem we were facing at the time was that the regulations we worked on were peripheral to an overall set of oil and gas regulations that had not yet been completed by Kazakstani Officials, the so-called "Unified Field Rules". The material we worked on, therefore, was less than comprehensive, and so was the draft material that emerged from it.

We have now written a complete and comprehensive set of oil and gas exploration and production regulations, starting from scratch. Our work is based primarily on Texas and Kansas oil and gas field rules. Texas is the Number 2 producer (after Alaska) and one of the oldest in the country, with a history of regulation dating back to the 1930's. Kansas, best known for the largest US natural gas field, the Hugoton Field, also has a seasoned history of oil and gas regulation dating back to 1935. Kansas oil and gas regulations serve as a model for the protection of water resources.

Safety and environmental protection are heavily emphasized in this report, including the protection of the public and oil field workers from hydrogen sulphides, the protection of fresh-water supplies through tested and proven regulations covering casing settings, cementing operations, and well abandonments, and the use of relatively new concepts such as netting of open pits for the protection of migratory birds.

Even though this is an interim report, we opted to bind the enclosed regulations for the benefit of USAID officials who have a direct interest in our work. The regulations are in draft form, subject to change by us, as we review them in detail, by Kazakstani officials who have to fit them into their legal framework, and by industry officials who, we hope, will participate in a review process to make the regulations workable and acceptable to Western industry. Still, the regulations as submitted herewith are complete and comprehensive, and they will give USAID officials a vision of where this project is headed and what impact it might have on one of the most important industries in the Caspian Region.

As regards Kazakstan, the regulations by themselves are meaningless unless administered by a duly authorized and empowered state organization. We believe that an independent regulatory Agency, which we have tentatively named the "Oil and Gas Regulatory Agency" (or "OGRA"), should be put in charge of this task. The OGRA we envision will be self-financed, from minimal assessments against oil and gas production, and its independence from political forces will be ensured by a tenure provision for its key personnel.

Oil and gas exploration and production in most countries functions within a well-defined legal and regulatory hierarchy, with an oil and gas law at the top to define and articulate the country's policies on oil and gas, a regulatory regime and agency charged with the implementation and enforcement of the country's oil and gas laws, and a set of model production-sharing contracts familiar to Western oil companies that are designed to attract investment capital in the industry.

In Kazakstan, the oil and gas law is in place, in the form of an "Edict Concerning Petroleum", dated June 28, 1995. That Edict was developed with assistance from Western petroleum experts, and it is adequate in terms of its ability to serve as the country's oil and gas law.

Missing in the legal and regulatory hierarchy are the oil and gas commission or OGRA, and a workable set of model production-sharing contracts. The interim report presented here is designed to function as the OGRA's basic regulatory guide. We believe it to be a workable set of rules, but we also are intensely aware of the fact that the Agency that will be charged with the administration of these rules has not yet been created. We believe that, as soon as the regulations themselves have been adopted, the focus should shift to the governmental structure that needs to be put in place to make these regulations a functioning reality.

There has been some discussion in the recent past regarding a Regional approach to structuring the oil and gas industries in various countries of the Caspian Region. The set of oil and gas regulations proposed here, with some adjustments to reflect differences in legal and other requirements, could become the starting point for regulatory efforts in other Caspian oil-producing nations, especially Azerbaijan and Turkmenistan. This would be one of the topics of common interest that a joint Caspian Oil and Gas Commission should pursue.

The principal author of this work is Mr. William R. Bryson with Merklein & Associates, a former Director of the Oil and Gas Conservation Division of the Kansas Regulatory Agency (the Kansas Corporation Commission). The Kansas Oil and Gas Regulatory Program is the nation's third largest in terms of well activity, with 66,000 producing

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Washington, DC, April 2, 1996

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Introduction

These regulations cover the period beginning with the time when a person has successfully bid on one or more tracts and has been authorized by receiving an Exploration License by the appropriate entity in the Government of the Republic of Kazakhstan to explore for oil or gas. In order to assure the Government of Kazakhstan that provisions of the Edict on Oil and Gas will be followed, several plans are required of potential Contractors as a measure of their commitment to use the best available technical methods and progressive techniques to maximize oil and gas exploration and, eventually efficient production from Contract Territories. These regulations are not intended to reiterate what is required by the Edict but to translate mandates of these laws into a working regulatory program which achieves the goals and objectives of the Edict.

Section 1 of the Regulations is the only part of the requirements which reviews the principles of the Edict so that any Contractor involved with either exploration or production activities knows what forms the basis of Regulatory Sections 2 through 9. A second reason for Section 1 is to remind both potential Contractors and the Kazakhstan Oil and Gas Agency that plans of drilling programs, hydrocarbon reserve estimates and the success of the regulatory flow which achieve the best interests of the Republic of Kazakhstan and the incentive of each Contractor in charge of developing a Contract Territory under Agreement, is at times uncertain. Success is resource dependent and the geologic environment in which oil or gas is discovered is better known after drilling rather than before. Each well drilled adds to the knowledge of the reservoir and the efficiencies needed to be emplaced to maximize hydrocarbon extraction.

These regulations suggest flexible approaches in some areas where the Edict may portray a sterner interpretation. Flexibility can be maximized within the confines of the Edict only if the successful Contractors and the Oil and Gas Regulatory Agency communicate freely through the application process, agency inspection and data exchange programs and during hearing on contested issues.

1.0 Scope: Requirements Prior to Oil and Gas Exploration and Production

This section briefly outlines requirements contained in the Edict which must be satisfied by a person seeking to become involved in oil or gas exploration and production through Contract Agreement with the Republic of Kazakhstan. Regulations contained in Sections 2 through 9 are for Contractors who, through the competitive bidding process, have assumed licensed authority to explore for oil and gas on a specific Contract Territory or group of Contract Territories. Section 1 reiterates the basic principles of the Edict which the Contractor must be continually mindful of during the tenure of his Contract Agreement.

1.1 License Requirements, Terms and Conditions

- (A) Contractors shall adhere to all terms and conditions contained in the License Agreement (Contract Agreement), these include:
 - (1) To explore for oil or gas using the best technologies and equipment available to thoroughly discover commercial deposits and estimate their potential for commercial development.
 - (2) Conduct exploration and production operations in such a way as to protect Kazakhstan's environmental and usable water resources.
 - (3) Conduct exploration and production operations in such a manner as to protect the health and well being of the citizens of Kazakhstan and provide a safe work environment for those involved in the exploration and production of oil and gas.
- (B) Contractors shall be obligated under the Production License to diligently use the best techniques to maximize recovery of oil and gas. Contractors who do not proceed to develop production that has been discovered, or use practices which lead to premature abandonment of producing wells will be guilty of a breach of Contract Agreement.
- (C) Contractors are obligated to maintain good communication with the Oil and Gas Regulatory Agency as to the reporting of oil or gas reserves, matters of regulatory compliance and assisting the Republic of Kazakhstan in building an informational data bank on the hydrocarbon worth of the Republic.

1.2 Submission of Proposed Drilling Program and Contract Territory Development Plan.

- (A) Each Contractor shall submit a proposed Drilling Plan as a condition of the Exploration License. The plan may need to be modified once exploration begins and the Contractor is obligated to advise the OGRA of changes in

drilling locations and the reasons for the change. The OGRA should keep a flexible approach to plan alteration providing the Contractor is using the best available geologic interpretation to delete some locations from the plan and add others.

- (B) The Contractor must proceed with orderly development of each deposit discovered and notify the OGRA of each discovered productive reservoir and its potential to produce oil or gas.
- (C) The Contractor is obligated under the Production License to maximize development of each deposit. Agreements between Contractors of adjoining Territories are encouraged to coordinate orderly development of oil and gas deposits. The OGRA must sanction these inter-contractor agreements as long as they achieve the goal of the Edict which is to exploit the full recovery of oil and gas without waste. The leaving of recoverable oil and gas in the reservoir shall be considered economic waste by the Republic of Kazakstan.

1.3 Submission of a General Plan for Protecting Water Resources and Environmental Conditions.

- (A) Each Contractor shall submit the following plans prior to beginning drilling under the Exploration License.
 - (1) Groundwater protection measures to be used in preventing leakage or escape of oil or saline waters during drilling and eventually during production.
 - (2) A plan for the control of Hydrogen Sulphide release; during drilling and during the productive life of the field. This Plan is to include both protective and response measures designed for protection of workers and the general public.
 - (3) Development and submission of an Emergency Spill Contingency Plan for primarily production operations, but also designed for containing sudden releases of fluids during drilling operations.
- (B) Each Contractor shall provide the OGRA with a list of techniques and equipment to be used in controlling high pressure wells. Contained in the list should be those new technologies or equipment inventions which were tried and did not perform to advertized specifications.
- (C) Each Contractor shall work with the OGRA to define areas of the Republic of Kazakstan where special requirements for drilling, waste disposal and well

plugging techniques are required to protect water and environmental resources. Included for consideration are:

- (1) groundwater sensitive areas;
- (2) wetlands, estuaries and inland water bodies;
- (3) subsidence susceptible areas due to underlying salt deposits;
- (4) off-shore environments; and
- (5) centralized drilling of directional holes from a common surface location to minimize use of land resources.

1.4 Submission of General Survey for Establishing Cultural, Archeological and Natural Events Within a Contract Territory

- (A) The Edict requires that the Contract perform Surveys for Cultural and Archeological evidence which may be affected by drilling or production activities.
- (1) The Contractor must be prepared to perform this survey at each new drilling location unless the requirement is waived by the Republic of Kazakstan.
 - (2) These surveys shall be conducted prior to and during the installation of any pipelines.
- (B) The Contractor shall prepare a plan which outlines responses to natural disasters such as flooding, tidal wave events, land subsidence, earthquakes and windstorms. The Contractor shall only have to address those potential events which are likely to occur in the part of Kazakstan where the Contract Territory is located.

1.5 Definitions in Edit

- (A) These terms are used as they appear in the Edict and have the exact meaning of law:
- (1) "Block" means any territory on land and on water situated completely or partially in the Republic of Kazakstan and designated as a Block on a specially compiled map of Blocks.

- (2) "Internal Water Bodies" means lakes, artificial water bodies, and other water-surface resources.
- (3) "Production" means any operations associated with the lifting of Petroleum to the surface and it shall include among other things:
 - (a) construction and operation of underground and surface industrial equipment and installations;
 - (b) lifting of Petroleum to the surface, organization and maintenance of the working process in operational wells;
 - (c) processing and refining of Petroleum;
 - (d) extraction of components associated with Petroleum.
- (4) "Competent Body" means a governmental authority to which the Government of the Republic of Kazakstan delegate the rights directly related to conclusion of Contracts.
- (5) "Contract" means an agreement between a Contractor and the Competent Body for conducting of Petroleum operations.
- (6) "Contract Territory" means a territory allocated for conducting of Petroleum operations and which is defined by geographical co-ordinates.
- (7) "Commercial discovery" means a discovery in the Contract Territory of one or several Deposits (fields) worth of development.
- (8) "Licensee" shall mean a User of the subsurface which became a holder of a License.
- (9) "Licensee" means a permission granted by the Government of the Republic of Kazakstan to a User of the subsurface for conducting Exploration and Production for a fixed term within a Contract Territory.
- (10) "Sea" means the surface and layer of water, the surface of the bottom of the Caspian and Aral Seas (lakes), from the initial coastline of its entire extent within the boundaries of the Republic of Kazakstan to its exterior marine frontiers which are established on the basis of the treaties between the Republic of Kazakstan and the Seaboard States.
- (11) "Marine Scientific Research" means scientific research work associated with conducting of Petroleum operations at sea.

- (12) "Deposit (field)" means one or several natural accumulations of hydrocarbons in a geological reservoir of any type.
- (13) "Main pipeline" means an engineering installation consisting of the linear part and associated overland facilities, communications, telecontrol and communication facilities intended for transport of Petroleum from the place of Production (processing) to the place of transfer to other types of transport or the place of processing and utilization. A pipeline which operates in a regime of a storage collector shall not be referred to as a Main Pipeline.
- (14) "User of the subsurface" means any legal entity or a physical person, states, and (or) international organization which carry out Petroleum operations in the Republic of Kazakstan in accordance with this Edict.
- (15) "Petroleum" means Crude oil, Natural gas and also the hydrocarbons which are extracted after refining Crude oil, Natural gas, and after processing of oil shale or tar sand.
- (16) "Petroleum operations" means all types of work relating to Exploration, Production and associated with them in a single technological cycle, storage of Petroleum and its pumping by pipeline transport.
- (17) "Contractor" means a User of the subsurface which concludes the Contract with the Competent Body in accordance with this Edict.
- (18) "Good Petroleum deposit development practice" means practice usually employed by entities which are engaged in conducting of Petroleum Exploration and Production in countries of the world, as being reasonable, safe, efficient, and necessary for conducting of Petroleum operations.
- (19) "Associated compounds in Petroleum" means various types of metallic and other compounds contained in Petroleum and in the formation waters of a Deposit.
- (20) "Seaboard States" means the states of the Caspian and Aral Seas (lakes) basin, both adjacent and situated on the opposite coast.
- (21) "Applicable law" means the law of the Republic of Kazakstan, provided it is directly stipulated in legislative acts or where the provisions of the Contract do not define applicable law. In any other cases, the law of the Republic of Kazakstan or the law of any other country may be used as applicable law subject to provisions of the Contract.

- (22) "Natural gas" means hydrocarbons which exist in gaseous state under normal atmospheric temperature and pressure, including enriched gas, dry gas, associated gas, and residual gas which remains after the extraction or separation of liquid hydrocarbons from the enriched gas, and non-hydrocarbon gas produced together with liquid and gaseous hydrocarbons.
- (23) "Exploration" means any operations which are associated with the prospecting and Exploration of Petroleum, and which includes: field geological and geophysical studies, structure drilling, drilling of pioneer and research wells, and also test commercial production work in the fields which are explored.
- (24) "Crude oil" means any hydrocarbons, irrespective of their unit weight, which are extracted from the subsurface in a liquid state under normal atmospheric temperature and pressure, including liquid hydrocarbons, known under the names of distillate or condensate which are formed of Natural gas through the process of natural condensation.

2.0 Definitions

- (A) The following words or terms, when used in this section, shall have the following meaning unless the context clearly indicates otherwise. Some definitions which are more specific to certain regulatory subjects are found embodied in those sections of these regulations.
- (1) Adjacent estuarine zones--This term embraces the area inland from the coast line of Kazakstan and is comprised of the bays, inlets, and estuaries along the coast.
 - (2) "Alternate cementing materials" means materials used in lieu of portland cement blends, that have been approved for use by the OGRA.
 - (3) "Assessment" means any charge against the parties involved in any hearing, application, investigation, or enforcement action against a Contractor, and the assessment on natural gas and oil produced to pay the costs associated with the administration of the OGRA oil or gas regulatory program.
 - (4) "Casing" means tubular materials used to line a well bore.
 - (5) "Casing-head gas" means gas produced that was in solution with oil in its original state in the reservoir.
 - (6) "Cement" means portland cement or a blend of portland cement used to support and protect casing and to prevent the migration of subsurface fluids by the formation of an impermeable barrier.
 - (7) "Combination well" means a well that produces both oil and gas, excluding casing-head gas, from the same common source of supply.
 - (8) "Commingling" means the mixing of production from more than one common source of supply.
 - (9) "Common source of supply" means each geographic area or producing zone definitely separated from any other area or zone which contains, or appears to contain, a common accumulation of oil, gas or both. Common source of supply may extend over more than one Contact Territory. Also referred to as a common reservoir.
 - (10) "Core" means a continuous section recovered during drilling.

- (11) "Correlative rights" means the privilege of each Contractor in a common source of supply to produce from that supply only in a manner or amount that will not:
- (a) Injure the reservoir to the detriment of others;
 - (b) take an undue proportion of the obtainable oil or gas; or
 - (c) cause undue drainage between developed Contract Territories or areas capable of potential production.
- (12) "Day" means a period of 24 consecutive hours.
- (13) "Deliverability" means the amount of natural gas, expressed in Mcf per day, which a well is capable of producing into a pipeline, while maintaining a back-pressure against the well head. The amount of back-pressure to be maintained and the test procedure shall be specified by the OGRA for the common source of supply in which the well is located.
- (14) Dewatering--means to remove free water.
- (15) "Discovery well" means the first well completed in a common source of supply which is not in communication with any other common source of supply.
- (16) "Disposal well" means a well into which those fluids brought to the surface in connection with oil and natural gas production are injected, for purposes other than enhanced recovery and which disposal takes place in an unproductive saltwater formation.
- (17) "Drilling time log" is the chronological tabulation or plotting of the rate of penetration of subsurface rocks by the rotary bit.
- (18) "Enhanced recovery" means any process involving the injection of fluids into a producing zone to increase the recovery of oil or gas.
- (19) "Enhanced recovery injection well" means a well into which fluids are injected to increase the recovery of hydrocarbons.
- (20) "Field" means a geographic area in one or more Contract Territory or which contains one or more oil pools or gas producing zones.

- (21) "Fluid" means a material or substance which flows or moves in a semi-solid, liquid, sludge, or gaseous state.
- (22) "Freshwater" means water containing not more than 1,000 milligrams of total dissolved solids per liter. This upper limit is approximately equivalent to 1,000 parts of salt per million or 500 parts of chlorides per million.
- (23) "Gas" means the gas obtained from gas or combination wells, regardless of its chemical analysis.
- (24) "Gas" (cubic foot) means the volume of gas contained in one cubic foot of space at a standard pressure base and at a standard temperature base. The standard pressure base shall be 14.65 pounds per square inch absolute, and the standard temperature base shall be 60 degrees Fahrenheit. Whenever the conditions of pressure and temperature differ from the above standard, conversion of the volume from these conditions to the standard conditions shall be made in accordance with the ideal gas laws as corrected for deviation.
- (25) "Gas-oil ratio" means the ratio of gas produced, in cubic meters, to one barrel or 21 liters of oil produced during the concurrent period.
- (26) "Gas" (sour) means any natural gas containing more than 1 1/2 grains of hydrogen sulfide per 100 cubic feet or more than 30 grains of total sulphur per 100 cubic feet, or gas which is found by the OGRA to be unfit for sale due to its hydrogen sulfide content.
- (27) "Exploratory well" means any well drilled for the purpose of securing geological or geophysical information to be used in the exploration or development of oil and gas, and includes what is commonly referred to in the industry as "slim hole tests," "core hole tests," or "seismic holes".
- (28) "Gas well" means a well that:
- (a) produces gas not associated with oil at the time of production from the reservoir; or
 - (b) produces more than 15,000 standard cubic feet of gas to each stock tank barrel of oil from the same common source of supply, as measured by the gas-oil ratio test prescribed by and reported on the form prescribed and furnished by the commission.

- (29) "Hardship well" means a well authorized by the OGRA to produce at a specified rate because reasonable cause exists to expect that production below the specified rate would damage the well and cause waste due to non-recovery.
- (30) "Illegal production" means any production in violation of the statutes, rules, regulations or orders of the OGRA or the Contractor's License Agreement.
- (31) "Liquid" means a solution or substance, excluding gas, which flows freely at standard temperature and pressure.
- (32) "Mousehole" means a service hole drilled at a slight angle and normally about 10 meters deep on those wells drilled by rotary tools.
- (33) "Mud-laden fluid" as the term is commonly used in the industry, means any OGRA-approved mixture of water and clay or other material which will effectively seal a formation to which it is applied.
- (34) "Multiple completion" means the completion of any well so as to permit production from two or more common sources of supply with each common sources of supply completely segregated.
- (35) "OGRA" means the Oil and Gas Regulatory Agency.
- (36) "Oil" (crude) means any petroleum hydrocarbon which is produced from a well in liquid phase and which existed in a liquid phase in the reservoir.
- (37) "Oil, (pipeline)" means oil free from water and basic sediment to the degree that it is acceptable for pipeline transportation and refinery use.
- (38) "Oil well" means a well that produced one stock tank barrel or more of crude oil to each 15,000 standard cubic feet of gas, as measured by the gas-oil ratio test prescribed by and reported on the form prescribed and furnished by the commission.
- (39) "Open flow" means the volume of gas which a gas well is capable of producing at the wellhead during a period of 24 hours against atmospheric pressure, computed according to the standard procedure approved by the OGRA.

- (40) "Person" means any natural person, corporation, association, partnership, governmental or political subdivision, receiver, trustee, guardian, executor, administrator, fiduciary, or any other legal entity.
- (41) "Pipeline" means any pipes above or below the ground used or to be used for the transportation of oil, gas, liquids, or gases.
- (42) Pollution of surface or subsurface water means the alteration of the physical, thermal, chemical, or biological quality of, or the contamination of, any surface or subsurface water in the Republic that renders the water harmful, detrimental, or injurious to humans, animal life, vegetation, or property, or to public health, safety, or welfare, or impairs the usefulness or the public enjoyment of the water for any lawful or reasonable purpose.
- (43) "Pool" means a single and separate natural reservoir of oil or gas characterized by a single pressure system.
- (44) "Contractor" means any person who holds a License and is authorized to explore, or drill for or produce, in whole or in part, oil or gas or both from a well.
- (45) "Production" means produced oil, gas, condensate, or casing-head gas.
- (46) "Productivity of a well" means the daily capacity of a well to produce oil or gas.
- (47) "Productivity of a pool" means the sum of the productivities of the wells completed in the pool.
- (48) "Purchaser" means any person by Contract Agreement who purchases production from a well, Contract Territory or common source of supply.
- (49) "Rathole" means the service hole drilled at a slight angle and normally about 12 meters deep on those wells drilled by rotary tools.
- (50) "Reasonable production" means the amount of crude petroleum or natural gas which must be produced to satisfy current rates of pipeline capacity or represents the maximum producing efficiency of the reservoir.
- (51) "Recompletion" means a well which is re-worked for the purpose of developing new productive zones after its initial well completion.

- (52) "Sensitive groundwater area" means a geographic or hydrogeologic area designated by the OGRA as having hydrogeologic, climatic, soil and other characteristics that make the area's fresh or usable groundwater vulnerable to pollution from oil and gas activities.
- (53) "Service well" means a well drilled for:
- (a) The injection of fluids in enhanced recovery projects;
 - (b) the supply of fluids for enhanced recovery projects; or
 - (c) the disposal of salt water.
- (54) "Solid" means a material or substance which does not flow freely at standard temperature and pressure.
- (55) "Special order" means an order issued by the OGRA which is directed to a specifically named Contractor or to a group of Contractors and does not constitute a general situation and which is dispositive of a particular matter as applied to a specific set of facts relating to production, exploration or the environment.
- (56) "Spill" means any escape of salt water, oil, or oil refuse by overflow, seepage or otherwise from the vicinity of wells, tanks, pipelines, dikes or pits involved in the exploration for, the gathering of oil and gas and the drilling, production, storage, treatment, abandonment and post abandonment of oil and gas wells.
- (57) "Storage oil" means produced oil confined in tanks, reservoirs, containers or stationary vessels.
- (58) "Storage oil-lease" means produced oil in tanks, reservoirs, containers or vessels on the Contract Territory where it was produced.
- (59) "Storage well" means a well used to inject or extract natural gas for storage purposes.
- (60) "Stratigraphic hole" means a hole, normally of small diameter, drilled through subsurface strata for exploratory purposes, with no intent to produce hydrocarbons through the hole being drilled.
- (61) "Surface casing" means the first casing put in a well which is cemented into place. It serves to shut out shallow water formations. It also acts as a foundation or anchor for all subsequent drilling activity. When a

production casing is cemented in the upper portion to protect usable water, it shall be deemed surface casing.

- (62) Surface or subsurface water means Groundwater, percolating or otherwise, and lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, inside the territorial limits of the Republic, and all other bodies of water.
- (63) "Tertiary recovery process" means the process or processes of oil recovery which go beyond waterflooding or secondary recovery.
- (64) "Undue drainage" means the uncompensated migration of either oil or gas between developed Territories within the same common source of supply caused by the unratable production of one or more wells located there.
- (65) "Usable water" means containing not more than 3,000 milligrams of total dissolved solids per liter. This upper limit is approximately equivalent to 6,100 parts of salt per million or 1,500 parts of chlorides per million.
- (66) "Waste oil" means any tank bottom, basic sediment, cut oil, reclaimed oil from pits, ponds or streams, dead oil, emulsions, or other types of oil not defined as pipeline oil.
- (67) "Waterflood" means the process of injecting fluids into one or more wells to enhance the recovery of oil.
- (68) "Wellhead working pressure" means the static pressure in the annulus while flowing through the tubing, or static pressure in the tubing while flowing through the annulus, except in cases where the casinghead is not in open communication with the producing formation because of the presence of a packer or other obstruction in the annular space between casing and tubing. In these cases, the wellhead working pressure shall be determined by adjusting the observed tubing pressure for the effect of friction caused by flow through the tubing, or by using a bottom-hole pressure bomb and correcting back to wellhead conditions.
- (69) "Well log" means the written record progressively describing the well's down-hole development.
- (70) "Well history" means the chronological record of the development and completion of a well.

(B) All terms not defined in this definitional section or other specific definition sections shall be interpreted to be consistent with their common use in the industry.

3.0 Scope -- Requirements for Drilling and Completion of Wells

Regulations on drilling and completion (exploration and development) depict the variety of geological and technical peculiarities of the multi-bed oil, gas and gas condensate deposits of Kazakhstan stipulate the necessity for justification of drilling and well completion techniques which address these special situations. Kazakhstan deposits are characterized by: gas caps, high deposit temperatures, aggressive water drive in production zones, highly penetrable horizons prone to saturation and water breaks, and unstable rock formations. In oil and gas deposits found at depths of greater than 3500 m., abnormally high temperatures and pressures, high hydrogen sulphide and carbonic gas, thick salt beds and unstable rocks are common.

This section defines the rules on implementing the development phase of the project which includes the process of drilling and completion prior to production.

3.1 Onshore and Inland Waters

3.1.1 General

- (A) In order to protect the natural resources and environment, all casing cemented in any well shall be steel casing that has been hydrostatically tested with an applied pressure at least equal to the maximum pressure to which the pipe is subjected at the estimated depth of the producing formation. For new pipe, the Contractor may use a mill test pressure to fulfill this requirement. As an alternative to hydrostatic testing, a full length electromagnetic, ultrasonic, radiation thickness gauging or magnetic particle inspection may be employed.
- (B) The use of cement in setting surface casing or behind production casing to isolate producing deposits to prevent upward or downward travel of fluids (oil, gas or water) between the casing and the rock formations of the bore hole.
- (C) The surface casing shall be set at such depth as to protect usable water and shall be cemented from top to bottom. Sufficient cement shall be used to fill the space outside the casing from the shoe (base) to the ground surface or the bottom of the cellar.
- (D) If cement does not circulate to the ground surface or the bottom of the cellar, the Contractor shall contact the designated OGRA representative and receive approval of a plan which describes procedures to be used to do additional cementing to complete the work.

- (E) A blow out preventer or control head and other connections to keep the well under control at all times shall be installed as soon as the surface casing is set. This is to allow safe conduct of work without accidents and complications during the drilling and completion of the well.
- (F) Wells drilled to potential producing zones where the anticipated natural pressure of the oil reservoir exceeds the weight of the drilling fluid column shall be equipped to divert any well bore fluids away from the rig floor. Drilling shall stop if the diverter fails to operate properly.

3.1.2 Surface Casing

- (A) Amount Required. A Contractor shall set and cement sufficient surface casing to protect all usable quality water strata as defined by 2.0 (A)(65). The Contractor shall, before drilling a well within any Authorized Contract Territory obtain a letter from OGRA as to the depth of necessary protection, unless OGRA has developed a standardized table showing these requirements for the Republic of Kazakhstan.
- (B) Cementing of Surface Pipe. Cementing shall be done by the pump and plug method. Sufficient cement shall be used to fill the annular space outside the casing from the shoe (base) to the ground surface or to the bottom of the cellar. If cement does not circulate to ground surface or the bottom of the cellar, the Contractor or his representative shall obtain the approval of the OGRA or authorized representative for the procedures to be used to perform additional cementing operations, if needed, to cement surface casing from the top of the cement to the ground surface.
- (C) Cement Quality.
 - (1) Surface casing strings must be allowed to stand under pressure until the cement has reached a compressive strength of at least 500 psi in the zone of critical cement before drilling plug or initiating a test. The cement mixture in the zone of critical cement shall have a 72-hour compressive strength of at least 1,200 psi.
 - (2) An operator may use cement with volume extenders above the zone of critical cement to cement the casing from that point to the ground surface, but in no case shall the cement have a compressive strength of less than 100 psi at the time of drill out nor less than 250 psi 24 hours after being placed.

- (3) In addition to the minimum compressive strength of the cement, the free water separation shall average no more than six milliliters per 250 milliliters of cement. For purpose of testing, API RP10B is recommended as a standard method.
 - (4) The OGRA may require a better quality of cement mixture to be used in any well or any Contract Territory if evidence of local conditions indicates a better quality of cement is necessary to prevent pollution or to provide safer conditions in the well or territory.
- (D) Compressive strength tests. Cement mixtures for which published performance data are not available must be tested by the Contractor. Tests shall be made on representative samples of the basic mixture of cement and additives used, using distilled water or fresh water for preparing the slurry. Test data showing competency of a proposed cement mixture to meet the above requirements must be furnished to the OGRA prior to the cementing operation. To determine that the minimum compressive strength has been obtained, Contractors shall use the typical performance data for the particular cement used in the well (containing all the additives, including any accelerators used in the slurry) at the following temperatures and at atmospheric pressure.
- (1) For the cement in the zone of critical cement, the test temperature shall be within 5.5 degrees centigrade of the formation equilibrium temperature at the top of the zone of critical cement.
 - (2) For the filler cement, the test temperature shall be the temperature found 30 meters below the ground surface level, or 33 degrees centigrade whichever is greater.
- (E) Cementing report. Upon completion of the well, a cementing report must be filed by the Contractor with the OGRA furnishing complete data concerning the cementing of surface casing in the well as specified on a form furnished by the OGRA. The Contractor or his duly authorized agent having personal knowledge of the facts, and representatives of the cementing company performing the cementing job, must sign the form attesting to compliance with the cementing requirements of the OGRA.
- (F) Centralizers. Surface casing shall be centralized at the shoe, above and below a stage collar or diverting tool, if run, and through usable-quality water zones. In nondeviated holes, pipe centralization is required as

follows: a centralizer shall be placed every fourth joint from the cement shoe to the ground surface or to the bottom of the cellar. In deviated holes, the operator may be required to provide additional centralization. API spec. 100 is recommended as a standard for centralizers.

(G) Alternative surface casing programs.

- (1) An alternative method of usable water protection may be approved upon written application by the Contractor to the OGRA. The Contractor shall state the reason (economics, well control, etc.) for the alternative usable water protection method and outline the alternate program for casing and cementing through the protection depth for strata containing usable-quality water. Alternative programs for setting more than specified amounts of surface casing for well control purposes may be requested on a Contract Territory or field basis. Alternative programs for setting less than specified amounts of surface casing will be authorized on an individual well basis only. The OGRA may approve, modify, or reject the proposed program. If the proposal is modified or rejected, the Contractor may request a hearing or informal conference from the OGRA. The Contractor shall obtain approval of any alternative program before commencing operations.
- (2) Any alternate casing program shall require the first string of casing set through the protection depth to be cemented in a manner that will effectively prevent the migration of any fluid to or from any stratum exposed to the wellbore outside this string of casing. The casing shall be cemented from the shoe to ground surface in a single stage, if feasible, or by a multi-stage process with the stage tool set at least 16 meters below the protection depth.
- (3) All alternate casing programs shall include pumping sufficient cement to fill the annular space from the shoe or multi-stage tool to the ground surface. If cement is not circulated to the ground surface or the bottom of the cellar, the Contractor shall run a temperature survey or cement bond log. The OGRA or its designated representative shall be notified prior to running the required temperature survey or bond log. After the top of cement outside the casing is determined, the Contractor or his representative shall contact the OGRA and obtain approval for the procedures to be used to perform any required additional

cementing operations. Upon completion of the well, a cementing report shall be filed with the OGRA on the prescribed form.

- (4) Before parallel (nonconcentric) strings of pipe are cemented in a well, surface or intermediate casing must be set and cemented through the water protection depth.

3.1.3 Intermediate casing

- (A) Cementing method. Each intermediate string of casing shall be cemented from the shoe to a point at least 180 meters above the shoe. If any productive horizon is open to the wellbore above the casing shoe, the casing shall be cemented from the shoe up to a point at least 180 meters above the top of the shallowest productive horizon or to a point at least 60 meters above the shoe of the next shallower casing string that was set and cemented in the well.
- (B) Alternate method. In the event the distance from the casing shoe to the top of the shallowest productive horizon makes cementing, as specified above, impossible or impractical, the multi-stage process may be used to cement the casing in a manner that will effectively seal off all such possible productive horizons and prevent fluid migration to or from such strata within the wellbore. The OGRA shall be notified by the Contractor if such alternate methods are necessary.

3.1.4 Production casing

- (A) Cementing method. The production string of casing shall be cemented by the pump and plug method, or another method approved by the OGRA, with sufficient cement to fill the annular space back of the casing to the surface or to a point at least 180 meters above the shoe. If any productive horizon is open to the wellbore above the casing shoe, the casing shall be cemented in a manner that effectively seals off all such possibly productive horizons by one of the methods specified for intermediate casing in Section 3.1.3 of this regulation.
- (B) Isolation of associated gas zones. The position of the gas-oil contact shall be determined by coring, electric log, or testing. The producing string shall be set and cemented below the gas-oil contact, or set completely through and perforated in the oil-saturated portion of the reservoir below the gas-oil contact.

3.1.5 Tubing and storm choke requirements

- (A) Tubing requirements for oil wells. All flowing oil wells shall be equipped with and produced through tubing. When tubing is run inside casing in any flowing oil well, the bottom of the tubing shall be at a point not higher than 300 meters above the top of the producing interval nor more than 16 meters bore the top of a line, if one is used. In a multiple zone structure, however, when a Contractor elects to equip a well in such a manner that small through-the-tubing type tools may be used to perforate, complete, plug back, or recomplete without the necessity of removing the installed tubing, the bottom of the tubing may be set at a distance up to, but not exceeding, 300 meters above the top of the perforated or open-hole interval actually open for production into the wellbore. In no case shall tubing be set at a depth of less than 70% of the distance from the surface of the ground to the top of the interval actually open to production.
- (B) Storm choke. All flowing oil and gas wells located in bays, estuaries, lakes, rivers, or streams must be equipped with a storm choke or similar safety device installed in the tubing a minimum of 30 meters below the mud line.

3.2 Offshore

3.2.1 Casing. The casing program shall include at least three strings of pipe, in addition to such drive pipe as the Contractor may desire, which shall be set in accordance with the following program.

- (A) Conductor casing. A string of new pipe, or reconditioned pipe with substantially the same characteristics as new pipe, shall be set and cemented at a depth of not less than 90 meters TVD (true vertical depth) nor more than 240 meters TVD below the mud line. Sufficient cement shall be used to fill the annular space back to the pipe to the mud line; however, cement may be washed out or displaced to a maximum depth of 16 meters below the mud line to facilitate pipe removal on abandonment. Casing shall be set and cemented in all cases prior to penetration of known shallow oil and gas formations, or upon encountering such formations.
- (B) Surface casing. All surface casing shall be a string of new pipe with a mill test of at least 1,100 pounds per square inch (psi) or reconditioned pipe that has been tested to an equal pressure. Sufficient cement shall be used to fill the annular space behind the pipe to the mud line; however, cement may be washed out or displaced to a maximum depth

of 16 meters below the mud line to facilitate pipe removal on abandonment. Surface casing shall be set and cemented in all cases prior to penetration of known shallow oil and gas formations, or upon encountering such formations. In all cases, surface casing shall be set prior to drilling below 1,075 meters TVD. Minimum depths for surface casing are as follows.

(1) Surface Casing Depth Table.

Proposed Total Vertical Depth of Well	Surface
to 2,150 meters	25% of proposed total depth of well
2,150-3,050 meters	600 meters
3,050 meters and below	760 meters

(2) Casing test. Cement shall be allowed to stand under pressure for a minimum of eight hours before drilling plug or initiating tests. Casing shall be tested by pump pressure to at least 1,000 psi. If, at the end of 30 minutes, the pressure shows a drop of 10% or more, the casing shall be condemned until the leak is corrected. A pressure test demonstrating a drop of less than 10% after 30 minutes is proof that the condition has been corrected.

(C) Production casing or oil string. The production casing or oil string shall be new or reconditioned pipe with a mill test of at least 2,000 psi that has been tested to an equal pressure and after cementing shall be tested by pump pressure to at least 1,500 psi. If, at the end of 30 minutes, the pressure shows a drop of 10% or more, the casing shall be condemned. After corrective operations, the casing shall again be tested in the same manner. Cementing shall be by the pump and plug method. Sufficient cement shall be used to fill the calculated annular space above the casing shoe to protect any prospective producing reservoirs and to a depth that isolates abnormal pressure from normal pressure (0.465 gradient). A float collar or other means to stop the cement plug shall be inserted in the casing string above the shoe. Cement shall be allowed to stand under pressure for a minimum of eight hours before drilling the plug or initiating tests.

3.2.2 Blowout preventers

- (A) Before drilling below the conductor casing, the Contractor shall install at least one remotely controlled blowout preventer with a mechanism for automatically diverting the drilling fluid to the mud system when the blowout preventer is activated.
- (B) After setting and cementing the surface casing, a minimum of two remotely controlled hydraulic ram-type blowout preventers (one equipped with blind rams and one with pipe rams), valves, and manifolds for circulating drilling fluid shall be installed for the purpose of controlling the well at all times. The ram-type blowout preventers, valves, and manifolds shall be tested to 100% of rated working pressure, and the annular-type blowout preventer shall be tested to 1,000 psi at the time of installation. During drilling and completion operations, the ram-type blowout preventers shall be tested by closing at least one each trip, and the annular-type preventer shall be tested by closing on drill pipe once each week.

3.2.3 Kelly cock. During drilling, the well shall be fitted with an upper kelly cock in proper working order to close in the drill string below hose and swivel, when necessary for well control. A lower kelly safety valve shall be installed so that it can be run through the blowout preventer. When needed for well control, the Contractor shall maintain at all times on the rig floor safety valves to include:

- (A) full-opening valve of similar design as the lower kelly safety valves; and
- (B) inside blowout preventer valve with wrenches, handling tools, and necessary subs for all drilling pipe sizes in use.

3.2.4 Mud program. The characteristics, use, and testing of drilling mud and conduct of related drilling procedures shall be designed to prevent the blowout of any well. Adequate supplies of mud of sufficient weight and other acceptable properties shall be maintained. Mud tests shall be made frequently. Adequate mud testing equipment shall be kept on the drilling platform at all times. The hole shall be kept full of mud at all times. When pulling drill pipe, the mud volume required to fill the hole each time shall be measured to assure that it corresponds with the displacement of pipe pulled. A derrick floor recording mud pit level indicator shall be installed and operative at all times. A careful watch for swabbing action shall be maintained when pulling out of hole. Mud-gas separation equipment shall be installed and operated.

3.2.5 Wellhead Equipment and Connections

- (A) Requirement. All wells shall be equipped with casingheads of sufficient rated working pressure, with adequate connections and valves available, to permit pumping mud-laden fluid between any two strings of casing at the surface.
- (B) Casinghead test procedure. Any well showing sustained pressure on the casinghead, or leaking gas or oil between the surface casing and the oil string, shall be tested in the following manner: The well shall be killed with water or mud and pump pressure applied. Should the pressure gauge on the casinghead reflect the applied pressure, the casing shall be condemned. After corrective measures have been taken, the casing shall be tested in the same manner. This method shall be used when the origin of the pressure cannot be determined otherwise.
- (C) Christmas tree. All completed wells shall be equipped with Christmas tree fittings and wellhead connections with a rated working pressure equal to, or greater than, the surface shut-in pressure of the well. The tubing shall be equipped with a master valve, but two master valves shall be used on all wells with surface pressures in excess of 5,000 psi. All wellhead connections shall be assembled and tested prior to installation by a fluid pressure equal to the test pressure of the fitting used in the connection.
- (D) Storm choke and safety valve. A storm choke or similar safety device shall be installed in the tubing of all completed flowing wells to a minimum of 30 meters below the mud line. Such wells shall have the tubing-casing annulus sealed below the mudline. A safety valve shall be installed at the wellhead downstream of the wing valve. All oil and gas, and gathering lines shall have check valves at their connections to the wellhead.
- (E) Pipeline shut-off valve. All gathering pipelines designed to transport oil, gas, condensate, or other oil field fluids from a well or platform shall be equipped with automatically controlled shut-off valves at critical points in the pipeline system. Other safety equipment must be in full working order as a safeguard against spillage from pipeline ruptures.

3.2.6 Training. The Contractor shall certify at the time of license application under Section 1 of these regulations that all tool pushers, drilling superintendents, Contractors representatives, and Subcontractors will have completed a school on well control equipment and techniques. The Contractor shall certify to the

satisfaction of the OGRA that each person listed above has received refresher courses every two years. These training requirements do not apply to onshore drilling activities covered under Section 3.1 of this regulation.

3.3 Preservation of Well Samples, Logs and Cores

- (A) Each Contractor holding a license to explore for oil and gas within a Contract Territory shall preserve samples or drill cuttings, cores and all other information as required under Subsection (D) of this regulation. Retention of such information shall be required whether wells are drilled under the exploration program or as a development well once production is established within a Contract Territory.
- (B) Formation samples or drill cuttings normally saved in drilling or well recompletion activities or any cores taken shall be retained by the Contractor for 180 days after the well drilling operation has started.
- (C)
 - (1) Upon request of the OGRA and as specified in (C)(2), samples shall be washed and cut into splices or sets. One set shall be placed in labelled sample envelopes and delivered, at the prepaid expense of the Contractor to the proper data collecting center designated by the OGRA. Upon request of the OGRA, all cores or core longitudinal sections not required by the Contractor for well evaluation purposes shall be placed in stratigraphic sequence in adequate boxes, labelled with the well name, location and footage and delivered, at a prepaid expense of the Contractor to the OGRA or a place of their designation.
 - (2) The extent to which such samples are required by the OGRA will be stipulated in the Contractors License Agreement. Delivery of the processed samples and cores shall be made within 180 days of the beginning of drilling or date of commencement of recompletion of the well. The OGRA may make special requests for samples if exploration discovers unexpected subsurface information not included within the scope of the License Agreement.
 - (3) If retention of the core is required by the Contractor, designated representatives of the OGRA shall be provided unrestricted access to the core at the Contractor's office, or at other place designated by the Contractor during the Contractor's normal business hours. This access shall be subject to any confidentiality requests made under subsection (E) of this regulation.
 - (4) Contractors in physical possession of cores requested by the OGRA shall not dispose of the cores without permission of the OGRA.

Unauthorized disposal shall be considered by the OGRA as a violation of the Contractors Exploration or Production license, whichever applies.

- (5) The OGRA may request shallow samples from portions of the hole that may not normally be saved during drilling. In the case of such requests, procedures described under (C)(1) shall apply.
- (D) (1) The following information shall be delivered to the OGRA within 180 days of the commencement of drilling or recompletion of a well:
- (a) A copy of the affidavit of well completion;
 - (b) core analyses;
 - (c) final drill stem data elements;
 - (d) charts and estimations of oil or gas recovery;
 - (e) final electric logs;
 - (f) final radioactivity logs;
 - (g) similar wireline logs or surveys run by the Contractor on all boreholes excluding seismic shotholes (if used in Kazakhstan);
 - (h) final logs run to obtain or verify geophysical data; and
 - (i) geological well reports.
- (2) For good reason shown, an extension of 60 days may be granted by the OGRA or designated representative for the submission of the required information. The request for extension shall be in writing and received 10 days prior to the expiration of the 180 day period.
- (3) Failure of the Contractor to deliver the information to the OGRA shall be a violation of the license agreement and may cause the OGRA to impose whatever sanctions are appropriate under the conditions of the Agreement.
- (E) Confidentiality Requests. Even though, under the laws governing the exploration for production of oil or gas, Contractors are required to freely share all geological information or data obtained during exploration with the OGRA, there may be cases where an initial period of information confidentiality is desirable either for the business interests of the Contractor or for the economic benefit of the Republic of Kazakhstan. The following procedure shall govern confidentiality requests:
- (1) If a written request for confidentiality is made to the OGRA within 180 days of the commencement of drilling or recompletion of a well, any information, samples or cores required under (C) and (D) of this regulation shall be held in

confidential custody by the OGRA for a period of one year, providing the OGRA approves the Contractor's request.

- (2) All rights to confidentiality shall be lost if the filings are not timely as provided in Subsections (C) and (D) or if the request for confidentiality is not timely, as provided in paragraph (E)(1).
 - (3) Upon an approved confidentiality declaration by the OGRA, samples, cores or information on each applicable hole or well may be released prior to the expiration of the one-year period only upon written approval of the Contractor.
- (F) Each Contractor shall furnish to the OGRA monthly a list of all logging services performed on each hole and the name of the Subcontractor(s) performing the service.

4.0 Scope -- Requirements During Production of Wells

This section sets forth regulations governing the production of oil or gas from productive zone or multiplicity of productive zones from the time oil or gas is discovered within a Contract Territory by a Contractor who has been issued a license to produce. Petroleum operations are generally carried out under the Chapter 6. Article 30 of the June 28, 1995 Edict from the President of the Republic of Kazakstan. Article 30 requires a Contractor who has, through exploration, discovered a productive interval or deposit, to assess the productivity and prepare a summary of its commercial potential. The deadlines for notifying OGRA of a discovery, its productivity assessment and the procedures and rationale used to determine the commercial value of the discovery are defined in the Contract.

These regulations require the Contractor to develop the Contract Territory in the most efficient or optimum manner so that maximum recovery of oil without waste of oil or gas resources occurs. The regulations also recognize that pipeline capacity carrying oil or gas from a Contract Territory or group of Territories may, in some cases, temporarily be more limiting than the aggregate well capacity with the Territory.

4.1 General -- Contractors are mandated by law and obligated by license and contract agreement to produce oil or gas at an optimum rate which reflects the ability to transform well spacing design to fit the physical properties of the producing reservoirs.

4.1.1 Well Spacing Requirements

- (A) Except as provided in Section 4.1.3 or in Section B of this regulation there shall be no country wide spacing requirements for producing oil and gas wells within the boundaries of the Republic of Kazakstan, however, each Contractor holding a Production License for a Contract Territory shall satisfy the OGRA that the adopted distance between producing wells at the point of penetration of the producing interval will provide for maximum recovery of hydrocarbons. Information to be filed with the OGRA shall include but not be limited to the following:
- (1) A description of the geology and physical properties of each producing zone which makes the proposed spacing pattern technologically optimum and will provide an efficient recovery of oil or gas.
 - (2) Competent, conclusive geological or engineering data indicating that the adopted well density for each reservoir will not cause drainage of oil from wells producing from the same zone on adjoining Contract Territories being operated by other Contractors.

- (3) A plat of the location of all wells drilled within the Contract Territory. The plat shall show location of all producing wells, injection or water supply wells, and unproductive (dry) holes drilled under current Exploration or Production Licenses as well as the location of any holes, producing or otherwise, completed by other parties prior to the License Agreement. All plat maps required under this Section or Section (C) shall be updated annually by the Contractor and sent to the OGRA.
- (B) No well for oil or gas shall terminate in the producing zone nearer than 150 meters to any adjoining Contract Territory being developed by a different Licensee unless the OGRA receives a copy of a well spacing agreement between two Contractors that a jointly developed spacing and well density program is in the best interests of maximum recovery of oil from a reservoir. The requirement of a written agreement shall apply for each common source of hydrocarbon supply within the involved Contract Territories regardless of whether wells are single or multiple completions. This spacing limitation shall also apply to adjoining unlicensed tracts unless waived by the OGRA.
- (C) The Contractor shall provide the OGRA a description or plat of all surface point of entry for wells and the coordinates of the terminus of the well at the producing formation contact. For a single Contract Territory this shall include:
 - (1) The location of a centralized pad where the surface entry of two or more wells has taken place including the location of any injection wells drilled within the formation pattern.
 - (2) The location of any single vertical (non-deviated) oil or gas wells which were not drilled from a central location or were drilled and completed by a previous Contractor.
 - (3) If the wells completed as described in (C)(1) of this section are designed as multiple completions, the plat should clearly describe the subsurface coordinates for each common source of supply.
 - (4) The Contractor shall provide the OGRA with any additional information as requested.

4.1.2 Application to Modify Original Territory Development Plan

- (A) If at any time during the tenure of any Contract Agreement, the Contractor finds it necessary to modify either the originally submitted drilling plan or the production development plan, including a recalculation of oil or gas reserves, he shall submit to the OGRA an application for approval of plan modification. Information included in the request may include, but not be limited to the following.
- (1) Well location changes which deviate substantially from the original plan and the reasons why the relocation of exploration locations was necessary.
 - (2) Geologic maps of each common source of supply (reservoir) for which discovery of oil or gas has taken place and the change in configuration of each deposit revealed by the drilling program.
 - (3) Recalculation of reserves of oil or gas within the Contract Territory or a specific common source of supply within a Territory based on the amended information. This should include any projected oil or gas decline curves for individual wells which factor into the recalculation. Trend curves should also show increases or decreases in produced water.
 - (4) An assessment of the success or failure of producing zones to respond to enhanced recovery techniques such as water flooding, gas injection or polymers.
 - (5) A narrative statement as to why the changes in plans are necessary to maximize the development of the Production within the Contract Territory and provide for the most efficient recovery of oil or gas.
- (B) Actions by the OGRA
- (1) The OGRA may, in the interest of efficiency allow the Contractor to provide the information required under Section (A) of this regulation on an annual basis or more frequently for major modifications to the program. Acknowledgment of report acceptance by the OGRA constitutes approval of modifications.
 - (2) When the OGRA believes additional information is needed from the Contractor to provide a full evaluation of the Contractor's diligence or intent to maximize development of the Territory or

the future performance of each producing zone located therein, it shall give the Contractor 60 calendar days to satisfy the OGRA request.

- (C) The OGRA, on its own motion, may at any time establish hearings or informal conferences with the Contractor on exploration or production related events pertaining to the Contract Territory.
- (D) The OGRA shall hold a formal hearing if, on the basis of reports and findings filed under Section (A) or (B) of this Regulation, it determines that the Contractor has not used the most efficient methods and technology for conducting "Petroleum operations" in developing the Contract Territory.

4.1.3 Well Spacing Exception Requests

- (A) Except as provided by (B), (C) or (D) of this regulation, each oil well or gas well shall not be drilled nearer than 150 meters from any Contract Territory boundary where the adjoining tract is under the physical control of a different Licensed Contractor.
- (B) The OGRA may delineate areas of the Republic of Kazakstan where the production is encountered at less than 600 meters and where the minimum distance set back for a well from a Territory boundary may be less than 150 meters but in no case shall a well be located less than 60 meters from a boundary.
- (C) The OGRA may grant an exception to allow drilling within shorter distances than provided in subsection (A) or (B), whichever is applicable, when such exceptions are necessary either to prevent waste, protect correlative rights, or to maximize efficient recovery of oil based on reservoir conditions.
- (D) The OGRA may grant an exception to address situations where the oil is of such low gravity as to require a close spacing or density of wells, and special recovery techniques such as steam flooding are necessary to maximize profitable recovery.
- (E) When an exception to this regulation is desired pursuant to subsections (C) or (D), an application shall be submitted to the OGRA by the Contractor and shall contain the following:
 - (1) A brief explanation of the exception or exceptions requested;

- (2) the proposed location of the well(s); including the distance to the nearest Contract Territory boundary.
 - (3) The name of the Contractor(s) of whose Adjoining Contract Territory boundary is less than the minimum distance from the proposed well location. If a written agreement to the well location has been signed by both Contractors, this must be provided to the OGRA.
 - (4) A plat showing the location of the proposed well with respect to the closest producing wells surrounding the proposed location.
- (F) Any applicant requesting the exception shall notify the adjoining Contractor of his intentions. The Adjoining Contractor may file a protest with the OGRA at which time the OGRA may set the issue for hearing within 30 days of receiving the protest. Any costs associated with the hearing shall be paid by whichever party receives unfavorable judgment from the OGRA on the issue. Cost reimbursement by a Contractor shall go to the appropriate governmental entity authorized by Edict to receive such monies.

4.1.4 Hearing Procedures on Exceptions or Appeals

- (A) A Contractor may request a hearing before the OGRA on matters pertaining to the following:
- (1) Denial actions on applications by the OGRA;
 - (2) Sanctions or Penalty Actions issued by the OGRA against an operator for violations of regulations or License Provisions;
 - (3) Requested exceptions to these regulations or
 - (4) Any other action taken by the OGRA which the Contractor is aggrieved and where the OGRA believes a hearing determination would be of benefit to the Republic of Kazakstan.
- (B) The OGRA, on its own motion, may set for hearing any issue pertaining to these regulations including:
- (1) Actions taken by Contractors which appear to be violations of the Exploration or Production License;

- (2) Cases where the OGRA has incomplete information to make a valid determination on an oil and gas regulatory issue and the Contractor's testimony is essential to resolution of the issue;
 - (3) Changes in these regulations after the initial document goes into effect.
- (C) Notification of Parties. Any Contractor who initiates a hearing request with the OGRA will be responsible for notifying each party affected by the matter at least 20 days prior to the hearing. The manner in which notification is effected and the list of those to be notified shall be provided to the Contractor by the OGRA.
- (D) Protestors of Contractor applications or activities shall file said protest with the OGRA within 20 days after receipt of the notice of the application. The protest shall be in writing and shall include a clear and concise statement of the direct and substantial interest of the protester in the proceeding. The protester shall provide the OGRA specific allegations as to the manner in which the grant of the application will cause waste, violate correlative rights or pollute the water and environmental resources of the Republic.
- (E) All protestors under (D), in order to secure consideration of the protest, shall offer evidence or a statement or participate in the hearing.
- (F) The OGRA, after hearing, shall make a decision or determination and that decision shall be final without further appeal.

4.1.5 Well Bore; Commingling of Production: From More Than One Source of Supply

- (A) Where the Contractor determines that the productivity of two or more sources of supply within a well bore have depleted to the point where the metering of the production of each is no longer cost effective or meaningful in terms of the information provided by individual metering, he may apply to the OGRA for approval to commingle production on a case-by-case basis.
- (B) The opportunity to apply for commingling under (A) shall also apply to gas wells providing none of the common source of supply produce sour gas or zone produces gas that has a substantially lower BTU quality.
- (C) Application -- Applications to commingle oil or gas production shall be filed with the OGRA on an individual well basis and shall include:

- (1) A description of the well with a plat attached showing the location of the subject well, the location of other wells in the immediate area (0.3 km), and for each of these wells, the name of the Contractor;
 - (2) the names of the upper and lower limits of the sources of supply to be commingled, with proposed perforations or open holes noted;
 - (3) a wireline log of the subject well;
 - (4) the production potential of oil, water, gas or a combination for each source of supply;
 - (5) the total production for the formations sought to be commingled.
- (D) Notification -- The Contractor shall provide notification to the Contractor of an adjoining Territory if the subject well is located 0.3 km or less from the boundary.
- (E) Amendment unavailable. A new commingling application shall be required if the Contractor desires to open an additional source of supply that was not included in the initial application.

4.1.6 Well Bore--Commingling of Fluids (Injected Water)

- (A) Well bore commingling of fluids from one or more intervals with fluids from a productive interval, also known as a dump flood, shall be permitted after application and approval by the OGRA. Commingling shall be prohibited if the OGRA finds that waste or a violation of correlative rights is likely to result.
- (B) Application. Applications for commingling shall be filed with the OGRA. The application shall contain the following information:
- (1) A plat map showing the location of the subject well, the location of other wells within 0.3 km radius of the subject well and the Contractor's names of all the wells;
 - (2) the intervals to be commingled, with proposed perforations or open zones noted;
 - (3) a well construction diagram of the subject well; and

- (4) an estimate of the amount of fluids to be commingled.
- (C) Notification -- The Contractor shall be required to provide notice to Contractors of adjoining territories if the subject well is located within 0.3 km of the Contract Territory boundary.
- (D) Non-Transferable -- Permits to commingle fluids shall be valid only during the tenure of the applicant as the Contractor for the operation of the well. Subsequent Contractors will be required to file a new application for each well where fluid commingling was permitted and is desired to continue.
- (E) Protests -- Any adjoining Contractor who was notified under Section (C) and who files a protest within 15 days of receiving notice, is entitled to an OGRA hearing unless the OGRA judges the protest to be nonsubstantive or frivolous in substance.

4.1.7. Application and Procedure for Multiple Completions Wells

- (A) A Contractor shall file an application with OGRA requesting permission to multi-complete a well in separate reservoirs that are not in communication and the OGRA shall approve such proposal providing the following conditions are satisfied:
 - (1) The Contractor demonstrates the two or more reservoirs are within the Contract Territory authorized for which a Production License was issued and
 - (2) The reservoirs are within the authorized depth interval if the Contractor's original agreement with the OGRA was restricted by depth or defining formation limitation.
- (B) If the proposed producing zones of intended multiple completion were not identified as a part of the original reservoir information submitted as a condition of obtaining a License for Production, the Contractor shall submit to the OGRA all data necessary to show these zones can be feasibly produced and will increase the recoverable oil reservoir of the Contract Territory.
- (C) Information required by the OGRA on multiple completions shall be as follows:
 - (1) A electric log or portion of an electric log showing clearly the subsurface location of the separate reservoirs claimed.

- (2) Packer setting report where applicable.
 - (3) Packer leakage test or communication test.
 - (4) A diagrammatic sketch of the mechanical installation,
 - (5) A letter from any adjoining Contract Territory operator, if different from the applicant, that he has received notice of the application.
- (D) An adjoining Contractor may file a protest within 20 days of the receipt of the notification required under Section (C)(5) of this regulation if:
- (1) The proposed multiple completion is located sufficiently close to wells on his Contract Territory completed in the same zone and the zone was targeted for as a major producing reservoir in his original License Agreement.
 - (2) The Contractor has evidence the proposed multiple completion would impair his ability to fulfill the performance provision of his production License Agreement with the OGRA regarding recoverable oil.
- (E) If the OGRA believes sufficient information exists to validate the protest, it shall not approve the application until a hearing is held or until it receives written proof that the applicant and the protestor have reached an agreement. All such agreements between Contractors shall be binding and made part of the OGRA file.

4.1.8 Horizontal Well Completions

- (A) An application shall be filed with the OGRA for any intent to develop a new or existing well with horizontal drainholes. On the application the operator shall indicate whether the application is for one well or more than one well and if the request is a modification of the original Territory development plan filed as a part of the Exploration or Production Licensing Process. The OGRA shall have the option of approving the application, or notifying the Contractor that a hearing will be held and the date of the hearing.
- (B) Definitions. The following words and terms, when used in section, shall have the following meanings, unless the context clearly indicates otherwise:

- (1) Correlative Interval means evidence submitted by the Contractor showing the producing zone in which the horizontal drainhole is completed and how this zone correlates with producing zones within the field or Contract Territory.
 - (2) Horizontal Drainhole means that portion of the wellbore drilled in the correlative interval, between the penetration point and the terminus.
 - (3) Horizontal Drainhole Displacement means the calculated horizontal displacement of the horizontal drainhole from the penetration point to the terminus.
 - (4) Horizontal Drainhole Well means any well that is developed with one or more horizontal drainholes having a horizontal drainhole displacement of at least 30 meters.
 - (5) Penetration Point means the point where the drainhole penetrates the top of the correlative interval.
 - (6) Terminus means the farthest point required to be surveyed along the horizontal drainhole from the penetration point and within the correlative interval.
- (C) Drainhole Spacing
- (1) The well spacing requirements as applicable to the penetrated producing zone shall apply and are set forth in Section 4.1.1. of these regulations.
 - (2) No point on a horizontal drainhole shall be drilled nearer than 150 meters from an adjoining Contract Territory not under the responsibility of the applicant.
- (D) Multiple Drainage Holes Allowed
- (1) A single well may be developed with more than one horizontal drainhole originating from a single vertical wellbore.
 - (2) A horizontal drainhole well developed with more than one horizontal drainhole shall be treated as a single well.
 - (3) The horizontal drainhole displacement used for calculating coverage of acreage for a well completed with multiple

horizontal drainholes shall be the horizontal drainhole displacement of the longest horizontal drainhole plus the projection of any other horizontal drainhole on a line that extends in a 180 degree direction from the longest horizontal drainhole.

- (E) **Drilling Unit Plat.** The required plat must depict the area within the Contract Territory showing the surface location of the proposed horizontal drainhole well, and the proposed path, penetration point, and terminus of all drainholes. An amended drilling application permit and plat shall be filed after completion of the horizontal drainhole well if the OGRA determines that the drainhole, as drilled, is not reasonable with respect to the drainhole represented on the plat filed with the drilling permit application.
- (F) **Directional Survey.** A directional survey from the surface to the farthest point drilled on the horizontal drainhole shall be required for all horizontal drainholes. The directional survey and accompanying reports shall be conducted and filed as directed by the OGRA.

4.2 Oil and Gas Production Reporting Procedures

Scope -- The Edict stresses the importance of keeping the OGRA advised of progress being made in developing and producing oil and gas resources from a Contract Territory. This Section covers various reporting requirements which supports the original production plan submitted by the Contractor in advising the OGRA on new discoveries of oil and gas, calculation of reserves.

4.2.1 Well Completion Reports, Initial Productivity

- (A) Within 180 days of the commencement of drilling of a well, the Contractor shall file an affidavit of completion with the OGRA. Time extensions can be approved by the OGRA upon written request of the Contractor for the following:
 - (1) Due to unforeseen circumstances, the completion of the well or determination of productivity would take longer than 180 days or
 - (2) The time requirement for cementing additional casing would be greater than 180 days.
- (B) The affidavit of completion shall be filed regardless of the manner in which the well is completed, including a well which is dry and abandoned. The OGRA forms shall be used for filing. The affidavit

shall be accompanied by wireline logs of the well, if run, or other logs if required by the OGRA. The Contractor shall be allowed one extension not to exceed 90 days.

- (C) Each Contractor shall attach legible documentation to the affidavit of completion showing the type, amount and method of cementing used on all casing strings in the well bore.
- (D) The Contractor shall be responsible for conducting a physical test to determine the initial productivity of the well if oil or gas is found. The initial test shall be conducted within 30 days of the filing of the affidavit of completion for the well. Tests shall be witnessed by a designated representative of the OGRA and shall be done in accordance with accepted productivity testing procedures approved by the OGRA.

4.2.2 Well Production Reporting Requirements

The Contractor shall be responsible for submitting production reports to the OGRA within the time periods outlined in Subsections 4.2.2.1-4.2.2.3 of this regulation.

4.2.2.1 Reporting of Oil Produced

- (A) The Contractor shall file each month a verified statement showing the amount of crude petroleum actually produced by each well within the Contract Territory. The verified statement shall be filed with the OGRA on or before the 20th day of each month following the month in which the production occurred.
- (B) Each Contractor shall annually file with the OGRA an oil well status report for each well in the Contract Territory. Such report should include a summary of oil produced, the oil water ratio for each well and, if a well was shut in for part of the year, the reasons why it was not produced. The annual report shall be submitted to the OGRA on or before the end of February of the year following the year in which production occurred.
- (C) New oil discoveries, i.e. new fields or common sources of supply, shall be reported by the Contractor within 30 days of the completion of the well, and shall be added to the reporting schedule for all wells listed under (A) and (B). Once entered on the schedule, discovery wells and any succeeding wells shall be reported in conformance with the reporting procedure for any other well.

4.2.2.2 Measurement of Gas Production From All Wells

- (A) All natural gas produced from wells completed in gas reservoirs shall be accounted for by measurement before the same leaves the Contract Territory. Each well completion shall be metered separately and the Contractor shall report the volume produced from each completion to the OGRA, no later than 20 days after the end of the month during which the gas was produced. The following special reporting conditions apply:
 - (1) In reporting gas well, production the full well stream gas measurement should be used. All gas produced must be reported regardless of its disposition, including gas used within the Contract Territory by the Contractor to operate heaters, or other equipment, or gas vented from low pressure separators, and
 - (2) Gas produced from any Contract Territory covered by coastal or inland waters of the Republic of Kazakstan may, at the option of the Contractor, be measured on a shore or at a point removed from the well location from which it was produced.
- (B) All natural gas produced from wells completed in an oil producing reservoir shall be accounted for by measurement before the pipeline connection point for the Contract Territory. Volumes shall be reported to the OGRA in accordance with Section (A) of this regulation.
- (C) All casinghead gas produced from oil wells and sold through Contract Agreement with the OGRA, processed for its gasoline content, used in a different Contract Territory of the same Contractor or used in cycling or reinjection operations, shall be accounted for by measurement before the gas leaves the Contractor Territory or before it is used within the same Contract Territory. The Contractor shall report the volume to the OGRA in the time period set forth in (A).
- (D) Exceptions to Reporting -- The Contractor may, through written application to OGRA, seek an exception to Sections (A) or (B) of this regulation. OGRA shall administratively approve or deny the request in writing to the Contractor.
- (E) No meter or meter run used for measuring gas as required by this regulation shall be equipped with a manifold which will allow gas flow to be diverted or bypassed around the metering element in any manner unless it is of the type listed as follows:

- (1) double chambered orifice meter fittings with proper meter manifolding to allow equal pressure across the metering during servicing;
- (2) double or single chambered orifice meter fittings equipped with proper meter manifolding or other types of metering devices accompanied by one of the following types of meter inspection manifolds:
 - (a) A manifold with block valves at each end of the meter run and a single block valve in the manifold complete with provisions to seal and continuously maintained seal record;
 - (b) An inspection manifold having block valves at each end of a meter run and two block valves in the manifold with a bleeder between the two and with one valve equipped with provisions to seal and continuously maintain seal records.
- (F) Whenever sealing procedures are used to provide security in the meter inspection manifold system, the seal records shall be maintained for at least three years at the Contractor's office and made available for OGRA inspection during normal working hours. At any time a seal is broken or replaced, a notation will be made on the orifice meter chart along with graphic representation of estimated gas flow during the time the meter is out of service.
- (G) All current gas producing wells must be equipped with meters conforming to these regulations by _____(date).
- (H) Failure to comply with the provisions of this rule will result in the OGRA taking whatever enforcement proceeding is appropriate for the level of violation.

4.2.2.3 Produced Water Reporting

Each Contractor shall keep a record of the volume of water produced by all wells within a Contract Territory and shall follow the procedure set forth below:

- (A) Metering of all water injected into disposal wells regulated by Section 7 and back into the producing formation as provided by 6. For purposes of reporting, the volumes to each type of well shall be reported separately. Reporting for Section 6 wells should not include make up

water from other sources which has been added to reach the desired injection volume. Meters must be placed at the injection well.

- (B) The OGRA may require the Contractor to perform an "annual barrel test" or other method of measuring oil/water ratios on individual wells within the Contract Territory. If the OGRA requires a test, it shall notify the Contractor of the date the test is to be made at least 10 days prior to the date. The OGRA shall also indicate whether an OGRA representative will be on-site to witness the test.
- (C) The Contractor shall keep current and preserve for a period of five years an accurate record of the amount of water produced from each producing zone within the Contract Territory.
- (D) The Contractor shall submit an annual report of water production to the OGRA by March 1st of the year following the year in which the water was produced.

4.2.3 Annual Reserve Calculation and Performance Evaluation Report

- (A) Each Contractor having responsibility for producing within a Contract Territory shall provide to the OGRA the following information on an annual basis:
 - (1) Adjustments to any oil or gas reserve estimates which were offered as a part of the competitive bid process. Estimates shall be for each producing zone within the Contract Territory, unless commingling is approved in which case, the estimate will be for the combined zone production.
 - (2) Graphic trends for each zone which includes oil or gas production projections on any economic deterrent to production such as increase in water production, failure of formation to respond to secondary recovery or mechanical malfunctions to wells, pumping equipment or waste fluid disposal capability.
 - (3) A statement as to the performance of the production reservoir to various oil or gas recovery techniques or enhanced recovery stimuli.
 - (4) A listing of newly discovered fields and the estimated potential recovery from the reservoir(s).

- (B) Upon receipt of the report, the OGRA shall either approve the report in writing to the Contractor or if the OGRA believes the Contractor's performance to be less than originally presented, shall hold a hearing before taking adverse action on the Contract Agreement.

4.3 Well-Reentry Notification

- (A) The Contractor shall notify the OGRA at least 48 hours before re-entering an abandoned or plugged well. The OGRA representative may conduct on-site inspection of the drilling operations. The Contractor shall file a report stating where cement was encountered when drilling out plugs. Reports shall not be required for wells drilled after the effective date of these regulations, however, the notification requirement would apply.

4.4 Venting and Flaring of Gas

- (A) The OGRA may, without administrative hearing, permit venting and flaring of casing head gas, other than sour casing head gas. The Contractor shall file an affidavit or application with the OGRA stating that:
 - (1) The well has 50 mcf/d or less of casing-head gas available for sale as established by an OGRA supervised test. The OGRA may require Contractor documentation of the test in place of on-site supervision, and
 - (2) The casing-head gas volume is uneconomic to market due to absence of pipeline access or the price received would not allow reasonable recovery of the investment required to market such gas and the direct expense attributable thereto, either for the Contractor or the Republic of Kazakhstan.
- (B) The affidavit shall contain a statement from the Contractor that a diligent effort has been made to obtain a market for the gas or seek ways to capture and reuse the gas at facilities on the Contract Territory.
- (C) In making a determination as to whether to approve or deny the Contractor's application to vent or flare gas, the OGRA shall consider:
 - (1) The immediate or near future availability of a market or of pipeline facilities.
 - (2) The probable recoverable gas reserves.
 - (3) The necessity for maintenance of gas pressure in the producing formation to maximize the effective recovery of oil.

- (4) The feasibility of reinjecting the gas or defining other places where the gas could be used.
 - (5) Whether the test period has been sufficient to determine the gas volume to be vented or flared.
 - (6) Any anticipated change in the gas/oil ratio of the well and the effect on recoverable reserves.
 - (7) The conformance of the venting or flaring activity with the air quality regulations of the Republic of Kazakhstan.
- (D) When required by the OGRA, all casing head gas vented or flared under this rule shall be metered and the charts or records retained by the Contractor for a period of two years. Such information shall be reported to the OGRA twice a year or at other intervals required by the OGRA. The OGRA has the authority to terminate the venting or flaring of gas at any time when it determines that the reason provided under Section (C) of this regulation, no longer apply.
- (E) If the Contractor's application is denied at the outset or terminated after original approval was given by the OGRA, the Contractor may request a hearing before OGRA within 20 days from receipt of the OGRA determination. The OGRA shall hold a hearing within 60 days of the Contractor's request if it determines the failure to do otherwise could significantly deter the future ability of the Contractor to fully recover oil reserves. After hearing, the OGRA's decision shall be final.

4.5 Production and Flaring of Sour Gas

- (A) Sour gas may be produced only if:
- (1) The OGRA finds, upon receipt of an application by a Contractor that it is not commercially feasible or practical to treat sour gas to make it marketable, or
 - (2) The Contractor cannot maintain a pipeline capacity supply by producing marketable gas from other wells within the Contract Territory or group of Contract Territories under the physical control of the same Contractor, and
 - (3) The Contractor is in full compliance with the safety and health provisions of Section 9.1 of these regulations on operating in Hydrogen Sulphide Areas.

- (B) The flaring of sour casing-head gas may be permitted by the OGRA upon application by the Contractor and after considering the following in addition to those factors outlined in Section 4.6(A).
 - (1) The hydrogen sulphide content of the gas,
 - (2) The feasibility of desulphurization of the gas, and
 - (3) The proposed flaring facility

- (C) When required by the OGRA, all sour gas flared under this regulation shall be metered and analyzed for its hydrogen sulphide content. Such information shall be reported to the OGRA at a frequency specified by the OGRA. The flaring of sour gas may be terminated by the OGRA when necessary.

5.0 Plugging and Abandonment of Wells

Scope -- This series of regulations covers the procedures to be followed in plugging and abandoning oil, gas or injection wells. The Contractor is obligated to plug any well which is no longer commercially productive to either the Contractor or the Republic of Kazakstan in a manner which:

- (1) Prevents pollution to usable water and environmental resources and
- (2) Prevents movement of fluids into other potential producing zones, thus threatening to decrease their productivity.

These regulations also are intended to prevent a Contractor from prematurely plugging and abandoning a well which may still be productive if operated by another Contractor with a different organizational situation and would still be of economic advantage to the Republic of Kazakstan.

5.1 Notification of Intention to Abandon Well

- (A) Before any work is commenced to abandon any well drilled for the exploration of oil or gas, any currently producing well, any injection well, whether disposal or enhanced recovery, including any well drilled below the usable water level, the Contractor shall give written notification to the OGRA of the intention to abandon that well.
- (B) The notification shall be on forms prescribed and furnished by OGRA and shall be received by the OGRA at least 5 days prior to plugging. The Contractor shall include a casing record for the well and plugging procedures to be used.
- (C) Notification by the Contractor shall contain a statement as to why the plugging is necessary, including an assessment of the future economic recovery of oil or gas from the well in terms of profitability to the current or future Contractor and the Republic of Kazakstan.
- (D) Upon receipt of the notification, OGRA shall:
 - (1) Approve the plugging procedure plan submitted by the Contractor or require an alternative procedure.
 - (2) Require additional consultation or information on future productivity of the well prior to approval.

- (3) Notify the appropriate field agent of OGRA as to the date of plugging so the agency can be present, if desirable, at the time of plugging.
- (E) Exceptions from the notice requirement on the plugging of wells may be granted by an authorized representative of the OGRA when:
- (1) a drilling rig already at work on the location is ready to commence plugging operations on a dry and abandoned well and the Contractor can readily prove, on the basis of logging a test, that the well has no productive future; or
 - (2) an emergency situation exists. In such case, the Contractor shall present a plugging plan to the OGRA representative which reflects measures to control the emergency.

5.2 Commencement of Operations, Extensions, and Filing of Plugging Records

- (A) The Contractor shall complete, duly verify, and file, a plugging record on the appropriate form with the OGRA within 30 days after plugging operations are completed. A cementing report made by the party cementing the well shall be attached to, or made a part of, the plugging report.
- (B) Plugging operations on each dry well must be commenced within a period of six months after drilling or testing operations cease and shall proceed with due diligence until completed. For good cause, a reasonable extension of time in which to start the plugging operations may be granted pursuant by the OGRA to the following procedures:
- (1) The OGRA or its authorized representative may administratively grant an extension of time of six months if the well is not a pollution hazard; is in compliance with OGRA's safety and pollution control regulations, and provided that the Contractor obtains a permit for this extension, or has paid whatever fees are required for an extension.
 - (2) Any administratively granted extension of time is subject to review by the OGRA or its representative at any time.
 - (3) If the OGRA or its representative declines administratively to grant or to continue an extension of time, the Contractor shall plug the well or request a hearing on the matter.

5.3 General Plugging Procedures and Methods

- (A) In plugging wells, all rock formations containing usable quality water, oil or gas, be protected. All cementing operations during plugging must be performed under the direct supervision of the Contractor or his authorized representative who shall not be an employee of the subcontractor hired to plug the well.
- (B) Cement plugs shall be set to isolate each productive zone and usable quality water strata. A "productive zone" as used in this rule, is defined as any stratum known to contain oil or gas in commercial quantities within the unit of the Contract Territory or to a limit of 800 meters outside the Territory if the unit is located adjacent to the boundary.
- (C) Cement plugs must be placed by the circulation or squeeze method through tubing or drill pipe.
- (D) All cement for plugging shall be an appropriate oil well cement without volume extenders and mixed in accordance with standards acceptable to the OGRA. Slurry weights shall be reported on the cement report. The API oil well cement and mixing procedures are recommended as a standard.
- (E) The Contractor may propose specified cementing compositions to be used in special situations, for example, high temperatures, high corrosion potential, or salt section. The authorized representative of OGRA shall approve all special cement programs prior to use in plugging.
- (F) Contractors shall only use subcontractors which, by either license or registry, can qualify as approved cementers by demonstrating they are able and qualified to mix and pump cement in compliance with these regulations.
- (G) For onshore and inland wells, a 3 meter cement plug shall be placed in the top of the casing and casing shall be cut off one meter below the surface of the ground so not to interfere with soil cultivation.
- (H) The OGRA may require additional cement plugs to cover and contain any productive zone, or to separate any water stratum if the water qualities or hydrostatic pressures differ sufficiently to justify separation.
- (I) The interval between all plugs shall be filled with an approved heavy mud-laden fluid of not less than 36 viscosity and a weight of not less

than 4.1 kgs/0.5 liters or a bridge shall be set at all intervals. The hole must be in static condition at the time the plugs are placed.

- (J) Non-drillable materials that would hamper or prevent reentering the well shall not be placed in any wellbore during plugging operations except in those cases where a well was plugged and abandoned with an unretrievable radioactive logging tool present in the hole.
- (K) All cement plugs, except the top plug, shall have enough slurry volume to fill 16 meters of hole, plus 10% for each 300 meters of depth from the ground surface to the bottom of the plug.
- (L) Each rathole and mousehole shall be plugged by displacing any mud or water with cement from the bottom of the hole to near the surface in a manner that will not interfere with soil cultivation or other man related activities.
- (M) When the borehole has penetrated both a highly permeable formation and an overlying salt formation, a cement plug of 16 meters in length shall be set above the highly permeable formation. The plug should be set in a compatible formation.
- (N) If the above procedures can not be followed due to conditions in the casing, or wellbore, or due to external natural conditions, the Contractor and representative of OGRA must agree on a specific alternative plugging program which meets the objective of these rules.
- (O) The OGRA representative may require the tagging of plugs in those situations where plug movement historically has occurred due to hydrogeologic or tectonic conditions.

5.4 Plugging Requirements Specified for Certain Casing Conditions

- (A) Plugging requirements for wells with surface casing.
 - (1) When insufficient surface casing is set to protect all usable quality water strata and such usable quality water strata are exposed to the wellbore when production or intermediate casing is pulled from the well, a cement plug shall be placed from 16 meters below the base of the deepest usable quality water stratum to 16 meters above the top of the stratum. This plug shall be evidenced by tagging with tubing or drill pipe. The plug must be respotted if it has not been properly placed. In addition, a cement plug must be set across the shoe of the

surface casing. This plug must be a minimum of 30 meters in length and shall extend at least 16 meters above and below the shoe.

- (2) When sufficient surface casing has been set to protect all usable quality water strata, a cement plug shall be placed across the shoe of the surface casing. This plug shall be a minimum of 30 meters in length and shall extend at least 16 meters above the shoe and at least 16 meters below the shoe.
- (3) If surface casing has been set deeper than 60 meters below the base of the deepest usable quality water stratum, an additional cement plug shall be placed inside the surface casing across the base of the deepest usable quality water stratum. This plug shall be a minimum of 30 meters in length and shall extend from 16 meters below the base of the deepest usable quality water stratum to 16 meters above the top of the stratum.

(B) Plugging requirements for wells with intermediate casing.

- (1) For wells in which the intermediate casing has been cemented through all usable quality water strata and all productive horizons, a cement plug meeting the requirements of subsection (5.3)(K) of this regulation shall be placed inside the casing and centered opposite the base of the deepest usable quality water stratum, but extend no less than 16 meters above and below the stratum.
- (2) For wells in which intermediate casing is not cemented through all usable quality water strata and all productive horizons, and if the casing will not be pulled, the intermediate casing shall be perforated at the required depths to place cement outside of the casing by squeeze cementing through casing perforations.

(C) Plugging requirements for wells with production casing.

- (1) For wells in which the production casing has been cemented through all usable quality water strata and all productive horizons, a cement plug meeting the requirements of subsection (5.3)(K) of this regulation shall be placed inside the casing and centered opposite the base of the deepest usable quality water stratum and across any multi-stage cementing tool.

- (2) For wells in which the production casing has not been cemented through all usable quality water strata and all productive horizons and if the casing will not be pulled, the production casing shall be perforated at the required depths to place cement outside of the casing by squeeze cementing through casing perforations.
 - (3) The OGRA representative may approve for the Contractor to set a cast iron bridge plug immediately above each perforated interval, provided at least 6 meters of cement is placed on top of each bridge plug. A bridge plug shall not be set in any well at a depth where the pressure or temperature extends the ratings recommended by the bridge plug manufacturer.
- (D) Plugging requirements for well with screen or liner.
- (1) If practical, the screen or liner shall be removed from the well.
 - (2) If the screen or liner is not removed, a cement plug in accordance with subsection (5.3)(K) of this regulation shall be placed at the top of the liner.
- (E) Plugging requirements for wells without production casing and open-hole completions.
- (1) Any productive horizon or any formation in which a pressure or formation corrosive water problem is known to exist shall be isolated by cement plugs centered at the time and bottom of the formation. Each cement plug shall have sufficient slurry volume to fill a calculated height as specified in subsection (5.3)(K) of this regulation.
 - (2) If the gross thickness of any such formation is less than 30 meters, the tubing or drill pipe shall be suspended 16 meters below the base of the formation. Sufficient slurry volume shall be pumped to fill the calculated height from the bottom of the tubing or drill pipe up to a point at least 16 meters above the top of the formation, plus 10% for each 300 meters of depth from the ground surface to the bottom of the plug.
- (F) Plugging Horizontal Drainhole Wells. All plugs in horizontal drainhole wells shall be set in accordance with subsection (5.3)(K) of this section. The productive horizon isolation plug shall be set from a depth 16 meters below the top of the productive horizon to a depth either 16

meters above the top of the productive horizon, or 16 meters above the production casing shoe if the production casing is set above the top of the productive horizon. If the production casing shoe is set below the top of the productive horizon, then the productive horizon isolation plug shall be set from a depth 16 meters below the production casing shoe to a depth that is 16 meters above the top of the productive horizon. In accordance with subsection (5.3)(H) of this section, the OGRA or its representative may require additional plugs.

5.5 Surface Casing To Be Left In Place

Regardless of the method of drilling (rotary or other), usable water is to be protected with surface casing which has been cemented and such casing shall not be removed from the well at abandonment.

6.0 Scope: Fluid Injection Into Productive Deposits

This section sets forth regulations for operations which require the recycling of produced water, water from other sources, polymers or other fluids designed to enhanced recovery of oil or maintain reservoir pressure. In many reservoirs, secondary and tertiary recovery techniques are essential to maximize recovery of oil. Appropriate location of injection wells within a field or Contract Territory may allow the Contractor to better approach reserve recovery calculations. Proper completion of injection wells is necessary to prevent migration of formation or injected fluids into usable water formations or other productive zones. These regulations address both protection of water resources and unintentional waste of hydrocarbon resources.

6.1. Permits Required for Injection Wells

- (A) Any Contractor who engages in fluid injection into productive oil or gas reservoirs must obtain a separate permit from the OGRA. Permits will be issued when the injection will not cause waste or oil resources or cause pollution to usable water.
- (B) Permits for disposal of waters produced along with oil or gas may be obtained from the OGRA if the user can demonstrate to the satisfaction of the agency that the fluid will not enter any productive oil and gas deposit, and are covered under Section 7 of these regulations.
- (C) The Contractor may file an injection well plan with the OGRA after the first producing well is completed within a Contract Territory or defer such action until enough producing oil wells have been completed in a producing zone for the Contractor to determine the most efficient location within the producing zone to develop a pressurized fluid front to recover oil.
- (D) A water injection well plan may be modified at any time during the life of the Contract with submission to the OGRA of applications for additional injection wells within a Contract Territory.
- (E) Once applied for, either through the injection well plan or by individual injection well application, a drilled well is found not to be of value as an injection well, the Contractor shall notify the OGRA and plug and abandon the well in conformance with the requirements of Section 5 of these regulations.

6.2 Action by the OGRA

- (A) An injection well permit may be modified, suspended or terminated by the OGRA after notice and opportunity for hearing if:
- (1) Usable water or reservoir damage (channeling of the zone) due to excessive injection pressure has been found to occur;
 - (2) The operation or completion of the injection well is discovered to be different than was originally approved as a condition of permit issuance;
 - (3) The injected water is discovered to be escaping the permitted injection zone;
 - (4) Ground water or environmental resources are likely to be or have been polluted as a result of injection well operation.

6.3 Casing Requirements - Injection wells shall be cased and the casing cemented as required in Section. 3.1 (Well Construction Requirements — Onshore and inland waters or 3.2 (offshore casing cementing, drilling and completion rules). Such wells will be completed so that injected fluids will go into the producing zone approved by the OGRA permit.

6.4 Special Equipment Requirements

- (A) Tubing and Packer - Tubing used to conduct the injected fluids from the surface to the producing interval shall be set on a mechanical packer, as follows:
- (1) Packers shall be set no higher than 60 meters below the measured top of cement behind the long string (production casing) and
 - (2) In no case higher than 45 meters below the base of any usable water formation.
- (B) Pressure Valve - The surface of the well (wellhead) shall have installed a pressure observation valve on the tubing and for each space between casing (annulus) of the injection well.
- (C) Exceptions - The OGRA may grant any exception to the special equipment requirements upon valid proof furnished by the Contractor. Denial of the exception request by the OGRA shall be final unless a

representative of the agency believes a hearing is warranted after reviewing research, data and information provided by the Contractor.

6.5 Testing of Injection Wells

- (A) Before injection begins, the user shall conduct a pressure test measurement on the production casing. The test pressure must be the same as the authorized injection pressure or psig whichever is less, but must be at least 200 psig.
- (B) As an alternative to the testing and measurements required in (A) of this part, the tubing-casing annulus may be monitored in accord with a plan approved by the OGRA or its duly authorized representative.
- (C) The Contractor shall notify an inspector for the OGRA at least 48 hours prior to the planned time of testing. The test shall not begin until the end of the 48 hours unless authorized by the OGRA.
- (D) A complete record of all tests and measurements shall be sent to the OGRA within 30 days after the test.
- (E) Each injection well shall receive a mechanical integrity test every five years in accordance with Section 7(K)(2) of these regulations.

7.0 Fluid Disposal (Injection) Into Unproductive Formations

Scope: This regulation covers those cases where produced water cannot be feasibly re-injected into an interval productive of oil or gas within a Contract Territory. Infeasibility may occur when the volume of fluid produced exceeds the amount that should prudently be injected for the most efficient recovery of oil or pressure maintenance of the reservoir or will otherwise impair the productivity of the reservoir. In other cases, the producing reservoir may not be conducive to water injection, such as in gas producing zones where water lift is a prerequisite to producing wells at desired capability or capacity.

- (A) General -- Any Contractor who disposes of produced salt water or other oil and gas waste by injection into a porous formation not productive of oil, or gas resources shall be responsible for applying with the following:

Saltwater or other oil and gas waste as defined under Section 2 of these regulations may be disposed of, upon permit application and approval by the OGRA by injection into nonproducing zones of oil, or gas bearing formations that contain water mineralized by natural processes to such a degree that the water is unfit for domestic, industrial, agricultural or other general uses.

Geological Requirements

- (B) Before such formations are approved for disposal use, the Contractor shall show that the formations are separated from usable water formations by impervious beds which will give adequate protection to such usable water formation. The Contractor shall also demonstrate to the OGRA that these formations are non-productive of oil and gas within the Contract Territory or if within one mile of an adjoining Contract Territory being operated by the same or different Contractor. The Contractor may file a design application for approval and submit exact depths after completion.
- (C) Applications and Notification of Adjacent Contractor -- The application to dispose of produced water or other oil and gas wastes by injection not productive of oil or gas shall be filed with the OGRA. The Contractor shall be responsible for giving notice by post to each Contractor of each adjoining Contract Territory unless the proposed disposal well location is two (2) kilometers or more distant from the boundary of an adjacent tract. The OGRA may, at their option, notify additional parties or other government entities.

(D) Protested Applications --

- (1) If a duly notified Contractor believed the proposed disposal well could affect the productivity of his Contract Territory, said Contractor shall register a written protest with the OGRA within 20 days of the receipt of the application notification.
- (2) For purposes of this section; "affected" means a Contractor who believes he will suffer economic damage if the disposal well is approved for injection.
- (3) If no protests are received within 20 days, the OGRA may approve the application. If the OGRA disapproves the application on the basis of (2) above, the Contractor applicant shall have the right to request a hearing from the OGRA. After hearing, the OGRA shall issue a written decision and furnish the verdict to both parties to the protest.

(E) Subsequent Actions by OGRA -- A permit for produced water or other oil and gas waste disposal may be modified, suspended or terminated by the OGRA for just cause and after notice to the Contractor and opportunity for hearing if:

- (1) A major change of conditions occurs in the operation or completion of the disposal well or there are substantial changes in the information originally furnished;
- (2) Usable water is likely to be polluted as a result of continued operation of the well.
- (3) There are substantial violations of the terms and provisions of the permit or related violation of the Contractors Production License conditions.
- (4) The Contractor is found to have misrepresented pertinent facts during the permit issuance process.
- (5) Injected fluids are escaping from the permitted disposal zone and are likely to migrate into usable water formations or other producing zones with the Contract Territory or ones adjacent to it.

(F) Duration and Transfer of Permit -- A permit issued by the OGRA for produced water disposal well is for the life of the Contract Agreement

with a specified Licensed Contractor. In the event, a Contractor with a disposal well permit relinquished a Contract Territory prior to the normal termination date provided by the Edict, the subsequent Contractor may resume injection into the disposal well and without application provided that:

- (1) The new Contractor verified that no modifications have been made to the well by him or any Subcontractors.
 - (2) A mechanical integrity test has been conducted within a five year period prior to the transfer of the Contract Territory, as provided for in (K)(2) of this regulation, and
 - (3) The disposal well is not located on acreage deleted from the original Contract Territory by the previous Contractor. The location of a disposal well within a Contract Territory shall be, at all times, considered part of the Territory even if adjoining acreage is non-productive.
- (G) Casing -- Disposal wells shall be cased and the casing cemented in accordance with requirements set forth in Section 3 of these regulations and shall be in such a manner that the injected fluids will not endanger oil, gas or usable water resources.
- (H) Special Equipment
- (1) Tubing and packer. New wells drilled or converted for disposal shall be equipped with tubing set on a mechanical packer. Packers shall be set no higher than 30 meters above the top of the permitted interval. Disposal wells in use prior to enactment of these regulations shall be so equipped within one year of approval of the Contractors Production License.
 - (2) Pressure valve. The wellhead shall be equipped with a pressure observation valve on the tubing and for each annulus of the well. Disposal wells in use prior to enactment of these regulations shall be so equipped within six(6) months of approval of the Contractors Production License.
 - (3) Exceptions. The OGRA may grant an exception to any provision of sections (1) and (2) upon proof of good cause. If the OGRA denies an exception, the Contractor shall have a right to a hearing upon request. Subsequent decisions by OGRA, after hearing, shall be final.

- (I) Well record. Within 30 days after the completion or conversion of a disposal well, the Contractor shall file with the OGRA a complete record of the well on the appropriate form which shows the current completion.
- (J) Monitoring and reporting
- (A) The Contractor shall monitor the injection pressure and injection rate of each disposal well on at least a monthly basis.
 - (B) The results of the monitoring shall be reported annually to the OGRA on the prescribed form and shall identify the wells from which the produced water originated.
 - (C) All monitoring records shall be retained by the Contractor for the life of the Contract Territory Agreement unless otherwise specified by the OGRA and shall be transferred to a successive Contractor.
 - (D) The operator shall report to the appropriate OGRA representative within 24 hours any significant pressure changes or other monitoring data indicating the presence of leaks in the well. The Contractor shall confirm this report in writing within seven working days.
- (K) Testing
- (1) Before beginning disposal operations, the Contractor shall pressure-test the long string casing. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig.
 - (2) Each disposal well shall be pressure-tested in the manner provided in subparagraph (1) of this paragraph at least once every five years to determine if there are leaks in the casing, tubing, or packer. The OGRA shall prescribe a schedule for testing and keep a list of successful test completions.
 - (3) As an alternative to the testing required in subparagraph (2) of this paragraph, the tubing-casing annulus pressure may be monitored and included on the annual monitoring report required by paragraph (J) of this section, provided that there is no indications of problems with the well. The OGRA may grant an

exception for valid alternative tests or surveys such as monitoring of injection rate/injection pressure relationships.

- (4) The Contractor shall notify the appropriate OGRA representative at least 72 hours prior to the testing. Testing shall not commence before the end of the 72 hour period unless authorized by the OGRA.
 - (5) A complete record of all tests shall be filed with the OGRA on the appropriate form within 30 days after the testing.
- (L) Plugging. Disposal wells shall be plugged upon abandonment in accordance with Section 5 of these regulations.

8.0 Environmental Requirements

Scope -- This section contains regulations which address aspects of Chapter 9 of the Edict of the President of the Republic of Kazakstan which relates to the protection of the environment and usable water resources. The section does not cover procedures for evaluating cultural sites nor does it address activities such as preparation of reports for evaluating the environmental impact (EEI) required as a prerequisite for signing Contracts with the Republic. These regulations address environmental and water protection activities which are exploration or production related and occur after the Contract Agreements have been formalized and approved.

8.1 Definitions

- (A) The following words and terms when used in this section, shall have the following meanings unless the context clearly indicates otherwise. These definitions are specific to the classification or use of pits, and to rules pertaining to environmental or water resource protection:
- (1) Basic sediment pit means a pit used in conjunction with a tank battery for storage of basic sediment removed from a production vessel or from the bottom of an oil storage tank. Basic sediment pits are sometimes referred to as "burn pits."
 - (2) Collecting pit means a pit used for storage of saltwater prior to disposal at a tidal disposal facility, or pit used for storage of saltwater or other oil and gas wastes prior to disposal at a disposal well or fluid injection well. In some cases, one pit is both a collecting pit and a skimming pit.
 - (3) Completion/workover pit means a pit used for storage or disposal of spent completion fluids, workover fluids and drilling fluid, silt, debris, water, brine, oil scum, paraffin, or other materials which have been cleaned out of the well bore of a well being completed or worked over.
 - (4) "Dike" means a permanent structure constructed at or above the surface of the earth totally enclosing production facilities or equipment which is used to temporarily contain fluids resulting from oil and gas activities and which were discharged as a result of unforeseen circumstances. Releases to diked areas are not classified as spills and not applicable to 8.4.

- (5) Drilling fluid disposal pit means a pit, other than a reserve pit, used for disposal of spent drilling fluid.
- (6) Drilling fluid storage pit means a pit used for storage of drilling fluid which is not currently being used but which will be used in future drilling operations. Drilling fluid storage pits are often centrally located among several wells with a Contract Territory.
- (7) "Emergency pit" means a constructed or excavated or natural depression used to temporarily contain fluids resulting from oil and gas activities which were discharged as a result of unforeseen and unavoidable circumstances. Use of the pit is necessitated by a temporary shutdown of disposal well or fluid injection well/or associated equipment, by temporary overflow of saltwater storage tanks on a producing territory or by a producing well loading up with formation fluids such that the well may die. Release to emergency pits are not classified as spills and not applicable to 8.4 unless overflow occurs.
- (8) Flare pit means a pit which contains a flare and which is used for temporary storage of liquid hydrocarbons which are sent to the flare during equipment malfunction but which are not burned. A flare pit is used in conjunction with a gasoline plant, natural gas processing plant, pressure maintenance or repressurizing plant, tank battery, or a well.
- (9) Fresh makeup water pit means a pit used in conjunction with drilling rig for storage of water used to make up drilling fluid.
- (10) Gas plant evaporation/retention pit means a pit used for storage or disposal of cooling tower blowdown, water condensed from natural gas, and other wastewater generated at gasoline plants, natural gas processing plants, or pressure maintenance or repressurizing plants.
- (11) Mud circulation pit means a pit used in conjunction with a drilling rig for storage of drilling fluid currently being used in drilling operations.
- (12) Reserve pit means a pit used in conjunction with a drilling rig for collecting spent drilling fluids; cuttings, sands, and silts; and wash water used for cleaning drill pipe and other equipment at the well site. Reserve pits may be referred to as slush pits, working pits, or mud pits by some Contractors.

- (13) Saltwater disposal pit means a pit used for disposal of produced saltwater which is generally not allowed unless special authorization is issued by the OGRA.
- (14) Skimming pit means a pit used for skimming oil off saltwater prior to disposal of saltwater at a tidal disposal facility, disposal well, or fluid injection well.
- (15) Washout pit means a pit located at a truck yard, tank yard, or disposal facility for storage or disposal of oil and gas waste residue washed out of trucks, mobile tanks, or skid-mounted tanks.
- (16) Water condensate pit means a pit used in conjunction with a gas pipeline drip or gas compressor station for storage or disposal of fresh water condensed from natural gas.
- (17) "Working pit" means a pit used to temporarily confine fluids or refuse resulting from oil and gas activities during the drilling or completion of any oil, gas, exploratory, service or storage well. Some Contractors interchangeably use the term for drilling pit

8.2 Permit Procedures for Drilling and Production Pit Operation.

- (A) General -- Pits shall not be used to contain fluids resulting from oil and gas activity unless approved by the OGRA. Contractors who submitted a general environmental protection plan as a part of obtaining a Contract Territory Agreement to explore and produce for oil and gas and have had that document approved by the OGRA need not resubmit pit construction or operation procedure information at the time of drilling or producing unless unexpected geologic or subsequent operation conditions have made modifications necessary.
- (B) Permitting and Construction of Pit Facilities
 - (1) All pits used in connection with the exploration for and the production of oil or gas shall be permitted either through the approval of a proposed drilling program or individually as the need for the pit becomes apparent. An application for permit shall be filed with the OGRA prior to pit construction and shall contain the following information:
 - (a) The name or identification number for the Contract Territory and the coordinates of the pit location.

- (b) The list of producing reservoirs from which fluids might be periodically discharging into emergency pits.
 - (c) The construction specifications for the pit, including specifications of any liners to be installed.
 - (d) Any hydraulic conductivity test results which were conducted on earth materials comprising the base of the pit.
 - (e) The proposed pit closure procedure (may be the same as that set forth in the General plan).
 - (f) The depth to the shallowest existing water table in the vicinity of the well, drilling location or other production facility where the pit is to be located.
 - (g) Any other information required by the OGRA.
- (2) In approving applications for pits, the protection of soil and water resources from pollution shall be considered by the OGRA. The chloride concentration of drilling fluids and produced waters to be contained in pits and geohydrogeology shall be considered in determining the pollution risk that a particular pit poses to water resources.
- (3) Each Contractor having a pit shall:
- (a) Install observation trenches, holes or monitoring wells if required by the OGRA.
 - (b) Prevent surface drainage from entering the pond, and
 - (c) Seal any pits except as specified as exempt from the permitting process under Section (D) of this regulation, if the OGRA determines that an unsealed condition will present a pollution threat to soil or to water resources.
- (4) The following pit waste characteristics and authorized disposal methods are applicable to situations involving the generation and disposal of oil and gas waste. A list of those pits in use within a Contract Territory which are exempt from the permitting process shall be maintained for inspection by the OGRA representative.

All permit exempt pits shall be closed in a manner compliant with procedures set forth in Section 8.3.

- (a) Fresh water condensate. A Contractor may, without a permit, dispose of fresh water which has been condensed from natural gas and collected at gas pipeline drips or gas compressor stations, provided the disposal is by a method other than disposal into surface water of the Republic of Kazakhstan.
- (b) Inert wastes. A Contractor may, without a permit, dispose of inert and essentially insoluble oil and gas wastes including, but not limited to, concrete, glass, wood, and wire, provided the disposal is by a method other than disposal into surface water of the Republic.
- (c) Low chloride drilling fluid. A Contractor may, without a permit, dispose of the following oil and gas wastes by spread on land, provided the wastes are disposed of on the same Contract Territory where they are generated, and provided the Contract has the written permission of the OGRA, hand spreading is limited to water base drilling fluids with a chloride concentration of 3,000 milligrams per liter (mg/l) or less; drill cuttings, sands, and silts obtained while using water base drilling fluids with a chloride concentration of 3,000 mg/l or less; and wash water used for cleaning drill pipe and other equipment at the well site.
- (d) Other drilling fluid. A Contractor may, without a permit, dispose of the following oil and gas wastes by burial, provided the wastes are disposed of at the same well site where they are generated: water base drilling fluid which had a chloride concentration in excess of 3,000 mg/l but which have been dewatered; drill cuttings, sands, and silts obtained while using oil base drilling fluids or water base drilling fluids with a chloride concentration in excess of 3,000 mg/l; and those drilling fluids and wastes allowed to be landspread without a permit.
- (e) Reserve pits and mud circulation pits. A Contractor shall not place or cause to be placed into a reserve pit or mud circulation pit any oil field fluids or oil and gas wastes, other than the following:

(I) drilling fluids, whether freshwater base, saltwater base, or oil base;

(II) drill cuttings, sands, and silts separated from the circulating drilling fluids;

(III) wash water used for cleaning drill pipe and other equipment at the well site;

(IV) drill stem test fluids; and

(V) blowout preventer test fluids.

- (f) Completion/workover pits. A Contractor shall not discharge or cause to be discharged into a completion/workover pit any oil field fluids or oil and gas wastes other than spent completion fluids, workover fluids, and the materials cleaned out of the well bore of a well being completed or worked over.
- (g) Basic sediment pits. A Contractor shall not place or cause to be placed into a basic sediment pit any oil field fluids or oil and gas wastes other than basic sediment removed from a production vessel or from the bottom of an oil storage tank. Although a Contractor may store basic sediment in a basic sediment pit, he may not discharge oil or free saltwater in the pit. The total capacity of the basic sediment pit shall not exceed 1,000 liters.
- (h) Flare pits. A Contractor shall not discharge or cause to be discharged into a flare pit any oil field fluids or oil and gas wastes other than the hydrocarbons designed to go to the flare during upset conditions at the well, tank battery, or gas plant where the pit is located. A Contractor shall not store liquid hydrocarbons in a flare pit for more than 48 hours at a time.
- (i) Fresh makeup water pits and fresh mining water pits. A Contractor shall not discharge or cause to be discharged into a fresh makeup water pit any oil and gas wastes or any oil field fluids other than water used to make up drilling fluid.

- (j) Water condensate pits. A Contractor shall not discharge or cause to be discharged into a water condensate pit any oil field fluids or oil and gas wastes other than fresh water condensed from natural gas and collected at gas pipeline drips or gas compressor stations.
- (C) No permits shall be required for dikes around oil and gas storage, separation or disposal facilities. Contractors shall be responsible for removing fluids from diked areas within 72 hours after discovery of the fluids. The Contractor may request extensions to the 72 hour period through approval of the OGRA representative.
- (D) In areas where Sensitive Groundwater Areas exist or where the shallow subsurface materials underlying a pit location is very porous or permeable, the OGRA may require the Contractor to use closed systems in lieu of pits. This requirement also extends to sensitive environmental areas such as wetlands and in heavily populated areas. All fluids generated from the drilling of oil or gas wells must be transported to an approved disposal facility on the Contractors Territory or other Territory under the control of the operator.
- (E) Protection of Birds
 - (1) If a Contractor who maintains a tank or pit does not take protective measures necessary to prevent harm to birds, the Contractor may incur liability under the wildlife protection laws of Kazakhstan. The Republic of Kazakhstan supports the efforts to curtail threats to threatened and endangered species.
 - (2) A Contractor must screen, net, cover, or otherwise render harmless to birds the following categories of open-top tanks and pits associated with the exploration, development, and production of oil and gas, including transportation of oil and gas by pipeline:
 - (a) open-top storage tanks that are eight feet or greater in diameter and contain a continuous or frequent surface film or accumulation of oil; however, temporary, portable storage tanks that are used to hold fluids during drilling operations, workovers, or well tests are exempt;
 - (b) collecting pits

- (3) If the OGRA finds a surface film or accumulation of oil in any pit, the OGRA will instruct the Contractor to remove the oil. If the Contractor fails to remove the oil from the pit in accordance with the OGRA's instructions, the OGRA may require the operator to screen, net, cover, or otherwise render the pit harmless to birds.

8.3 Surface Impoundment and Site Closure Requirements--Onshore

- (A) Closure: Upon the permanent termination of the flow of fluids or placement of solids into any pit used in connection with any exploration or production activity and before backfilling and surface restoration begins, the Contractor shall;
 - (1) Remove the liquid contents to a disposal well with an active permit under Section 7 or other oil and gas operation approved by the OGRA or to road maintenance or construction locations approved by the OGRA.
 - (2) Dispose of reserve pit waste (muds and cuttings) down the annular space of a completed well providing the surface casing extends through all usable water in accordance with Regulation 3.1.2 and if the waste to be disposed of was generated during the drilling and completion of a well on the Contract Territory.
 - (3) Dispose of the remaining solid contents in any manner for which the OGRA has approved as a part of the Contractors' exploration waste management plan. These requirements may include:
 - (a) Burial in-place of treated contents in accordance with grading and restoration requirements described under subsection E of this regulation.
 - (b) Removal and placement of the contents in a designated disposal area located on the Contract Territory if approved by the OGRA. This may be a centralized facility designed to receive the wastes from all wells drilled within the Contract Territory.
 - (c) Removal and placement of the contents to a disposal site on acreage of another Contract Territory under the control of the same licensed Contractor providing the plan to do this was part of the License stipulations and approved by the OGRA.

- (d) In the event, options (a)-(c) above are not physically feasible or environmentally prudent for the geologic setting of the Contract Territory, the OGRA shall assist the Contractor in locating a more acceptable site.

(B) Waste Transfer

- (1) Each Exploration Licensee and Production Contractor shall notify the designated OGRA representative at least 24 hours prior to transferring pit waste to an off-site location as described in (A)(3)(c) of this regulation. If the OGRA has already approved off-site disposal on an initial occasion, 24 hour notification is not required. Within 30 days after completion of a transfer of waste, each Contractor shall file a report with the OGRA describing both the point of generation and the final destination of the waste from each pit and the approximate volume transferred.
- (2) If a pit waste within a Contract Territory is transferred from all wells or facility location to a centralized waste management and disposal point and the centralized location is defined in the Licensee Exploration Plan, then the only reporting required is where the transfer of waste is to a different location than previously approved by the OGRA as a part of a lease development plan.

(C) Time limitation

- (1) Working and reserve pits at oil and gas drilling locations shall be closed within a maximum of one year after the drilling operation has commenced. Permission to extend the time for closure may be given by the OGRA for an additional 120 days upon written request by the Contractor. Failure to comply with the one year period or request an extension in writing may cause OGRA to take whatever action is appropriate under the laws of Kazakstan. Extension requests must be made 10 days or more prior to the end of the one year period.
- (2) Pits used in conjunction with production operations shall be issued for the duration of the Contractor License. A new permit, however, will be issued to each successive Contractor for the Territory within which the pit is located and for as long as the wells are actively producing.

- (D) Closure form required--Each Contractor shall file a pit closure form within 30 days after closure of a pit. Failure to file closure forms or restore the surface under Section (E) of this regulation may cause the OGRA to review the Contractors Agreement and License Condition and take appropriate punitive measures.
- (E) Backfilling Requirements and Surface Restoration
- (1) The Contractor shall be responsible to insure that all pits are backfilled in conformance with the closure and restoration plan approved by the OGRA as a part of the Contract Territory Agreement. To the greatest extent possible, the surface of the soil shall be returned to the same condition as existed prior to construction of the pit.
 - (2) Any Contractor who maintains or uses a reserve pit; mud circulation pit, freshwater make up pit, completion/workover pit, basic sediment pit or water condensate pit shall dewater, backfill and compact the pit within 120 days of cessation of use except for reserve pits which is closed and backfilled under (C) of this regulation. All stockpiled soil shall be returned as top dressing for the final cover.
 - (3) All pit locations, after backfilling and restoration of the soil profile shall be reseeded with an appropriately selected ground cover, which is quick growing and is able to flourish in the climate of the pit location. Reapplication of appropriate short and long term seeded plants or grasses shall be the Contractor's responsibility until an adequate vegetative cover has been established to prevent water or wind erosion. The OGRA shall notify the Contractor when it believes surface vegetation has been satisfactorily restored.

8.4 Spillage of Oil or Produced Water, Reporting, Clean Up

- (A) The Contractor shall report any accidental discharge (spill) of oil which exceeds 10 barrels to the local OGRA representative within 72 hours of the discovery of the event except that all spills, regardless of quantity which enter flowing water, ponds, or lakes shall be reported within 24 hours or immediately if the discharge of oil occurs on an offshore Contract Territory. In reporting the spill verbally, the Contractor shall provide the following information:

- (1) The Contractor's name and location of spill on the Contract Territory.
 - (2) The time and date the spill occurred or was discovered.
 - (3) Description of spilled material and amount.
 - (4) Description of the circumstances causing the spill.
 - (5) The location of the spill with respect to the nearest and usable water supply or nearest human habitation.
 - (6) The method used to contain the spill until cleanup measures could be implemented.
 - (7) Any other information which the OGRA may require.
- (B) The Contractor shall clean up the spill in accordance with the proposed cleanup plan. The Contractor's proposed method shall be in agreement with the Spill Contingency Plan which was filed with OGRA as a part of the Contracts licensure requirements set forth under Section 1.3 (A)(3) of these regulations.

In the event that unusual procedures are required to provide adequate containment or cleanup of oil spillage which were not set forth in the Contractor's Spill Contingency Plan, the Contractor shall file a modification to the plan thus incorporating the new procedure as one addressing a unique set of circumstances.

- (C) Produced water spill (release) to the onshore environment
- (1) The Contractor shall report to the OGRA using the procedure under (A) all releases of produced saline water if one or more of the following situations apply:
 - (a) The saline water spillage occurred in such location as to endanger an existing water supply whether such supply may be shallow groundwater or from an onshore surface water body (lake or flowing stream) or artificial catchment (spring box or cistern).
 - (b) The saline water spillage was of such magnitude so as to increase the salinity in the groundwater or surface water body to the extent that future usable water supplies may not be available for human consumption.
 - (2) The Contractor shall develop and implement a contamination site remediation plan designed to reduce the contamination and return the salinity of the contaminated area to as near to natural levels as is cost-effectively possible. The plan shall include.

- (a) Designated point of disposal of retrieved contaminated ground water providing the injection well has been approved for disposal of produced water by OGRA.
 - (b) A plat or map showing the position of monitoring and withdrawal wells if the site involves groundwater pollution. The OGRA shall be furnished updated plot maps by the Contractor when wells are added to the system or inactivated. Monitoring or withdrawal wells shall be plugged in a manner acceptable to the OGRA.
 - (c) Reports by the Contractor to the OGRA shall be submitted no less than every four months after the remediation operation begins and shall be submitted more frequently if requested by the OGRA.
- (3) The Contractor shall only be required to submit reports of produced water spillage for offshore oil and gas producing facilities in saline waters if the quantity of release is greater than 20,000 liters (1,000 barrels) or if the chloride concentration of the produced water is significantly higher than the salinity of the body of water into which the discharge took place.

8.5 Chemical Dumping Prohibited

- (A) The dumping or release of chemical substance associated with any oil or gas exploration or production operation into pits at hydrocarbon collection tank sites or at gas or oil processing sites is prohibited unless the waste has become part of the drilling return fluid or production waste stream. Such wastes include, but is not limited to the following:
- (1) Acids, or any other unused substance brought onto a wellsite or stored on the Contract Territory by the Contractor for potential use in drilling or production operations;
 - (2) Oil and gas wastes such as empty drums, spent solvents, rinsate, spilled chemicals or waste acid;
 - (3) Used equipment lubrication oils and hydraulic fluids; and
 - (4) Sanitary wastes, drums, insulation and other miscellaneous solid waste.

- (B) Any Contractor or Subcontractor found to be responsible for dumping or releasing chemical substances shall be subject to the appropriate penalty by the OGRA. The OGRA, may at its election, require the Contractor to remediate the areas where the release occurred in accordance with procedures set forth in Regulation 8.4.2.

8.6 Waste Management Control -- Offshore and Estuaries

- (A) The Contractor shall not pollute the waters of the Republic of Kazakstan offshore environment and adjacent estuarine zones (salt water bearing bays, inlets, and estuaries) or damage the aquatic life therein. The Contractor shall, at all times, follow the provisions of the pollution control management plan approved as a condition of receiving a Contract Territory.
- (B) All oil, gas, exploratory drilling and well producing operations shall be conducted in such a manner to preclude the pollution of the waters of the Republic's offshore and adjacent estuarine zones. Particularly, the following procedures shall be utilized to prevent pollution.
 - (1) The discharge or burial of liquid waste material into the Kazakstan offshore environment and adjacent estuarine zones shall have been pretreated, for the removal of any constituents which may be harmful to aquatic life or injurious to life or property unless permission has been previously obtained from the OGRA to waive pretreatment.
 - (2) No oil or other hydrocarbons in any form or combination with other materials or constituent shall be discharged of into the Kazakstan offshore and adjacent estuarine zones or buried at sea.
 - (3) All deck areas on drilling platforms, barges, work-over unit and associated equipment both floating and stationary subject to contamination shall be either curbed and connected by drain to a collecting tank, sump, or enclosed drilling slot in which the containment will be treated and disposed of without causing hazard or pollution; or else drip pans, or their equivalent, shall be placed under any equipment which might reasonably be considered a source from which pollutants may escape into surrounding water. These drip pans must be piped to collecting tanks, sumps or enclosed drilling slots designed to accommodate all reasonably expected drainage. Satisfactory means must be provided to empty the sumps or enclosed drilling slots to prevent overflow or prevent pollution of the surrounding water.

- (4) Solid combustible waste may be burned and the ashes may be disposed of into Kazakstan offshore and adjacent estuarine zones. Solid wastes such as cans, bottles, or any form of trash must be transported to shore in appropriate containers. Edible garbage, which may be consumed by aquatic life without harm may be disposed of into Kazakstan offshore and adjacent estuarine zones.
- (5) Drilling muds which contain oil shall be transported to shore or a designated area for disposal. Only oil-free cutting and fluids from mud systems may be disposed of into Kazakstan Offshore and adjacent estuarine zones at or near the surface. The Contractor may transport these wastes to an onshore facility under his control for burial providing the potential site has been approved by the OGRA.
- (6) Fluids produced from offshore wells shall be mechanically contained in adequately pressure-controlled piping or vessels from producing well to disposition point. Oil and water separation facilities at offshore and onshore locations shall contain safeguards to prevent emission of pollutants to the Kazakstan offshore and adjacent estuarine zones prior to proper treatment or for injection under Section 6 and 7 of these regulations.
- (7) All deck areas on producing platforms subject to contamination shall be either curbed and connected by drain to a collecting tank or sump in which the containment will be treated and disposed of without causing hazard of pollution, or else drip pans, or their equivalent, shall be placed under any equipment which might reasonably be considered a source from which pollutants may escape into surrounding water. These drip pans must be piped to collecting tanks or sumps designed to accommodate all reasonably expected drainage. Satisfactory means must be provided to empty the sumps to prevent overflow.
- (8) Any Contractor employee or other party observing water pollution shall report such sighting, noting size, material, location and current conditions to the Contractor's management personnel. Immediate action or notification shall be made to eliminate further pollution. The Contractor shall then transmit a report of all actions taken to resolve the problem to the OGRA.
- (9) Immediate corrective action shall be taken in all cases where pollution has occurred. A Contractor responsible for the

pollution, shall remove immediately such oil, oil field waste, or other pollution materials from the waters and the shore line where it is found. Such removal operations will be at the expense of the responsible Contractor.

- (C) The OGRA may suspend producing and/or drilling operations at any Contract Territory well when it appears that the provisions of this rule are being violated.

9.0 Safety and Occupational Health

Scope -- The Edict contains provisions to protect the health and safety of the public and workers against oil and gas exploration and production operations which if not controlled could affect their wellbeing. This section addresses two major occupational health concerns: The uncontrolled release of hydrogen sulphide gas which is a natural constituent of many oil and gas reservoirs and the potential of fire resulting from the ignition of gas during drilling operations. The third occupational hazard, that of a well blowing out and causing harm to rig workers was covered under Section 3 of these regulations. The release of hydrogen sulphide also has the potential to be injurious or life threatening to the general public within the vicinity of the release.

9.1 Oil or Gas Resource Operations in Hydrogen Sulphide Areas

- (A) Each Contractor who conducts operations as described in paragraph (1) of this subsection shall be subject to this regulation and shall provide safeguards to protect the general public, the Contractor's employees and others visiting the Contract Territory from the harmful effects of hydrogen sulphide. This section applies to both intentional and accidental releases of hydrogen sulphide.
- (1) Operations including drilling, working over, producing, injecting, gathering, processing, transporting, and storage of hydrocarbon fluids that are part of, or directly related to, field production, transportation, and handling of hydrocarbon fluids that contain gas in the system which has hydrogen sulphide as a constituent of the gas, to the extent as specified in subsection (C) of this section.
 - (2) This section shall not apply to:
 - (a) operations involving processing oil, gas, or hydrocarbon fluids which are either an industrial modification or products from industrial modification, such as refining, or other petrochemical or chemical processing facilities beyond the licensed responsibility of the Contractor.
 - (b) Operations involving gathering, storing, and transporting stabilized liquid hydrocarbons;
 - (c) operations where the concentration of hydrogen sulphide in the system is less than 100 ppm.

(B) Definitions. The following words and terms, when used in this section, shall have the following meanings, unless the context clearly indicates otherwise.

- (1) Industrial modification--means those operations related to refining, petrochemical plants, and chemical plants. The term does not include field processing such as that performed by gasoline plants and their associated gathering systems.
- (2) Stabilized liquid hydrocarbon--means the product of a production operation in which the entrained gaseous hydrocarbons have been removed to the degree that said liquid may be stored at atmospheric conditions.
- (3) Radius of exposure--means that radius constructed with the point of escape as its starting point and its length calculated as provided for in subsection (C)(2) of this section.
- (4) Area of exposure--means the area within a circle constructed with the point of escape as its center and the radius of exposure as its radius.
- (5) Public area --means a dwelling, place of business, church, school, hospital, government building, a public road, all or any portion of a park, city, town, village, or other similar area that can expect to be populated.
- (6) Public road--means any highway or road maintained by the Republic of Kazakstan or governmental subdivision for public access or use.
- (7) Sulphide stress cracking--means the cracking phenomenon which is the result of corrosive action of hydrogen sulphide on susceptible metals under stress.
- (8) Facility modification--means any change in the operation such as an increase in throughput, in excess of the designed capacity, or any change that would increase the radius of exposure.
- (9) Public infringement--means that a public area and/or a public road, or both, has been established within an area of exposure to the degree that such infringement would change the applicable provisions of this rule to those operations responsible for creating the area of exposure.

- (10) Potentially hazardous volume of hydrogen sulphide--A volume of hydrogen sulphide gas of such concentration that:
- (a) the 100 ppm radius of exposure is in excess of 16 meters and includes any part of a "public area" except a public road; or
 - (b) the 500 ppm radius of exposure is greater than 16 meters and includes any part of a public road; or
 - (c) the 100 ppm radius of exposure is greater than 1000 meters
- (11) Contingency plan--means a written document that shall provide an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, or following the accidental release of a potentially hazardous volume of hydrogen sulphide.
- (12) Reaction-type contingency plan--means a preplanned, written procedure for alerting and protecting the public, within an area of exposure, where it is impossible or impractical to brief in advance all of the public that might possibly be within the area of exposure at the moment of an accidental release of a potentially hazardous volume of hydrogen sulphide.

(C) General Provisions

- (1) Each Contractor shall determine the hydrogen sulphide concentration in the gaseous mixture in the operation or system.
- (a) The Contractor shall submit to OGRA the published reference standard or methods to be used in determining said concentration.
 - (b) The test of vapor accumulation in storage tanks may be made with industry accepted colormetric tubes.
- (2) For all operations subject to this section, the radius of exposure shall be determined, except in the cases of storage tanks, by the following Pasquill-Gifford equations, or by other methods that have been approved by the OGRA upon submission by the Contractor.

- (a) For determining the location of the 100 ppm radius of exposure: $x = [(1.589)]$ (mole fraction $H_2S(Q)$) to the power of (.6258).
 - (b) For determining the location of the 500 ppm radius of exposure: $x = [(0.4546)]$ (mole fraction $H_2S(Q)$) to the power of (.6258). Where x = radius of exposure in meters Q = maximum volume determined to be available for escape in cubic meters per day; H_2S = mole fraction of hydrogen sulphide in the gaseous mixture available for escape.
- (3) The volume used as the escape rate in determining the radius of exposure shall be that specified in subparagraph (a)-(e) of this paragraph, as applicable.
- (a) The maximum daily volume rate of gas containing hydrogen sulphide handled by that system element for which the radius of exposure is calculated.
 - (b) For existing gas wells, the current adjusted open-flow rate, or the operator's estimate of the well's capacity to flow against zero back-pressure at the wellhead shall be used.
 - (c) For new wells drilled in developed areas, the escape rate shall be determined by using the current adjusted open-flow rate of offset wells, or the field average current adjusted open-flow rate, whichever is larger.
 - (d) The escape rate used in determining the radius of exposure shall be corrected to standard conditions of 14.65 pounds per square inch (psia) and 60 degrees Fahrenheit.
 - (e) For intentional releases from pipelines and pressurized vessels, the operator's estimate of the volume and release rate based on the gas contained in the system elements to be de-pressured.
- (4) For the drilling of a well in an area where insufficient data exists to calculate a radius of exposure, but where hydrogen sulphide may be expected, then a 100 ppm radius of exposure equal to 1000 meters shall be assumed. A lesser-assumed radius may be

considered upon written request to the OGRA setting out the justification for same.

(5) **Storage tank provision:** Storage tanks which are utilized as a part of a production operation, and which are operated at or near atmospheric pressure, and where the vapor accumulation has a hydrogen sulphide concentration in excess of 500 ppm, shall be subject to the following:

- (a) No determination of a radius of exposure shall be made for storage tanks as herein described.
- (b) A warning sign shall be posted on or within 16 meters of the facility to alert the general public of the potential danger.
- (c) Fencing as a security measure is required when storage tanks are located inside the limits of a town, or where conditions cause the storage tanks to be exposed to the general public.

(6) All Contractors whose operations are subject to this section, and where the 100 ppm radius of exposure is in excess of 16 meters, shall be subject to the following.

(a) **Warning and marker provision.**

(I) For above-ground and fixed surface facilities, the operator shall post, where permitted by law, clearly visible warning signs on access roads or public streets, or roads which provide direct access to facilities located within the area of exposure. The Contractor may make written request to the OGRA for alternate warning plan in populated areas. The sign shall be of sufficient size to be readable at a reasonable distance from the facility.

(II) For buried lines subject to this section, the operator shall comply with the following.

(i) A marker sign shall be installed at public road crossings.

(ii) Marker signs shall be installed along the line, when it is located within a public area or along a

public road, at intervals frequent enough in the judgment of the Contractor so as to provide warning to avoid the accidental rupturing of line by excavation.

(iii) The marker sign shall contain sufficient information to establish the ownership and existence of the line and shall indicate by the use of the words "Poison Gas" that a potential danger exists.

(b) Security provision.

(I) Unattended fixed surface facilities shall be protected from public access when located within 1/4 mile of a dwelling, place of business, hospital, school, church, government building, public park, town, city, village, or similarly populated area. This protection shall be provided by fencing and locking, or removal of pressure gauges and plugging or valve opening, or other similar means. For the purpose of this provision, surface pipeline shall not be considered as a fixed surface facility.

(II) For well sites, fencing as a security measure is required when a well is located inside the limits of a town, or where conditions cause the well to be exposed to the public. The fencing structure will be considered adequate if it is a deterrent to the public access.

(c) Materials and equipment provision.

(I) Facilities completed or modified subsequent to the effective date of these regulations, shall have metal components which have been selected and manufactured so as to be resistant to hydrogen sulphide stress cracking under the operating conditions for which their use is intended. The handling and installation of materials and equipment used in hydrogen sulphide service are to be performed in such a manner so as not to induce susceptibility to sulphide stress cracking. Other materials which are nonsusceptible to sulphide stress cracking, such as fiberglass and plastics, may be used in hydrogen sulphide service provided such materials have been

manufactured and inspected in a manner which will satisfy the latest published, applicable industry standard, specifications, or recommended practices. This regulation also applies to equipment to be used in drilling and workover operations.

(II) Other materials and equipment (including materials and equipment used in drilling and workover operations) which are not included within the provision of clause (I) of this subparagraph, may be used for hydrogen sulphide service provided:

(i) such materials and equipment are proved, as the result of advancements in technology or as the result of control and knowledge of operating conditions (such as temperature and moisture content), to be suitable for the use intended and where such usage is technologically acceptable as good engineering practice; and

(ii) the OGRA has approved the use of said materials and equipments for the specific uses after written application.

(III) Existing facilities (including materials in present common usage for drilling and workover operations in hydrogen sulphide areas) which were and are in operation prior to the effective date of this section, and where there has been no failure of existing equipment attributed to sulphide stress cracking, shall satisfy the requirements of this section.

(IV) In the event of a failure of any element of an existing system as the result of hydrogen sulphide stress cracking, the compliance status of the system shall be determined by the OGRA after the Contractor has submitted to the OGRA a detailed written report on the failure.

(7) All operations subject to subsection (a) of this section shall be subject to the additional Control and Equipment Safety Provision, paragraph (8) of this subsection, and the Contingency Plan Provision, paragraph (9) of this subsection of this section if any of the following conditions apply:

- (a) The 100 ppm radius of exposure is in excess of 16 meters and includes any part of the "public area" except a public road;
 - (b) the 500 ppm radius of exposure is greater than 16 meters and includes any part of a public road;
 - (c) the 100 ppm radius of exposure is greater than 1000 meters.
- (8) Control and equipment safety provision: Contractors subject to this provision shall install safety devices and maintain them in an operable condition or shall establish safety procedures designed to prevent the undetected continuing escape of hydrogen sulphide. For intentional releases of a potentially hazardous volume of hydrogen sulphide gas, the gas must be flared unless permission to vent is obtained from the OGRA or its representative. Venting will be allowed only upon a showing that the venting will not pose an unreasonable risk of harm to the public.
- (9) Contingency plan provision.
- (a) All Contractors whose operations are subject to this provision shall develop a written contingency plan complete with all requirements before hydrogen sulphide operations are begun. A general plan shall be submitted as a condition of the License Agreement.
 - (b) The purpose of the contingency plan shall be to provide an organized plan of action for alerting and protecting the public prior to an intentional release, or following the accidental release of a potentially hazardous volume of hydrogen sulphide.
 - (c) The contingency plan shall be activated prior to an intentional release, or immediately upon the detection of an accidental release of a potentially hazardous volume of hydrogen sulphide.
 - (d) Conditions that might exist in each area of exposure shall be considered when preparing a contingency plan.

- (e) The plan shall include instructions and procedures for alerting the general public and public safety personnel of the existence of an emergency.
- (f) The plan shall include procedures for requesting assistance and for follow-up action to remove the public from an area of exposure.
- (g) The plan shall include a call list comprised of government entities, emergency medical personnel or local civic and law enforcement officials and shall be approved by the OGRA.
- (h) A plan shall include a plan detailing the area of exposure as defined under (B)(4)-(5) and 11 of this regulation. The plan shall also contain provisions for notification of residences, names and telephone numbers of the Contractor's representative and a procedure for pre-briefing the public on the reporting of incidents.
- (i) The designated OGRA representative shall be notified if the contingency plan is activated:
 - (I) 12 hours in advance of an intentional release or as soon as a decision is made to release if such decision could not reasonably have been made more than 12 hours prior to the release.
 - (II) immediately in the case of an accidental release.
 - (III) as soon as possible before or after an unplanned intentional release made in an emergency situation to prevent a possible uncontrolled release.
- (j) The retention of the contingency plan shall be as follows:
 - (I) The plan shall be available for the OGRA inspection at the location of the Contractor's office or other pre-specified location.
 - (II) The plan shall be retained at the location which lends itself best to activation of the plan.

- (k) The plan shall be kept updated to insure its current applicability and any substantive revisions filed with the OGRA.
- (10) The injection of fluids containing hydrogen sulphide shall not be allowed under the conditions specified in this provision unless first approved by the OGRA and shall be subject to all applicable regulations of this regulation. If the Contractor believes special considerations apply or the OGRA denies permission to inject on the basis of hydrogen sulphide presence, the Contractor may request a hearing from the OGRA.
- (11) In addition to any other requirements of this section, drilling and well workover operations, and gasoline plant sites where the 100 ppm radius of exposure is 16 meters or greater shall be subject to the following:
- (a) Protective breathing equipment shall be maintained in two or more locations at the site.
 - (b) Wind direction indicators shall be installed at strategic locations at or near the site and be readily visible from the site.
 - (c) Automatic hydrogen sulphide detection and alarm equipment that will warn of the presence of hydrogen sulphide gas in concentrations that could be harmful shall be utilized at the site.
- (12) Drilling provision. Drilling and workover operations where the 100 ppm radius of exposure includes a public area or is 1,000 meters or greater shall be subject to the following additional provisions.
- (a) Protective breathing equipment shall be maintained at the well site and shall be sufficient to allow for well control operations.
 - (b) The Contractor shall provide a method of igniting the gas in the event of an uncontrollable emergency.
 - (c) The operator shall install a choke manifold, mud-gas separator, and flare line, and provide a suitable method for lighting the flare.

- (d) Secondary remote control of blowout prevention and choke equipment to be located away from the rig floor at a safe distance from the wellhead.
 - (e) The OGRA representative shall be notified of the intention to conduct a drill stem test of a formation containing hydrogen sulphide in sufficient concentration to meet the requirements of this provision if such a test is conducted during night time hours.
- (13) Training requirement provision.
- (a) Each Contractor whose operations contain hydrogen sulphide in excess of 100 ppm shall train its employees working in the affected areas in hydrogen sulphide safety and shall provide the OGRA written assurance such training has taken place and has a program in place to train new employees.
 - (b) Each Contractor shall require all service companies working in affected areas to utilize only those service company personnel who have been trained in accordance with the provisions of subparagraphs (c) and (d) of this paragraph. Written certification to the operator by the service company that only those subcontractor personnel who have been trained in accordance with the training requirement provision will be utilized in affected areas, complies with this provision. For this provision, service company shall mean any company actually performing work at well sites, gasoline plant sites, or on pipelines, where such work could allow the escape of hydrogen sulphide gas.
 - (c) The training of all personnel working in the affected areas shall include the following elements:
 - (I) hazards and characteristics of hydrogen sulphide;
 - (II) safety precautions;
 - (III) operation of safety equipment and life support system.

(d) On-site supervisory personnel shall be additionally trained in the following:

(I) effect of hydrogen sulphide on metal components in the system;

(II) corrective action and shutdown procedures, and when drilling a well, blowout prevention, and well control procedures;

(III) must have full knowledge of the requirements of the contingency plan, when such plan is required.

(14) Accident notification. Operators shall immediately notify the appropriate OGRA office of any accidental release of hydrogen sulphide gas of sufficient volume to present a hazard and of any hydrogen sulphide related accident.

(D) Reports required

(1) Certificate of compliance provision. A certificate of compliance shall be submitted for operations subject to any provision of this section. The following shall apply to the certificate of compliance provision of the section.

(a) The certificate of compliance shall certify that operator has complied or will comply with applicable provisions of this section.

(b) The certificate of compliance shall be filed with the closest OGRA office where the operation is located.

(c) The certificate of compliance shall certify that existing operations subject to this section to be in compliance as specified in an attached schedule, or, for new or modified facilities, will be in compliance upon completion.

(d) An approved certificate of compliance will permit a Contractor to perform all activities described in the certificate without additional filing of approval.

(e) A new or amended certificate of compliance shall be required if there is a change in public exposure caused by public infringement of an existing radius of exposure

resulting in a change in the applicable provisions of this section, not described by the existing certificate. The Contractor shall file the new or amended certificate within 30 days after such infringement.

- (f) A new or amended certificate of compliance shall be required if there is modification of an existing operation or facility which increases the radius of exposure in a public area, or results in a change in the applicable provisions of this section not described by the existing certificate. The Contractor shall file the new or amended certificate at least 30 days prior to initiating the operation or construction.
- (g) The operator shall file a certificate of compliance 30 days prior to commencement of a drilling or workover operation on wells where a certificate of compliance is required for that well by provisions of this section (wells drilled on noncertified leases or wells with a 100 ppm radius of exposure greater than 1,000 meters).
- (h) In case of extenuating circumstances, a Contractor may file a certificate of compliance with an attached written explanation for those cases where waiver of 30-day prior filing is requested. In such cases, the approval of the certificate of compliance by the OGRA will constitute authority to proceed.
- (i) The certificate of compliance shall be prepared and executed by a representative of the Contractor who, through training and experience, is qualified to make such certification.
- (j) The certificate of compliance will be in effect until conditions are altered in a manner that would require amending the "certificate." The Contractor shall notify the OGRA within 30 days following cessation or abandonment of operations in a certificated area.
- (k) A certificate of compliance may cover a single operation or multiple operations located in an area, a field, or a group of pools, within a Contractor Territory. The description of the type of operation as indicated on the form must be sufficiently complete to the degree that it is

obvious what element of an operation is to be covered by the certificate. The OGRA shall issue identification numbers for each element of the system shown on certificates and for each type of operation.

(l) Certificates are nontransferable, and a new Contractor of a system or any acquired element of a system or operation shall be required to certificate that operation. A change of Contractor for a Territory or part thereof, nullifies the certificate.

(m) Each Contractor shall maintain a current master list of all his operations for which a certificate of compliance is in effect and shall submit such list for inspection upon request by the OGRA.

(2) Completion report provision.

(a) The Contractor shall report on the initial completion report for new oil or gas wells, the hydrogen sulphide concentration of the wellhead gas for all wells where the hydrogen sulphide concentration is equal to or exceeds 100 ppm.

(3) The Contractor shall furnish a written report to the OGRA with 10 days of an accidental release of hydrogen sulphide gas of sufficient volume to be a hazard and of any accident, regardless of whether the release was accidental or intentional.

9.2 Fire Prevention and Swabbing

(A) No hydrocarbon flow tank, unless entirely buried, shall hereafter be placed nearer than 45 meters from any derrick, rig, building, power plant, or boiler of any description. The OGRA or his representative may administratively grant exceptions to this requirement. If the OGRA administratively denies the request for an exception, the Contractor shall move the hydrocarbon flow tank to required distance or request a hearing on the matter. After hearing, the OGRA shall make a final determination on the exception request and notify the Contractor in writing of the decision.

- (B) No field working hydrocarbon tank having a capacity of 200,000 liters or more shall be built closer than 60 meters (measured from shell to shell) to any other like tank.
- (C) No Contractor engaged in the production, transportation, storage, handling, reclamation processing, or treating crude oil on a Contract Territory shall store, either permanently or temporarily, crude oil in open pits or earthen storage.
- (D) All oil tanks where there is a potential gas hazard, shall be gas tight and provided with proper gas vents.
- (E) No forge or open light shall be placed inside the derrick of a well showing oil or gas.
- (F) Boilers must be equipped with steam lines for fighting fire and must not be set nearer than 45 meters to any producing well.
- (G) All wells shall be cleaned into a pit located not less than 13 meters from the derrick floor and 45 meters from any fire hazard.
- (H) No boiler or electric lighting generator shall be placed or remain nearer than 45 meters to any producing well or oil tank.
- (I) Any rubbish or debris that might constitute a fire hazard shall be removed to a distance of at least 45 meters from the vicinity of any well, tank, pump station or processing area. All waste shall be burned or disposed of in such manner as to avoid creating a fire hazard.
- (J) Dikes or fire walls shall not be required except such fire walls must be erected and kept around all permanent oil tanks, or battery of tanks, that are within the boundaries of any city, town, or village; or where such tanks are closer than 150 meters to any roadway, inhabited dwelling or school.