Environmental Protection within a Gas Production Section

OLAR HORATIU RAUL
PhD student DRILLING PRODUCTION DEPARTMENT
*The **Petroleum-Gas University of Ploieşti**, UPG PLOIESTI*
Ploiesti, ROMANIA

AVRAM LAZAR
PhD Habil. DRILLING PRODUCTION DEPARTMENT
*The **Petroleum-Gas University of Ploieşti**, UPG PLOIESTI*
Ploiesti, ROMANIA

STAN MARIUS
PhD MECHANICAL DEPARTMENT
*The **Petroleum-Gas University of Ploieşti**, UPG PLOIESTI*
Ploiesti, ROMANIA

ABSTRACT

The motivation of choosing the research of the theme is the immeasurable importance that the protection of the environment has in carrying out any activity, and in meeting the objectives.

The study focuses on the protection of the environment, which represents: the set of measures, actions and regulations aimed at maintaining, protecting and improving natural environmental conditions, reducing and eliminating, where possible, environmental pollution and pollution sources, for the purpose fulfillment of the activities and objectives described within the Gas Production Section . Only an extremely rigorous and constant approach at all levels of the objectives of the Section can lead to an efficient control over the activities and to the reduction of risk factors.

Keywords—*environment, environmental protection, waste, wells, waste management, Gas Production Section*

I. INTRODUCTION

The natural gas industry can affect physical environmental factors through the following large groups of successive activities: prospecting, drilling and drilling (onshore and offshore); transport of natural gas and derived products; conditioning of natural gas; storage, distribution and use of natural gas. In order to protect the environment, we identify and analyze the possible sources of pollution, and in direct agreement with environmental policies we manage the waste produced as a result of the activities within a Gas Production Section.

II. THE MAIN POSSIBLE SOURCES OF POLLUTION

At the drilling wells: drilling fluids, materials used for landscaping, debris resulting from drilling, settling of land and roads, following the completion of the works to restore the affected land according to the zonal landscape and play in the agricultural circuit;

In the wells in production: leaks in the environment of the fluids from the wells spreading on the ground of substances and materials with which operations of stimulation, injection, sand consolidation, hydraulic cracking and acidification that are performed;

At wells in capital repairs: circulation and killing fluids, as well as other fluids from the well;

For pipes: phenomena of wear, corrosion, cracking, breakage, mechanical deformation;

At separator and reservoir parks: gas emissions into the atmosphere, accidental liquid discharges, sludge from cleaning tanks, separators, decanters, stored sludge;

At waste and / or industrial water injection stations: liquid discharges outside the permissible limits;

In industrial areas and utilities: noise pollution, vibration;

Concerning the access roads: removing from circulation some areas of agricultural land, forest affected by the respective objective, in operation;

III. Presentation of a gas production section

The Gas Production belongs to the Production Branch, being directly subordinated to the Production Manager of the Branch and has in its composition:168 employees {Extraction operators, mechanical locksmiths, intervention team, training heads, Tesa personnel (senior civil servant, economist, engineers, deputy section chief and section head)};13 gas fields;39 working points;333 natural gas wells in production;9 Gas drying stations (6 stations with triethylene glycol and 3 stations with delusional salts);3 field compressors;4 wastewater injection stations;6 wastewater injection wells;1 Waste deposit specific to the gas extraction activity.

I mention some of the main activities carried out:Natural gas extraction; conditioning of natural gas; compression of natural gas; optimization of natural gas production; safe operation of production capacities; carrying out maintenance and annual revisions to all the production infrastructure (Break heads, adduction pipes, collecting pipes, field compressors, gas drying stations, measuring and control devices); supply, management, and distribution of materials and spare parts; elaboration and analysis of the working procedures in force at the Company level; coordination and supervision of the entire staff of the Section; waste management resulting from the production activity.

The Gas Production section has the following objectives:Carrying out the annual Production Plan; incorporation in the annual technological consumption; carrying out the works of interventions and re-equipping wells; conducting annual technical revisions to well groups and technological installations, collecting pipes, wastewater injection stations, TEG gas / salt drying stations; compliance with environmental requirements; failure to record any work-related injury or occupational disease; continuous assurance of the quality of the natural gas delivered; increased production capacity; increasing the portfolio of gas resources and reserves, by discovering new resources and by developing and improving the recovery of resources already discovered; identifying new opportunities for growth and diversification; increasing the performance of the company, and of the staff employed.

IV. Statements of energy policy and of the integrated management system

At the company level there are published:

Energy Policy Statement, which has the following objectives:Communication throughout the organization of the importance of energy management for continuous improvement of energy performance, detailed analysis of energy flows and consumption on each process in order to determine the opportunities for continuous improvement of energy performance, compliance with applicable legal requirements and with other requirements to which the organization has subscribed regarding the use of energy, energy consumption and energy efficiency, awareness and education of employees in spiritual energy saving and use of clean energy (solar panels), reducing the impact on the environment and the costs of energy use, promote the purchase of energy efficient products and services

Policy statement in the field of integrated management, mentioning some of the objectives:Prevent pollution and reduce the unwanted effects of our operations against the environment, protection of the occupational health and safety of the employer, through adequate control of the working environment, continuous monitoring and systematic analysis of the processes carried out in order to ensure their efficiency and effectiveness, responsibility of each employee regarding the personal contribution to the performances of the integrated management system of quality, environment, health and occupational safety, development of production capacities with higher yields, in order to use resources efficiently and in order to reduce the quantities of waste generated in their operation, reducing air pollution by reducing the amount of pollutant emissions (CO2, NOx), by using new, high-performance technologies that contribute to increasing energy performance, maintaining within the permissible limits of the quality of the water discharged into the natural stream, concomitant with the significant reduction of the volumes of cooling water discharged.

V. THE ENVIRONMENTAL AUTHORIZATION

The environmental authorization for the Gas Production Section, natural gas extraction through wells located in the 13 gas structures, and which contains:

a) The authorized activity:Equipments: installations, equipment, means of transport used in the activity (337 wells in production, 6 wells for injection of water from the field, 9 gas drying stations 3 field compressors, one headquarters); Raw materials, auxiliaries, fuels, packaging used - way of packaging, storage, quantities (fuels, methane gas, lubricants, triethylene glycol, foam, methanol, alkyd paints, primer, diluents, lithium chloride, calcium chloride; Utilities: industrial water, drinking water, electricity, natural gas; Description of the main phases of the technological process or other activities; natural gas production, interventions at wells, special operations, cracks, acidification, maintenance of access roads;The obtained products and by-products;Data regarding the thermal power plant - equipment, used fuels;; Other specific data; The operating program

b) Environmental protection installations, measures and conditions; Stations and installations for the retention, evacuation, and dispersion of pollutants in the endowed environment: reservoirs water reservoir, sewage treatment plant, decanter, (Periodically water withdrawals are made and bulletins for analyzing liquid samples for wastewater are discharged from the station purification-evacuation in the emissary); baskets for the evacuation of flue gases in the armosphere, the construction of injection wells, which does not allow the migration of water in groundwater; Other special arrangements, equipments and measures for environmental protection: transport of reservoir water, free flow of wells, ensuring soil protection; Concentrations and mass flows of pollutants, noise levels, radiation, admitted to evacuation in the environment, permissible exceedances and in what situations,

c) Monitoring of the environment: Physico-chemical, bacteriological, and biological indicators emitted, pollutant emissions, frequency, mode of exploiting the results: determination of the concentration in the pollutants of the flue gases, measurement of the noise level; The data to be reported to the territorial authorities for environmental protection and periodicity;

d) The way of managing the waste and packaging:Waste products: types, composition, quantities; Waste collected: types, composition, quantities, frequency; Waste temporarily stored: types, composition, quantities, storage mode; Valor Waste used: types, composition, quantities, destination; Waste transportation mode; Removal mode; Monitoring of waste management; Used packaging and results; The management of the packaging

e) The mode of management of dangerous substances and preparations:Hazardous substances and preparations produced, or used; Ul Management mode; The mode of management of packaging used or resulting from hazardous substances; Installations, equipment arrangements, and protective measures; Monitoring the management of dangerous substances and preparations

f) The compliance program - measures to reduce the present and future effects of the activities:Domain: soil and groundwater protection: this is not the case; Source of financing: not the case

Authorization of water management regarding: "Probes for injection of water from the field belonging to the Gas Production Section"
We also hold Notification of the functioning of the objective of the Gas Production Section, comprising the general data of the section, water supply, waste water discharge, quality indicators and obligations, and Environmental authorization regarding the Waste Deposit Specific to the gas extraction activity

We also have contracts for sale, purchase or service, for:Waste oils derived from the activity carried out; Recyclable industrial waste: iron, paper, plastic; Sludge removal and transport services; Municipal waste collection / transport services; Controlled collection, transport and disposal of triethylene glycol waste and emulsion waste; Controlled transport and disposal services for hazardous waste generated on company sites; Use / exploitation of groundwater resources

VI. PREVENTIVE MEASURES REGARDING THE ENVIRONMENTAL PROTECTION

Preventive measures regarding the Environmental Protection for a good organization regarding the management of hazardous and non-hazardous materials, of waste, and to avoid accidents and environmental incidents at the Gas Production Section, the following documents are taken and the following documents are drawn up: Plan for preventing and combating accidental pollution at potentially polluting water uses, where the mode of action is passed, the persons and tasks drawn to each person involved; List of addresses of interest of the regulatory and control authorities and of other institutions with which our company headquarters collaborates, in the field of environmental protection; Environmental communication diagram; List of significant environmental issues; Program of actions for achieving the environmental objectives; List of critical points generating potential ecological accidents; List of dangerous chemical substances and preparations; The record of the packages delivered; Secure register for loading and unloading registration of hazardous waste; List of environmental normative acts;List of waste generated from the activities of the section; Waste records; The situation of the injected reservoir water; The situation of the injection wells; Situation regarding industrial water: injected water, technological water consumption, industrial water from wells, water delivered to consumers; List of observed environmental events: runoff water at wastewater installations;The storage of dangerous substances (HCl, methanol, diethylene glycol, triethylene glycol, gasoline, diesel, paints, diluents) is done in separate containers or buildings;

Example of the actuation procedure in the event of an imminent threat or the occurrence of a reservoir water leak:

Head of formation:

a) Take immediate measures to prevent and limit the effects of leaks, evacuating the reservoir water from the damaged bay;
b) Immediately notify the head of the section about the imminence of the production, or about the production of spills of chemical substances or preparations

Head of Section:

a) Immediately notify the production manager and the head of the environmental protection service in the branch, about the ecological accident or potential accident.
b) Summons the intervention team.
c) It provides the materials, equipment, equipment and human resources, necessary for the actions of limitation and / or prevention on the environment, of the product / potential accident.
d) Initiates the report of the observed / potential non-compliance, and records the non-compliance in the non-compliance register online.
e) Upon completion of the corrective / preventive actions, close the non-compliance in the online register.

Head of environmental protection service:

a) Informs about the ecological accident produced or potential, with the agreement of the branch manager, the county agency for environmental protection and the county commissioner of the National Environmental Guard, respecting the legal requirements of the O.U. 68/2007 regarding environmental responsibility.
b) Informs the county agency for environmental protection and the county commissioner of the National Environmental Guard, about the measures taken, respecting the legal requirements of the O.U. 68/2007 regarding environmental responsibility.
c) Communicates the ecological accident product / potential to the service of environmental protection / headquarters.
d) Check the removal of the non-conformity, which caused the accident.

VII. WASTE MANAGEMENT

Waste management is held separately for each category, and collection, storage, storage and recovery / surrender take place as follows:
a) Example: Paper, plastic, metal, hazardous packaging (paint containers, diluent containers, used TEG) are selectively withheld at the probe groups and at the Drying Stations, then collected at the Section Headquarters, stored separately, and then delivered to the supplier of services.

Example of generation, collection, storage and recovery of paper and cardboard waste, code 20 01 01:

Current Number	Month	Category of waste:			
		Generate	From wihch:		
			Harnessed	Finally disposed of	Remaining in stock
1.	January	0.5	0	0	16.5
2.	February	23.3	39.8	0	0
3.	March	0.5	0	0	0.5
4.	April	0.5	0	0	1
5.	May	0.5	0	0	1.5
6.	June	0.5	0	0	2
7.	July	0.5	0	0	2.5
8.	August	0.5	0	0	3
9.	September	0.5	0	0	3.5
10	October	0.5	0	0	4
11	November	1	0	0	5
12	December	1	6	0	0
	The total	45.8	45.8	0	0

Table 1: generation, collection, storage and recovery of paper and cardboard waste

The economic agents with which our company has contracts carry out the operation of collecting, transporting and processing waste.
b) The reservoir water is measured by the gas extraction operator at each discharge with the help of the calibration beam and noted on a standardized form after which it is directed to the Reservoir Group and then transported by self-survey to the 4 Storage Basins Injection Station wastewater, after which it is injected with the help of injection pumps in the injection wells belonging to the section, keeping also the water management transported from groups and injected on standardized forms.
c) At the Waste Deposit Specific to the extraction activity there are:

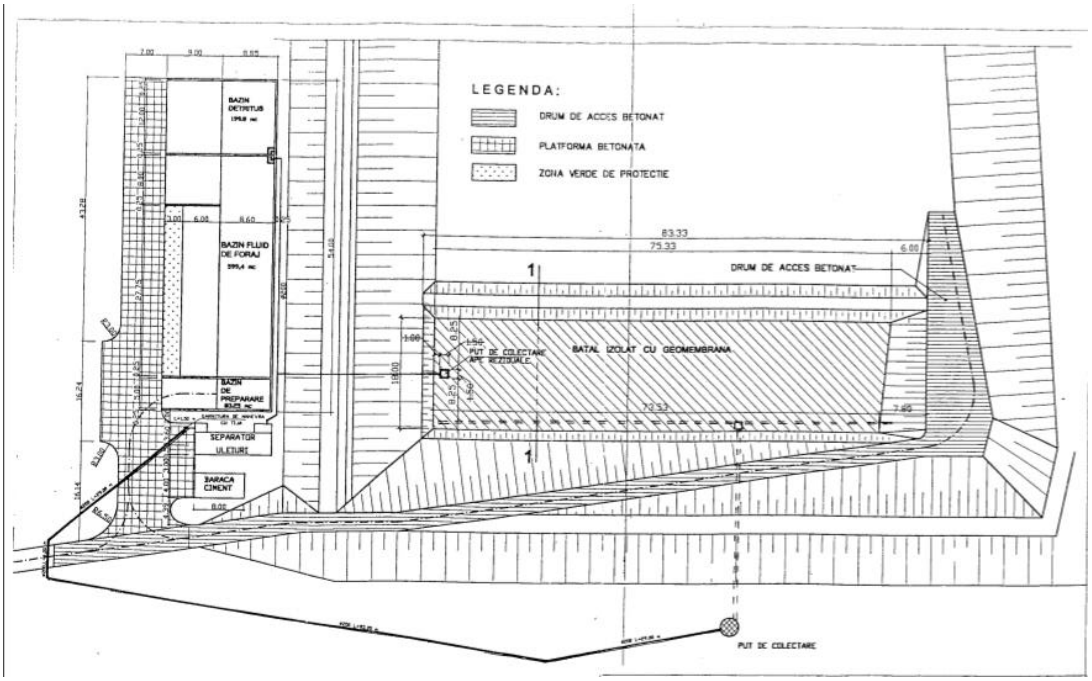

Figure 2: Specific waste deposit

A reservoir for drilling fluids depreciated from wells in drilling, intervention, RK, special fluids, and muddy water; A debris storage tank; An isolated basin with an area of about 1 ha for storage of petroleum products; A separator basin with liquid impurities with pumps, where the water resulting from the separation of the first three basins is pumped, the water that is transported to the storage basin injection station, which is then injected into the wells; A sludge storage tank, debris, sediment, processed using cement.

CONCLUSIONS

Keeping under control of equipment, materials, waste is continuously monitored, and training on environmental protection is performed monthly.

Also, periodic internal and external inspections are carried out where all the environmental aspects are verified, the gas production process, the obligatory documents to be present at the Headquarters of the Section, authorizations, contracts, Safety Data Sheets, reports, waste management situations, records, collection, storing, and handing over or using them, environmental monitoring, the plan of interventions in case of accidental pollution, checking the on-line training for environmental protection.

Having the right recipe, and the constant attention, can lead us to success quickly, helping both the staff and the company to have the results they want in a quick time, being friendly with the environment!

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