

PN-ACE-788

101124



USAID Regulatory Reform and Energy Sector Restructuring Project

**Romania – Recommended Regulations for the Oil & Gas
Sector**

July 1997

Prepared for
United States Agency for International Development
Project Office - ENI/EUR/EEUD/EI
Project No 180-0030

Under the
**Regulatory Reform and Energy Sector Restructuring in Central
and Eastern Europe and The Baltics Project**
Contract No - DHR-C-00-95-00016-00

Prepared by
Bechtel Consulting

Bechtel International, Inc

22934-009-012



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**NATIONAL AGENCY FOR
MINERAL RESOURCES OF
ROMANIA**

**REGULATIONS FOR THE
PETROLEUM INDUSTRY**

DRAFT
July 9, 1997

DRAFT
SPECIAL ORDER

**of the National Agency for Mineral Resources of Romania, Adopting Regulations
Governing the Conduct of Operations in the Petroleum Industry In
Romania And Its Territorial Waters, Including Environmental Protection, Exploration,
Well License, Drilling, Exploitation, Offshore, Pipeline Transportation and the
National Database**

Whereas the Government of Romania in Decision No 221/April10,1995 empowered the National Agency for Mineral Resources to

- 1 Administrate the mineral resources of the State,
- 2 Negotiate the agreements for mineral resources and regulate activities and operations under these agreements,
- 3 Set taxes and fees for exploration and exploitation activity and for transportation of crude oil, products and natural gas,
- 4 Issue normative, acts and instructions of a compulsory nature with regard to geological research, exploitation and protection of the useful mineral substances, and

Whereas the Petroleum Law of 1995 was passed by Parliament, signed by the President and published in the Official Monitor of Romania on December 29, 1995, that said Law establishes the National Agency for Mineral Resources as the Competent Authority charged with administrating the provisions of the Law acting under the Government of Romania, that among other things the Competent Authority is authorized to issue compulsory norms, regulations and instructions concerning application of the present law,

Whereas the Competent Authority also has a responsibility to ensure that operations in the petroleum and natural gas industries are conducted in an environmentally acceptable manner, and

NOW THEREFORE IT IS ORDERED by the National Agency for Mineral Resources of Romania that the Guideline for the Environmental Management Unit and the Regulations hereinafter set out be and they are hereby adopted effective _____, and shall thereafter remain in effect unless and until they are amended or rescinded by the Competent Authority, and

IT IS FURTHER ORDERED that an exception to any such regulation may be granted by the Competent Authority pursuant to a showing that such exception is justified, is in the common interest, and should be approved under the Law

APPROVED _____

Mihail Ianas, President

Attest _____

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**NATIONAL AGENCY FOR MINERAL RESOURCES
OF ROMANIA**

REGULATIONS FOR THE PETROLEUM INDUSTRY

PART I DEFINITIONS - GENERAL

- (a) **"Petroleum Law"** means the law No 134 passed by the Parliament, signed by the President, and published in the Official Monitor of Romania on December 29, 1995,
- (b) **"Methodological Norms"** means Methodological Norms For The Application Of The Petroleum Law approved by the Romanian Government in Decision No 1265 dated November 22, 1996,
- (c) **"Competent Authority"** means the National Agency for Mineral Resources,
- (d) **"Petroleum Agreement"** means the terms and conditions agreed to between the Competent Authority and the Title Holder pertaining to exploration for and exploitation of hydrocarbons in the concession or Block,
- (e) **"SCADA"** means a Supervisory control and data acquisition system used in monitoring, analyzing and determining optimized mode of fluid flow in the transportation system
- (f) **"Concession"** means an area of mineral rights leased to a legal person in Romania for the exploration, development and production of hydrocarbons
- (g) **"Title Holder"** means the legal person in Romania authorized to conduct petroleum operations by virtue of a Petroleum Agreement,
- (h) **"Block"** means the exploration or exploitation block, representing the area corresponding to the surface projection of the outline of that part of the earth's crust inside which exploration, exploitation works are conducted in a determined depth interval as well as the additional surface area necessary for carrying out the petroleum operations on the Block,
- (i) **"Applicant"** means the Title Holder or approved representative of the Title Holder that seeks approval to drill a well or conduct an exploitation or exploration program,
- (j) **"Application" Fee** means the non-refundable administration payment which must accompany an application for approval for the drilling of a well, for an exploitation program or for an exploration program,

- (k) **“Approval”** means the approval by the Competent Authority a request, application or recommendation submitted by a Applicant and issuance of a permit to drill a well or to conduct an exploration or exploitation program
- (l) **“Completion Report”** means the report which must be prepared by the Permittee or Title Holder at the conclusion of the exploration or exploitation program,
- m) **“Exploration” or “Exploration Operations”** means all studies and operations conducted in order to determine the geological conditions of petroleum accumulation, the prospecting phase, the identification of deposits, their quantity and quality evaluation, as well as, determination of the technical and economic conditions for their use,
- (n) **“Exploration Program”** means all of the activities involved in the preparation for and conduct of investigations to determine the geological conditions which may be related to petroleum accumulations This includes data collection and analysis,
- (o) **“Field Inspector” or “Inspector”** means the employees or agents of the Competent Authority who are authorized to review the field operations of an operator or a Drilling Contractor or of an exploration or exploitation program,
- (p) **“Right-of-way”** means the total surveyed area occupied by a linear facility such as roadway or pipeline,
- (q) **“Well”** means a bore hole drilled for the purpose of finding and/or exploiting crude oil and/or natural gas in commercial quantities,
- **“Exploration Well” or “Wildcat”** well means a well or a portion of a well which is drilled in search of a new pool not previously discovered or produced and may be classified as exploratory at the time the well license is issued It will generally be located outside an Exploitation block,
 - **“Exploitation Well”** means a well or a portion of a well which may be classified as exploitation/development at the time the well license is issued when it is located within an exploitation block,
 - **“Appraisal Well”** means a well drilled to delineate an already discovered pool to obtain information to assist in confirming commerciality or planning prudent development and exploitation,
- (r) **“Operator”** means the legal person who, being either the Title Holder or with the legal consent of the Title Holder, conducts exploration or exploitation operations on a concession or Block,
- (s) **“Crude Oil”** means a mixture mainly of pentane and heavier hydrocarbons that is recovered or is recoverable at a well from an underground reservoir and that is liquid at the conditions under which its volume is measured or estimated, and includes all

other hydrocarbon mixtures so recovered or recoverable except raw gas or condensate Crude oil shall be reported in metric tons of 1000 kilograms each,

- (t) **"Exploitation Program"** means the plan for activities and operations involved in developing and producing hydrocarbons including wells, facilities, their locations and timing together with economic analysis and estimated production schedule,
- (u) **"Natural Gas"** means the gas containing hydrocarbon substances or combustible mixtures of gaseous hydrocarbons and non-hydrocarbons extracted from wells Said term shall include residual gas (methane, ethane, propane and butane) remaining after the extraction of liquids therefrom,
- **"Associated Natural Gas"** means natural gas which exists in a reservoir in solution with Crude Oil, or in a gas cap, in contact with Crude Oil,
 - **"Non-Associated Natural Gas"** means gas accumulated in a reservoir which does not contain Crude Oil which can be economically and technically exploited,
- (v) **"Pool"** means a natural underground reservoir containing or appearing to contain an accumulation of oil or gas or both which is separated or appears to be separated from any other such accumulation,
- (w) **"Maintenance"** means the combination of all technical and associated inspection and administrative actions intended to retain an item or restore it to a state in which it can perform its required functions,
- (x) **"Pipeline"** means those facilities through which fluids are conveyed including pipe, components and appurtenances attached to the pipe up to and including the isolating valves,
- (y) **"Transporter"** means one or more of the specialized units or other entities authorized by the Government to operate the national systems of petroleum transportation in Romania including, main pipelines, trucks and rail cars which receive petroleum from the producers and transport it to the appropriate delivery point, including refineries, processing or distribution units, customers, other purchasers or to export,
- (z) **"Abandon"** means to permanently remove from service

PART II ENVIRONMENT

Article 1- Enforcement of Environmental Law

The National Agency for Mineral Resources (NAMR) will oversee and enforce those elements of the Environmental Law together with regulations of the Ministry of Environment which apply to exploration for and exploitation and transportation of petroleum resources in Romania

Article 2 - Environmental Management Unit Role

The NAMR will be assisted in meeting oversight responsibility by its Environmental Management Unit (EMU) which will work with the EMU's of the operating companies to ensure effective communication and implementation of environmental requirements. The role of EMU is to advise, coordinate and communicate regarding environmental matters.

Article 3 - EMU Organization

The fundamental aim of the EMUs' is to promote compliance with legitimate environmental standards while facilitating conduct and growth of business. The Unit members must have comprehensive knowledge of regulations and requirements of the Ministry of the Environment and a working knowledge of oil field operations.

The structure and function of the EMU will be in accordance with Government Decision Number _____ of _____, 1997.

Article 4 - Designated Spokeperson

Each Company will identify an individual who will be the Company's principal contact with the EMU of the Competent Authority on all environmental matters.

Article 5 - Environmental Management Plan

Each company will prepare and submit to the Competent Authority an Environmental Management Plan which will describe how the entity will ensure that its business is conducted in an environmentally acceptable manner and in compliance with all relevant Romanian laws and regulations.

The Environmental Management Plan will be prepared in a format and with content as may be defined by the Competent Authority.

Article 6 - Contingency Plan

Each company conducting petroleum field activities or operating facilities shall provide adequate evidence that it is fully capable of responding quickly and effectively to possible events such as petroleum and saltwater spills, explosions and fires, release of toxic chemicals, and well blowouts. That evidence will be provided in the form of a contingency plan which will include descriptions of elements including, but not limited to

- detection systems
- notification procedures
- response plans
- equipment and materials availability
- trained manpower
- management and coordination of response

Article 7 - Environmental Performance Report

The Company will prepare and submit to the Competent Authority annually a summary report describing the environmental performance of the Company during the previous calendar year and include plans for future improvement. This report will be due by March 31 of the succeeding year. Topics will include, but not be limited to

- description of major environmental accidents and emergencies, including oil and produced water spills,
- description of remediation measures implemented and their results,
- list of penalties issued by the Ministry of Environment, including reasons and subsequent actions taken,
- summary of results of air and water quality monitoring programs,
- summary of expenditures made for environmental protection activities, measures, equipment and materials during the period,
- review of initiatives taken to achieved required environmental performance,
- a work plan outlining measures to be taken to correct deficiencies during the next year

PART III EXPLORATION REGULATION

Article 1 - Definitions

In this Part

- (a) "Prospecting Permit" or "Permit" means the official document, issued by the Competent Authority under this Regulation, authorizing the Applicant to proceed with the exploration program subject to this Regulation. Such "permit" does not include a preemption right. Exploration operations can be performed under a petroleum agreement in cases of administration or concession grants which carry exclusive rights, and also under a prospecting permit which has non-exclusive rights.
- (b) "Field Operations" means all of those activities in support of the exploration program conducted using man power or equipment in the geographic area of interest,
- (c) "Permittee" means the Romanian or foreign legal person that has received approval from the Competent Authority to conduct an exploration program and has been issued a prospecting permit or otherwise has approval under a Petroleum Agreement ,
- (d) "Shot Hole" means a hole drilled for the purpose of detonating an explosive charge for the primary purpose of obtaining geophysical information,
- (e) "Test Hole" means a hole drilled for the primary purpose of obtaining geological information and in which no explosive charge will be detonated,

Article 2 - Intent

- (a) The intent of this Regulation is to provide the basic requirements under which an exploration program for petroleum resources in Romania will be approved and conducted

Other Regulations, e g , Drilling Regulation, environmental protection and safety may also apply

(b) It is the responsibility of the Applicant to have knowledge of and conform with all legal and regulatory requirements

Article 3 - Permit Approval and Expiration

(a) The Competent Authority will issue its decision to the Applicant within thirty (30) days of receipt of the application

(b) Upon program approval, the Competent Authority will issue to the Applicant an Prospecting Permit This Permit may contain special provisions and conditions relating to the conduct of the Exploration Program Failure to proceed with operations under an approved exploration permit for a period of six months shall be grounds for cancellation of the permit

Article 4 - Kinds of Projects

This Regulation applies to all studies and operations conducted to determine the geological conditions which may be related to the petroleum accumulation Requirements pertaining specifically to exploration drilling activities are contained in the Drilling Regulation

Article 5 - Who Can Apply

Any Romanian or foreign legal person with a demonstrable interest in Romanian petroleum resources and an appropriate level of technical capability and financial resources can apply to the Competent Authority for approval to conduct an exploration program The Competent Authority may request evidence attesting to the legal status, interest and technical and financial capability of the applicant

Article 6 - Application

The application for approval to conduct an exploration program will be submitted to the Competent Authority with content including

- evidence of technical and financial strength
- a map of suitable scale of the work area
- a description of the work proposed and the target
- estimated time for completion of works

Following favorable review of the request and execution by the parties of a suitable confidentiality agreement, the permit will be issued

Article 7 - Responsibility of Permittee

(a) Where an approval is granted by the Competent Authority, the legal person having made the application will accept and discharge full responsibility for the approved exploration program, including compliance with all relevant laws and regulations

(b) Where the Permittee utilizes the services of a third party, e g , a geophysical contractor, the Permittee will retain full responsibility for ensuring that the exploration program is conducted in compliance with this Regulation and any other applicable regulation

Article 8 - Information, Ownership and Confidentiality

Under the Petroleum Law, all data and information resulting from Petroleum Operations belong to the Romanian State. The titleholder or applicant is entitled to retain, interpret and use the data subject to the confidentiality requirement. Use of the data is

- free of charge when under administration or a concession contract
- subject to a fee in the case of a prospecting permit

Provisions for the degree and duration of the confidentiality of such data and information will be contained in the Permit issued upon program approval, or in the Petroleum Agreement when the exploration program is to be conducted thereunder.

Article 9 - Completion Report

Within thirty (30) days after the exploration program has been terminated, the Operator will submit to the Competent Authority a Completion Report together with all data collected in the program. The report will be in a form and with content as specified by the Competent Authority in the Permit. At minimum, this report will

- (a) summarize the results of the program, including an analysis of the petroleum prospectivity in the area of investigation,
- (b) indicate what data have been collected,
- (c) attest that the Permittee has complied with all relevant laws, regulations and other instructions and conditions relevant to the exploration program, including those relating to access, clean-up and abandonment.

Article 10 - Access for Work

Access to areas needed for the exploration program will be obtained by the Permittee in accordance with Article 7 of the Petroleum Law.

Article 11 - Notification of Commencement and Termination

The Permittee or Title Holder, as the case may be, will advise the Competent Authority of the commencement date of exploration program field operations at least fifteen (15) days before such commencement and at least thirty (30) days before completion of such field operations.

Article 12 - Access and Assistance to Inspectors

- (a) The Permittee, and all of its agents and contractors involved in the field operations, shall provide immediate access to the field operation by the Competent Authority's Field Inspectors at the Inspectors' request.
- (b) The Permittee and its agents and contractors will provide the Inspector with reasonable assistance, answer the Inspector's questions regarding the exploration program and supply information reasonably requested by the Inspector.

Article 13 - Display of Permit on Site

A copy of the Permit issued by the Competent Authority for the exploration program will be kept on the site of the field operations at all times and will be made available to the Inspector on request

Article 14 - Minimum Separation Distances

The Permittee and its agents and contractors will ensure that no activities are performed within distances less than those specified in Schedule 1 of this Regulation

Article 15 - Use of Existing Rights-of-Way

To the extent reasonably possible, the Applicant will design the exploration program to make maximum use of existing rights-of-way for program activities, including access

Article 16 - Clearing and Restoration

All line clearing activities and land restoration will be conducted in accordance with the law

Article 17 - Use and Clean-Up of Land

Efforts should be made to minimize the amount of land used for the exploration program. On completion of field operations, all materials and debris resulting from the program should be cleaned up and disposed in an acceptable manner

Article 18 - Damages to Private Property

(a) Damage to private property must be repaired according to the agreements made with the landowners

(b) Where damages are caused by the field activities to private property for which an access and use agreement is not in place, such damages must be repaired as agreed upon with the landowner

(c) Any dispute between the Permittee and the landowner will be resolved by the legal court, according to the law

Article 19 - Damages to Public Property

Damages to public property caused by field activities will be repaired to the satisfaction of the government body having jurisdiction over that property

Article 20 - Water and Gas Release

If water or gas is accidentally released from an aquifer or stratum and comes to the surface during or after the drilling of a test hole or shot hole, the Permittee or Title Holder must

- (a) cease drilling and ensure that no explosive charge is loaded in the hole,
- (b) ensure that the hole is plugged to confine the water or gas to the aquifer or stratum from which it was released
- (c) notify the Competent Authority and the landowner,

- (d) repair any damages caused and provide such compensation as may be agreed to with the landowner

Article 21 - Ground Subsidence

Where ground subsidence occurs around holes created during field operations, such areas of subsidence will be promptly filled to the level of the surrounding ground and measures taken to avoid further subsidence

Article 22 - Water Contamination

The exploration program must be designed and conducted in a manner which avoids contamination of surface water and ground water and prevents movement of water from one formation to another

Article 23 - Safety Hazards and Obstructions

The Permittee will design and conduct the exploration program so as to minimize any hazards to public safety and obstructions to the use of facilities such as roads

Article 24 - Abandonment of Test and Shot Holes

(a) If any shot hole or test hole drilled in the conduct of the exploration program, is to be temporarily abandoned, the Permittee must not leave such holes unattended until they are prepared and secured in a manner which will ensure public safety and environmental protection until the holes can be permanently abandoned

(b) Permanent abandonment of shot holes must be accomplished immediately after detonation of the charge in the hole. Permanent abandonment of test holes must be completed within thirty (30) days after they have been drilled. In both cases an approved plug should be placed in the hole immediately above the detonation depth and another plug at least 0.5 m below the surface and all drill cuttings should be used to fill the hole, with any remainder spread evenly over the ground surrounding the hole

Article 25 - Application Fee

An application fee in the amount specified by the Competent Authority must accompany the application for an Exploration Permit

Article 26 - Penalties

From time to time, the Competent Authority may set penalties for contravention of this Regulation, in keeping with Article 38 of the Petroleum Law

SCHEDULE 1 MINIMUM SETBACK DISTANCES, METERS

FACILITY	ENERGY SOURCE							NON EXP LO SIVE	TEST HOLE
	VIBRO SEIS	EXPLOSIVE CHARGE, KG							
		Less than 2	2 to 5	5 to 10	10 to 20	20 to 40	more than 40		
Residence, barn, cemetery, building, structure with concrete base	100	180	180	180	220	260	300	50	100
Waterwell	100	180	180	180	220	260	300	50	180
Buried water pipeline	100	30	40	60	70	90	120	50	50
Driveway, Gateway, Survey Monument, Buried Telephone or Communication line, Paved highway	100	50	65	85	100	130	150	30	50
Irrigation headworks	100	180	180	180	180	180	200	50	100
Irrigation canals more than 4 meters wide	100	30	40	60	70	90	120	10	30
Pipelines with diameter less than 152 mm	100	30	40	60	70	90	120	30	50
Pipelines with diameter 152 mm to 306 mm	100	45	65	85	100	130	150	45	50
Pipelines with diameter more than 306 mm	100	60	90	115	140	175	200	60	50
Oil or gas well	100	30	50	70	100	140	170	45	50
Dams 3m or more high with capacity of 1200 cubic meters or more	100	100	100	150	250	350	400	100	100

PART IV WELL LICENSING REGULATION

Article 1 - Definitions

In this Part

- (a) "License" means an approval issued by the Competent Authority for the purpose of drilling a well,
- (b) "Licensee" means the holder of a license to drill a well according to the records of the Competent Authority
- (c) "Total Depth" means the final drilled depth of the well at the completion of drilling "Proposed Total Depth" or "Target Total Depth" is the Total Depth the applicant expects to drill to at the time of applying for a license

Article 2 - Application

Any operator wishing to drill a well must apply to the Competent Authority for a well license and receive the approved well license before commencing drilling operations

Article 3 - License Approval

(a) The Competent Authority may grant a well license within 15 days of receipt of the application, if the Applicant

(i) submits an application in a form and with a content acceptable to the Competent Authority (see Appendix 1),

(ii) pays an application fee as required by the Competent Authority at the time of the application,

(iii) demonstrates that the well shall be drilled at a location in an exploration or exploitation block in which the Applicant has a registered interest, is operating on behalf of the Title Holder, and that the exploration or exploitation plan has been approved by the Competent Authority

(b) Where the Competent Authority grants to an Applicant a Well License, it may require several conditions be followed as part of the approval and these conditions shall be specified in writing on the approved well license

(c) Where the Competent Authority rejects the Well License Application, it shall specify the reasons in writing and, where the reason for the refusal is a deficiency in the application, the Applicant may correct the deficiency and re-apply

Article 4 - Other Approvals Required

The licensee of a well shall apply for and obtain the permission of the Competent Authority before performing any of the following operations (See Appendix 3)

- (a) drill deeper than the permitted total depth,

- (b) abandon a well (see Appendix 2),
- (c) alter (deepen, plug back/recomplete) a well (see Appendix 2),
- (d) to re-enter a well previously abandoned (see Appendix 2)

Article 5 - Use of Oil Base, Saturated Salt and/or KCI Drilling Fluid Systems

Where the operator plans to use an oil base fluid, a saturated salt drilling fluid' or a system containing Potassium Chloride (KCI) he should specify the disposal methods he intends to use in the Well License Application and, following approval of these methods by the Competent Authority ensure they are carried out

Article 6 - Provision of Data

The licensee shall provide to the Competent Authority in an electronic format specified by the Competent Authority, the well data listed in Appendix 3 by the 15th day of the second month following the month in which the well is completed or abandoned, unless otherwise agreed to by the Competent Authority in writing

APPENDIX 1

Application for Well License

Form to be submitted accompanied by the required fee survey plan consent to right of entry and geological prospect to NAMR
In compliance with regulations under the Petroleum Law application is made for approval to drill

Well name _____
Surface location S or M _____, _____ Ground elevation _____
(X) (Y) DDMMYYYY0

Projected bottom hole co ordinates if directionally drilled _____
Expected completion Oil _____ Gas _____ in _____ formation at depth _____ meters

Expected total depth _____ meters in _____ formation
Land title _____ Title holder(s) _____
(Concession and number)

Surface rights owned by Government of Romania Y/N or _____

Attach the drilling testing and completion prognosis which includes the casing program design and incorporate the following information

PROPOSED CASING PROGRAM

(1)	2)	(3)	(4)	(5)	(6)	(7)	(8)
Bit size (mm)	Casing Size (OD)	Weight (kg/m)	Grade	Make	New/Used	Setting	Cement Depth (tons)

Control equipment to be used _____
Type of drilling fluid to be used _____
Well will be drilled with Rig No _____ by _____ Rig License No _____
(Drilling contractor)

Responsible agent of applicant _____
Dated at _____ this _____ day of _____, 19____
Signature _____ Position _____
Name (Print) _____ Company _____

ENVIRONMENTAL PROTECTION

- a Description of plans for disposal of drilling fluids lubricants and other liquids

- b Proposed method for separation of cuttings and other solids from drillings fluids and disposal of those and other solids

- c Environmental status prior to drilling _____ (complies with Ministry of Environment and NAMR regulations)
_____ (does not comply with regulations)
- d If non compliant, describe remediation program to be completed prior to the NAMR granting the license

Environmental Status Certification

(Operations Manager or EMU Official) _____ Date _____ Signature _____

APPROVAL (For NAMR use only)

Well classification Exploratory _____ Exploitation _____
This application has been approved subject to the following conditions

Approval Number _____
Confidential Status Yes/No _____ Dated _____, 19____

APPENDIX 2

Application to Abandon/Alter a Well

In compliance with the regulation under the Petroleum Law application is made to

ABANDON _____ ALTER _____

Well name _____
Surface location S or M _____, _____, _____ Ground elevation _____

(X) (Y) DDMMYYYY0
Land title _____ Title holder(s) _____

(Concession and number)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bit size (mm)	Size (OD)	Weight (kg/m)	Grade	Make	New/Used	Setting Cement	Depth (tons)

Open hole Size(s) _____ Intervals _____
Total depth _____ Plugged back depth _____
Present status _____
(oil gas suspended well abandoned)

Abandonment/Alteration proposed program

Abandonment/Alteration program to be carried out by _____ Rig License No _____

Responsible agent of applicant _____

Dated at _____ this _____ day of _____, 19 _____

Signature _____ Position _____

Name (Print) _____ Company _____

Note The NAMR field office must be notified before work is commenced

ENVIRONMENTAL PROTECTION

a Environmental Status prior to abandonment _____ (complies with Ministry of Environment and NAMR regulation)
_____ (non compliant with regulations)

b If non compliant, describe environmental remediation program with anticipated completion date(s)

c Disposition of equipment and facilities

d Disposal of drilling fluids lubricants and other liquids

e Disposal of cuttings metals and other solids

f Description of site remediation program

g Status of the land water and air

Environmental Status Certification

(EMU Officials) _____ Date _____ Signature _____

APPROVAL (For NAMR use only)

This application has been approved subject to the following conditions

Dated _____, 19 _____ NAMR officer _____

APPENDIX 3

List of Well Data to be Submitted to the Competent Authority in Electronic Format

- 1 Well name/location and elevations (GL,KB)
- 2 Drilling history and well status
- 3 Total depth
- 4 Casing Data (diameter, weight, intervals)
- 5 Cementing Data
- 6 Copies of all well logs
- 7 Formation tops and thicknesses
- 8 Perforation zones/results of production/injection tests and drillstem tests
- 9 Fluid analysis
- 10 Details of potential production zones
- 11 Details of production/injection tests

List of Well Data to be retained for storage by the operator

- 1 Hard copies of all data submitted electronically
- 2 Complete set of drilling samples (cuttings)
- 3 Complete set of core samples

Note These lists may be reviewed and modified to conform with the requirements of the database system

APPENDIX 4

Application to Deepen , Plug Back , Re-enter a Well

Title Holder _____ Address _____

Field and Reservoir _____ Well ID _____

Elevation _____ Concession ID _____ Sq Km _____ Well Location, Trapezoid

ID ,Lease Number , Coordinates for theWell _____

Name of Nearest Town and Distance and Direction to this Well _____

CASING RECORD

Size in OD	Weight Kg/M	Grade	Depth M	Cement Top M

Present Well Status (oil gas suspended abandoned) _____

Completion Interval Perforated Open Hole _____

Proposed Completion Interval Perforated Open Hole _____

Proposed Program _____

ENVIRONMENTAL

PROTECTION

a Describe environmental protection program (isolation of current formation protection of ground water etc) _____

b Environment status prior work _____ (complies with Ministry of Environment and NAMR regulations) _____ (non-compliant with the regulations)

c If non compliant describe environmental remediation program with anticipated completion date(s) _____

Environmental Status Certification

_____ (EMU Officials)	_____ Date	_____ Signature
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_____ Name of Title Holder Representative	_____ Title	_____ Signature	_____ Date
_____ Telephone Number	_____	_____	_____

APPROVAL FOR NAMR

The Application is Approved As Requested _____ or Subject To _____

Signature NAMR Representative _____ Date _____

PART V DRILLING REGULATION

Article 1 - Definitions

In this part the following definitions shall apply

- (a) "Drilling Contractor" means the owner of the drilling equipment (rig) provided to the operator to drill the well
- (b) "Field Operations" means all of these activities in support of the drilling program conducted in the area of the rig by the Drilling Contractor or the Operator
- (c) "Pool Exploitation Plan" means the plan approved by the Competent Authority for the economic development of a hydrocarbon deposit
- (d) "Well Authorization" or "Well License" means the official document, issued by the Competent Authority under this Regulation, approving an application to drill a well,

Article 2 - General

2 1 Intent

2 1 1 NAMR has been identified in the Petroleum Law as the "Competent Authority" with responsibility to negotiate concession agreements and award concessions, to oversee the development of discovered reserves and to issue norms, regulations and instructions to be followed by the concession holder. These regulations are intended to define the manner in which drilling operations will take place, specify the rights and obligations of both the Competent Authority and the Concession Title Holder and to reference other laws under which certain of the operations will also be governed

2 2 Responsibility for Enforcement

2 2 1 The Competent Authority is responsible for the enforcement of these regulations

2 2 2 The Competent Authority may allow a waiver of a specific regulation if such waiver is requested by the operator and deemed advisable by the Competent Authority

Article 3 - Well Position

3 1 Intent

3 1 1 Defines the setback distance required for all new wells from existing facilities of various kinds (both manmade and natural). The primary reasons for distance specifications are for safety and protection of the environment. Note that this same regulation should also prevent or restrict man made developments which are allowed near the well

3 2 Surface Improvements

3 2 1 No well may be drilled within 100 meters of

- (a) Any permanent building, installation or works
- (b) A place of public concourse
- (c) The right of way of any public road
- (d) The easement of any public utility or pipeline

3.3 Air Strips and Airports

3.3.1 The licensee of a well proposed within 5 km of a commercial airport or within 1 km of any other airstrip must

- 1 Inform the owner/operator of the airport of his intention to drill
- 2 Specify the intended well location
- 3 Define the height of the derrick to be used
- 4 Estimate dates of the start and finish of drilling operations

3.3.2 The drilling operator shall maintain written at the well site acknowledgment from the airport owner/operator that the information has been given to him

3.3.3 While erected the drilling rig shall be lit in accordance with regulations pertaining to facilities close to airports

3.4 Drilling Near Mine Workings

3.4.1 Subsurface

(a) No well may be drilled within 2 km of any subsurface mine working which has not been abandoned or within 400 m of any known mine working which has been abandoned unless permission is specifically obtained from the Competent Authority

(b) If permission to drill within the above distances is requested, the following conditions will apply

1 No well may be drilled within 50 m of any subsurface mine working, whether active or abandoned

2 All wells to be drilled must be sited such that a pillar of the mining material with a radius of at least 50 m will surround the well bore

3 When drilling through a minable coal seam or salt bed, the following will apply

(i) The diameter of the hole drilled will be at least 100 mm larger than the casing to be run, to a depth of at least 50 m below the coal seam or the salt bed

(ii) Casing must be new, run to a depth at least 50 m below the coal seam or salt bed and equipped with one centralizer and one scratcher per joint for at least 20 m above and below the coal seam or salt bed

(iii) The first casing string run through the coal seam or salt bed must be cemented from bottom to top by the circulation method using suitable float equipment. If cement returns are not obtained at surface, a temperature survey to define the cement top must be run. The Competent Authority may specify the remedial action required

(iv) The cement must be allowed to set a minimum of 24 hours before drilling out

(v) The well licensee must inform the responsible Competent Authority Field Office during normal business hour at least 24 hours prior to cementing and will not proceed with such operations before the appointed time without a witness from the Competent Authority being present or unless a waiver of the witness requirement is received from the Competent Authority. Competent Authority shall not withhold such a waiver if it does not wish to witness the cementing operations.

3 4 2 Surface (Open Pit) Mine Workings

The title holder of a concession may not drill within the development area (as defined by the development plan for the pit) of a surface mine unless

- (a) Permission is obtained from the pit operator
- (b) The Title Holder is able to demonstrate the need for the well to the Competent Authority
- (c) The Title Holder is able to demonstrate to the Competent Authority that it will be able to employ the well following completion and to install any required facilities with minimal disruption to the operator of the pit

3 5 *Water Pollution Control*

3 5 1 No well may be drilled within 100 m of the normal high water mark of any body of fresh water or any permanent stream or river

3 5 2 No pit, associated with the drilling of a well, used for containing oil, water, drilling fluids or any other fluid may be constructed within 100 m of the normal high water mark of any body of fresh water or any permanent stream or river

3 6 *Domestic Water Wells*

3 6 1 No well may be drilled within 250 m of a domestic water supply well

3 6 2 Where wells are drilled within 750 m of a domestic water supply well, the operator will, prior to drilling, test the domestic water supply well and obtain samples of the produced water. The test and the analysis of the samples, certified by a qualified hydrologist, will be filed with the Competent Authority

3 7 *Right of Expropriation*

3 7 1 The title holder of a concession is assured the right of access, according to provisions of the law, onto the land needed to develop and perform petroleum operations within the limits of the concession block

3 7 2 For exploration and exploitation wells the operator must attempt to negotiate with the landowner and should follow the well positions as outlined above. If the operator is unable to reach such an agreement, following the terms and conditions of the Petroleum Law, he may apply to the courts and request that legal servitude or forced rental be applied to the land in question

3 7 3 The operator must inform the Competent Authority of his intent to apply to the courts for legal servitude prior to making such an application

3 7 4 In all cases the land to be affected shall be determined according to the principle of "minimum reasonable requirements" and the operator shall make every effort to reach a negotiated settlement with the land owner and to use as little land as possible

Article 4 - Well Spacing

4 1 Intent

4 1 1 Defines the subsurface (reservoir) target within which wells are to be drilled In a competitive situation (where mineral rights have different ownership) spacing is defined on an areal basis to ensure equity among the mineral rights owners based on their share of the reserves Where all reserves in a pool have a common ownership (i e within a concession or a unitization across concession boundaries) the well spacing will be taken from the reservoir management plan approved by the Competent Authority as part of the pool exploitation plan to support maximum hydrocarbon recovery and economic value

4 2 Exploration Wells

4 2 1 Exploration wells, drilled outside established exploitation blocks, are not subject to well spacing requirements and will be targeted to best define the reservoir

4 3 Exploitation (Development) Wells

4 3 1 Subsurface target definition will be as specified in the exploitation plan approved by the Competent Authority under the "Exploitation Regulation"

4 3 2 Spacing will be specific to each exploitation block as per the approved plan and will consider the reservoir parameters (porosity, permeability, reservoir transmissibility, homogeneity), the fluid characteristics (viscosity, gravity, oil bubble point, gas dew point and the drive mechanism in the interest of achieving maximum hydrocarbon recovery and economic value

4 4 Absence of an Exploitation Plan

4 4 1 In the absence of an exploitation plan, operators should attempt to use "normal" spacing

- 1 For gas wells - one well per 250 hectares
- 2 For light/medium crude oil (>18 API) - one well per 60 hectares
- 3 For heavy oil (< 18 API) - one well per 30 hectares

Article 5 - Well Authorization

5 1 Intent

5 1 1 To ensure that the Competent Authority is aware of the plans of the operator to drill the well and to further ensure that the Competent Authority agrees with the drilling of the well including the assigned unique well identifier and finds the geological/drilling prognosis including cement and casing design to be reasonable

5.2 Well License

5 2 1 Each well must have an approved well license prior to spudding. The form and the information provided shall be as described in the "Well License Regulation"

5.3 Posting of License

5 3 1 A copy of the approved well license (the Well Authorization) must be clearly posted at the well site at all times throughout drilling of the well

5 4 Follow Conditions

5 4 1 The operator shall follow the terms and conditions of the well license. Exceptions may be approved by the Competent Authority pursuant to application and justification submitted by the Operator

5 5 Operations Requiring Notice to the Competent Authority

5 5 1 Notice to the Competent Authority within the time indicated is required for the following

- a) 15 days before beginning or ending field operations on a concession,
- b) Within 7 days after identifying an oil or gas productive zone different from those expected as set out in the prognosis for the well and furnished with the application to drill,
- c) Within 24 hours of experiencing an uncontrolled flow of oil, gas or water, including a blow out and/or fire,
- d) Within 24 hours after experiencing a 72 hours interruption in drilling operations for any reason

5 5 2 Notice shall be by the most expeditious means available (telephone, radio) in keeping with the notice times set out above and shall be confirmed in writing immediately following with such particulars as are available

5 6 Rig License

5 6 1 All drilling rigs must have a rig license, issued by the appropriate authorities, and the rig license should be prominently displayed at the rig

Article 6 - Drilling and Servicing Operations

6 1 Intent

6 1 1 The Operator is required to install and operate adequate blowout preventer, casing, cement, valving, choking, diverter and kill controls to maintain control over the well at all times. It is the intent of all provisions of this section that casing be securely anchored in the hole in order to effectively control the well at all times, all usable-quality water zones be isolated and sealed off to effectively prevent contamination or harm, and all potentially productive zones be isolated and sealed off to prevent vertical migration of fluids or gases behind the casing. When the section does not detail specific methods to achieve these

objectives, the responsible party shall make every effort to follow the intent of the section, using good engineering practices and the best currently available technology

6 1 2 All casing cemented in any well shall be steel casing that has been hydrostatically pressure tested with an applied pressure at least equal to the maximum pressure to which the pipe will be subjected in the well As an alternative to hydrostatic testing, a full length electromagnet, ultrasonic, radiation thickness gauging, or magnetic particle inspection may be employed

6 1 3 Wellhead assemblies shall be used on wells to maintain surface control of the wells Each component of the wellhead shall have a pressure rating equal to or greater than the anticipated pressure to which that particular component might be exposed during the course of drilling, testing, or producing the well

6 1 4 A blowout preventer or control head and other connections to keep the well under control at all times shall be installed as soon as surface casing is set This equipment shall be of such construction and capable of such operation as to satisfy any reasonable test which may be required by the Competent Authority

6 1 5 Wells drilling to formations where the expected reservoir pressure exceeds the weight of the drilling fluid column shall be equipped to divert any wellbore fluids away from the rig floor All diverter systems shall be maintained in an effective working condition No well shall continue drilling operations if a test or other information indicates the diverter system is unable to function or operate as designed

6 2 Casing Requirements

6 2 1 Conductor casing must be run to a depth of not less than 20 m where the surface in which the well will spud is not fully competent and where a wash out around the hole may reasonably be expected to occur

6 2 2 Surface Casing must be set to a minimum depth of 15% of the expected depth of the next string of casing, but to at least 150 m below ground level or such greater depth as required to protect all fresh water zones

6 2 3 While drilling below the intermediate string when intermediate casing is in place, the surface and intermediate casing annulus must be vented by a line with a minimum diameter of 50 mm which must extend to at least 60 cm above ground level, contain an open valve and a pressure measurement point and be terminated so that any flow is directed in a downward direction The pressure on such annulus must be recorded in the daily drilling report when drilling below intermediate casing

6 2 4 All casing strings will be equipped with hole scratchers and casing centralizers across all porous formations and for at least 20 m above and below the porous zones

6 2 5 All casing should meet the standards and specifications of the American Petroleum Institute

(API) or an equivalent body The required performance properties of casing which meet these standards can be found in API Bulletin 5C2

6 3 Cementing

6 3 1 Surface casing must be cemented to the surface in all cases. Where there are no returns, cement must be topped up from the surface unless waived by the Competent Authority.

6 3 2 All production and intermediate casing string cement jobs shall ensure that the lowest 250 m of cement, outside the casing string, comprises neat grade "S2", containing only such additives as are required for placement of the cement and further that each such string is cemented to a point at least 100 m above the uppermost porous zone as determined after logging. Where intermediate casing has been run the production casing shall be cemented into the intermediate casing with a minimum overlap of 150 m.

6 3 3 All production liners shall be cemented full length, with a minimum of 150 m of overlap into the preceding casing string.

6 3 4 All casing strings shall be reciprocated throughout the cement job through a minimum reciprocation distance of 3 m unless a waiver is obtained from the Competent Authority because of load limitations imposed by the drilling rig derrick or setback capabilities or because of tensile safety factor violation in the casing.

6 3 5 Cement must be set under pressure a minimum of twelve hours before the cement plug is drilled out of the casing. If a float collar or shoe is used, pressure may be released immediately upon completion of the cement job, provided no backflow occurs.

6 4 Survey Requirements

6 4 1 Deviation surveys must be made during drilling at intervals not exceeding 150 m.

6 4 2 A directional survey of the well must be made where the deviation exceeds 10° and in all cases where the well has been deliberately directionally drilled.

6 5 Logging and Testing

6 5 1 When samples of drill cuttings are recovered from wells drilled, the samples must be washed, dried and preserved in bags with each bag labeled showing the Unique Well Identifier, the depth interval and the date it was collected. The samples must be held in storage accessible to the Competent Authority.

6 5 2 When a well is cored over a productive or potentially productive formation, the core shall be retained in book fashion wooden boxes' labeled on the body of the box with the Unique Well Identifier, the number and interval of the core, top, bottom and recovery of the core and the date of retrieval. The core must be held in accessible storage until the Competent Authority has agreed that it may be disposed of. When a core is analyzed, a copy of the analysis must be furnished to the Competent Authority without delay.

6 5 3 Before a well is completed, suspended or abandoned the following logs must be run:

- 1 A gamma ray log from the total depth of the well to the ground level.

2 A resistivity and porosity log must be run from the total depth of the well to the base of the surface casing

6 5 4 Testing of prospective zones shall proceed with prudent speed and be completed within 60 days after bottoming the hole or setting casing if cased hole testing is planned. An extension of time in which to complete testing may be approved by the Competent Authority pursuant to the Operators' request if conditions warrant.

6 5 5 Where the operator performs a drill stem test in either open hole or cased hole, a clear and non-fading print of the pressure chart and a report containing complete details of the test with special reference to all fluid recoveries must be maintained.

6 5 6 Abandonment of tested zones will be performed by cementing or squeeze cementing the interval as appropriate.

6 6 Environmental Considerations

6 6 1 All operations at the well site must meet the requirements of the Environmental Ministry as defined in the Environmental Law.

6 6 2 While drilling operations are underway, all drilling fluids will be contained on the lease in tanks made specially for that purpose or in pits, constructed on the lease with an impermeable layer, such as clay, specially for that purpose.

6 6 3 When an open hole drill stem test or a cased hole flow test is performed, the operator must not permit discharge to the atmosphere of any gas produced. Gas must be completely burned using a flare line and flare pit of an approved design or using a flare stack where production testing is performed.

6 6 4 Where a flare line is used, it must be adequately anchored and provided with a means to ensure continuous ignition of any gases.

6 6 5 Where a flare stack is used, it should have sufficient separation capacity to prevent carry over of liquids and be provided with a means of continuous ignition.

6 6 6 Any liquids produced during a test must be adequately contained on the concession and disposed of by an approved method.

6 6 7 Air Pollution Prevention will be practiced. Open burning of garbage is prohibited requiring storage and movement under controlled conditions to an approved disposal site.

6 7 Assistance to Competent Authority Inspectors

6 7 1 All persons and legal persons in Romania engaged in the drilling industry as Concession Title Holders, Drilling Rig Contractors and Well Operators shall give all possible assistance to inspectors and officers of the Competent Authority in the performance of their duty.

6 8 Fire Precautions

6 8 1 All precautions possible to prevent fires at the well site should be taken. All personnel should be familiar with the Fire Prevention regulations in effect in Romania and published in "Culegere de Acte Normative si Ordine cu Caracter de Protectia Muncii si Prevenirea si Stingerea Incendurilor"

6 8 2 Smoking is forbidden within 50 m of any well bore where drilling or well servicing operations are underway and within 50 m of a producing well, separator, oil storage tank, or other source of ignitable vapors

6 8 3 If an internal combustion engine is located within 25 m of a well, or source of ignitable vapors its exhaust pipe must be insulated or sufficiently cooled to prevent the ignition of flammable material

6 8 4 If a diesel engine is located within 25 m of a well or source of ignitable vapors it must be provided with one of the following

- An air intake shut off valve equipped with a readily accessible remote control
- A system for injecting inert gas into the cylinders, equipped with a readily accessible remote control
- A suitable duct so that the air for the engine is obtained from at least 25 m from the well

6 8 5 Except where liquid fuel for either gasoline or diesel engines is held in a tank attached directly to the engines, liquid fuel must not be held within 25 m of the well. Drainage from fuel storage areas must be away from the well and any potential sources of ignition

6 8 6 Lighting or heating apparatus involving the use of an open flame are not permitted within 50 m of a well or source of ignitable vapors

6 9 Completion or Abandonment

6 9 1 In general a rig may not be removed from a well until the well is either completed or abandoned. In some cases the operator may wish to carry on testing, completion, or abandonment operations using a smaller service rig in which case approval can be given by the Competent Authority with reasonable time limits set for performance of works, in response to a request by the operator

6 9 2 Unless otherwise approved by the Competent Authority every well drilled must either be completed or plugged and abandoned when drilling and testing operations are completed

6 10 Plugging Requirements

6 10 1 Approval to Abandon a Well must be obtained from the Competent Authority

6 10 2 All porous and permeable zones and formations must be isolated with cement

6 10 3 A cement plug with a minimum length of 50 m must be set in the bottom of the well

6 10 4 All cement plugs will be a minimum of 50 m long and shall be placed at least 25 m above and below all porous and permeable zones

6 10 5 A cement plug of at least 50 m must be placed across the surface casing shoe

6 10 6 The casing must be cut off at least 1 m below ground level, filled with a minimum of 3 m of cement and a steel plate welded onto the casing stub

6 10 7 The depth of each cement plug must be verified by tagging with pipe or by logging

Article 7 - Clean Up

7.1 Ministry of Environment Regulations

7 1 1 Following drilling, the well site must be cleaned up and restored according to standards established by the Ministry of Environment

7.2 Disposal of Drilling Fluids

7 2 1 Prior to final abandonment of the well site, the drilling fluids used during the drilling of the well must be properly disposed of

7 2 2 Water based fluids held in pits and tanks on the lease should be representatively sampled, analyzed for damaging components, clarified and the fresh water portion as determined by sample analysis and accepted by the Competent Authority, pumped off to the surrounding lands at volume rates insufficient to cause erosion or other damage

7 2 3 Drilling fluids may be disposed of prior to the setting of the final abandonment plugs by pumping the fluid down the well. The operator must identify the most likely porous and permeable zone which will take the fluid and ensure that it does not contain fresh (potable) water

7.3 Disposal of Cuttings

7 3 1 Cuttings from a well drilled with water based drilling fluids may be disposed of on the concession in the pits. Pits should be squeezed with the subsoils excavated from them until dry and fully compacted and allowed a period for settlement before final restoration of the site

7.4 Use of Oil Base Mud

7 4 1 Oil base mud and cuttings from wells drilled with oil base drilling fluids may not be disposed of as above. Where the operator plans to use an oil base drilling fluid, he should specify the disposal methods he intends to use in the Well License Application and, following approval of these methods by the Competent Authority in the Well Authorization, ensure they are carried out

In the majority of cases, oil base drilling fluids will be transported to another drilling well using similar fluids or held in tanks until such time as another oil base drilling fluid is required. Disposal, if required, should be by pumping downhole below an intermediate casing string

Cuttings from wells drilled with oil base drilling fluids should be separated from the fluid by centrifuging until as dry as possible and landfarmed on the lease until the oil content can no longer be measured. Landfarming requires that the cuttings be spread over the lease as finely as possible and mixed with high concentrations of nitrogen fertilizer and soil and turned over (disked) frequently. Additional applications of nitrogen fertilizer may be required if high levels of oil are present in the cuttings.

7 5 Use of Saturated Salt and/or KCl Drilling Fluid Systems

7 5 1 Where the operator plans to use a saturated salt drilling fluid, or a system containing Potassium Chloride (KCl) he should specify the disposal methods he intends to use in the Well License Application and, following approval of these methods by the Competent Authority in the Well Authorization, ensure they are carried out.

7 5 2 Salt saturated drilling fluids shall not be disposed of on the land or in water bodies.

7 6 Surface Restoration and Surrender

7 6 1 Any land surface surrendered must be returned to original condition including the replacement of any topsoil which has been moved aside. Such restored surface which is pasture land should be seeded with the local ground cover, and farm land should be returned to the owner in accordance with terms of the agreement with the owner.

7 7 Competent Authority Inspection

7 7 1 The Competent Authority may inspect the site during and after restoration and may require additional work if the restoration is not performed satisfactorily.

Article 8 - Penalties

8 1 Sanctions According to the Legal Provisions in Force

8 1 1 If the operator fails to comply with the provisions of the Petroleum Law and other statutes in force it may be penalized and fined by the Competent Authority in an amount as specified by Article 38 of the Petroleum Law.

8 1 2 The Competent Authority shall endeavor to follow the following sequence of events if an operator is seen to be in contravention:

- i) Issue a Warning requiring the operator to comply with specific legal provisions
- ii) Order the drilling operations shut down until the operator is in compliance
- iii) Assess a Fine

Article 9 - Reporting Requirements

9 1 Ownership of Information

9 1 1 All data resulting from petroleum operations in Romania are the property of the Romanian State under Article 5 of the Petroleum Law. The title holder is entitled to retain, interpret and use the data subject to the confidentiality requirement.

9.2 Reporting of Information

9 2 1 The titleholder of a concession must submit by scheduled dates all data, information and documents required by the Competent Authority concerning the petroleum operations carried out and the results obtained

9.3 Digitization for Data Base

9 3 1 The operator shall cause to be electronically stored, in a manner as may from time to time be prescribed by the Competent Authority, all data gathered from the well

9 3 2 The operator shall maintain an electronic database that enables timely and accurate submittals to the Competent Authority in a format that complies with the specifications for reporting electronic data issued by the Competent Authority

9 3 3 The Competent Authority shall ensure that the agreed confidentiality of such data is maintained

9 4 Hard Copy Maintenance

9 4 1 The operator shall maintain a filing system containing the original copies of such data as gathered on paper and the original electronic files for data gathered in that manner for the lifetime of the concession, and thereafter so long as the Title Holder has other concessions in Romania. The data will all be transferred to the Competent Authority upon expiration of the last concession held by the Title Holder in Romania.

APPENDIX 5

Proposal to Plug and Abandon

Field and Reservoir Name _____ WellID _____ County _____
 Title Holder _____ Zonal Inspectorate _____
 Address _____ Concession ID _____
 _____ Elevation _____

Location of Well Trapezoid ID Lease Number Coordinates for Well _____
 _____ Name of nearest town and distance and direction to this well

Type of Well _____
 1 oil 2 gas 3 disposal 4 injection 5 other
 Enter appropriate Number _____

Type of Completion (single or multiple) _____ Total Depth _____ Depth to base of Fresh Water _____

Casing Record _____ Top of Cement Determined By _____

Size in Depth M Cement Volume CuM Hole Size in Top Cement M Temp Survey Calculated Bond Log Est Csg Rec M

Record of perforated intervals and open hole				Plugging Proposal List all cement and bridge plugs planned			
Perforations	Open	Plugged	Plugging Method	Cement Volume M	Depth M to Top	Bottom	
OH							

Name of Title Holder Representative _____ Title _____ Signature _____ Date _____

Telephone Number _____

NAMR Zonal Inspectorate Office Action _____ Expiration Date _____
 Approved / Rejected / Instructions

Signature NAMR Representative _____

APPENDIX 6

Plugging Record

Field and Reservoir Name _____ Well ID _____ Elevation _____

Title Holder _____ Address _____

County _____ Date Drilling Permit _____ Date Plugged _____

Well Location Trapezoid ID , Lease Number , Coordinates For Well _____

Cementing to plug and abandon data Plug # 1 Plug # 2 Plug # 3 Plug # 4 Plug # 5 Plug # 6 Plug # 7 Plug # 8 Plug # 9

* Cementing Date _____

Size of Hole or Pipe @ Plug , inches _____

Depth to Bottom of Tubing , M _____

* Cubic Meters Cement Used _____

* Slurry Volume , Cubic Meters _____

* Calculated Top of Plug , M _____

Measured Top of Plug , M _____

* Type of Cement _____

Casing and Tubing Record After Plugging _____ Was any Junk Left in the Hole , Y /N _____

Size ,in Wt ,Kg/M Put in Well , M Left in Well , M Hole Size,in

_____ Location & Description of Junk _____

List all open hole and perforated intervals

From _____ To _____ From _____ To _____

From _____ To _____ From _____ To _____

From _____ To _____ From _____ To _____

I have knowledge of the facts and the cementing operations performed on this well , described and marked with an asterisk above are true and correct as shown herein

Signature of Cementer or Authorized Representative _____ Name of Cementing Company _____

Certificate I declare under penalties prescribed in the law that I am authorized to make this report , that this report was prepared by me or under my supervision and direction and that data and facts stated herein are true , correct , and complete to the best of my knowledge

Signature , Company Representative _____ Title _____ Date _____ Phone _____

Signature Representative of NAMR _____ Date _____

PART VI· EXPLOITATION REGULATION

Article 1 - Definitions

In this Part

- (a) "Battery" is a collection of equipment which may include separators, treaters, compressors, tanks, measurement devices etc as are necessary for the collection and treatment of oil and gas produced from oil and gas wells within an exploitation block,
- (b) "Commercial Pool Discovery" Once a discovery has been made and sufficient information collected, the operator may apply to the Competent Authority to have it classified as commercial. The operator will submit for approval an exploitation plan containing the development plan and initial reserves estimates together with underlying assumptions including estimated recovery mechanism,
- (c) "Condensate" means the liquid fraction of hydrocarbons resulting from the separation process of free gases,
- (d) "Secondary or Tertiary Recovery" means the increased recovery from the pool achieved by the application of extraneous energy to the pool, and includes water injection, gas injection miscible fluid injection, steam injection, underground combustion and injection of dry gas to recover condensate from wet gas in the reservoir but does not include the injection in a well of a substance for the sole purpose of,
- gas lift, or
 - hydraulic fracturing, chemical treatment or explosive treatment to stimulate the reservoir around the well,
- (e) "Experiment" or "Experimental Program" means a plan or method of operation for the recovery of oil and gas, including the drilling of wells for production or injection or conversion to injection that uses methods that are untried and unproven in that pool,
- (f) "Field Operations" means all of these activities in support of the exploitation program conducted using man power and equipment in the geographic area of interest,
- (g) "Project area" is the area in a pool in which secondary or tertiary recovery operations are conducted,

Article 2 - Application

This Regulation applies to projects/studies and operations conducted to exploit the hydrocarbon accumulations in Romania

Article 3 - Intent

The purposes of this Regulation are

- (a) To prevent waste and promote development of oil and gas resources in Romania, by authorizing reasonably supported exploitation programs , including experimental oil and gas recovery projects which are proposed and justified,
- (b) To secure safe and efficient practices in equipping, completing, reworking, testing, operating and abandoning of wells and in operations for production of oil and gas,
- (c) To provide for the economic, orderly and efficient development in the public interest of oil and gas resources in Romania,
- (d) To afford each title holder the opportunity to obtain his share of the production of oil and gas from any pool,
- (e) To avoid pollution above and below the surface in operations for the production of oil and gas and in other related operations over which the Competent Authority has jurisdiction

Article 4 - Transitory Provision

(a) Intent

It is the intent of the Competent Authority that henceforth from the effective date of this Regulation compliance with it is required for all exploitation activities which are an extension of exploitation pre-existing or in progress at the effective date. Modifications to already developed programs which are necessary to achieve compliance are to conform with a reasonable schedule approved by the Competent Authority after review and consultation with the Operator

(b) Compliance Program

(i) Within six months of the effective date of this Regulation, each entity with exploitation activities then in progress will submit to the Competent Authority a compliance program describing in detail the compliance status of each of its individual exploitation activities. This compliance program will also set out the work plan and schedule to modify facilities and procedures to bring them into compliance with this Regulation

(ii) The compliance program will include an annual work plan and schedule of investments to be made by the entity to bring its exploitation activities into compliance within five (5) years from the effective date of this regulation

(c) Compliance with Program Approval

Within three months of the receipt date of the Compliance Program, the Competent Authority will approve or disapprove the compliance program. In case of rejection, the Competent Authority will provide its reasons therefor

(d) Resubmission if Program Rejected

Within two months of rejection of a compliance program by the Competent Authority, the entity will submit a modified program taking into consideration concerns expressed by the Competent Authority in its rejection

(e) Approval of Resubmitted Compliance Program

Within one month of the receipt of the Compliance Program which is resubmitted under (d) above, the Competent Authority will issue its decision

(f) Deadline for Compliance with Program Approvals

(i) All exploitation activities which existed on the date on which this regulation comes into force must, within one year of that date, either comply with this regulation or be covered by a compliance program approved by the Competent Authority

(ii) In well justified cases this deadline may be extended for six months by the Competent Authority

(g) Penalties

Fines and other penalties will be set by the Competent Authority for contravention of this regulation, according to Article 38 of the Petroleum Law No 134 of 1995

(h) Annual Report

For each approved Compliance Program the entity will submit to the Competent Authority an annual report within thirty (30) days after each anniversary of approval of the program by the Competent Authority. Such annual report is required until full compliance with this regulation is achieved

(i) Exemption

The Competent Authority may define particular conditions and circumstances wherein it will issue an exemption to the entity from the requirements contained in the transitory provisions of this regulation. Where such an exemption is granted, the Competent Authority may specify certain other conditions which must be fulfilled by the entity

Article 5 - Confirmed Reserves

In order to support development and exploitation works after exploration works, the Title Holder will submit the necessary documentation for geological resources and reserves confirmation, according to the technical instructions issued by the Competent Authority and request confirmation of resources and reserves by the Competent Authority

Article 6 - Definitions of Reserves

Definitions used by the Title Holder for geological resources and reserves will be according to the technical instructions regarding the evaluation, classification and computation of petroleum reserves, and with content from the evaluation studies of the geological resources and petroleum reserves

Article 7 - The Exploitation Project

The Exploitation Project must include a description of the work planned, encompassing scheduling and location of the wells and surface facilities. The surface facilities should

include gathering, processing, measuring and transportation components and their design and make up. The description must also include plans for disposal of produced water and other wastes and measures to be employed in protecting the environment and providing for safety.

Also in the Project should be the economic justification to be made up of estimated costs, and the anticipated production profile. A discussion of the known or estimated natural reservoir mechanics and known plans for increasing recovery should be included. The Project must include structure maps on all the exploitation objectives marking the geological resource limits together with locations of all existing and planned wells.

Article 8 - Approval by the Competent Authority

The Competent Authority will review the Exploitation Project and, within sixty (60) days, approve the Project and will confirm resources and reserves justified by the Project, if it is assured of the exploitation of reserves according to the technical and economic conditions under which they were evaluated and that the environment and reservoir will be protected. If not so judged, the project will be disapproved and reasons therefor provided.

Exploitation Project approval by the Competent Authority does not relieve the Title Holder of the necessity to obtain other permits (well license etc.) required by other Regulations issued by the Competent Authority.

The operator may reapply for approval of an Exploitation Project which has previously been disapproved by the Competent Authority and upon correction of deficiencies in the initial application receive approval to proceed with development.

Article 9 - Changes to Approved Project Plans

As work progresses under an approved Exploitation Program more information will be obtained on the pool which may require small or large adjustments to the Project Plan.

The Title Holder shall provide full information concerning any needed adjustments as developments occur and the Competent Authority will take administrative notice and require the Project Plan to be updated with the modifications, or if warranted, will require submission of a new Project Plan.

Article 10 - Expansion of the Exploitation Block

Expansion of a block can be approved where the Title Holder provides sufficient proof that the hydrocarbon deposit exists beyond the declared limits of the Block. In this case, the Title Holder of the Exploitation Block has the right of preemption for the contiguous area for the rights to perform exploration, development and exploitation works, provided that

1. The rights within the contiguous block are not held by other Title Holders.

ii. An Exploitation Plan for the extension is submitted to, and approved by the Competent Authority.

Article 11 - Joint Exploitation Plans

The Competent Authority will normally approve only one Exploitation Project Plan for an Exploitation Block where reserves are confirmed.

Where a petroleum deposit which is found to be in two or more concession areas or areas under Administration, the Competent Authority will require the Title Holders to associate and to jointly submit an Exploitation Project Plan for the combined reserves. The Plan to exploit the petroleum deposits may be allowed on a cooperative basis, if both parties so request, or under a voluntary unitization agreement.

Article 12 - Forced Pooling

Where the Title Holders of adjacent portions of the Exploitation Block, described in Article 11, are unable to reach an amicable agreement, the Competent Authority may require all Title Holders to participate through a Forced Pooling Agreement under operatorship of one of the owners selected by the Competent Authority. The Competent Authority will consult with all parties prior to requiring a Forced Pooling Agreement and may subsequently determine the conditions under which the Forced Pooling Agreement will be operated. The Competent Authority will attempt to ensure each operator receives an equitable share of the production and net income from the pool, and will consider the following in the development of the Forced Pooling Agreement Exploitation Block:

- i The geological resources and reserves underlying each block
- ii The development costs, other investments and income streams likely to accrue to each Title Holder under a competitive development
- iii Production characteristics for each well including net rate of production, impurities and pressure
- iv Productive area in each concession or administration area

Article 13 - Review

The Competent Authority requires that selected annual exploitation programs be reviewed jointly with the Title Holder before approval is given. Programs scheduled for this review shall be determined by the Competent Authority based on the size and significance of the program together with the extent of variance from the Exploitation Project plan and other factors considered important by the Competent Authority.

The Competent Authority shall notify the operator 20 days in advance of each review giving the time and place for the meeting.

Article 14 - Suspended Well

- (a) The Title Holder shall notify the Competent Authority, if there is a suspension of normal production or injection operations for a period longer than sixty (60) days
- (b) The Title Holder of a well at which production or injection is resumed after a suspension shall notify the Competent Authority of the date on which production or injection is resumed.

(c) Where operation at a well has been suspended and not resumed in a justified way within two years, or within such time as the Competent Authority may require, the Title Holder may be required to abandon the well

Article 15 - Simultaneous Production from More than One Pool

(a) The Title Holder of a multi-zone well shall within 30 days after the well has been completed in more than one pool, advise the Competent Authority of the effective date of each completion and submit to the Competent Authority a sketch showing

- the type and make of each component of the subsurface installation,
- the depth of the perforations, packer and well construction

(b) In an Exploitation Project the Competent Authority may, by order, approve two or more pools in a field as pools from which production may be taken without segregation in the wellbore, and may, where circumstances exist require or limit the application of the order to production or injection in wells named in the order

(c) Any project proposal to commingle fluids from separate pools under this Article shall include, where applicable

- (i) - maps showing
 - the boundaries of the pools
 - the structure, thickness, extent and fluid interfaces of the pools
- (ii) - discussion of
 - ii -geological, engineering, environmental conservation, safety and economic factors which support commingling from two or more pools in the same well bore together with risks of negative impacts from such commingling

Article 16 - Segregation Tests

(a) Where a well is completed as a multi-zone well, the Title Holder shall within thirty (30) days of such completion, submit to the Competent Authority

(i)- an analysis and interpretation of the tests conducted to confirm that segregation has been established both within and behind the well casing, and

(ii)- information on gas, oil, water and other characteristic where proof of segregation is based on difference in such characteristics

(b) The Title Holder of a multi-zone well shall, once every two (2) years or such other frequency as the Competent Authority may require, and after a change in subsurface equipment or any other operation that may disturb or exert abnormal pressure differentials upon segregation equipment,

- (i)- prove to the satisfaction of the Competent Authority that segregation persists between the pools and their flow channels in the well,
- (ii)- notify the Inspector of the Competent Authority at the appropriate area office at least three days in advance of any segregation test at the well

- (c) Where the Title Holder fails to maintain segregation between the zones, the Competent Authority may require that one zone be sealed off by suitable means

Article 17 - Injection Wells

- (a) All injection into a well shall be through tubing
- (b) Before any fluid is injected into a subsurface formation in a well the Title Holder shall
 - (i) - set a packer in the well as closely above the injection interval as is practicable, and
 - (ii) - fill the space between the tubing and outer steel casing with a non-corrosive, corrosion inhibited liquid
- (c) Where a well is equipped with an injection packer the Title Holder of the well shall every two (2) years, submit to the appropriate area office of the Competent Authority, evidence to show, to the satisfaction of the Competent Authority, that the liquid between the tubing and the casing is isolated from the fluid being injected

Article 18 - Producing Wells

- (a) All production from a well shall normally be through tubing, except when casing flow is authorized in connection with an approved multiple completion in a project
- (b) All surface equipment of production wells (Christmas trees, pumping units, separators, flowlines, tanks etc) are to meet the required rating (pressure, volume, etc) compatible with the reservoir conditions
- (c) The surface and subsurface equipment of a completed oil or gas well shall be of such nature and so arranged as to permit the ready measurement of tubing pressure, production casing pressure, surface casing pressure and in the case of a flowing well the bottom hole pressure, and permit any other reasonable test required by good operating practice
- (d) The surface equipment shall include such valve connections as are necessary to sample the oil, gas or water produced
- (e) The Title Holder of an oil or gas well, on completion of the well and on any subsequent alteration, shall keep and make readily available to the Competent Authority on request an accurate and detailed description of all the subsurface equipment in the well and its location therein

Article 19 - Construction of Batteries

- (a) Only batteries which are included in an approved Exploitation Program may be constructed
- (b) The operator of a battery shall install, at the battery, equipment that will provide for
 - (i) - the separation and continuous measurement of all produced gas
 - (ii) - adequate storage for produced liquids
 - (iii) - accurate determination of oil, condensate and water production
 - (iiii) - protection of the environment from spills or uncontrolled releases of oil, gas and water production

Article 20 - Common Flowlines to the Battery

- (a) Where production from more than one well or from more than one zone in a well is received at the battery, the production from each well or each zone in each well as the case may be, shall be carried to the battery in a separate flowline
- (b) The Competent Authority may approve, upon application, the use of common flowlines where
 - (i) - the wells on the common flowline will not be produced concurrently
 - (ii) - the economics of installing separate flowlines is prohibitive considering the productivity of each well

Article 21 - Testing of Wells in a Battery

- (a) Where production from wells is commingled in a battery before measurement, each completion shall be tested as follows
 - 1 The duration of each well test shall be 24 hours
 - 2 The testing frequency for all wells and completions producing to a proration battery shall be at least once each month unless approved otherwise by the Competent Authority

Article 22 - Production Measurement

Measurements of oil and gas will be made at the delivery stations where production is delivered to the Transporter, and normal measurement facilities will be placed and operated at such locations by the Title Holder for this purpose. Measurement facilities are required to be calibrated initially in accordance with international standards contained in Norms published by the Romanian Institute for Standardization, and thereafter when requested by the Competent Authority, all such work to be the Title Holder's responsibility

- (a) Measurement of gas

1 The volume of gas will be calculated in cubic meters at standard conditions of one atmosphere (0.9807 MPa) absolute pressure and 15 degrees C temperature. Gas volumes will be reported in units of 1000 cubic meters to one decimal place at standard conditions.

2 Gas measurement shall be by an approved orifice meter or other approved device which is equipped with a chart drive not slower than seven days per rotation for recording pressure and temperature. The Title Holder shall record on the chart the identification of the well, the time and dates of the start and finish of measurement recorded thereon, the flowing temperature and pressures and the gas gravity.

(b) Measurement of oil and condensate

1 Oil and condensate quantity shall be computed as the number of tons at the temperature of 15 C.

2 A licensee shall accurately measure produced oil and condensate by either manual gauging of tanks or use of an approved meter.

3 The gravity of the oil must be determined by hydrometer measurement or other approved method.

(c) Measurement of Water

1 The measurement of water shall be by tank gauge, approved meter or other approved method and be reported in cubic meters.

Article 23 - Water Disposal

(a) Approval of the Competent Authority must be obtained by the Title Holder for the method and system for the gathering, storage and disposal of water produced in conjunction with oil or gas.

(b) An request for approval of a system for the gathering, storage and disposal of water produced in conjunction with oil or gas shall include,

(i) - maps showing

- the location of the disposal well
- status of each well adjacent to the disposal well,
- the structure or isopachs of the pool into which fluids will be disposed
- lithology of the disposal formation

(ii) - figures showing

- geological cross-sections showing the top and base of the disposal formation, and fluid contacts, if any,
- well bore sketch of the proposed disposal well showing all casing, cement, any former completion and the currently proposed completion, the proposed tubing depth and the depth make and model of packer and any other information which bears on the mechanical integrity of the well
- produced water storage handling and measurement facilities

(c) Details of favorable or unfavorable impacts of the proposed water disposal in connection with any oil, gas or fresh water production in the area together with recommended limitations, if any, on injection rate or pressure

Article 24 - Storage Of Liquid Hydrocarbons

Liquid hydrocarbons shall be stored only in tanks designed for such purpose unless otherwise approved by the Competent Authority

Article 25 - Tank Storage

Each tank or group of tanks containing oil or any fluid other than fresh water at a wellsite, battery or processing plant will be surrounded by a dike or firewall of a capacity greater than that of the largest tank within the dike or firewall. The dike or firewall must be maintained in good condition so that its purpose of containment is not compromised and so that no fire hazard exists from vegetation

Article 26 - Tank Proximity to Surface Improvements

The minimum distance between a dike or firewall surrounding hydrocarbon storage tanks and any surface improvement or public roadway, will be 50 m unless otherwise approved by the Competent Authority

Article 27 - Venting of Pressure Relief Systems

Pressure relief valves on storage tanks and pressure vessels shall be tested monthly by the Title Holder and the results recorded

Article 28 - Produced Water Storage and Disposal

Storage and disposal of produced water at a well, battery or processing plant must be done by methods approved by the Competent Authority. The preferred method of disposal is injecting into isolated formations which do not contain fresh water or hydrocarbons

Article 29 - Oil and Salt Water Spill Control

When a spill of oil or salt water occurs, immediate steps must be taken to contain and recover the spilled material

Article 30 - Spill Contingency Planning

(1) Each entity which conducts exploitation activities must have in place a contingency plan which has been approved by the Competent Authority

(2) The contingency plan must include information such as

- (a) identify the kinds of risks of spills in the exploitation activities
- (b) describe procedures for detecting, containing and cleaning up spills
- (c) identify responsible company personnel and describe their responsibilities and required training
- (d) identify local authorities and other people who should be notified if a spill occurs
- (e) describe the communications plan for internal and external communications

- (f) list and describe equipment and materials that will be used if a spill occurs

(3) It may be efficient for two or more entities to cooperate in the preparation and implementation of a spill contingency plan. Where this approach is used, all participants must ensure that their own requirements are completely satisfied.

Article 31 - Venting Of Gases

(1) Venting of gas well gas can be permitted during initial testing. Associated gas can also be vented with approval of the Agency, if processing and utilization thereof is not economical and not required for operations. In all such cases the vented gas must be burned.

(2) Flare lines and flare pits for this purpose must be designed and operated in such a way as to not constitute a fire or safety hazard.

Article 32 - Care of Well Sites and Battery Sites

1) The entity responsible for a well or battery site must

- (a) ensure that waste material (water, rubbish, drilling fluids, oil, oily waste and other products) is contained at all times,
- (b) dispose of all waste materials in such a manner to avoid contamination of potable surface or underground water, and
- (c) ensure that waste material does not constitute or create a safety hazard to the environment or property

(2) Upon completion or abandonment of a well or battery, the entity responsible must

- (a) properly dispose of all liquid waste,
- (b) clear the area of debris,
- (c) fill all excavations made in connection with the well or battery, and
- (d) advise the Competent Authority's field inspectors when this operation is completed

(3) The well or battery site must be maintained in a clean condition.

Article 33 - Fencing

Wells equipped with a pumping unit and located inside or within 500 m of the boundaries of a city, town or village, or located within 500 m of any public facility (e.g., a park or recreation area) which may be visited by the public must be surrounded by a fence. This fence must be of a suitable design, construction and condition to prevent access to, or

tampering with, the well or pumping unit Gas wells must be fenced regardless of their location,

Article 34 - New Pool Analyses

Following the first production test of the first well in a new pool the operator will perform analyses of representative samples recovered of the produced fluids including oil, gas, condensate and water The reservoir temperature and pressure shall also be measured Analysis should include

Oil Composition
 Sulphur Content (weight %)
 Gravity
 Viscosity

Gas Composition
 Gross Heating Value
 Density

Condensate
 Composition - Mole Fractions and Composition of Separator Liquid
 Density

Water
 Solids Content
 Density
 Chlorides
 Salinity
 pH
 Resistivity

All analyses should include the unique well identifier, the point of sampling, the date of the sampling, and the pressure and temperature of the sample All analyses should be maintained in the Title Holders data base and be accessible to the Competent Authority

Article 35 - Deliverability or Gas Well Tests

All gas wells will be tested before being placed on production The initial test shall be multi-point and be made after completion and before production except for test production Later testing following production will be as required by the Agency

Article 36 - Signs

- (a) The Title Holder is required to post identity signs at each field facility including
- wells
 - tank batteries
 - other facilities

Included on the sign should be the name of the Title Holder, the location and name or number of the well battery or facility and the name or number of the Concession

Article 37 - Production and Injection Records

(a) Records to be Maintained for Individual Wells

If a well producing crude oil, gas, condensate or water, including water for technological injection, the operator shall maintain a daily record of the production from the well

- (i) For oil and gas wells, the record will include
 - the crude oil, condensate, gas, the liquid quantity extracted from wet gas by additional processing, and water produced from the well
 - the days that the well produced during the period being reported

- (ii) For injection wells, the record will show
 - the volume of each injected fluid
 - the number of days of fluid injection during the period being reported
 - the average well head injection pressure

- (iii) The Title Holder shall by the twentieth (20th) day of the first month following the end of each quarter, submit a report to the Competent Authority containing the information required in (i) and (ii) above for the preceding quarter

- (iv) Determination of the produced quantities may be either
 - from individual well measurements
 - prorated from the measured production at a central gathering point based on the individual well test rates, the time each well is on production and the volumes measured at the gathering point

- (v) Each oil well must be tested for 24 hours monthly and the individual well test data noted. A new 24 hours test is also required each time the method of production changes (i.e., flowing to artificial lift) and in keeping with changes in producing ability

(b) Records to be Maintained for Exploitation Blocks

For each exploitation block, the Title Holder shall report to the Competent Authority by the twentieth (20th) day of first month following each quarter, the information set out below for the preceding quarter

- (i) - The composite production and injection from and into each pool on the Block as determined in (a) above including

- Oil
- Gas
- Condensate
- Water

Other Fluid

(ii) A summary of the disposition of produced water including

- Volumes of water produced
- Volumes of water injected into a reservoir
- Volumes of water produced from water production wells
- Volumes of water injected into any underground formations, with details as to the volumes injected into each formation or zone
- Volumes of water injected for disposal

(iii) The operator shall be responsible to provide this information in the form described by the Competent Authority

Article 38 - Penalties

Penalties for non-compliance will be levied in accordance with Article 38 of the Petroleum Law

APPENDIX 7

Oil Well Potential Test and Completion Report

Field and Reservoir Name _____ Well ID _____ Elevation _____

Concession ID _____ SqKm _____ Well Location ,Trapezoid ID ,

Lease Number , Coordinates for the Well _____

County _____ Zonal Inspectorate _____ Name of Nearest Town and Distance
and Direction to this Well _____

Title Holder _____ Address _____

Purpose of Report , Initial
Completion _____ Retest _____ Reclassification _____

POTENTIAL TEST DATA

Date of Test _____ Nr Hours Tested _____ Production Method ,Flowing Pumping ,Gas Lift ,Other _____

Choke Size _____ Type and Size Pump _____

Injection gas oil ratio _____

Production During Test , Oil ,tons _____ Gas ,CuM _____ WATER , CuM _____ Gas/OIL Ratio _____ Flowing

Tubing Pressure _____ Casing Pressure _____ Oil Gravity ,Deg API _____

Calculated 24 Hour Rate , Oil , tons _____ Gas , CuM _____ Water ,CuM _____

Was Swab Used During this Test ? Y/N _____ Oil Produced Prior to Test _____

Instructions File an original and one copy of the completed Form in the appropriate Zonal Inspectorate Office within 30 days
after completing a well

Well Testers Certification

I declare under penalties prescribed in the law that I conducted or supervised this test by observation of either beginning and
ending meter readings or tank gauges employed to measure all production during the test I certify further that the potential test
data shown above is true , correct , and complete , to the best of my knowledge

Signature of Well Tester _____ Name of Company _____ NAMR Representative if Witnessed _____

Certification

I declare under penalties prescribed in the law , that I am authorized to make this report , that this report was prepared by me or
under my supervision and direction and that data and facts stated herein are true , correct , and complete to the best of my
knowledge

Name of Title Holders Representative _____ Title _____ Telephone Number _____

Signature _____ Date _____

DATA ON WELL COMPLETION

Type of Completion New Well _____ Deepening _____ Plug Back _____ Other _____

Permit Dates To Drill , Plug Back , Deepen , or Re enter _____

Dates Permitted Operations Commenced _____ Completed _____

Top of Pay ,M _____ Total Depth ,M _____ Plug Back Depth ,M _____

Is This Well A Multiple Completion ? Y/N _____ If Multiple Completion List All Reservoirs open in the Well

FIELD AND RESERVOIR OIL/GAS WELL ID

CASING RECORD

Casing Size ,in Weight ,Kg/M Depth ,M Multistage Tool Cement Vol ,CuM Hole Size ,in Top Cement ,M
Depth

LINER RECORD

Size Top Bottom Cement Volume Screen

TUBING RECORD

Size Depth Set Packer Depth Completion Interval

STIMULATION AND SQUEEZE CEMENTING

Depth Interval Volume and Kind of Material Used

FORMATION RECORD PRINCIPAL GEOLOGICAL MARKERS

Formations Depth Formation Depth Formation Depth

SUMMARY OF INTERVALS DRILL STEM TESTED OR CORED

ENVIRONMENTAL PROTECTION

a Environmental Status _____ (Complies with Ministry of Environment and
NAMR regulations), _____ (non-critical spill/leakage), _____ (accident or
serious emergency), _____ (clean up in progress)

b If applicable, describe the environmental remediation program with anticipated completion date(s)

Environmental Status Certification

(Operations Manager or EMU Officials)

Date

Signature

APPENDIX 8

Production Report

Title Holder _____ Address _____

Field and Reservoir _____ Concession ID _____

Concession Area , Sqkm _____ Number Wells on Concession in This Field and Reservoir _____

OIL OR CONDENSATE Tons

<u>Opening Stock</u>	<u>Production</u>	<u>Delivered to Transporter</u>	<u>Consumed on Lease Show Fuel or Injected</u>	<u>Final Stock</u>
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GAS , Cubic Meters at 15 Deg C , and 760 mm Hg

<u>Production</u>	<u>Delivered to Transporter</u>	<u>Lease Fuel</u>	<u>Injected</u>	<u>Flared</u>
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WATER , Cubic Meters

<u>Production</u>	<u>Enhanced Recovery</u>	<u>Injected Disposal</u>	<u>Other Disposal</u>
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Certification

I declare under penalties prescribed in the law , that I am authorized to make this report , that this report was prepared by me or under my supervision and direction and that the facts stated herein are true correct and complete to the best of my knowledge and belief

_____ Name of Title Holders Representative	_____ Title	_____ Telephone Number
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_____ Signature	_____ Date
--------------------	---------------

Instructions

This report must be submitted to the National Agency for Mineral Resources at its Bucharest Office by the 20th day of the first month following the end of each quarter and reflect data for said quarter Accordingly the due dates are January 20 , April 20 , July 20 and October 20 of each year

CONCESSION WELL PRODUCTION SUMMARY

Field and Reservoir _____

PRODUCTION

<u>WELL ID</u>	<u>Oil or Condensate , tons</u>	<u>Gas ,CuM</u>	<u>Water , CuM</u>
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ENVIRONMENTAL PROTECTION

a Environmental Status _____ (Complies with Ministry of Environment and NAMR regulations), _____ (non critical spill/leakage), _____ (accident or serious emergency), _____ (clean up in progress)

b If applicable, describe environmental remediation program with anticipated completion date(s)

Environmental Status Certification

(Operations Manager)	Date	Signature
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PART VII OFFSHORE REGULATIONS

Article 1

Petroleum industry operations on the Romanian Continental Shelf in the Black Sea are subject to all of the applicable regulations of the Competent Authority. In addition, the offshore environment makes necessary the application of additional requirements and practices which are set out in this segment entitled "Offshore Regulations"

Article 2 - Pollution Prevention

(a) During exploration, development, production and transportation of petroleum hydrocarbons, the operator shall take measures to prevent unauthorized discharge of pollutants into offshore waters. The operator shall not create conditions that will pose unreasonable risk to public health, life, property, marine life, navigation, commercial fishing or other beneficial uses of the sea.

(b) The handling and disposal of drill cuttings together with drilling fluid content and disposal are matters for review and approval by the Competent Authority.

(c) Curbs, gutters, drip pans and drains shall be installed in deck areas to catch and collect all oil and grease from facilities on offshore structures, whether for drilling, production or storage. Fluids collected shall be transferred to a sump which shall discharge into treating facilities which will remove the pollutants before dumping the treated residue into the sea. The recovered oil and grease may be mixed with production and transported to shore or otherwise handled as approved by the Competent Authority.

(d) All water produced with oil or gas shall be collected and cleansed of oil and grease by suitable treatment before dumping into the sea.

Article 3 - Oil Spill Contingency Plans

Operators conducting petroleum industry operations in the offshore shall submit an oil spill contingency plan for approval by the Competent Authority.

The plan may be specific to the operator or may have been jointly developed in cooperation with other operators in the Black Sea. The plan shall include the following:

(a) Oil spill trajectory analyses which are specific to the area of operations.

(b) Identification and location of response equipment, materials, and vessels together with procedures to be employed in responding to a large or continuous spill and also a small or short term spill.

(c) Procedures for the purpose of early detection and timely notification of an oil spill including the names, addresses and telephone numbers of responsible persons and alternates who are to receive notification of a spill and the names, addresses and telephone number of individuals within the Competent Authority who are also to be notified.

- (d) Identification by name or position of the oil spill response Coordinator who has the responsibility and commensurate authority to direct and coordinate the response operation
- (e) Allocation of sufficient manpower adequately trained to function as a spill response team, such training to be in keeping with industry standards and acceptable to the Competent Authority

Article 4 - Casing

Offshore wells drilled in the Black Sea will ordinarily require a more comprehensive casing program which in addition to casing required for onshore wells may include

- (a) Drive or structural casing which is set by driving, jetting or drilling to a depth sufficient to provide hole stability for initial drilling operations
- (b) Conductor casing which is set in drilled hole at a depth sufficient to penetrate and protect against shallow drilling hazards. Conductor casing shall generally be set to a depth of at least 100 meters and not more than 300 meters below the mud line, but in every case before penetration of zones known to contain oil or gas. The annular space behind the Conductor pipe shall be filled with cement back to the mud line
- (c) Surface casing which is set and cemented to a depth which is generally 25% of the proposed total depth of the well or a maximum of 800 meters for wells that are to be 3200 meters or greater depth. Cementing shall be to a point at least 100 meters inside the Conductor pipe

Article 5 - Platforms and Structures

(a) Platforms and Structures which are employed offshore for drilling, workover, and production operations shall be designed, fabricated, installed and maintained to assure their structural integrity for the safe conduct of all such operations considering the environmental conditions at the platform location. Platform design, fabrication, and installation shall conform to API RP 2A, Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms

(b) Applications for new platforms and for major modification or repair to existing ones shall be submitted to the Competent Authority for approval in connection with submissions as appropriate of either the exploitation or exploration plan or a modification thereof. Information shall include the platform identification and operating location together with drawings, plans, front and side elevations of the entire platform and plan views that clearly illustrate essential parts, i.e., number and location of well slots, design loadings of each deck, water depth, nominal size and thickness of all primary load bearing jacket and deck structural members and nominal size, makeup, thickness and design penetration of piling

Other data required are the environmental conditions the structure is designed to be safely employed within and a comparison of such conditions with those which are known or should reasonably be expected to exist during the planned life of the structure at the operating site

Approval by the Competent Authority will be incorporated in approval of the exploitation or exploration plan which the structure is part of

PART VIII REGULATIONS FOR PIPELINE TRANSPORTATION SYSTEMS FOR THE PETROLEUM AND NATURAL GAS INDUSTRIES

Article 1 - Authority

These regulations are issued in keeping with provisions of Articles 8, 35 and 36 of the Petroleum Law, which was passed by Parliament on December 18, 1995, signed by the President and published in the Official Monitor of Romania on December 29, 1995 and Chapter 10 of Government Decision Number 1265 of November 22, 1996 entitled "Methodological Norms for the Application of the Petroleum Law"

Article 2 - Definitions

For the purpose of these regulations the following definitions apply

- (a) "Commissioning" means activities associated with the initial filling with the fluid to be transported of a pipeline system, including associated stations and appurtenances
- (b) "In-service pipeline" means a pipeline that has been commissioned for the transportation of fluid
- (c) "Pipeline offshore" means a pipeline laid in maritime waters and estuaries seaward of the ordinary high watermark
- (d) "Pipeline on land" means a pipeline laid on or in land, including lines under inland water courses
- (e) "Pipeline system" means a pipeline with pressure increasing or reducing equipment, (except in the case of offshore production platforms), their associated fabricated assemblies, SCADA, and safety systems, metering, receipt/delivery stations, and breakout tankage, corrosion protection systems, rights of way and any other equipment, facility or building used in the transportation of fluids
- (f) "Riser" means the part of a pipeline that includes the pipeline connecting section and extends between the pipeline resting on the sea floor and the pipeline termination point on a platform
- (g) "Deactivate" means to remove temporarily from service
- (h) "Station" means a facility that is used by an operator in connection with the operation of a pipeline, and includes a facility for pumping, compression, pressure reduction, storage, metering or delivery
- (i) "Tank farm" means a facility constructed for the storage of oil and includes the land and other works connected with the facility
- (j) "Operator" means the company, entity or specialized unit having authority and responsibility for operation and oversight of a pipeline or pipeline system

Article 3 - General

- (a) These regulations apply to all onshore and offshore pipeline systems for the transportation of produced or imported petroleum hydrocarbons, including oil, gas, and condensate downstream of the delivery point from the importer or producer and upstream of a refinery, distribution unit, consumer or export point
- (b) These regulations may be amended from time to time as conditions require
- (c) The Competent Authority may approve exceptions to specific provisions in the regulations pursuant to the submission of an application accompanied by supporting information which justifies the exception
- (d) The standards adopted herein to govern the design, construction, repair, maintenance and operation of pipeline transportation systems for the petroleum industry are those published by the **Romanian Institute of Standardization**, as from time to time amended, and which are based on international pipeline standards employed generally by the international petroleum industry
- (e) All aspects of pipeline system operations covered by these regulations are also subject to all applicable laws of Romania including in particular the Petroleum Law and Environmental Law

Article 4 - Transitory Provision

(a) The cited **Standards** prescribed in these regulations shall apply to new construction or renovation, which is undertaken after the effective date of this regulation

(b) Existing Systems on the effective date

(i) Pipeline transportation systems which are in existence or under construction on the effective date shall be evaluated for capacity segment by segment and classified versus the prescribed standards. In every case a determination shall be made as to the safe pressure and quantity limits which should be imposed on each segment. The evaluations and determinations shall be conducted by competent engineers having knowledge of the facts, and be fully documented and attested by the knowledgeable person having responsibility for the analysis, and submitted to the Competent Authority by the Operator of each pipeline system by (six months after regulation becomes effective)

(ii) The Competent Authority will review the submissions required in (i) above and schedule meetings with the Operators' experts and representatives to clarify as required and by (ten months after regulation becomes effective) issue an order imposing operating limits on each segment of pre-existing pipeline systems. The order may require removal from service of certain segments which are found too deficient from the perspective of safety and environmental protection. Approval to restore such segments to operation may be granted pursuant to a showing the deficiency has been corrected

(iii) The pipeline Operator has overall responsibility for the results and quality of estimates made by experts in evaluating each segment of existing systems required in (i)

above The attester to the evaluation is individually responsible under the law as regards the making of false statements The Operator may rely on its own experts or may retain outside specialists for this work, and in every case must furnish the Competent Authority with satisfactory evidence of the qualifications and factual knowledge of the experts used

Article 5 - Construction and Renovation

(a) Before undertaking construction, replacement or modification of a pipeline system or portions thereof, the Operator of the pipeline shall submit an application to the Competent Authority requesting approval of the project The application shall include the full plans, specifications and design for all aspects of the proposed installation If there is any part of the planned project which does not equal or exceed the applicable **Standards**, the deficiency must be fully described in the application and justification for the departure provided The Competent Authority will review the application and accompanying information, ask questions and hold meetings with the Operators' representatives as necessary and reach a decision on the application which will be provided in writing The application will be approved if the proposed project is found to conform with the **Standards** and may be approved, conditionally approved, or disapproved if it does not so conform

(1) The Operator in every case is responsible for compliance with these regulations and decisions of the Competent Authority Contractors which may be employed by the Operator to complete certain works, whether design, construction, abandonment, or operation, must also certify full compliance with these regulations in rendering their services

(b) Before any new, renovated or modified pipeline system or portion thereof is placed in service it shall be tested in accordance with the requirements of the applicable **Standards** and the results furnished to the Competent Authority Upon reaching a determination that test results are satisfactory, the Competent Authority will issue a permit authorizing commissioning and use of the facility

(c) When an Operator proposes to abandon or deactivate a pipeline system or portion thereof for a period longer than 12 months, the Operator shall apply to the Competent Authority for approval to do so, giving the reasons therefor and describing the work which will be undertaken in achieving the objective Upon concluding that the abandonment or deactivation is in the public interest and that any works planned conform with applicable **Standards**, approval to proceed will be given

(d) A pipeline which has been deactivated for 12 months or longer cannot be returned to service, until it has been retested according to applicable **Standards**, the results furnished to the Competent Authority along with a request to reactivate and approval given

Article 6 - Operating and Safety Requirements

The Operator of a pipeline shall

(a) have communication facilities for the safe efficient operation of the pipeline and for emergency situations,

(b) periodically test instruments and equipment at the stations to maintain safe operations,

- (c) record continually the discharge and suction pressures at all pump and compressor stations,
- (d) clearly mark all sectionalizing valves on the pipeline to indicate their open and closed position,
- (a) clearly mark isolating valves, blowdown valves, and other major valves in each station to indicate their open and closed position and functions,
- (f) clearly post along the boundaries of all pipeline stations, junctions, and river, road, railroad or utility crossings, the operators' name and telephone number to be used in reporting emergencies involving the pipeline

Article 7 - Reportable Incidents

(a) The following incidents shall be reported to the Competent Authority within 24 hours by the most expeditious means available

- death or serious injury
- explosion or fire
- removal from service of main pipeline
- oil spill 16 m³ or more
- uncontrolled escape of gas or liquified petroleum gas
- discharge of toxic substance on land or a water body
- any other event considered significant by the operator
- serious damage to property greater than 20 million Lei

The initial report shall be followed up within 15 days with a written report giving full particulars on the occurrence and indicating the action taken and further steps planned to deal with the problem

Article 8 - Operational Records

(a) The operator of a pipeline or pipeline transportation system is required to keep and maintain records of operations including pressure, volume, and temperature data measured at the inlet and outlet of all stations

(b) In addition, daily records shall be made and preserved of all fluid deliveries to and from the transporter including the identity of the shipper and the receiver of the fluids

(c) The records in (a) and (b) shall be reported to the Competent Authority, at the time and in the manner required

Article 9 - Access to Pipeline System

(a) The Operator of an oil or gas pipeline upon application for connection and offer of oil or gas for transportation by a producer or shipper in the vicinity of the Operators' facilities must connect, receive and transport the fluid

(b) When the transporters' facilities are the only ones in the area of newly tendered fluids for shipment and there is insufficient capacity in the system to accommodate all the volumes

offered by all the shippers, the pipeline operator shall connect and receive fluids from all tendering shippers on a prorated basis, taking the same percentage of offerings from each shipper

(c) When a shipper is unable to obtain a connection with a transporter or when the transporter believes there is justification for not extending a connection, either party may petition the Competent Authority to resolve the issue. The Competent Authority will then hold a hearing on the matter after giving 10 days notice and following the hearing render its decision

Article 10 - Measurement, Handling and Storage

(a) Marketable oil which is defined as crude petroleum oil containing one percent (1%) or less of basic sediment and water and less than six tenths (0.6) Kg of salt per ton above a point 15 centimeters below the pipeline connection with the tank shall be received and transported by the pipeline. Determination of the percent of basic sediment and water and salt content shall be by an approved accurate test which is and acceptable to both the shipper and the transporter

(b) The transporter shall provide adequate storage incident and necessary to the transportation of oil including storage near enough to the destination to allow quantities to be delivered within 5 days of the supply order

(c) A pipeline may deliver to the shippers' destination either the identical oil or gas received from the shipper or a like quantity of other oil or gas which is of like kind and value

(d) Measurement of oil shall be by tank gage, approved automatic custody transfer equipment or other device or method approved by the Competent Authority which yields accurate measurement. The gravity shall be measured by hydrometer or other approved device and recorded. A compositional analysis of crude tendered may also be periodically required. Adjustments to quantities determined shall be made for temperature to a basis of 15 C

(d) Measurement of gas shall be by an orifice meter or other approved device with determinations made of the gravity and liquid content of the gas together with the flowing pressures and temperature. The volume shall be converted to standard conditions of 760 mm Hg absolute pressure and 15 C

(f) The Transporter is allowed a deduction of actual losses from the transportation system for evaporation or leakage up to a maximum of three tenths of one percent (0.3 %) of the quantities received from shippers. This limit does not apply to losses resulting from fire, storm, flood, riots, insurrection, war, or act of the public enemy, which losses shall be borne proportionally by shippers according to their quantities then in the system which experienced the loss

Article 11 - Pipeline Tariffs

(a) The Competent Authority has authority to approve services, rates, and terms for all transportation services of petroleum fluids. All Operators shall file tariffs, with the Competent Authority, for the following services

Crude oil gathering and transmission
Oil products gathering and transmission
Natural Gas gathering and transmission
Natural Gas distribution

(a) Tariffs shall include a table of contents, an index of purchasers, and full statements as to

Availability - who may receive service
Applicability - a definition of the service to be provided
Rates
Measurement
Billing & Payment
Application for Service
Extension of Facilities
Other Terms & Conditions such as ownerships of goods, liability, measurement and quality standards, classes of service

(c) Rates and Services

Rates shall be based upon all costs of providing the service, including capital related costs, labor, fuel, and all other operating expenses as determined by the Competent Authority and shall provide for capital cost recovery and earnings on capital investment

Transportation services shall be rendered to customers ensuring equal conditions to all producers. Operators of transportation systems shall publish unit rates for the transportation of crude oil, oil products or natural gas, including any monthly charges, for reservation of transportation capacity and shall submit such studies as the Competent Authority may require to support the derivation and form of such unit rates. Rates for transportation shall not include the price or value of the crude oil or natural gas being transported. Sellers of crude oil or natural gas shall publish separately, unit prices for such products at a point prior to their delivery to a transportation system. Prices for crude oil and natural gas shall be subject to approval by the Competent Authority

Sellers of petroleum fluids and Operators of transportation systems also shall file, for approval by the Competent Authority, a statement of procedures that will be followed in the event a deficiency in supplies prevents shipments of total quantities required by customers

PART IX REGULATIONS FOR THE NATIONAL DATABASE

Article 1

Article 5 of The Petroleum Law, Number 134, dated December 29, 1995, together with Chapter 6 of Government Decision Number 1265 approved November 22, 1996, adopting Methodological Norms for the Application of The Petroleum Law, provide that all data and information resulting from petroleum operations conducted with respect to Romanian Petroleum resources, irrespective of the period when such were obtained, belong to the Romanian State. The Law and Decision assign responsibility to the National Agency for Mineral Resources to set up and utilize the National Database containing such data. The Title Holders are obligated to ensure the collection, preparation, updating and transmission of the data in the manner requested by the National Agency for Mineral Resources. The Title Holders have the right to use the data for the duration of the Petroleum Agreement.

Article 2

This text together with Annex "A" of this regulation establish the National Database and contain the technical instructions and descriptions of the data fields, and manner and timing of submittal of petroleum data to the Competent Authority. The regulation and Annex may be amended to meet future needs perceived by the Competent Authority in keeping with the prevailing Law and Government Decisions.

ANNEX "A"

INSTRUCTIONS FOR DATA MANAGEMENT FOR PETROLEUM EXPLORATION AND PRODUCTION OPERATIONS

1.0 Purpose

The purpose of this document is to establish consistent procedures for organizing, storing, and reporting data from petroleum and natural gas operations to the National Agency for Mineral Resources (Competent Authority). Under article 5 of the Petroleum Law, all data from petroleum operations are the property of the Romanian State. Compliance with the procedures described in this document will improve the Competent Authority's ability to administer these data, in accordance with its responsibilities as established under the Petroleum Law of 1995 and Methodological Norms in Government Decision number 1625, approved 22 November 1996.

2.0 Applicability

These instructions for data management apply to Title Holders, Operators and any other legal persons working under the authority of the Title Holder on a petroleum exploration or exploitation program. Data collected from present or future exploration and exploitation programs must be managed in accordance with this instruction.

3.0 Background

Exploring for and producing oil and gas requires the collection of large quantities of data. These data include geological and geophysical information from bore holes, well tests, seismic surveys and hydrocarbon production quantities from individual oil or gas wells and fields. The Competent Authority is responsible for administering the State's ownership of

petroleum data, subject to confidentiality requirements and the Title Holders' rights to use and interpret these data. Recognizing the value of the petroleum data that it administers, the Competent Authority adopted these procedures to help ensure that it receives complete, accurate and timely data submittals from Title Holders.

To help manage its petroleum data, the Competent Authority established a National Oil and Gas Database. This database management system will store geological and geophysical data from wells, seismic surveys and other sources. It will record current and cumulative production data from wells and fields. It will include a catalog, or index, of other information, including non-electronic data, that are stored outside the National Database.

This database is currently implemented using Landmark's OpenWorks software, a relational database management system that is widely used in the global oil and gas industry. The database was designed so that information can be submitted to the Competent Authority in other standard formats, in addition to OpenWorks.

In the past, entities conducting petroleum exploration and production in Romania collected and stored information according to their own needs. Each entity maintained separate hardcopy and electronic records of the data it collected. The entities exchanged data as necessary, however, there was no single repository for oil and gas information. Most of these historical data are still held by the entities that collected them. Except for seismic data, most of the historical information is still in hard-copy, rather than digital format.

The Competent Authority has already begun a program to convert the historical data to digital format. In cooperation with the entities that hold the data, the Competent Authority is developing procedures and establishing priorities to digitize hard-copy records and convert existing electronic files to a format suitable for loading into the National Database. With approximately 60,000 existing oil and gas wells and thousands of kilometers of seismic profiles, this conversion effort will take several years to complete.

The procedures described in this document are intended primarily for the submission of newly collected data from oil and gas operations. The data formats described here are valid for historical records as well, however, the process of digitizing existing data requires additional procedures not described in this document. Newly collected information that is within the scope of the National Database must be submitted to the Competent Authority, in digital form, according to these guidelines. This requirement applies to future data collected from both new and existing wells, seismic surveys and other oil and gas operations.

4.0 Responsibilities

The Title Holder of a concession is responsible for collecting, storing, verifying and submitting data to the Competent Authority according to these instructions. The Title Holder must make complete and accurate data submittals to the Competent Authority according to the established schedules for each category of data. The Title Holder may contract with Operators or other legal persons to perform some of all of its data management functions, including submitting data to the Competent Authority. The Title Holder is responsible for making sure that its subcontractors comply with the Competent Authority's data management procedures.

The Competent Authority's Database Department is responsible for receiving data and merging them into the National Database. The Database Department will verify that all of the required data for a particular activity, e.g., completion of an exploration well, have been submitted. If the Competent Authority finds that data are missing or invalid, the Title Holder will be responsible for supplying the missing data or correcting errors. The Title Holder is responsible for the completeness and accuracy of data submitted. The Title Holder is also responsible for submitting data according to the reporting deadlines established by the Competent Authority.

5.0 Data Management Plan

The application for an Exploration Permit or Exploitation Permit must include a data management plan. The purpose of this plan is to demonstrate that the Applicant understands and will comply with the Competent Authority's data management requirements. The Competent Authority will not issue a permit unless the Applicant has submitted an acceptable data management plan.

At minimum, the data management plan must describe

- Methods for collecting and recording data. For example, will data be encoded electronically in the field, as they are collected, or will they be collected and stored in hard-copy format, to be keyed or digitized later?
- Procedures for correlating data with their sources. For example, data associated with core samples and laboratory test results must be identified and labeled according to the well where they were collected, using the Unique Well Identifier.
- Quality control procedures that the Applicant will employ to assure that data supplied to the Competent Authority are complete and accurate.
- A brief description of the database management software and hardware that the Applicant or its subcontractors will use to capture and store electronic data.
- Procedures for maintaining the security and integrity of data, both in hard-copy and electronic format. For example, what methods are used to make backup copies of the database files? Where are backup tapes or disks stored? How will hard-copy records and digital media be protected from loss due to theft or fire?
- The software formats in which data will be submitted to the Competent Authority, e.g., OpenWorks database, ASCII text, etc. The available formats are described in the following section.
- The electronic medium that will be used to deliver data to the Competent Authority, e.g., 8mm tape, diskettes, etc. Acceptable media for receiving data are described in the following section.

6.0 Data Management Procedures

This section describes procedures for submitting data to the Competent Authority, including acceptable database software formats.

6 1 Collecting and Storing Data

Title Holders must collect the data described in Appendix A and encode it in a suitable electronic format before submitting it to the Competent Authority. The Competent Authority can supply a Windows PC-based program, RomWorks, to help Title Holders provide the required data in digital format. Alternatively, Title Holders may use other software to collect and manage their data before transmitting it to the Competent Authority.

The Title Holder is responsible for maintaining the security and integrity of the data it collects. The Title Holder must use sound data management practices throughout the period of its concession contract. Sound data management practices include

- Encoding data electronically on a regular basis as information is collected, rather than accumulating large volumes of records that are in hard-copy format only
- Where feasible, recording data electronically in the field
- Checking data to verify accuracy
- Correctly identifying and labeling samples, magnetic tapes, hard-copy records and other items so that data can be associated with the appropriate well, drilled interval, seismic line, etc. All data from wells, for example, must be keyed to the Unique Well Identifier (UWI)
- Backing up electronic files on a regular basis (preferably daily). Storing backup tapes and other physical data to protect them from damage or loss from causes such as theft or fire
- Submitting data on a regular basis to the Competent Authority, following the schedules shown in the following section

6 2 Submitting Data to the Competent Authority

The Competent Authority is prepared to accept electronic data from Title Holders in one of several standard application formats. Acceptable formats include PPDM/POSC (e.g., Landmark OpenWorks), Microsoft Access, X-base (Dbase compatible) and ASCII text. The data must be organized into separate fields, records and tables (or files), according to the scheme shown in Appendix A.

The following sections briefly describe each of the acceptable software formats. PPDM/POSC or Access, using the Competent Authority's database template, are the preferred formats.

Each data submittal should include only new information. Once a well is drilled and its data are reported, these data should not be included in future submittals. Corrections to data previously reported should be submitted separately from new data.

6 2 1 PPDM/POSC (OpenWorks)

The National Database is implemented using Landmark's OpenWorks software. Operators using OpenWorks may submit data to the Competent Authority as an OpenWorks project.

Before submitting data using OpenWorks, the Operator must contact the Competent Authority's Database Department for further instructions. The Database Department can provide Operators with a sample OpenWorks database that contains all of the required table and field definitions.

Because OpenWorks complies with PPDM and POSC standards, data from any other software that complies with these models should be suitable for import to the National Database (PPDM and POSC are software design standards widely used in the petroleum industry to facilitate the exchange of information between different software programs). Operators should contact the Database Department for more information on submitting data in PPDM or POSC databases.

6.2.2 Access (RomWorks)

Working in conjunction with the Competent Authority, Landmark developed a program called RomWorks to prepare data for the National Database. Using RomWorks, all required data fields can be keyed into a database from any Windows-based PC. RomWorks was developed using Microsoft Access, however, Access is not required to run the program. Operators using RomWorks can submit the Access database that the program builds directly to the Competent Authority. The Competent Authority can provide copies of the RomWorks software, along with instructions for using it.

If RomWorks is not used to collect the data, submittals can still be made as an Access database. The Competent Authority will supply a sample Access database that includes the required table and field definitions. Operators may use this sample database as a template to prepare data submittals for the Competent Authority. A complete description of required data tables and fields can be found in Appendix A.

6.2.3 Submitting Data in Dbase-Compatible Format

Data may be submitted as a series of Dbase-compatible (*.dbf) files. Files should be submitted in Dbase III format. Data must be organized into tables with field definitions exactly as shown in Appendix A. There should be one dbf file submitted for each applicable table shown in the Appendix.

6.2.4 Submitting Data as ASCII Text

If data cannot be submitted in one of the database formats shown, they may be delivered as ASCII text files. There must be one text file for each applicable database table shown in Appendix A. Each line, or record of the text file must contain the same information as shown for each database record, with the fields in the same order.

ASCII data fields may be fixed-length, as shown in the Appendix A definitions, or variable length with a delimiter. The delimiter should be a TAB or other unique character that does not occur within the data fields. If one logical record, as shown in the table definitions, cannot fit on one physical record of the ASCII file, then a second file should be used for the additional fields. Logical database records may not be split into two or more physical records of one ASCII file.

6.2.5 Electronic Media

The Competent Authority can accept data submittals in the following media formats

- 3 5" diskettes, DOS (Windows) format
- 3 5" diskettes, DOS with pkzip compression
- 8mm (Exabyte) tape, tar (Unix) format
- 3 5" diskettes or 8mm tape, other software formats by prior arrangement

Transmitting data via modem may be an option in the future

6 3 Data Tables

The Competent Authority has defined 20 tables containing approximately 250 separate fields for submittals to the National Database. Operators will submit only those tables relevant to the activity being reported. For example, submitting data from a 2D seismic survey requires 6 tables.

The organization of fields and tables in PPDM/POSC (OpenWorks) databases will differ somewhat from the structure described in this document, however, the data descriptions for each field are valid for all database formats. The table structures described in this document are intended primarily for Operators submitting data in Access, Dbase or ASCII formats.

The 20 data submittal tables can be grouped into six categories:

- Wells – 9 Tables
- Fields – 2 Tables
- Seismic – 6 Tables
- Catalog – 1 Table
- License/Lease – 1 Table
- Reservoir – 1 Table

6 3 1 Wells

Data from wells are organized into nine separate tables. Each well is identified by its Well Registration Number, also known as the Unique Well Identifier (UWI). The Competent Authority assigns the UWI as part of the Well License. After a well has been drilled or tested, the licensee must submit one or more data files to the Competent Authority. Each data record submitted for a well must include the UWI. The Competent Authority will not recognize any name or identification number other than the UWI for referencing data to a well.

6 3 1 1 Well Tables

Here is a brief description of the well data tables. A complete description of the data fields for each table can be found in Appendix A.

- 1) Well Master Contains UWI, coordinates, depth and other "header" information. This table contains one record for each well.
- 2) Geological Data Geological markers, e.g., formations, intersecting the well bore. Includes depths to markers and other information. This table contains one record for each marker.

- 3) Zone Data Pay zones Includes top and base markers for zone, permeability, net pay thickness and other values This table contains one record for each zone
- 4) Log Header Header information for borehole logs Includes curve name, logged interval and other data Does not include the digitized curve This table contains one record for each log curve
- 5) Core Header Header information for core samples Includes core number, depths to top and bottom of cored interval, recovery, unique material identifier, summary core description and similar information This table contains one record for each core sample (interval)
- 6) Perforation Data on perforated zone Includes depths to top and base of perforated interval, perforation density and other data This table contains one record for each perforated interval
- 7) Well Plan Information on drilled intervals, including well string data, bit size and cementation This table contains one record for each applicable drilled interval
- 8) Well Production Cumulative and monthly hydrocarbon production data For each producing well, this table contains one record per month
- 9) Tests Data from well tests, including tested interval, test type, flow rates and other information This table contains one record for each well test

6 3 1 2 Schedule for Submitting Well Data

Well data must be submitted to the Competent Authority in an acceptable electronic format according to the following schedule

Initial data submittal By the 15th day of the second month following the month in which a well is completed or abandoned (Example Data for a well completed on any day during the month of April is due on 15 June) Data collected during drilling and completion for any of the nine tables, except Well Production, must be submitted according to this schedule

Well Production Monthly production data must be submitted by the first day of the second month following the month of production (Example Production data for the period 1 May through 31 May are due by 1 July)

Additional data Additional well data (other than monthly production) collected after completion must be submitted by the 15th day of the second month after the data were collected For example, if geophysical logs are run or tests are made on an existing well during the month of September then the new log or test data are due to the Competent Authority by 15 November

These schedules for submitting data may be modified by agreement with the Competent Authority

6 3 2 Fields

Data for oil and gas fields are grouped into two tables. In addition to identifying fields by name, the primary purpose of these tables is to collect aggregate hydrocarbon production data.

6 3 2 1 Field Tables

Here is a brief description of the oil and gas field data tables. A complete description of the data fields for each table can be found in Appendix A-2.

- 1) Field Contains oil or gas field name, reservoir name, operator and license/lease number. This table contains one record for each oil or gas field.
- 2) Field Production Monthly and cumulative hydrocarbon production statistics. For each producing field, this table contains one record per month.

6 3 2 2 Schedule for Submitting Field Data

Field data must be submitted to the Competent Authority in an acceptable electronic format according to the following schedule:

Field The Competent Authority will create an entry in the Field table when discovery of a new field is reported. Title Holders should submit this Field data only when reporting the first month's production for a new field.

Field Production Monthly production data must be submitted by the first day of the second month following the month of production. (Example: Production data for the period 1 May through 31 May are due by 1 July.)

6 3 3 Seismic

There are four tables for reporting 2D seismic data and two tables for reporting data from 3D surveys. Seismic data must be keyed to the appropriate survey and line names.

6 3 3 1 Seismic Tables

There are six tables for recording data from seismic surveys:

- 1) 2D General General information for 2D survey: contractor, date, etc. One record per survey.

- 2) 2D LH Line data One record per line
- 3) 2D Location Shotpoint locations One record per shotpoint
- 4) 2D Shotpoint Trace Shotpoint trace

3D General General information for 3D survey One record per survey

3D Navigation Navigation data for 3D survey

6 3 3 2 Schedule for Submitting Seismic Data

Seismic data must be submitted to the Competent Authority in an acceptable electronic format according to the following schedule

Initial data submittal By the 15th day of the second month following the month in which a seismic survey is completed (Example Data for a survey completed on any day during the month of September is due on 15 November) Data collected for any of the six seismic tables must be submitted according to this schedule

6 3 4 Other Categories

There are three other tables containing miscellaneous data

6 3 4 1 Other Tables

- 1) Data Store Catalog, or index recording the location, custodian and other information for physical data, such as core samples or magnetic tapes Must be keyed to the appropriate Unique Material Identifier (UMI) Contains one record per physical item, or UMI
- 2) License/Lease Information about the licensee name, address, etc One record per licensee
- 3) Reservoir Reservoir names and general reservoir data One record per reservoir

6 3 4 2 Schedule for Submitting Other Data

These miscellaneous data must be submitted to the Competent Authority in an acceptable electronic format according to the following schedule

Data Store Table By the 15th day of the second month following the month in which the related activity, e g , well drilling or seismic survey, is completed (Example Custodial data for samples collected while drilling a well completed on any day during the month of June are due on 15 August)

License/Lease and Reservoir Tables These tables will be maintained by the Competent Authority's Database Department Title Holders will be directed to submit these tables as needed

7 0 Table and Field Descriptions

These table and field definitions are based on the Microsoft Access tables used by RomWorks. A sample Access database with this structure is available separately from RomWorks. Values for some data fields must be selected from a list of pre-defined codes. The codes for these fields are shown in the Data Dictionary.

For numeric fields, the number of decimal places in the Access database is set to "Auto". Numbers in integer (NI) fields should not contain decimal places. Numbers in decimal (ND) fields may contain up to 15 decimal places. Numeric values submitted in Dbase or ASCII formats should have the field widths and decimal places necessary to retain the precision of the original data.

If the data type, field widths or any other characteristics are altered from the values shown here, this change must be reported to the Competent Authority's Database Department along with the data submittal.

The table structure for PPD/POSC (OpenWorks) databases may differ from that shown here. The field descriptions are valid for all database formats.

Key to Data Type		
Code	Explanation	Remarks
C	Character (Text)	Width = Maximum number of characters
D	Date	
NI	Number (Integer)	Valid range 32768 to 32767
ND	Number (Decimal)	Double-precision, floating decimal point
L	Logical (Yes/No)	

Table 1 Well Master

Values for Field Names shown in *italic* type must be selected from the appropriate list of codes shown in the data dictionary, Appendix B.

Field Name	Type	Width	Description
UWI	C	26	Well registration number Assigned by the Competent Authority when it issues a drilling permit
Name No	C	80	Operator's well name and number
Data Source	C	20	Name of data supplier
License No	C	40	Lease or license number
Operator Name	C	40	Well operator
Drill Contractor	C	40	Drilling contractor
Projection System	C	20	Map projection system for X Y coordinates Normally Stereo-70
Surf_Easting	ND	12 3	X (Easting) coordinate of well at ground surface
Surf_Northing	ND	12 3	Y (Northing) coordinate of well at ground surface
Surf_Lat	ND	12 6	Latitude of well at ground surface Specify as decimal degrees
Surf_Lon	ND	12 6	Longitude of well at ground surface Specify as decimal degrees
BH_Easting	ND	12 2	X (Easting) coordinate of well at bottom of hole
BH_Northing	ND	12 2	Y (Northing) coordinate of well at bottom of hole
Initial Well Class	C	30	Classification of well at time of spud See Appendix B for list of codes
Final Well Status	C	30	Status of well at time of rig release See

			Appendix B for list of codes
Cur_Operation_Status	C	30	Current operational status of well See Appendix B for list of codes
Well_Result	C	30	Well's hydrocarbon result See Appendix B for list of codes
Elev_Ref_Datum	C	20	Geodetic datum? Description of local reference point for measuring depths, e g , top of casing?
Datum_Elev	ND	8 3	Elevation of datum above mean sea level
Ground_Elev	ND	8 3	Elevation of ground surface
Water_Depth	ND	8 3	Depth of sea (Offshore only)
Field_Name	C	80	Name of oil field or project
Drill_MD	ND	8 3	Total measured depth reported by driller
Log_MD	ND	8 3	Total measured depth reported by logger

Kick_Off_MD	ND	8 3	Measured depth of sidetrack kick off point(s)
Drill_TVDSS	ND	8 3	Total true vertical depth subsea reported by driller
TD_Chronostat	C	30	Chronostat unit in which well reached total depth
Rig_Name	C	20	Rig name
Rig_License_No	NI		Rig license number
Spud_Date	D		Date well spudded
Drill_Comp_Date	D		Date drilling completed
Target_Res_Code	C	40	Target reservoir
On_Offshore	L	1	True if onshore well
Tested	L	1	True if well has been tested
Logged	L	1	True if well has been logged
Cored	L	1	True if well has been cored
Deviated	L	1	True if well has been deviated
Sidetracked	L	1	True if well has been sidetracked
Multi_Completed	L	1	True if well multi-completed
Update_Date	D	10	Date this record was last modified

Table 2 Geological Data

UWI	C	26	Well registration number Assigned by the Competent Authority when it issues a drilling permit
Data_Source	C	20	Name of data supplier
Marker	C	40	Name of marker, e g , formation
Marker_Type	C	30	Type of event or marker
Marker_Type_MD	ND		Measured depth of marker
TWT	ND		Two-way time
TWT_Source	ND		Source of two-way time
Aver_Vel	ND		Average velocity to marker
Comments	C	255	General comments

Table 3 Zone Data

UWI	C	26	Well registration number Assigned by the Competent Authority when it issues a drilling permit
Zone_Name	C	40	Name of zone (formation)
Top_Marker_Code	C	40	Code for top marker of reservoir zone
Base_Marker_Code	C	40	Code for base marker of reservoir zone
Gross_Pay_AH	ND		Gross pay thickness along hole
Net_Pay_AH	ND		Net pay thickness along hole
Zone_Aver_Porosity	ND		Average porosity in zone
Zone_Aver_Kh	ND		Average permeability in zone
Zone_Aver_Sw	ND		Average water saturation in zone
Zone_Int_Vel	ND		Average interval velocity of zone
Data_Source	C	20	Name of data supplier
Comments	C	255	General comments

Comments	C	240	TESTS
Stimulation	C	20	TESTS
Test_Top_MD	ND	8	TESTS
Bast_Test_MD	ND	8	TESTS
Zone_Name	C	40	TESTS
Gauge_TVDS	ND	8	TESTS
Test_Date	DT	8	TESTS
Sample_Fluid	C	3	TESTS
Test_Salinity	ND	8	TESTS
PVT	L	1	TESTS
Oil_Gravity	ND	8	TESTS
Gas_Gravity	ND	8	TESTS
Test Results	C	50	TESTS
Number of Periods	NI	2	TESTS
Test Duration	ND	8	TESTS
Test_Gas_1	ND	8	TESTS
Test_Gas_2	ND	8	TESTS
Test_Gas_3	ND	8	TESTS
Test_Gas_4	ND	8	TESTS
Test_Choke_Size_1	ND	8	TESTS
Test_Choke_Size_2	ND	8	TESTS
Test_Choke_Size_3	ND	8	TESTS
Test_Choke_Size_4	ND	8	TESTS
OilGas_Ratio	ND	8	TESTS
Test_Oil	ND	8	TESTS
Test_Gas	ND	8	TESTS
Test_H2S	ND	8	TESTS
Test_Water	ND	8	TESTS
Test_Condensate	ND	8	TESTS
BH_Temp	ND	8	TESTS
Days	ND	8	TESTS
Hours	ND	8	TESTS
Surf_Temp	ND	8	TESTS
Field_Name	C	50	FIELD_MASTER
Reservoir(s)_Name	C	80	FIELD_MASTER
Operator_Name	C	40	FIELD_MASTER
Licence_No	C	40	FIELD_MASTER
Field_Name	C	80	FIELD_PROD
Reservoir(s)_Name	C	80	FIELD_PROD
Field_Tot_Oil_Prod	ND	8	FIELD_PROD
Field_Tot_Gas_Prod	ND	8	FIELD_PROD
Field_Tot_Cond_Prod	ND	8	FIELD_PROD
Field_Tot_Water_Prod	ND	8	FIELD_PROD
Oil_Open_Stock	ND	8	FIELD_PROD
Oil_Del_Transport	ND	8	FIELD_PROD
Gas_Del_Transport	ND	8	FIELD_PROD
Cond_Del_Transport	ND	8	FIELD_PROD
Tot_Oil_Used	ND	8	FIELD_PROD
Tot_Gas_Used	ND	8	FIELD_PROD
Tot_Gas_Flared	ND	8	FIELD_PROD
Tot_Water_Inj	ND	8	FIELD_PROD
Other_Disposals	ND	8	FIELD_PROD

Comments	C	255	FIELD_PROD
Licence_no	C	40	FIELD_PROD
Report_date	DT	8	FIELD_PROD
Licence_no	C	50	2DGENERAL
Line Name	C	20	2DGENERAL
Survey Name	C	20	2DGENERAL
Km	ND	8	2DGENERAL
Date of Acquisition	DT	8	2DGENERAL
Acquisition Contractor	C	20	2DGENERAL
Acquisition Type	C	20	2DGENERAL
Energy Source	C	20	2DGENERAL
Acquisition Fold	NI	2	2DGENERAL
Field Channels	NI	2	2DGENERAL
Recording Type	C	20	2DGENERAL
Processing Contractor	C	20	2DGENERAL
Date of processing	DT	8	2DGENERAL
Length of Data	NI	2	2DGENERAL
Final Fold	NI	2	2DGENERAL
CDP Increment	ND	8	2DGENERAL
Physical Location of Data	C	20	2DGENERAL
Projection system	C	20	2DGENERAL
Data Owner	C	20	2DGENERAL
Data Custodian	C	20	2DGENERAL
Line Name	C	20	2DLH
Minimum Trace	ND	8	2DLH
Maximum Trace	ND	8	2DLH
First Shotpoint	ND	8	2DLH
Last Shotpoint	ND	8	2DLH
Line Name	C	20	XY2D
Shotpoint	ND	8	XY2D
X	ND	8	XY2D
Y	ND	8	XY2D
LATITUDE	ND	8	XY2D
LONGITUDE	ND	8	XY2D
Line Name	C	20	2DSPTR
Shotpoint	ND	8	2DSPTR
Trace	ND	8	2DSPTR
Licence_No	C	50	3DGENERAL
Survey Name	C	20	3DGENERAL
Area Extent	ND	8	3DGENERAL
Date of Acquisition	DT	8	3DGENERAL
Acquisition Contractor	C	20	3DGENERAL
Acquisition Type	C	20	3DGENERAL
Energy Source	C	20	3DGENERAL
Acquisition Fold	NI	2	3DGENERAL
Field Channels	NI	2	3DGENERAL
Recording Type	C	20	3DGENERAL
Processing Contractor	C	20	3DGENERAL
Date of processing	DT	8	3DGENERAL
Length of Data	NI	2	3DGENERAL
Final Fold	NI	2	3DGENERAL
Bin Size Xline	ND	8	3DGENERAL

Bin Size Iline	ND	8	3DGENERAL
Physical Location of Data	C	20	3DGENERAL
Data Owner	C	20	3DGENERAL
Data Custodian	C	20	3DGENERAL
Survey Name	C	20	3DNAV
Minimum Line Number	ND	8	3DNAV
Maximum Line Number	ND	8	3DNAV
Minimum Trace Number	ND	8	3DNAV
Maximum Trace Number	ND	8	3DNAV
Trace Increment	ND	8	3DNAV
Line Increment	ND	8	3DNAV
Trace Byte Location	NI	2	3DNAV
Line Byte Location	NI	2	3DNAV
X1 (min Line, min Trace)	ND	8	3DNAV
X2 (min Line, max Trace)	ND	8	3DNAV
X3 (max Line, max Trace)	ND	8	3DNAV
X4 (max Line, min Trace)	ND	8	3DNAV
Y1 (min Line, min Trace)	ND	8	3DNAV
Y2 (min Line, max Trace)	ND	8	3DNAV
Y3 (max Line, max Trace)	ND	8	3DNAV
Y4 (max Line, min Trace)	ND	8	3DNAV
Projection_System	C	50	3DNAV

(Additional table definitions, for a total of 20, to follow)
(Code lists, or dictionaries, also to follow)