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ERCB

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-01

To: All Oil and Gas Operators
All In Situ Oil Sands/Heavy Oil Operators

12 February 1993

GAS DENSITY MEASUREMENT FREQUENCY — ORIFICE METERS

Section 14.070 (8.1) of the Oil and Gas Conservation Regulations currently stipulates that gas density factors used to compute gas production from a well or group of wells be determined by correlation tables or by semi-annual measurements of gas density. Gas density factors are an integral component of orifice meter gas volume calculations and the accuracy of the computed volume is very sensitive to the accuracy of the gas density. The correlation tables referenced have not been updated for some time and are very seldom used. In addition, ERCB field inspections indicate that semi-annual gas density determinations are not being consistently conducted by operators and that a wide variety of philosophies and procedures respecting gas density measurements exist throughout industry. Accordingly, the Board has reviewed its policy respecting these measurements with the intent of providing industry with practical requirements for density determination while also providing for accurate gas measurement.

With this as background, the Board has decided to establish minimum requirements for the frequency of gas density measurements based on the nature of the gas production and the volume produced through the meter. Frequencies range from semi-annual measurements where gas compositions are changing rapidly (e.g. gas cycling or miscible flood schemes) to once every two years where the gas is dry and consistent in composition. Extended frequencies in some cases are also considered appropriate where production rates are low (less than or equal to 16.9 thousand cubic metres per day). Provision has also been made for permanent exemption from density measurements where a history of consistent densities exist.

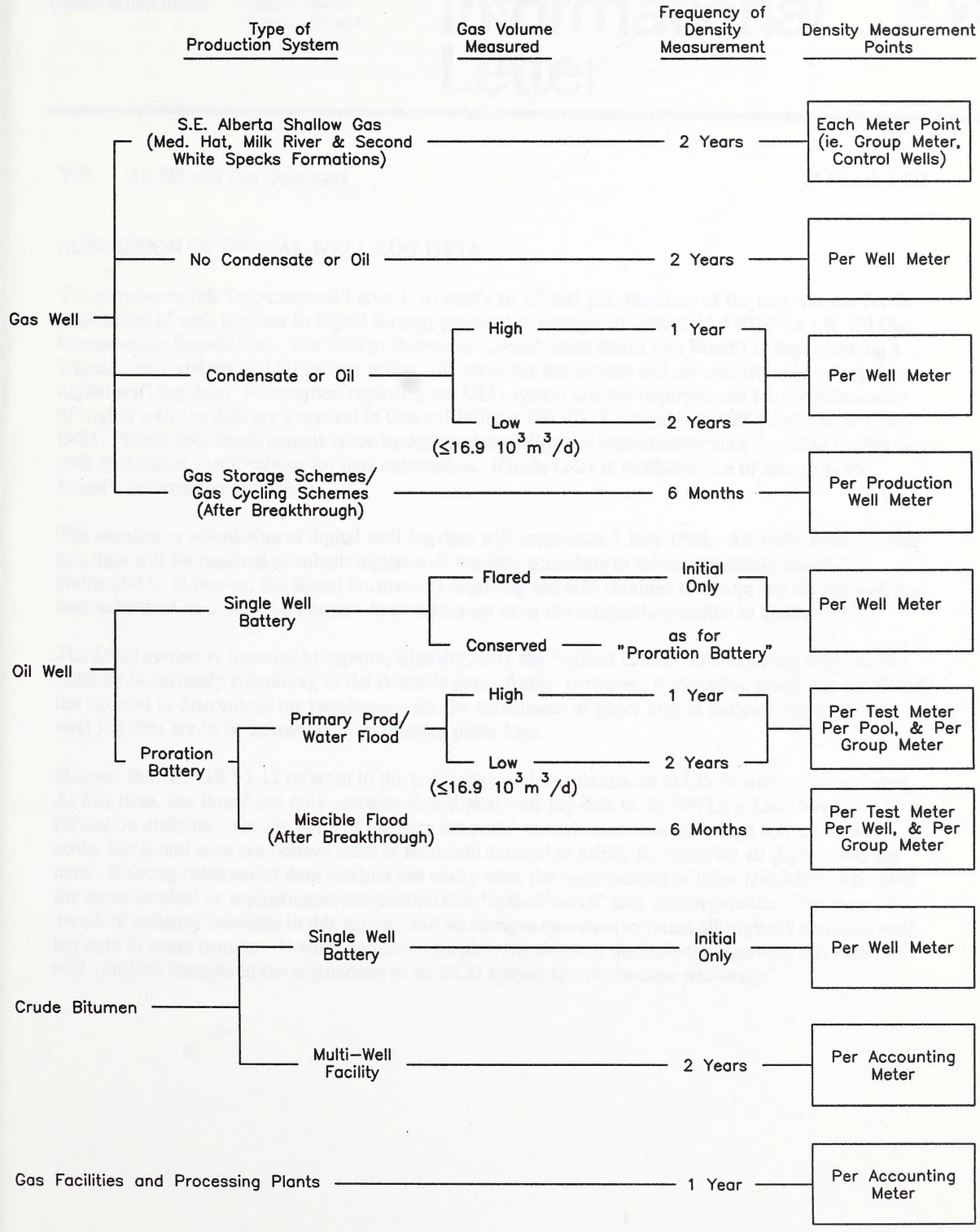
Therefore, effective immediately, the density factor used to compute the gas production from a well or group of wells shall be determined in accordance with the frequency schedule outlined in ERCB Guide G-49 Gas Density Measurement Frequency. A summary of the frequency schedule is attached. For further details and elaboration of exemption criteria, operators are encouraged to reference Guide G-49, available through the ERCB Information Services Section for a fee of $10.

Section 14.070(8.1) will be amended to remove reference to the correlation tables and semi-annual measurements and to make reference to Guide G-49. Questions regarding this matter may be directed to Mr. Al Chare at 297-2429 or Mr. Kelly McLean at 297-5341, both of the Board's Drilling and Production Department.

J. R. Nichol

J. R. Nichol, P. Eng.
Manager
Drilling and Production Department

Attachment to IL 93 – 1
Gas Density Measurement Frequency
Refer to ERCB Guide G – 49 for Details



ERCB

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-2

TO: All Oil and Gas Operators

19 March 1993

SUBMISSION OF DIGITAL WELL LOG DATA

The purpose of this Informational Letter is to notify all oil and gas operators of the requirement for the submission of well log data in digital format, pursuant to changes in section 11.140 of the Oil and Gas Conservation Regulations. The Energy Resources Conservation Board (the Board) is implementing a Digital Log Database (DLD) system which will allow for the capture and dissemination of selected digital well log data. Information regarding the DLD system and the requirements for the submission of digital well log data are provided in General Bulletin GB 92-12, issued July 1992, and ERCB Guide G-21. These documents contain some background regarding the implementation of the DLD system as well as detailed specifications for data submission. (Guide G-21 is available free of charge at the Board's Information Services.)

The **mandatory submission** of digital well log data will commence **1 July 1993**. All wells licensed after this date will be required to submit digital well log data according to the specifications detailed in Guide G-21. However, the Board is currently receiving and will continue to accept any digital well log data submitted on a voluntary basis. Such data must meet the standards specified in Guide G-21.

The DLD system is intended to capture, digitally, only the "optical curves" of traditional logs that the industry is currently submitting to the Board in paper form. However, it should be noted that the Board has no plan to discontinue the requirement for the submission of paper logs in the near term; digital well log data are to be **submitted in addition to paper logs.**

General Bulletin GB 92-12 referred to the possibility of data submission in LIS format on 9-track tape. At this time, the Board can only accommodate digital well log data in the CWLS's LAS Version 2.0 format on diskettes. On the basis of industry input and its own assessment of usage and associated costs, the Board does not believe there is sufficient demand to justify its capturing all digital well log data. Existing commercial data vendors can easily meet the requirements of those specialists who need the more detailed or sophisticated information that "optical curve" data cannot provide. The Board is aware of industry concerns in this matter, and encourages operators to retain all digitally recorded well log data in some manner. It will continue to monitor the needs of the industry regarding this data and will consider changes in the regulations or its DLD system as they become necessary.

Non-confidential digital well log data will be made available for sale to the industry and public as part of the Board's computer services inventory. Customers will be able to retrieve digital well log data on a minimum of a "per well" basis only. Initially, a minimum cost of $100 per well up to a non-compressed file size of 1 Megabyte and $50 per additional Megabyte (or portion thereof) will be used. The Board will continue to monitor costs and will advise customers if changes to the above prices appear necessary. The data will be released, unedited, in the same format as received, that is the CWLS's LAS Version 2.0, on high density 3.5" diskettes. Volume orders will also be available on cartridge.

If there are any questions regarding this subject, please contact Mr. Andrew Bau at 297-8106 or Mr. Earle Shirley at 297-8472.

C. A. Langlo, P. Geol.
Manager,
Geology Department

ERCB

Energy Resources Conservation Board

640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-3

TO: All Oil and Gas Operators

30 June 1993

LOGGING REQUIREMENTS

BACKGROUND

The Energy Resources Conservation Board (the Board) issued General Bulletin GB 92-12 (GB 92-12) in July of 1992. GB 92-12 outlined pending changes to the Oil and Gas Conservation Regulations (the Regulations), section 11.140, which deals with logging requirements. Subsequent to the issuance of GB 92-12 the Board received significant feedback from operators to the proposed addition of a gamma-ray and porosity log to the minimum logging requirements. Two main issues were brought forward. The first focused on additional logging costs that would be incurred over potentially non-productive intervals and the second related to concerns about logging zones for which the licensee did not hold the rights.

CHANGES TO THE REGULATIONS, SECTION 11.140

The Board reviewed alternatives to section 11.140, sub-section (a), which identifies the minimum logging requirements, to determine if the sub-section could be updated in a manner which would mitigate the concerns raised by industry and still reflect current logging practices. It was concluded that, because logging needs have become so varied and site specific, any modification of the existing minimum requirements would increase the complexity of the regulation and its administration. For this reason the minimum logging requirements, as described in section 11.140 (1)(a), will not change.

The Board does however expect that sufficient logging will be conducted in all wells to ensure satisfactory evaluation of potentially productive hydrocarbon-bearing intervals and to ensure proper well abandonments. This would include the ability to identify zones, including water zones, that require isolation within the wellbore prior to well abandonment. As is the current practice, the Board may specify additional logging requirements to deal with special areas, problems, or specific purposes for a well.

Other modifications to the Regulations section 11.140 (1)(b) and (c) will continue as indicated in GB 92-12. A copy of the new wording of section 11.140 is attached. Digital Log Data submission requirements are addressed in IL 93-2.

Any questions concerning this letter should be directed to the Board's Geology Department at 297-8214.

C. A. Langlo
Manager
ERCB, Geology Department

Attachment

Section 11.140 is repealed and the following is substituted:

11.140(1) The licensee shall,

(a) before completion, abandonment or suspension of drilling operations at a well, take an acceptable log to measure the resistivity and spontaneous potential of the strata from the total depth of the well to the base of surface casing, and record all pertinent data,

(b) within one month of the finished or suspended drilling date of the well, whichever occurs first, submit to the Board a copy of each log, survey or chart taken at the well together with all pertinent data other than the check shot calibrations made with reference to a velocity survey, and

(c) within one month of the run date, submit to the Board any additional logs taken at the well after the original logging operation.

(2) Logs, surveys, charts and other data submitted under this section must be in a format acceptable to the Board.

(3) The Board may on application allow substitution or grant relief from the requirements of this section where special circumstances warrant.

ERCB

JUL 21 1993

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-4

TO: All Oil and Gas Operators

30 June 1993

POLICY FOR THE LOGGING OF HORIZONTAL WELLS

INTRODUCTION

In July of 1992, the Energy Resources Conservation Board (the Board) circulated a questionnaire regarding a proposed **policy** for the logging of horizontal wells. The questionnaire was intended to solicit industry's input on the need for logging of the horizontal section of wells drilled for infill purposes within designated pools. This Informational Letter IL 93-4 outlines the policy the Board will adopt for logging requirements in horizontal wells.

QUESTIONNAIRE SURVEY RESULTS

The Board suggested two proposals for handling/enforcing of logging requirements for **horizontal development wells** and asked for operators' input on these by way of a questionnaire. A total of 56 responses were received. Included in this total were operators who, combined, have drilled over 70 per cent of the horizontal wells in the province. The responses to the questionnaire provided valuable information which was considered in reaching the following conclusions:

- Logging requirements for horizontal development wells tend to be site specific, are best known by the operator, and very rarely coincide with the current legislated minimum requirements.
- Operators overwhelmingly prefer to select an appropriate logging program without requiring approval to waive normal open-hole logging requirements.
- Information obtained is of importance primarily to the operator because it typically is production related, rather than used for determining reservoir parameters or the extent of reserves within a pool.
- A gamma-ray porosity log would be the preferred minimum requirement if one was to be legislated. A drill-cutting strip log, although considered useful by many operators, was not considered an appropriate minimum requirement because consistent quality could not be assured.

LOGGING REQUIREMENTS OF HORIZONTAL WELLS

The Board will therefore adopt the following **policy** respecting the logging requirements for horizontal development wells:

> Horizontal wells drilled outside a designated pool must be logged in accordance with section 11.140 (1)(a) of the Oil and Gas Conservation Regulations. Horizontal wells drilled as development wells (which are non-confidential at the time of licensing) within a designated pool are exempt from the normal logging requirements as per section 11.140 (1)(a), **over the horizontal section of the hole,** without prior approval from the Board. The vertical and build section of the well must be logged according to the normal requirements. As per section 11.140 (1)(b), operators are required to submit to the Board copies of **all** logs run.

Operators are encouraged to continue to run logs which will aid in a better understanding of the reservoirs being exploited.

This policy will come into effect on 1 July 1993. The Board will continue to monitor the practices associated with logging of horizontal wells and, if conditions warrant, modify the policy.

Any questions regarding logging requirements should be directed to the Board's Geology Department at 297-8214.

C. A. Langlo
Manager
ERCB, Geology Department

ERCB

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-5

To: All Oil and Gas Operators

25 May 1993

1993 ADMINISTRATION FEE ON WELLS AND OIL SANDS PROJECTS

The Board has set the 1993 Administration Fee at 76.0 per cent of the rate specified in sections 16.070 and 16.080 of the Oil and Gas Conservation Regulations, and invoices will be mailed on 5 July 1993. This factor is significantly reduced from last year's factor of 84.0 per cent. The reduction in the administration fee comes as a result of continued restraint.

For the 1993 Administration Fee, where the operation of a well is undertaken by a contract operator, the fee may be directed to the owner rather than the operator upon the written request of the owner. This request should include a complete description of the well and the name of the operator, and should be addressed to the attention of Ms. Y. Jamal and forwarded to our office no later than 11 June 1993.

N. G. Berndtsson
Board Member

ERCB
Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-6

TO: All Oil and Gas Operators
All Drilling and Servicing Contractors

1 June 1993

DRILLING WASTE MANAGEMENT
HYDROCARBON/SALT DISPOSAL PLAN CONTENT AND DATABASE REPORTING

Interim Directive ID 93-1 and Guide G-50 require that a waste disposal plan be submitted with the Well Licence Application when hydrocarbon or salt-based mud systems will be used during drilling or otherwise produced during the drilling operation. This informational letter will detail the required contents of a drilling waste disposal plan, as well as provide the form which will be used to collect information on all sump disposal operations.

Operators are advised that the disposal plan and analytical information form will be required with the application for a Reclamation Certificate, and therefore must be retained on file until that application is made.

Disposal Plan Requirements

The required information must be submitted under separate cover to the ERCB's Drilling and Production Department as part of the Well Licence Application. Once received, the plan will be forwarded to either the Department of Agriculture, Food, and Rural Development or the Department of Environmental Protection if the well will be located on public land, or to the ERCB's Environment Protection Department if the well will be located on privately-owned land (see page 4). The drilling waste disposal operation proposed in the plan must be reviewed and approved by the respective agency prior to spudding the well. The objective of the disposal plan review is to determine that the waste generator has considered the long-term soil reclamation steps required when producing a particular waste type, and to determine where and how these treatments are being implemented on wellsites in the province. Operators are encouraged to continue with the development of drilling technology which reduces the volume of waste generated and its toxicity to soil and vegetation. Wells which have an approved plan must also submit the pre-disposal analytical information described in Guide G-50 on the form attached to this informational letter. Disposal operations which deviate from the previously approved plan must have the revised procedure documented with the analytical information form and be submitted to the appropriate regulatory office.

For re-entry situations which will use a hydrocarbon or salt-based mud system but do not require a Well Licence Application, a drilling waste disposal plan must be submitted to the ERCB's Environment Protection Department and approved prior to commencing the re-entry operation.

Operators are advised that while landfarming can be an option when disposing of these wastes, the soil loading limits for metals specified in Guide G-50 for landspreading must not be exceeded.

1. For hydrocarbon-based drilling mud systems, a disposal plan must indicate:

   - Type of hydrocarbon to be used as a system base, and if it is emulsifying or not.
   - Brine type and anticipated concentration.
   - Estimated total volume of drilling waste to be generated.
   - Estimated total volume of drilling waste to be applied in a landfarming operation.
   - Any additional treatment processes which will be used (e.g. incineration, re-use).
   - Listing of mud-system additives to be used, including biocides and salts.
   - Equipment which will be used to reduce soil contamination and waste volume.
   - Method of handling completion fluids.
   - For landfarming operations, provide a location and general description of the site to be used, indicating:
     - estimated oil content in the resulting soil/waste mix;
     - current land use, topography, vegetation type, soil horizon used for disposal, topsoil depth, and size of disposal area;
     - measures implemented to contain surface and subsurface migration of contaminants;
     - procedures, timing, and frequency of the landfarming operation and depth of initial incorporation into the soil;
     - schedule for any subsequent waste/soil cultivation or tilling;
     - type of soil amendments which may be used to promote biodegradation;
     - analytical tests and sampling locations which will be used to determine initial soil/waste quality, and to monitor hydrocarbon degradation and salt levels;
     - time period required to complete the landfarming procedure and the criteria which will be used to determine when that point has been attained;
     - proximity to residents other than the landowner; and
     - name and telephone number of person responsible for the disposal operation.

2. For salt-based drilling mud systems, a disposal plan should indicate:

   - Type and amount of salt to be used as a system base and the reasons why this system was chosen.
   - Estimated total volume of drilling waste to be generated.
   - Listing of mud additives to be used.
   - Type of treatment/disposal process to be used (e.g. subsurface injection, freshwater washing).

- Predicted concentration of salts to be in the waste at the time of disposal/treatment.

- For landspreading operations, provide a location and general description of the site to be used, indicating:

  - current land use, topography, vegetation type, soil horizon used for disposal, topsoil depth, and size of disposal area;
  - measures implemented to contain surface runoff and subsurface contamination;
  - procedures and timing to be followed, and depth of initial incorporation into the soil, as well as any subsequent waste/soil cultivation or tilling;
  - type of soil amendments which will be used to promote soil reclamation;
  - analytical tests and sampling locations which will be used to determine initial soil/waste quality, and to monitor salt control;
  - time period required to complete the landspreading procedure and the criteria which will be used to determine when that point has been attained;
  - proximity to residents other than the landowner; and
  - name and telephone number of the person responsible for the disposal operation.

Multiple Well Drilling Programs

Operators intending to drill several wells in a specific geographic area are invited to contact the appropriate regulatory agency in cases where:

- The same drilling mud system will be used for all the wells under consideration in the program.

- Drilling fluid will be reused between wells to the maximum extent practical.

- Drilling waste volumes generated will be kept to a minimum.

The discussion of sampling, analysis, and disposal options will be conducted at least 4 weeks in advance of the drilling program being initiated in order to determine what sampling, analysis, and disposal options may be available.

In the case of multiple well programs, all or only selected sections of the drilling waste disposal guidelines may be required to be met by the regulatory agency. However, the soil loading rates specified in Guide G-50 will not change.

Disposal While Drilling

This disposal procedure has been implemented on a trial basis and it is evident that it has certain benefits when used in the appropriate drilling situation. At this time, however, the regulatory agencies believe that a specific provincial policy dealing with this procedure is premature. Operators considering this disposal option should contact the appropriate regulatory office to ascertain the current approach being implemented. Collection of information related to this process will continue and a more definitive policy may be formed after discussions with all segments of the drilling industry.

Alternate Disposal Options

Disposal procedures not addressed by this document or Interim Directive ID 93-1 and Guide G-50 will be considered for approval by the regulatory agencies on a case-specific basis. As experience and information on unique or innovative disposal operations is gained, policies will be published and implemented. Operators must contact the appropriate regulatory agency administering the land which may be affected by the procedure.

Drilling Waste Database

The ERCB, on behalf of the drilling industry and the other government agencies involved, is initiating the recovery of sump disposal information in a comprehensive database. These data will be used to monitor numerous aspects of the drilling waste disposal process and will be referenced when the current policies are formally reviewed after a 2-year operational period. To the extent possible, analytical data from all wells drilled in the province, irrespective of the type of drilling mud formulation, will be collected and retained. A form which attempts to capture the required data is attached to this informational letter and will also serve for notifying the regulatory agencies that the guidelines have been met and disposal is ready to proceed. Operators must submit this form with all required information complete, and may be asked to provide support information in some cases.

This document is endorsed by the following regulatory agencies and additional information can be obtained from:

- Private Land
  Energy Resources Conservation Board
  Environment Protection Department
  640 - Fifth Avenue S.W.
  Calgary, Alberta T2P 3G4
  (403) 297-3186

- Public Land (White Area)
  Alberta Agriculture, Food and Rural Development
  Industrial Land Management Section
  7000 - 113 Street
  Edmonton, Alberta T6H 5T6
  (403) 427-6597

- Public Land (Green Area)
  Alberta Environmental Protection
  Forest Management Division
  Forest Land Use Branch
  9920 - 108 Street
  Edmonton, Alberta T5K 2M4
  (403) 427-3582

H. O. Lillo, P.Eng.
Manager
Environment Protection Department

Attachment

NOTIFICATION OF DRILLING WASTE DISPOSAL

TO:
- ☐ Energy Resources Conservation Board
- ☐ Alberta Agriculture Food & Rural Development - Public Lands
- ☐ Alberta Environmental Protection - Forestry

Licensee: _____

Surface Location: LE _____ **LSD** _____ **Sec** _____ **Twp** _____ **Rge** _____ **W** _____ **M**

Well Licence #: _____

Licence of Occupation #: _____ **M.S.L. or R.O.E. #:** _____

Surface Location of Sump: ☐ **Same as well, or** ☐ **LE**___ **LSD**____ **Sec**____ **Twp**____ **Rge**____ **W**___**M**

Mud Type (please specify): _____

Special Case Disposal? ☐ **Invert based** ☐ **Salt based** ☐ **Other** _____

Well Depth (m.): _____ **(metal analysis required if >2,300 m.)**

A) SOLIDS

Moisture content θm _____
Oil content (%) _____

Saturated Paste Data

pH _____
E.C. dS/m _____
Saturation % _____

Ca mg/L _____
Mg mg/L _____
Na mg/L _____
Cl mg/L _____
S.A.R. _____
Wet Bulk Density kg/m^3 _____

Metals (if required)

B mg/kg _____
Cd mg/kg _____
Cr mg/kg _____
Cu mg/kg _____
Pb mg/kg _____
Ni mg/kg _____
V mg/kg _____
Zn mg/kg _____

Volume solids ___ m^3

B) LIQUIDS

pH _____
E.C. dS/m _____

Ca mg/L _____
Mg mg/L _____
Na mg/L _____
Cl mg/L _____
S.A.R. _____

NO_3 (as N) mg/L _____
NH_4 (as N) mg/L _____

T.S.S. mg/L _____

Volume liquids ____m^3

C) RECEIVING SOIL

Saturated Paste Data

pH _____
E.C. dS/m _____
Saturation % _____

Ca mg/L _____
Mg mg/L _____
Na mg/L _____
S.A.R. _____

Soil Horizon _____
Soil Texture _____

Landspread area available (ha) _____

(metal analysis required if area < 0.75 ha)

D) TOTAL METAL ADDITION TO DRILLING MUD

(Report if Maximum amount exceeded)

	Amt. added (kg)	Max. amt.
B	_____	2.5 kg
Cd	_____	0.75 kg
Cr	_____	50.0 kg
Cu	_____	100.0 kg
Pb	_____	50.0 kg
Ni	_____	12.5 kg
V	_____	50.0 kg
Zn	_____	5.0 kg

(metal anlaysis required if > maximum amount)

E) MICROTOX BIOASSAY (liquids)

Sample (Y/N)

Colour: _____ Clarification:
Turbidity _____ Filtration _____
pH(initial)_____ Centrifugation _____
pH(final) _____ Colour corr. _____

	(Step 1)	(Step 2 if required)	
	Original	Charcoal	Aeration
EC 50(5)	_____	_____	_____
EC 50(15)	_____	_____	_____
EC 20(5)	_____	_____	_____
EC 20(15)	_____	_____	_____

List mud additives if original failed: _____

_____

_____

_____

DRILLING WASTE DISPOSAL RATE CALCULATIONS

LANDSPREADING

	(measured)	
pH (of waste/soil mix)	_____	6.5 - 8.5

	Application Rate (m /ha)	Spread Area (ha)	Spread Thickness (cm)
E.C.	_____	_____	_____
Oil Content	_____	_____	_____
S.A.R.	_____	_____	_____
Cl	_____	_____	_____
B	_____	_____	_____
Cd	_____	_____	_____
Cr	_____	_____	_____
Cu	_____	_____	_____
Pb	_____	_____	_____
Ni	_____	_____	_____
V	_____	_____	_____
Zn	_____	_____	_____
N	_____	_____	_____

Total waste volume for landspreading _____ m^3
Spread area required for limiting parameter _____ ha
Spread area available _____ ha

MIX / BURY / COVER

	(measured)	
Cl concentration (of waste/soil mix)	_____	2,000 mg/kg
Oil content (of waste/soil mix)	_____	0.1 %

	Maximum Amount Added (kg)	Amount (kg)
Cl	_____	1,600 kg
B	_____	10 kg
Cd	_____	3 kg
Cr	_____	200 kg
Cu	_____	400 kg
Pb	_____	200 kg
Ni	_____	50 kg
V	_____	100 kg
Zn	_____	600 kg
N	_____	400 kg

Total waste volume for mix/bury/cover _____ m^3
Limiting parameter _____

Briefly describe sump treatments and disposal plan: _____

_____ (attach extra pages if necessary)

OFF LEASE DISPOSAL INFORMATION

☐ Landspread LE _____ LSD _____ Sec _____ Twp _____ Rge _____ W ____ M
☐ Deep well disposal LE _____ LSD _____ Sec _____ Twp _____ Rge _____ W ____ M
☐ Other _____ LE _____ LSD _____ Sec _____ Twp _____ Rge _____ W ____ M

Surface owner, and occupant consent granted? ☐ Yes
Name of contact granting consent: _____ Phone: _____
Special conditions: _____

LICENSEE INFORMATION

Name:
Phone:
Date of Application:

REGULATORY INFORMATION

Name:
ERCB/Public Lands/Forestry: Office _____
Date of Receipt:

ERCB

Energy Resources Conservation Board

640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-7

To: All Oil, Gas, and Oil Sands Operators

30 June 1993

ORPHAN WELL FUND — 1993 ORPHAN WELL LEVY

The 1993 Orphan Well Levy will be $60 per inactive well with assessment through the Energy Resources Conservation Board's (ERCB) Administrative Levy System as a separate invoice on a licensee's inactive wells. For the purpose of this levy, an inactive well was defined as any well which recorded 12 consecutive months of nil production or injection in the 1992 calendar year, excluding abandoned wells, observation wells, and domestic wells. Wells placed on production strictly for testing purposes are considered to be inactive wells.

With respect to invoicing by licensee rather than by operator, the Board regrets that it is unable to bill by operator as that information is not readily available for inactive wells on the ERCB database. The ERCB would therefore expect that each licensee resolve payment of the levy with its working interest partners and submit the total amount owing to the Board. Invoices for the Orphan Well Levy will be mailed on 5 July 1993.

Any inquiries respecting this fee should be directed to the Financial Accounting Department, Yasmin Jamal at 297-6990.

J. P. Prince, Ph.D.
Vice Chairman

ERCB

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-8

TO: All Oil and Gas Operators
All Waste Disposal Facility Operators

2 September 1993

UPSTREAM PETROLEUM WASTE MANAGEMENT STEERING COMMITTEE REPORT TO THE ERCB ON RECOMMENDED OILFIELD WASTE MANAGEMENT REQUIREMENTS

The purpose of this informational letter is to advise operators that the ERCB assumed jurisdiction for upstream oilfield waste on 1 September 1993 and that copies of the draft Recommended Oilfield Waste Requirements document are now available.

On 3 December 1992, a multi-stakeholder committee was established to prepare oilfield waste management requirements for the ERCB to implement when it assumed jurisdiction for regulation of upstream oilfield wastes on 1 September 1993. A steering committee was made up of representation from the following organizations:

Energy Resources Conservation Board
Alberta Environmental Protection
Alberta Special Waste Management Corporation
Canadian Association of Petroleum Producers
Alberta Health Unit Association
Alberta Oilfield Treating and Disposal Association
Environmental Services Association of Alberta

All the subcommittees have completed their work and the Steering Committee has reviewed and consolidated the information into a report entitled, "Recommended Oilfield Waste Management Requirements" which was submitted to the Board on 24 August 1993. The Steering Committee reached consensus on all aspects of the requirements, however, it identified several areas where further work and clarification are needed.

The requirements are a compilation of the new Environmental Protection and Enhancement Act (EPEA) and Regulations, Alberta Environmental Protection guidelines, requirements currently written into Alberta Environmental Protection's Licences to Operate, Oil and Gas Conservation Act and Regulations, and ERCB informational letters, interim directives, and general bulletins. A brief description of the contents of this report is shown in Attachment 1 to this informational letter.

Final review of the draft report by the Board has not yet been completed. Given that the report is, to a large degree, a compilation of existing regulations for waste management, it was felt reasonable to apply the requirements as set out in the draft immediately. Once Board review is completed, industry will be advised as soon as possible of any substantive changes. Following Board ratification of the draft report, a process of further industry and public review will be carried out. The goal will be the production of final Oilfield Waste Management Requirements within 12 to 18 months.

To initiate the industry/public review, a group comprised of those organizations listed above, plus representation from environmental non-government organizations, has been established. This group will distribute the report for public and industry input as soon as the Board has completed its review. The group will then assess the input it receives and recommend to the Board how any remaining public review process should proceed.

The draft Recommended Oilfield Waste Management Requirements document is available for viewing at the ERCB offices and can be picked up from the Information Services Department.

If you have any questions, please contact the ERCB's Environment Protection Department at 297-3642.

H. O. Lillo, P.Eng.
Manager
Environment Protection Department

ATTACHMENT 1

"RECOMMENDED OILFIELD WASTE MANAGEMENT REQUIREMENTS" CONTENTS

Report Section	Contents	Primary Source
1. Introduction	Brief overview of report contents and committee	N/A
2. Definitions	List of relevant definitions	EPEA, Oil and Gas Conservation Act
3. Oilfield Waste Policies	Describes responsibilities of those involved with oilfield waste, oilfield waste regulatory process, ERCB waste management philosophy	ERCB
4. Oilfield Waste Management Facility Requirements	Detailed application process and requirements for oilfield waste facilities	EPEA (Activities Regulation, Waste Control Regulation), Hazardous Waste Storage Guidelines, Guidelines for Industrial Landfills, Guidelines for Land Treatment of Industrial Waste, Guidelines for Design and Operation of Refuse Incinerators in Alberta, ERCB IL 85-16 "Storage, Handling and Disposal of Oily Wastes"
5. Guidelines for Oilfield Waste Characterization	Expectations and methodology for oilfield waste characterization, listed oilfield waste classification based on historical knowledge, testing and origins of waste streams, methods identical to those in EPEA, "dangerous oilfield waste" used instead of "hazardous waste"	EPEA Waste Control Regulation, CAPP "Production Waste Management Handbook"
6. Guidelines for Oilfield Waste Manifesting and Tracking	**Proposed** manifesting and tracking system, **current** reporting and accounting requirements	Oil and Gas Conservation Regulations

Report Section	Contents	Primary Source
7. Guidelines for Oilfield Waste Storage	Design, monitoring and closure requirements for above ground, below ground and container storage of oilfield waste	EPEA Waste Control Regulation, Hazardous Waste Storage Guidelines, ERCB IL 85-16 "Storage, Handling and Disposal of Oily Wastes"
8. Guidelines for Oilfield Landfills	Design, monitoring and closure requirements for oilfield waste landfills	EPEA Waste Control Regulation, Guidelines for Industrial Landfills, CCME National Guidelines for the Landfilling of Hazardous Waste
9. Guidelines for Land Treatment of Oilfield Waste	Design, monitoring and closure requirements for oilfield land treatment facilities	Guidelines for Land Treatment of Industrial Waste, AEP Licences to Operate
10. Guidelines for Disposal Wells	Current requirements for disposal wells, description of proposed changes	ERCB
11. Guidelines for Thermal Treatment	Current incineration standards, description of ongoing standards development process	Guidelines for Design and Operation of Refuse Incinerators in Alberta, AEP Licences to Operate
12. Existing ERCB Waste Requirements	Listing of current ERCB waste requirements	ERCB
Appendix 1 - Analytical Methods	Listing of suggested test methods for parameters to be analyzed for in requirements of other sections	ERCB, AEP
Appendix 2 - Ground Water Evaluation and Details for Construction of Observation Wells	Description of ERCB expectations for design of and sampling from observation wells	Guidelines for Land Treatment of Industrial Waste

ERCB

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-9

To: All Oil and Gas Operators

13 December 1993

OIL AND GAS DEVELOPMENTS
EASTERN SLOPES (SOUTHERN PORTION)

EXECUTIVE SUMMARY

This informational letter (IL) was developed by the Energy Resources Conservation Board (ERCB) to confirm to all oil and gas operators the information required for developments along the southern portions of Alberta's Eastern Slopes. These requirements have already been communicated by ERCB staff directly to some companies with active development plans in this region. This IL is intended to ensure a common understanding of ERCB requirements exists among any other potential operators in this area, as well as other potentially affected parties.

The key points of the IL are:

- Any company intending to develop a project in the region is expected to carry out a thorough and effective public consultation program consistent with the sensitivity of the area proposed for development. The program should document both issues identified and resolved.

- At each stage of development (i.e. initial pool delineation, subsequent delineation, pool development) a potential operator will provide, in as much detail as practical, its best estimate of the overall extent of development. This is required in order to avoid piecemeal proposals and to ensure that the overall scope and potential impacts of the development, if permitted, are clearly understood.

- Applicants will be required to carry out environmental assessments for each proposed development stage. These environmental assessments will be of sufficient detail to allow the Board to determine whether the project's economic benefits and mitigation programs sufficiently outweigh any remaining social and environmental costs (i.e. that the project is in the overall public interest). The level of detail expected in any environmental assessment will vary with project stage, the ultimate scope of development, the relative sensitivity of the proposed development area, and the extent of other existing and potential developments (both energy and non-energy related) in the area.

- Operators proposing developments within this region are expected to consolidate their plans and activities with other operators to the greatest degree practical wherever this may reduce area impacts.

The ERCB is of the view that this approach to the planning of new developments within the Alberta Eastern Slopes will be of benefit to operators, directly-affected parties, and to the general public. Ultimately, it is expected that this program of public consultation, project pre-planning, environmental assessment, and coordination of corporate activities will significantly help to ensure that, should developments proceed with the Eastern Slopes, they will occur in a manner which best meets the interests of all Albertans.

INTRODUCTION

The Eastern Slopes region of Alberta, particularly from Highway #1 south to the United States border (Figure 1) has the potential for significant oil and gas exploration, development, and production activity. At the outset, it must be acknowledged that the environmental sensitivities of localized areas within the region defined by Figure 1 are highly variable. As a general guideline this IL applies to undeveloped or minimally-developed areas; however, circumstances may exist such that the expectations are appropriate for certain developed areas also. Initial consultation with ERCB staff and other stakeholders would assist in determining the applicability of this IL to a given area.

The Board recognizes that this IL presents a broader regulatory approach to oil and gas development in the Eastern Slopes which is still evolving. For this reason the ERCB considers this IL as an interim document, and is prepared to revise it as circumstances warrant.

BACKGROUND

Following the posting and subsequent sale of mineral leases for several large parcels of land in the southern portion of the Eastern Slopes, various interest groups and individuals raised concerns about the possible impacts of the potential development. These mineral leases were reviewed by the Crown Mineral Disposition Review Committee (CMDRC) prior to posting and sale by the Alberta Department of Energy (AE).

The CMDRC is chaired by the Land Reclamation Division of Alberta Environmental Protection (AEP) and includes representation or available advice from all departments, agencies and boards which have a direct interest in land use, resource development and utilization, and protection of the environment and the natural resources of the province. It reviews each parcel requested for posting to determine whether surface access is possible and, if so, whether access restrictions are necessary. Surface access may be unrestricted (except for specific requirements under existing legislation), subject to additional restrictions such as increased setbacks from valley breaks, limited to specific time frames to protect wildlife, or may be prohibited. This committee follows the resource management policies and guidelines contained in the cabinet-approved Integrated Resource Plans (IRPs) and forwards its requirements to AE, also a CMDRC member, for inclusion in the postings.

The ERCB is responsible for the licensing of oil and gas wells in Alberta. As a part of that responsibility, the ERCB must ensure that exploration and development drilling, as well as subsequent production operations in a given area, are appropriate and in the public interest and that environmental impacts are acceptable.

GENERAL EXPECTATIONS

With this as background, the ERCB is aware that many forms of industrial and recreational development have already occurred throughout the Eastern Slopes region. Further, the Eastern Slopes

Policy and related IRPs provide a framework for land use planning and management. The ERCB believes that it does not have the mandate to assess the appropriateness of the Eastern Slopes Policy or IRPs, but does have the obligation to assess the impacts of a proposed energy development and the appropriateness of it for the affected area in light of that policy. The Board may conclude for instance, that while development may be permissable under an IRP, the proposed development may not be appropriate for the specific area. The ERCB therefore believes that the public interest in the Eastern Slopes region presents a need for a somewhat broader regulatory review than may be typical in more developed areas of the province.

To this end the ERCB has four main areas for which it has certain expectations, as follows:

- Public Consultation – Proponents of energy developments in this region are expected to have early and open consultation with interested parties to identify stakeholders and specific issues, baseline environmental data and further data requirements, and attempt to resolve as many issues as possible. Initial consultation with ERCB and AEP staff would assist in scoping out issues and stakeholders. Applications are to be accompanied by a full description of the consultation process, issues identified, issues resolved, and status of remaining issues including research needs.

  The consultation process should provide for a focusing of issues and resolution of as many of those issues as possible. ERCB staff are prepared to assist in the event cooperative discussions are not achieved but would expect the proponents of the development to do the necessary ground work. Because of the potential sensitivity of the area it is expected that proponents would go well beyond the normal consultation process. Whereas public hearings may be necessary, the Board believes mutual resolution of the issues outside the hearing process remains the preferred route, as it may provide for a broader scope for resolution than does the hearing process.

  A multi-stakeholder committee known as the Eastern Slopes Environment and Energy (ESEE) Committee has been established, intended to foster communication on oil and gas development issues in the Eastern Slopes. Represented on the committee are member companies of the Canadian Association of Petroleum Producers (CAPP) that have an active interest in the region, AEP, AE, ERCB staff, and several environmental interest groups. The Board supports this process and encourages on-going dialogue amongst all stakeholders.

- Development Plans – The ERCB expects applications such as well licences (initially) and other surface disturbances such as pipelines and facilities (later) to be submitted as a part of a "development plan" rather than on a piece-meal or single-well approach. Accordingly, the ERCB requires applications, including several or multi-wells as appropriate, for the following phases:

  1. Pool Delineation (initial) — The ERCB acknowledges that a definitive development plan is usually not possible at the outset. However, it is important that even with the first exploration well some outline of the conceptual developments be provided. This information, of course, cannot be very definitive but will be helpful in scoping out potential impacts and related issues. This stage of development could involve several wells, rather than separate single wells, and should address conceptual pipeline and production facility plans as well as details of measures proposed to minimize the impacts of drilling, production, and testing operations.

This phase should include baseline environmental information for the impacted area of the potential development. This information, referred to as an "environmental assessment", would be intended to assess specific sensitivities of a given area to evaluate whether or not development is indeed appropriate within that area.

2. Pool Delineation (subsequent) – Recognizing that further delineation needs may result from initial development (should this proceed), a subsequent delineation plan may be necessary. Should this be the case, the ERCB expects composite plans rather than single-well proposals and more definite plans for mitigation of impacts from drilling, production, and testing operations (e.g. pads, innovative testing methods). Elaboration of pipeline/facility proposals would be expected also. Delineation proposals are to include well locations and associated drilling and waste management aspects, access, and test/short-term production scenarios.

3. Pool Development – Upon delineation, a pool development plan encompassing all facilities, pipelines, and associated infrastructures would be expected. The overall objective would be to minimize the intrusion and to mitigate the impacts wherever possible.

The Board accepts that initial and subsequent delineation phases would typically provide only conceptual future plans which are subject to revision depending on drilling and testing results. Each phase is subject to a separate application and, if appropriate, public hearing process. It is therefore intended that the initial delineation phase establish whether development in the area is appropriate and, if so, what issues must be addressed in subsequent development phases. The application process for subsequent phases then provides for assurance that previously-defined issues are properly addressed, and also provides for review of new issues.

- Environmental Assessments — The oil and gas well developments currently proposed for the Eastern Slopes region are set out in Part 2, Division 1 of the AEP Environmental Protection and Enforcement Act (EPEA) as activities for which an environmental impact assessment is not required by AEP. Notwithstanding, the ERCB will require proponents to file quality environmental data to properly assess the overall benefit/cost of these proposals. Applicants will be requested to provide to the ERCB a thorough "environmental assessment" which includes, but is not limited to, the following information:

  (a) an analysis of surface site and access road selection and construction procedures;

  (b) an analysis of baseline environmental conditions and major areas of concern;

  (c) a description and analysis of the significance of environmental, economic, and cultural impacts including regional, temporal, and cumulative effects;

  (d) options and plans to mitigate these impacts, including reasons why they should or should not be implemented;

  (e) plans to monitor predicted impacts and the success of mitigation measures;

(f) emergency response plans and contingency plans to deal with unpredicted impacts;

(g) description and results of initial public consultation programs and details of any future programs proposed; and

(h) plans to minimize accidental substance release to the environment and to minimize waste.

The aforementioned represents areas that the ERCB believes necessary to assess the overall impacts of a proposed development. The ERCB believes, however, that the level of detail to which this information can or should be provided will vary depending on the phase of development being proposed. For example, requiring a full, comprehensive environmental assessment may not be reasonable or even necessary during the exploratory or "initial delineation" phases of a project.

It may still be necessary, however, to conduct sufficient environmental baseline analyses to determine what specific sensitivities exist and also to determine whether some form of development is appropriate within the project area. At the point where the potential for full-field development is more clearly defined, by comparison, comprehensive attention to the full-range of environmental assessment criteria may be warranted. It is also recognized that the environmental sensitivities of regions within the Eastern Slopes are variable, and it is reasonable to expect that the level of detail of the environmental assessment information be consistent with the sensitivity of the area proposed for development. That is to say that for areas of lower sensitivity, an overview assessment may suffice, compared to an area of high sensitivity where thorough treatment of all environmental assessment criteria would be appropriate. As a rule areas that have had little or no intrusions will be considered to be more sensitive.

In any event, the ERCB will expect the applicant to identify the sensitivity of the area and matters of potential impact early in this process and to discuss these with both government and the public to ensure the final application deals with all relevant issues, and in the appropriate level of detail to allow the Board to consider the applications.

- Consolidated Plans Amongst Operators – Operators proposing developments within the Eastern Slopes area would be expected to consolidate efforts, to whatever degree possible, involving sharing seismic or reservoir/test data, pooling efforts and resources, and use of common roads, pipeline and utility right-of-ways, and general infrastructure with efforts aimed at minimizing surface impacts and disturbances.

The ERCB's objective in documenting these expectations is to ensure sufficient information is available to make informed decisions that are in the public interest. Given the level of public interest, the Board has assigned staff to assist with and aid in coordination of the process, particularly when discussing applications under the jurisdiction of the ERCB. Notwithstanding these resources, the ERCB reiterates that it relies on the proponents of the developments to take the lead role in identifying issues, contacting interested and affected parties, and resolving issues where possible.

Questions or concerns may be addressed to Mr. Nelson Lord at 297-8159 of the Board's Drilling and Production Department, or Mr. Roger Creasey at 297-3187 of the Board's Environment Protection Department.

F. J. Mink
Vice Chairman

L. P. Prince, Ph.D.
Vice Chairman

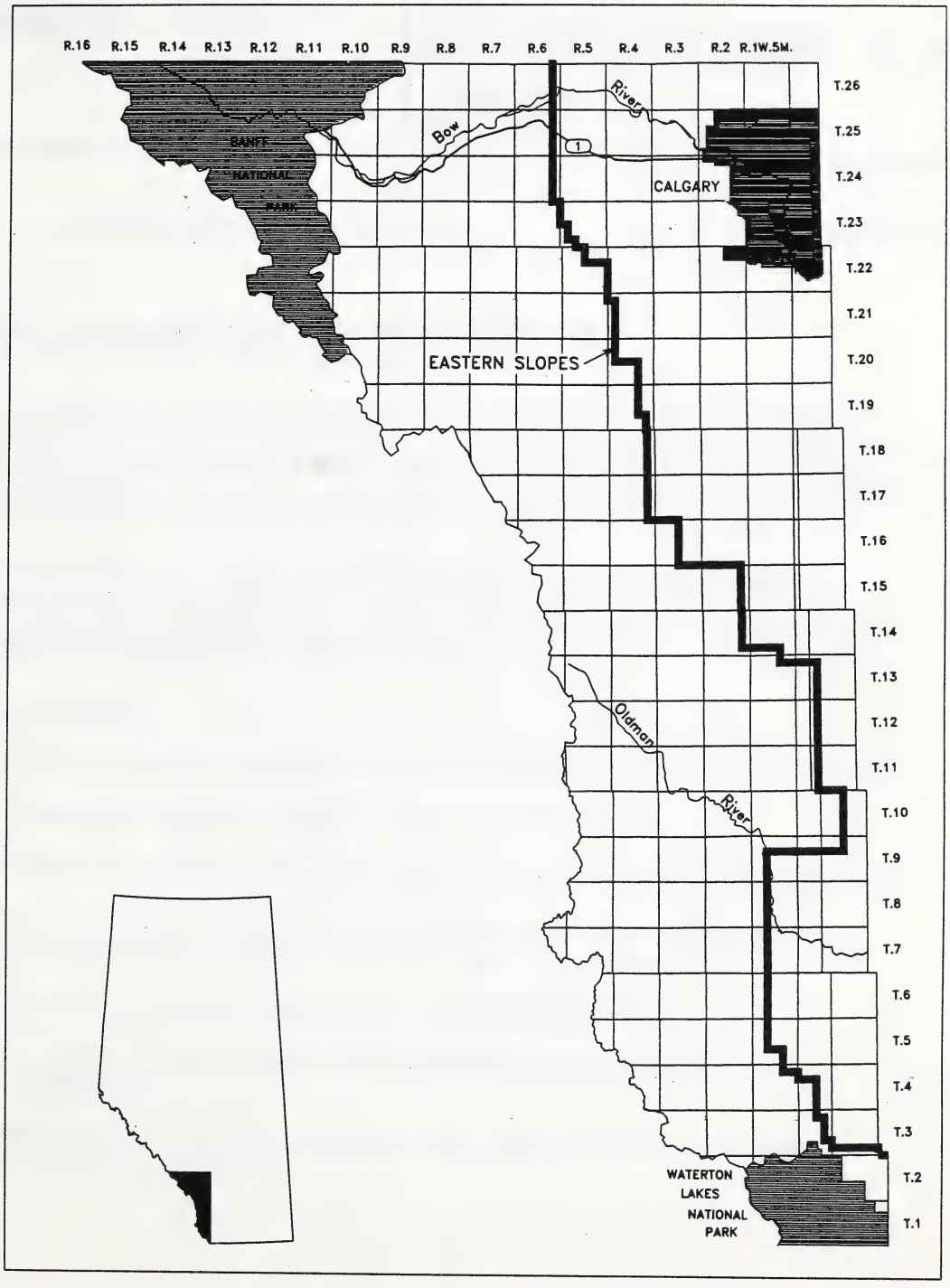


FIGURE 1 : EASTERN SLOPES SOUTHERN PORTION

ERCB

Energy Resources Conservation Board
640 Fifth Avenue SW
Calgary, Alberta
Canada T2P 3G4

Informational Letter

IL 93-10

TO: All Southeastern Alberta Shallow Gas Operators

20 December 1993

REVISED MEASUREMENT AND ACCOUNTING PROCEDURES FOR SOUTHEASTERN ALBERTA SHALLOW GAS WELLS

Informational letter IL 91-7, issued in September 1991, updated and reduced testing and reporting requirements for Southeastern Alberta shallow gas wells. These changes recognized the unique nature of the production from the Medicine Hat, Milk River, and Second White Specks shallow gas pools in Southeastern Alberta. Since that time, General Bulletin GB 93-6, issued 31 March 1993, eliminated the control well program which was no longer necessary for reservoir management purposes.

The Energy Resources Conservation Board (ERCB) continued to review the measurement and accounting procedures in this area and have identified further opportunities to reduce regulatory requirements while maintaining appropriate operational and reporting practices. The recent changes are now being consolidated into this IL, which supersedes IL 91-7.

The key revisions are:

- removal of areal size limitations for a Southeastern Alberta shallow gas well proration battery,
- establishment of operational criteria for determining battery size, and
- removal of mandatory use of the ERCB deliverability equation for test gas volume adjustments.

In addition, the ERCB has established procedures which should ensure that a simplified transition occurs between the previous requirements and the new ones. These include the following:

- conversion of existing proration batteries to the new sizing criteria, and
- automatic conversion of the ERCB production data base for control wells from measured to prorated status.

The following sections discuss the changes in more detail and also identify those requirements that remain unchanged from the IL 91-7.

Qualified Wells

Gas wells which produce from the Medicine Hat, Milk River, or Second White Specks pools or which have commingled production from any two or more of these pools and are located in fields and areas specified in Schedule I of Board Order No. MU804, as amended, are qualified to be included in a gas well proration battery. Commingling of production without segregation in the wellbore continues to require approval by the ERCB's Gas Department.

Measurement of Group Production

The total gas production of a proration battery must be accurately and continuously measured. Any variance from this requirement, such as utilizing the difference between two or more meters, requires written approval from the ERCB.

Size of a Gas Well Proration Battery

There is no longer any specific size limit for shallow gas proration batteries. The appropriate size must be considered in terms of a gathering system's operation with the key factor being the ability to conduct the deliverability tests in a manner that treats each well in a battery equitably. This approach will generally result in the main pipeline system laterals being used to establish a group measurement point.

Testing Requirements

Each individual well must have a deliverability test conducted at least once per calendar year, subject to the following requirements being met. If these requirements cannot be satisfied, the operator must either reconfigure the system or test each of the individual wells within the battery once per month.

- The test must be of sufficient duration to clearly establish a stabilized flow rate.
- The test must be representative of the well's capability under normal operating conditions.
- Testing programs must ensure that all wells are treated equitably within their respective batteries. In particular, the ERCB would expect an operator to test a well as soon as practical after being tied in, and at least monthly until the production rate has stabilized.

Gas Reporting Requirements

The gas well production must be determined and reported as outlined in ERCB Guide G-7, Production Accounting Handbook. If gas is vented during well blowdowns it must be accounted for and included with the prorated production of each well. The use of the ERCB deliverability equation is no longer mandatory; however, any adjustments to test gas rates prior to proration must be applied to all wells in a consistent manner.

Water Reporting Requirements

The ERCB will continue to waive the reporting of water production for the qualified wells. However, the ERCB is concerned about the potential for environmental damage which can result from using earthen pits for water disposal or blowing down to the well-site surface, and is currently reviewing this practice.

If an operator is currently blowing a well to surface or using a pit, a water production rate test must be completed annually and a permanent record of the following information retained on file and made available to the ERCB's staff upon request:

- the location of all surface pits and well-site surfaces utilized for disposal;
- a record of the volume of water produced into each pit or onto each well-site surface;
- the details of the annual well water production rate test;
- an analysis of the produced water, which must contain these parameters: TDS, pH, specific conductivity, boron, and major ions (Ca, Mg, Na, K, Cl, $S0_4$, $HC0_3$, $C0_3$, OH).

Under no circumstances may the volume of water disposed to an earthen pit or onto a well-site surface exceed 15 cubic metres per month.

TRANSITION METHODS

Conversion of Existing Control Wells

The conversion of control wells to prorated wells will not require an S-7 submission to change the well testing frequency from measured to prorated as would normally be required. Board staff made a one time system change on 15 April 1993. However, commingling of segregated zones must receive prior approval from the ERCB's Gas Department.

Conversion of Existing Proration Battery Size

Operators may merge existing proration batteries to meet the new sizing criteria by submitting a request letter and two copies of a gathering system map, which indicates the proposed modifications and consolidations, along with a table showing battery codes which are to be deleted and battery codes which are to be retained.

Any questions concerning this letter may be directed to the Drilling and Production Department, Rick Palmer at 297-8321 or Earl Quantz at 297-8324.

J. R. Nichol, P.Eng.
Manager
Drilling and Production Department

RP/lm