

Marcellus(/Utica) Gas/Oil Lease Issues and Conditions¹

Water Issues:

A drilling company is only responsible for damage to water supplies that lie within 2000 feet of the borehole opening for SIX (6) months following drilling. Other than delivery of a water tank and generally keeping the tank full, the company has little further responsibility. This is a stop-gap measure. The company should eventually, at the least, provide a permanent solution.

A recent study by The Pennsylvania State University has shown that 18 per cent of the wells has produced contamination of water wells in this vicinity from current Marcellus Shale drilling.

Economic Terms:

Some evidence already exists that property values on and near where drilling has been done have significantly dropped.

Forced-pooling ('unitization' according to Gov. Tom Corbett): flat 12.5% royalty, no land lease value. Anyone who refuses to sign a lease, within an industry designated production area, gets a double whammy. Normally, production area development costs are shared among all lessors. New, forced pooling policies charge those in the "forced pool" **four** times the prorated development costs. This is an out-of-pocket expense, a tax, a penalty, imposed on a land owner by the drilling/production company – and not only permitted, but endorsed, by the Commonwealth of Pennsylvania.

Standard lease: Current signing bonus \$3000 per acre, 15% production royalty, after development cost amortization, in current leasing procedures.

Royalty Payment:

The mandated state minimum is 12.5 per cent of net profit adjusted for the stake, the interest, in the drilling unit (which is usually one square mile, 640 acres). Standard royalty payment is 15% of produced value.

Lessor should insist on a statement of both production volume and dollar amount with **each** royalty check. Otherwise, how will the lessor know the basis for the agreed upon compensation?

Royalty payments are made in proportion to the amount of gas produced. Generally, eighty (80) per cent of the available gas will be produced within three (3) years. The well may then need re-fracturing to continue production.

If a well produces gas on your leased land, you most likely will **not** get free gas – no inexpensive or convenient way, for one residence, exists to add the required safety odorant. You may receive a fuel allowance, but don't count on it.

If no well is drilled on your land, you don't get FREE natural gas, and you may not be given a monetary fuel allowance.

Oil:

A lease should stipulate that any petroleum, specifically, extracted should provide a royalty.

¹ I am indebted to my colleague, Dr. Robert Hinds, Geologist, for a private conversation on 26 August 2011.

Utica Shale Gas Reserves:

Unless the lease specifically mentions royalties for Utica Shale Gas production, eventual, deeper drilling into the Utica formation, a far larger gas reserve, will be done without a royalty payment to the lessor, or for any additional gas producing formations.

Forced pooling is already in effect for the Utica Shale. In fact, all gas and petroleum reserves below the Onondaga geological formation are subject to forced pooling!

Drilling Pad Site Size and Location:

A minimum of FIVE (5) acres is required for a drilling pad and associated facilities. Property lessor has ABSOLUTELY NO SAY in the placement of a drilling pad OR any access roads!

Any gas compressor site location will be determined by the lessee, **not** the lessor

Gas compressor sites usually are not placed on the drilling pad; compressor sites usually require more the five acres.

Liability:

Liability(ies) are now (only recently has this become the standard clause in a lease) shared between lessor and lessee. Forced pooling, “unitization,” releases a poolee (unitee?) from liability, **if** they did not lease or sell their gas rights! .

That is, any lawsuit brought against a particular drilling action, physical damage, water contamination, water loss, *etc.* could burden the landowner, the lessor, with unexpected legal costs.

Drilling and Fracking Duration:

Drilling and hydrofracturing, *per* borehole, takes two to three months. Each well drill pad can accommodate up to 10 separate boreholes for each formation. Drill rig and ancillary equipment could be in place for up to **three to six years**, or more. If these sites are later used for Utica Shale exploration and production, three to six years of additional presence would be required.

Environmental Issues:

Current Pennsylvania laws regarding mineral extraction date back to the early days of petroleum production and do not reflect technology change – for either better or worse.

A) Atmospheric Emissions

1) Drilling Operations

- a) Any volatile material entrained in returning drilling mud may be emitted without control.
- b) Any discharge of gas or petroleum derived volatile materials during drilling are not controlled.
- c) Hydrocarbon storage tank emissions, from produced “gas liquids,” seem to need not be controlled or confined.

2) Compressor stations

- a) While the technology to insure that compressor stations are emission-free seems to exist, compressor stations presently have notorious reputations as indiscriminate emitters, particularly of volatile organic compounds such as benzene, and nitrogen- and sulfur-containing compounds; these usually have odors ranging from objectionable to sickening. Nitrogen-containing compounds can be corrosive and sulfur-containing substances can be quite toxic.

B) Mud² Storage Pits

- 1) Drilling mud storage pits are supposed to be lined, and are. This does not prevent leaking or guarantee that no leaks will occur.
- 2) All impoundments associated with any phase of drilling are required to be **ONLY 125 feet** from any waterway, regardless of size or environmental importance.
- 3) When drilling concludes, simply placing an impermeable covering over the “mud pit” constitutes an acceptable disposal practice. This is storage, not disposal. Occasionally, drilling chips may be removed for disposal at a sanitary land fill.

C) Noise

A conversation between two persons normally occurs at a sound intensity of 70 dB. A very soft whisper is 40 dB quieter.

A shouting voice exhibits a sound intensity of 90 dB. We don't generally like to be around people who shout.

A small aircraft engine generates a sound intensity of 125 dB. The pilot and passengers customarily wear noise reducing headsets.

A 2000 horsepower engine operating at full power will generate approximately 134 dB of sound.

Oil and gas drilling operations **must be continuous!** Except when moving the drill rig for a new hole, all engines will be running. Once strata containing gas or oil has been encountered, pressurized drilling mud, from the “mud pump,” must always be present in the well bore.

Each day of no gas flow “costs money” in that no gas or oil can be sold.

A drill rig requires separate power plants for:

- 1) The Kelly Table which rotates the drill pipe – 2000+ hp³.
- 2) Hoisting gear to lift the drill string – 200 to 500 hp
- 3) Mud Pump – 500 hp
- 4) Hydrofracturing pump (limited use) – 500 to 1500 hp

Industrial diesel engines have limited muffling and operate at half, or better, of rated power. Much of the noise arises directly from fuel ignition – an EXPLOSION. Enclosures only protect the engine from rain and have **no** sound absorbent material.

These are **not** automobile engines running at 10 to 15 per cent of rated power!

Noise levels **will** exceed 105 dB. Industrial situations require mandatory hearing protection when noise levels exceed 90 dB.

² Drilling “mud” predominantly contains ‘clays,’ predominately *barite*, a high density clay containing a high proportion of barium, a toxic heavy metal. This clay raises the mud density to more effectively carry pulverized rock to the surface. High density “mud” also helps to ‘contain’ gas or oil, under pressure, within the bore hole to prevent a “blow-out.” Other additives help to lubricate the drill bit and tubing on contacting well bore wall.

³ These power ratings are approximate.

People residing within a 1000 feet will experience continuous, objectionable noise!

D) Emergencies

- 1) Fire – Local volunteer fire companies are not trained to handle any kind of a gas fire larger than a 500 gallon propane – comparatively low pressure gas.
- 2) Medical – Anticipated Injury Types – Most local Volunteer Fire Companies are not trained to handle nor are they capable of handling one to five simultaneous injury cases of:
 - a) Burns
 - b) Crush injuries
 - c) High pressure hydraulic fluid leaks
 - d) Asphyxiation
 - e) Carcinogen exposure and other toxic substances cannot be determined
- 3) A Well Blow-Out – In the two recent examples, within Pennsylvania, of well blow-outs, crews capable of handling the problem had to be imported from Texas or Oklahoma.

Corporate Culture:

A) There isn't any! No unified organizational connection exists among all aspects and activities. Each aspect or activity is independent. No unified organizational connection is given for the whole effort.

Why? See below! No relationship, other than the transfer of money, exists between all of the personnel present on a drilling site.

B) Each defined activity or service:

- 1) drill rig moving,
 - 2) drill rig ownership,
 - 3) the drilling process,
 - 4) drilling mud formulation and management,
 - 5) casing supply,
 - 6) water and chemical transport
 - 7) casing installation,
 - 8) blow-out preventer installation,
 - 9) casing cementing,
 - 10) fracking,
 - 11) production piping and plumbing,
 - 12) gas-liquids separation and storage,
 - 13) delivery of produced gas to a pipeline,
 - 14) collection pipeline construction, and
 - 15) collection pipeline operation
- etc.*, will be provided by a separate corporation.

Why? To minimize liability exposure! Each corporate entity exists only for a

limited, restricted purpose, the duration of the required activity, and may be either quickly, easily dissolved OR entered into bankruptcy. Whom can you sue or who will you sue? Should lawsuits be necessary for damages related to these operations, legal actions would be exceedingly complex and costly.

- C) From the accidents that have already occurred at drilling sites, in Pennsylvania, Texas, Louisiana, Arkansas, Colorado, Wyoming, *etc.*, legitimate questions about the extent of personnel safety training can definitely be raised.

Of 7,897 permitted well pads, the Department of Environmental Protection for the Commonwealth of Pennsylvania, has recorded violations for 3,289 as of September, 2011.