

Comments on Minerals Management Service (MMS) Proposed Rule published May 18, 2007: Royalty Relief-Ultra-Deep Gas Wells on OCS Oil and Gas Leases; Extension of Royalty Relief Provisions to OCS Leases Offshore of Alaska, 1010-AD33.

Impact of Royalty Relief Measurement

Both Congress and MMS have provided a variety of royalty relief schemes with the goal of encouraging production. For example DWRRA resulted in an increase of leasing. The question if this increased leasing actually produced additional production is still an unresolved question. The case at hand is royalty relief for deep gas. The supporting document *Programmatic Effects of the Deep Gas Incentives in the Energy Policy Act 2005* indicates that about 10 to 12 percent of recent deep gas drilling is due to royalty relief incentives. That is a step forward towards measuring the impact of royalty relief incentive on production. A definitive analysis would need the proven original reserves. The most recent public proven reserves report is as of 12/31/2003 (<http://www.gomr.mms.gov/homepg/offshore/fldresv/resvmenu.html>). It will be several years before that data will be available. In the supporting spreadsheet to the document makes an assumption of a constant reservoir size based on existing historical data.

At first reading that a constant reservoir size would appear to be a reasonable assumption. I believe this assumption is suspect. Using the data (Table 4, <http://www.gomr.mms.gov/homepg/pubinfo/freeasci/geologic/estimated2003.html>) of the most recent reserves report, I extracted the Gas Fields in water depth of 200 meters or less. They have the following statistical attributes:

Number of Fields	868
Mean Size in BCF	147
Median Size in BCF	38.55
Maximum Size in BCF	3,171

This surrogate for deep gas reservoir size shows a dramatic variation. That is not consistent with a constant reservoir size. Further historical experience is that the larger targets generally get explored and developed first. Taking the same data computing the mean field size discovered in the time interval 1986-1990 and 1996-2000 yields these these field sizes:

	1986-1990	1996-2000
Mean in BCF	35.3	18.5

This surrogate data suggests the size of discovery is declining with time.

This is not a arcane statistical issue, but rather key attribute of the effectiveness of the policy. Are the 10 to 12 percent of the wells drilled which as the study indicate associated with royalty relief incentives located in average sized reservoirs or are they located in smaller reservoirs that are only economic with the royalty relief? If the MMS assumption on reservoir size is correct, then around 10 percent of the production is due to the incentive. If the reservoirs are much smaller then the share of production due to incentive will be corresponding smaller. Size does matter.

I stated previously that proven reserves is the definitive measure, but that is several years away. I suggest that data already held by MMS can provide insight to the question of reservoir size. That is the initial production rate. For example, the well production for the first 12 months is an excellent surrogate for the reservoir size. If the mean first year production of a well from before the policy and after policy is the same then that is a good indication the MMS assumption on reservoir size is valid. If the average first year is dramatically smaller then there is good reason to believe the contribution to production from the incentive is much less than 10% of the total. My analysis above indicates the potential for a declining reservoir size through time. A regression approach can be employed to

correct for this situation.

I recommend that MMS revisit this issue using initial well production approach to the analysis.

Water Depth

A key determining attribute of the proposed rule is water depth. Some of the provisions of the proposed rule do not have a sunset date. MMS has lease contracts have been in place for over 50 years and with no signs of imminent relinquishments. Given these relatively long time horizon, the regulations should address the contingency of increases or decreases in sea level. This is prudent so both the lease owner and MMS will have established policy and procedures in that event.

Royalty in Kind (RIK)

MMS recently reported to congress a 26 million dollar gain due to RIK (<http://www.mrm.mms.gov/rikweb/PDFDocs/RIKPRPFY2006.pdf>). The proposed rule and support documents are silent on RIK. I must presume then that the implied policy is if the market price is below the price threshold, no royalty is due, otherwise the royalty must be paid in value.

This places a burden on the lease owner depending on violent fluctuations of the gas market price. This burden is the staffing up or down in order to meet the requirement associated with royalty in value. I suggest a more economic process would be that the MMS take possession of the potential RIK product and market it. Then based on market price and price threshold send the proceeds of the RIK to the lease owner or the US Treasury as appropriate. This provides efficiency to both lease owners and MMS.

MMS needs to address the interaction of royalty relief and RIK.

If any clarification on these comments are needed, please feel free to contact me.

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