

Comments on the
SCIENTIFIC INVENTORY OF ONSHORE FEDERAL LANDS' OIL AND
GAS RESOURCES AND THE EXTENT AND NATURE OF RESTRICTIONS
OR IMPEDIMENTS TO THEIR DEVELOPMENT, PHASE II



Wyoming State Geological Survey
Challenges in Geologic Resource Development No. 4

Ronald C. Surdam, Ramsey Bentley, Seth Wittke, and Meg Ewald

Abstract

The WSGS analyzed the EPCA Phase II inventory in an attempt to understand why the analysis indicated that large percentages of federal lands and oil and gas resources, particularly in Wyoming, are "off-limits" to oil and gas exploration. EPCA Phase I results had painted a much less restrictive picture of federal oil and gas permitting. The removal of proved reserves from Phase II makes comparing it with Phase I nearly impossible, and accounts for discrepancies between the two analyses.

Introduction

The *Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and the Extent and Nature of Restrictions or Impediments to Their Development, Phase II*, was published in 2006 by the U.S. departments of Interior, Agriculture, and Energy to comply with the Energy Policy Act of 2005. The original Energy Act of 2000 (also known as the Energy Policy and Conservation Act (EPCA)), was amended by the Energy Policy Act of 2005. EPCA Phase I was prepared in response to the Energy Act of 2000, and EPCA Phase II was prepared in response to the Energy Policy Act of 2005.

As explained by the Bureau of Land Management (<<http://www.blm.gov/epca/qa.pdf>>), Section 604 of the Energy Policy and Conservation Act (EPCA) of 2000, as amended by Section 364 of the Energy Policy Act of 2005, required an inventory of all onshore federal lands to identify two things:

1. "United States Geological Survey estimates of oil and gas resources underlying these lands;" and
2. "The extent and nature of any restrictions or impediments to the development of the resources..." or in other words, the accessibility of the lands in question.

Under Phase II, lands were assigned to one of nine different categories, which defined degrees of accessibility based on lease terms and conditions. Each of these nine categories can be classified as meaning accessible or inaccessible.

According to the BLM, the inaccessible designation includes Phase II categories 1-4, described below:

1. *No Leasing (Statutory/Executive Order) (NLS)* are lands that cannot be leased due to Congressional or Presidential action. Examples include national parks, national monuments, and wilderness areas;

2. *No Leasing (Administrative) (NLA)* are lands withheld from leasing based on discretionary decisions made by federal land management agencies. NLA areas can include endangered species habitat and historical sites.

3. *No Leasing (Administrative), Pending Land Use Planning or NEPA Compliance (NLA/LUP)* are lands that have not yet undergone or are currently undergoing land use planning or NEPA analysis, and that are generally not available for leasing. In the cases where there is no land use plan in effect, non-federal mineral estate underlying federal land is categorized as NLA/LUP to reflect the fact that access to mineral estate can be allowed through the NEPA process.

4. *Leasing, No Surface Occupancy (NSO) (Net NSO for Oil & Gas Resources)* are lands that can be leased but ground-disturbing oil and natural gas exploration and development activities are prohibited.

These stipulations protect identified resources such as special status plant species habitat. Their surface areas are mapped as described by the land use plans. However, at least some of the resources can be accessed by directional drilling from nearby lands where surface occupancy is allowed. This is accounted for by creating an extended drilling zone (EDZ) that reduces the size of the NSO area. The area removed is then placed in the next most restrictive resource access category (5 through 9) that would otherwise apply in the absence of the NSO stipulation. Within the EDZ area the underlying resource is considered accessible even though the surface above it cannot be occupied by drilling equipment. After the EDZ is removed, the NSO area that remains is referred to as "Net NSO" (NNSO) and the resources under it are therefore considered inaccessible.

According to the BLM, the accessible with restrictions designation includes Phase II categories 5-8, described below:

5. *Leasing, Cumulative Timing Limitations (TLs)* on drilling of >9 months;

6. *Leasing, Cumulative Timing Limitations (TLs)* on drilling of >6 to ≤9 months;

7. *Leasing, Cumulative Timing Limitations (TLs)* on drilling of >3 to ≤6 months.

Categories 5-7 include lands that can be leased, but stipulations and/or COAs limit the time of the year when oil and gas exploration and drilling can take place. Timing limitation stipulations prohibit surface use during specified time intervals to protect identified resources such as sage grouse habitat or elk calving areas.

8. *Leasing, Controlled Surface Use (CSU)* are lands where stipulations and/or COAs control the surface location of natural gas and oil exploration and development activities by excluding them from portions of the lease. For example, a CSU stipulation could require an operator to develop a specialized mitigation plan based on the presence of moderately steep slopes. This category also includes the minimal areas that have timing limitations of less than three months.

Inaccessible lands were those that were not available for leasing, or were available for leasing but with no surface access available. Accessible lands were those that were leasable but with various restrictions applied. The least restrictive category is Leasing with Standard Lease Terms (SLTs), where no additional restrictive terms are added to a lease.

Analysis

When asked to comment on the Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and the Extent and Nature of Restrictions or Impediments to their Development, Phase II Cumulative Inventory, or EPCA Phase II, as well as compare it to Phase I, personnel at the Wyoming State Geological Survey made the following observations.

EPCA Phase I inventoried 59 million acres of federal land located in the western interior of the United States. Phase II inventoried 99 million acres, including all Phase I lands, northern Alaska, the Wyoming Thrust Belt, the Denver Basin, and lands in the eastern and southeastern United States. This effort marked a 40% increase in acreage inventoried, but resulted in a 30% reduction in accessible gas reserves and a 34%

reduction in accessible oil reserves. Phase I results showed that 87 trillion cubic feet (TCF) of gas and 2.2 billion barrels of oil within the inventoried area were deemed accessible under standard lease terms. Under Phase II, these amounts decreased to 25 TCF of gas and 743 million barrels of oil available. (See comparison chart)

The approximately 24 million acres in northern Alaska contain by far the most oil and natural gas, but approximately 60% of the oil and 50% of the natural gas under these lands is categorized as inaccessible. Including huge amounts of inaccessible Alaskan acreage containing large "recoverable" oil and gas resources paints a much more restrictive picture in terms of what lands and reserves are actually accessible.

Gas reserves almost as large as those in Alaska are located in the Greater Green River Basin (GGRB), but inclusion of areas such as the Wyoming Thrust Belt (WTB) in Phase II incorporates lands which are generally subject to a higher level of restriction.

Percentages of recoverable oil and gas reserves classified as inaccessible are 15% and 12%, respectively, under Phase I, versus 51% and 27% under Phase II.

Under Phase II, proved reserves were excluded from the accessible category. Proved reserves are the quantities of hydrocarbons that geological and engineering data demonstrate with a 90% degree of certainty are recoverable from known reservoirs under existing economic and operating conditions. They have already been drilled and are therefore deemed accessible and not subject to access restrictions.

The exclusion of proved reserves causes problems, especially when comparing the results of Phase I and Phase II. Removing fields with proven reserves such as Pinedale and Jonah from the "accessible" category excludes large amounts of accessible reserves that continue to increase in size as development progresses. The reserves in large resource plays like Jonah and the Pinedale anticline continue to grow as well spacing decreases and new drilling and well completion technology develops allowing for increases in or proven reserves. These new reserves are large and are accessible, and eliminating them from consideration in Phase II introduces bias towards a more restrictive picture than actually exists.

The Powder River Basin numbers haven't changed much between the two phases; however, there are thousands of new coalbed natural gas (CBNG) wells in the basin. It appears that a modified methodology was used in the Powder River Basin. Thousands of wells have been drilled in the Powder River Basin; yet the Phase II study has qualified none of the areas drilled as proved reserves. If the developed areas in the Powder River Basin were considered proved reserves; the calculated percentages of each category could change substantially.

The Phase II numbers for the Greater Green River Basin show a 13% increase in reserves in the "Restricted Beyond Standard Stipulations" category, and a 15% decrease in reserves in the "Standard Lease Stipulations" category. Removal of proved reserves from the calculations may have biased the data toward the two protected categories.

Land areas placed within the categories NLA/LUP (No Leasing, Administrative/Land Use Planning) were also moved into the "Restricted Beyond Standard Stipulations", or deemed "inaccessible". The "... NLA/LUP category is an area where a decision has not yet occurred and consequently the categorization may be less restrictive when the final land use plan is completed" (Phase II Report, p 94). This places additional federal land into the inaccessible category, increasing the amount of "recoverable resources" under restricted lands even though the actual leasing decision for these parcels of land has not been established as of the date of the report.

"The Phase II inventory finds that approximately 2,130 individual lease stipulations are being applied by the land managing agencies in the areas analyzed. To focus the analysis of constraints on oil and gas development, the inventory evaluates the onshore Federal lands: (1) where leasing is permitted under standard stipulations; (2) where leasing is permitted with varying limitations on access, principally seasonal occupancy restrictions; and (3) where oil and gas leasing is precluded or prohibited. The inventory also considers exceptions to stipulations that are granted after a review of on-the-ground conditions and the use of modern technologies such as directional drilling. The impact of conditions of

approval (COAs) attached to Federal drilling permits is also analyzed, which gives a more complete assessment of access constraints. A total of 175 unique COAs were identified and their effects on development evaluated. The nine categories of constraints analyzed in this report include the complete range of access restrictions associated with oil and gas leasing."

-Phase II Report, p 7

However, later in the report we find that many of the areas studied may not have been properly evaluated.

"Stipulations for Which No GIS Data Are Available. As noted in Section 2.1.2.3., specific efforts were made to assess stipulations where no GIS data were available. By count, approximately 39 percent of the 2,132 stipulations in the Phase II inventory do not have GIS associated with them. To the extent that this exists, the inventory overestimates access to lands and resources. This quantification had not been made in the Phase I inventory."

-Phase II Report, p 95

Also, in reference to the lack of GIS, Section 2.3.1.1 states:

"While it is impossible to assess the absolute magnitude of this issue, it is nevertheless believed to be significant. By item count, approximately 39 percent of total stipulations in the Phase II inventory do not have GIS associated with them. To the extent that this issue exists, the inventory overestimates access to lands and resources. The induced error is likely to be less than 39 percent as many of the missing stipulations are not likely to have large geographic coverage or may be outside a given study area. This issue points to a data gap to be addressed by federal agencies."

A possible error of 39% in the stipulations could significantly change the results of the entire Phase II inventory. There could be 39% fewer lease restricted areas, or possibly 39% more. We feel it would facilitate understanding of the study's conclusions to explain in

detail which study regions have these errors, and which areas in each region do not have associated GIS data.

Conclusions

The analysis above discusses several issues that highlight differences between the two inventories. Both inventories were designed to identify oil and gas resources underlying onshore federal lands, and to identify the extent and nature of restrictions or impediments to development of these resources. The conclusions drawn from Phase I and Phase II are so different that comparing results of the two phases is impossible. Most importantly, there is very little discussion of why new parameters and methodologies were adopted in Phase II.

For example, inclusion of proved reserves at Jonah and the Pinedale anticline would have offset the effect of including the Thrust Belt and unproved "reserves" (more correctly designated "potential resources"). Including the Thrust Belt and eliminating the proved reserves at Jonah and the Pinedale anticline significantly over-

states the restricted areas within Wyoming. Changing the methodology used to evaluate restrictions biased the results toward a far more restrictive leasing and development scenario than actually exists.

The fact that each phase analyzed a different set of resource categories also causes confusion. The Phase I inventory included proved reserves, recoverable resources, and potential resources. However, the Phase II inventory completely excluded proved reserves and instead introduced the term "technically recoverable resources" to refer to a category of natural resources somewhere between "proved reserves" and "recoverable resources." This new hybrid category allows inclusion of areas such as northern Alaska and the Wyoming Thrust Belt where resource development is more heavily restricted, while concomitantly providing for the exclusion of accessible proved reserves such as Jonah Field and the Pinedale anticline. This inconsistency emphasizes large areas of "inaccessible" resources while downplaying the existence of other large areas open to development.