

Appeals from decisions of the Wyoming State Office, Bureau of Land Management, increasing the rental rates for noncompetitive oil and gas leases. W-93527, W-83893, and W-90705.

Affirmed.

1. Oil and Gas Leases: Known Geologic Structure--Oil and Gas Leases: Noncompetitive Leases--Rules of Practice: Appeals: Burden of Proof--Rules of Practice: Evidence

A holder of a noncompetitive oil and gas lease who challenges a determination that certain lands are within the known geologic structure of a producing oil or gas field has the burden of establishing that the determination is in error. Where the finding is supported on the record by geologic evidence and the analysis of the Department's technical experts, the determination will not be altered in the absence of a showing of error by a preponderance of the evidence.

2. Oil and Gas Leases: Known Geologic Structure--Oil and Gas Leases: Rentals

BLM may properly require the holder of a noncompetitive oil and gas lease to pay an increased rental of \$2 per acre pursuant to 43 CFR 3103.2-2(d) where it determines during the lease term that any part of the land included in the lease is within a known geologic structure.

APPEARANCES: Donald R. Curry, Esq., Fort Worth, Texas, for appellants Winston L. Thornton and Bill T. Walker; Ann F. Hudson, pro se; Lowell L. Madsen, Esq., Office of the Regional Solicitor, Denver, Colorado, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE GRANT

Winston L. Thornton and other lessees 1/ have appealed from decisions of the Wyoming State Office, Bureau of Land Management (BLM), increasing

1/ The names of the lessees/appellants, the lease numbers, and the appeal docket numbers are set forth at Appendix A.

the rental rates for appellants' noncompetitive oil and gas leases. The basis for the decisions was that the land subject to the leases is situated within the expansion of the Big Piney-LaBarge Known Geologic Structure (KGS) designated August 15, 1986. We have consolidated these cases sua sponte because of the substantial similarity of legal and factual issues involved.

Each lease is a noncompetitive oil and gas lease issued by BLM pursuant to the provisions of the regulations at 43 CFR Subpart 3112 governing simultaneous filings and of section 17 of the Mineral Leasing Act, as amended, 30 U.S.C. | 226 (1982). 2/ By memorandum dated August 20, 1986, the District Manager, Rock Springs District Office, notified the Director, Wyoming State Office, BLM, that the lands included in appellants' leases had been found to be situated within an addition to the Big Piney-LaBarge KGS, effective August 15, 1986. In its decisions, BLM notified appellants of the increase in their rental rates "[b]eginning with the lease year which starts at least 30 days from receipt of this notice" from \$1 to \$2 per acre or fraction thereof through the fifth lease year and from \$2 to \$3 per acre for subsequent lease years. Appellants have appealed from these BLM decisions, alleging error in the KGS expansion.

An understanding of the basis for the expansion of the KGS to include lands embraced in appellants' leases is provided by reference to the Geologic Report for the Big Piney-LaBarge KGS by BLM geologist Dean P. Stillwell dated August 15, 1986 (Geologic Report). The Geologic Report explains that "[t]he Madison trap lies on the Moxa Arch, a broad, gently folded basement uplift" (Geologic Report at 2). The basis for the expansion of the KGS is explained in part as follows:

Amoco Production Company recently completed the Raptor Unit No. 1 well in Section 12, T. 24 N., R. 112 W. This well was completed as a CO₂ rich gas well in the Mississippian Madison Formation and is currently shut in. The well flowed non-combustible gas (96% CO₂) at a maximum rate of 13.14 million cubic feet of gas per day and 10 barrels of water per day from 30 feet of Madison perforations (16,466-16,496'). This well indicates that the Madison reservoir extends beyond its previ-ously known limits and that a gas/water contact occurs at the minus 9800 foot structure contour. Additional data from 17 other wells not available at the time of the last KGS evaluation of the Madison Formation has been used in making this determination.

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2/ Sec. 17 of the Mineral Leasing Act has subsequently been amended by sec. 5102(a) of the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA), P.L. 100-203, 101 Stat. 1330-256, to require that all available lands be initially posted for leasing by competitive bidding.

Stratigraphic cross-section A-A' (exhibit III) shows well developed porosity in the Madison Formation across the structure. * * * This stratigraphic cross-section of the Madison clearly shows well developed, correlative porosity (in particular, the porosity zone below the datum) in the Madison Formation across the entire structure. The high degree of correlation between equivalent stratigraphic intervals in each well strongly suggests that the reservoir is continuous across the entire structure.

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The Madison Formation contains a very large CO₂ rich reservoir. At the time the original KGS determination was completed, 15 wells had been completed in the Madison Formation. Each well was capable of producing gas from the Madison. Since that time, twenty additional wells have been drilled that further substantiate the presence of this reservoir.

* * * * *

Additional information received after the initial Madison KGS determination was made indicates that the limit of the presumptively productive reservoir was at a lower elevation on the Moxa Arch structure than originally mapped. Arco Oil and Gas Company completed the Rock Creek Unit No. 1 well in Section 28, T.32N., R.116W. (Exhibit I). This test of the Madison indicated large volumes of CO₂ rich gas. Despite abandonment of this well for economic reasons the test data indicated that the reservoir extended beyond the previously known limits. On the basis of the well, a second KGS determination effective December 20, 1984, extended the presumptively productive limit of the Madison to the minus 8900 foot sub-sea elevation.

The lowest proven gas is now defined as -9798 feet sub-sea based on a test of the Madison formation in the Amoco No. 1 Raptor unit well (Section 12, T.24N., R.112W.). Amoco has completed this well as a shut-in gas well. Additional testing of this well indicated that the gas/water contact has been reached. A test of perforated intervals deeper in the Madison at 16,608-16,656 feet and 16,900 to 16,919 feet flowed water with low rates of gas production indicating that the lower portion of the Madison is mostly water filled. Well logs for this well confirm this and indicate that the gas/water contact is located at 16,504 feet (-9806 feet sub-sea). For convenience the gas/water contact has been plotted at minus 9800 feet sub-sea on Exhibit I and defines the presumptively productive limits of the Madison reservoir.

Geologic Report at 1-4.

Appellants have all raised the same arguments in their respective statements of reasons for appeal. Appellants contend that there is insufficient geologic data to support a finding that the KGS of the Madison formation embraces the lands in these leases. The Amoco Raptor unit well is asserted by appellants to be 23 miles southeast of the clearly defined Madison pool encountered in the Exxon No. 1 Graphite Unit well in sec. 16, T. 27 N., R. 114 W. Appellants contend that below the -7,000 foot contour the reservoir cannot be defined in any reasonable manner and there is no control for the dip of the southwest flank of the structure. Further, appellants assert that the well logs show porosity in the Madison formation is erratic. Appellants further question the KGS delineation at the -9,800 foot contour in light of the occurrence of water in some wells within the -7,000 foot contour. Finally, appellants assert that certain parcels within each of the leases are outside the -9,800 foot contour and, hence, not properly included within the KGS.

In response to appellants' statements of reasons BLM has submitted a supplemental "Geologic Report" prepared by Dean P. Stilwell, which responds, point by point, to appellants' arguments. In response to appellants' assertions that there is insufficient well control to identify the geologic structure in the vicinity of their leases and that there is a lack of Madison data points outside the minus 7000 foot structural contour, the supplemental report states:

[T]here are other accepted methods of structural mapping to assist in contouring the flanks of this structure. * * * I also used structural mapping of overlying formations, where there are far more data points available, as a guide to structure at depth. There are a large number of well data points that indicate the approximate dip of the Frontier Formation on the northeast limb of the Moxa Arch structure and on the southwest limb in the vicinity of the appellant's lease. ^[3/] All of these data were used in structural mapping of the Frontier for a previous Big Piney-LaBarge KGS expansion. Additional published maps of the Lower Cretaceous Dakota Formation (Petroleum Information Corporation, 1985) and of the Permian Phosphoric Formation (Geomap Company, 1981) indicate a similar approximate dip gradient of both these formations on the northeast limb of the Moxa Arch structure and on the southwest limb in the vicinity of this lease. In the absence of data to indicate otherwise, I modeled the Madison Formation structure contours to mirror the structure of the

^{3/} References in the supplemental geologic report are to appellant in the singular as a separate supplemental report was prepared in response to each appellant's statement of reasons for appeal. Like each appellant's respective statement of reasons for appeal, the material language in each of the supplemental reports is virtually identical.

overlying formations. This is an accepted and common method of contouring deeper formations where little data is available. As the appellant suggests, a local structure is a possibility but the structure maps of the three shallower formations previously mentioned do not indicate that such a structure exists.

(Supplemental Geologic Report at 1).

The Supplemental Geologic Report also addresses appellants' assertion that there is an absence of continuity in the Madison reservoir, as well as their contention that the only zone which could be shown to have correlative porosity has a higher gas/water contact than the contour used to define the KGS:

The high degree of correlation between equivalent stratigraphic intervals across the reservoir is shown by the three stratigraphic correlation lines (including datum line) shown on cross section A-A'. These correlations indicate equivalence in stratigraphic position in each interval. The very well developed porosity in the zone immediately below the datum is correlative across the reservoir as are two well developed porosity zones above the datum. The Madison reservoir is a structural trap and, as discussed in my report, it appears to be gas filled (including lower porosity zones) above the gas/water contact. The Raptor well is wet in the porosity zone discussed by the appellant but appears to be gas filled in the upper portion of the Madison Formation, above its gas/water contact.

(Supplemental Geologic Report at 2).

As a threshold matter, we note that the regulations clearly provide for an increased rate of rental for noncompetitive leases commencing with the first lease year beginning 30 days after notice of inclusion of leased lands within a KGS. 43 CFR 3103.2-2(d). Thus, the key issue before us is whether lands within the leases were properly included in a KGS.

[1] An appellant who challenges a determination that certain lands are situated within the KGS of a producing oil or gas field has the burden of showing by a preponderance of the evidence that the determination is in error. Carolyn J. McCutchin, 93 IBLA 134, 136-37 (1986); see Bender v. Clark, 744 F.2d 1424 (10th Cir. 1984). The "preponderance of the evidence" standard has been defined as:

To establish the preponderance of the evidence means to prove that something is more likely so than not so; in other words, the "preponderance of the evidence" means such evidence, when considered and compared with that opposed to it, has more convincing force and produces in your [mind] belief that what is sought to be proved is more likely to be true than not true.

Thunderbird Oil Corp., 91 IBLA 195, 201 (1986), 4/ quoting South-East Coal Co. v. Consolidation Coal Co., 434 F.2d 767, 778 (6th Cir. 1970).

It is well established that this Board may rely on reports of the Secretary's technical experts. E.g., Ronald C. Age, 87 IBLA 255 (1985). In Champlin Petroleum Co., 86 IBLA 37, 40 (1985), we noted that "[w]hile the conclusions drawn from geological data are subject to different interpretations, the Secretary is entitled to rely upon the reasoned opinion of his technical expert in the field."

A KGS is defined as "technically the trap in which an accumulation of oil and gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive." 43 CFR 3100.0-5(l). Thus, delineation of a KGS recognizes the existence of a continuous entrapping structure, on some part of which there is production, or of numerous related, but nevertheless independent stratigraphic as well as structural traps. Thunderbird Oil Corp., supra at 202.

Reviewing the evidence in this case in light of the standard, we are unable to conclude that appellants have shown by a preponderance of the evidence that lands included in their leases which are within the -9,800 foot contour of the Madison formation are not properly included in the KGS. Additional data from wells penetrating the Madison formation on the southwestern flank of the structure would be helpful in further delineating the structure. However, the arguments tendered by appellants do not rebut the evidence relied upon by BLM or its analysis of the evidence to conclude that the lands defined by the contour are part of the KGS. Appellants have not met the burden of showing by a preponderance of the evidence that the lands within the -9,800 foot contour are not underlain by the trap of the Madison formation and presumptively productive.

[2] Appellants have also argued that some of the lands included within their leases are outside the -9,800 foot contour and, hence, outside the KGS. It appears from the record that this contention is correct. This Board has held that a KGS boundary is properly drawn to include the smallest legal subdivision (normally a quarter-quarter section) embraced in whole or in part within the stratigraphic contour defining the limits of the KGS. Kathleen M. Blake, 96 IBLA 61 (1987); see Pamela S. Crocker-Davis, 94 IBLA 328 (1986). However, in the context of these appeals from decisions raising the rental rate for noncompetitive leases the fact that part of the lands are not properly within the KGS boundary is not material where certain leased lands in each lease are properly within the KGS. It is well established that when BLM has determined that any part of the lands described in a noncompetitive oil and gas lease is within an addition to a KGS, the lessee is properly required to pay the increased annual rental required by regulation at 43 CFR 3103.2-2(d). Lewis & Clark Exploration Co., 97 IBLA 171 (1987); James D. Creighton, 87 IBLA 79 (1985).

4/ Aff'd, sub nom., Planet Corp. v. Hodel, CV No. 86-679 HB (D.N.M. May 6, 1987).

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decisions appealed from are affirmed.

C. Randall Grant, Jr.
Administrative Judge

I concur:

Will A. Irwin
Administrative Judge

APPENDIX A

<u>IBLA No.</u>	<u>Appellant</u>	<u>Lease Number</u>
87-374	Winston L. Thornton	W-93527
87-375	Bill T. Walker	W-83893
87-390	Ann F. Hudson	W-90705
		106 IBLA 22