APPENDIX B - M

Appendix B

Information Related to Oil and Gas Leasing, Permitting, and Development

Description of Typical Oil and Gas Operations

Sample Oil and Gas Lease

Appendix B

B-1. Information Related to Oil and Gas Leasing, Permitting, and Development

BLM Authority and Responsibilities for Oil and Gas Operations

The BLM has responsibility for environmental protection, public health, and safety related to oil and gas operations on public lands. There are three laws which give the BLM its primary direction for oil and gas operations: the Mineral Leasing Act of 1920 (MLA) as amended, the National Environmental Policy Act of 1969 (NEPA), and the Federal Land Policy Management Act of 1976 (FLPMA). However, there are other laws which affect the various stages of oil and gas operations, such as the Endangered Species Act of 1973 (ESA) and the National Historic Preservation Act of 1966 (NHPA).

Under MLA, BLM is responsible for mineral leasing, including onshore oil and gas leasing, for all Federal lands, including lands with a Federal mineral estate but private surface ownership (43 CFR 3100). The MLA and other laws specify types of Federal lands that are not available for oil and gas leasing.

Under NEPA, BLM's responsibilities are triggered by a Federal action or undertaking. This legislation directs the BLM to analyze and disclose to the public the impacts of Federal actions. Oil and gas leasing, permitting and development are all Federal actions which require varying degrees of NEPA analysis.

Under FLPMA, BLM's responsibilities are tied to the use of Federal lands. This legislation directs the BLM to prepare and disclose to the public its plans for the public lands under its jurisdiction.

Since leasing for oil and gas under MLA, impact analysis under NEPA, and management under FLPMA apply to the same lands during the leasing process, the three laws are tied together in a workable process to accomplish Congressional intent. The vehicle by which the process occurs on BLM lands begins with a Resource Management Plan (RMP) and accompanying Environmental Impact Statement (EIS). The RMP/EIS determines if the public land is available and suitable for leasing and establishes the appropriate lease stipulations.

Leasing Process

The decision to lease is a discretionary action that is made through the land use planning process. The RMP identifies lands open to leasing. All leases are subject to a standard set of terms and conditions that are found in section 6 of the lease form. The lease grants that a lessee has the right to use so much of the leased lands as is necessary to explore for, extract, and dispose of all the leased resources subject to: stipulations attached to the lease and restrictions deriving from specific non-discretionary statutes (such as the ESA), and such reasonable measures as may be required to minimize adverse impacts to other resource values, uses and users not addressed in the lease stipulations at the time operations are proposed. These measures are called Conditions of Approval (COA) and are discussed in the section on the Application for a Permit to Drill (APD) process, below.

Stipulations which get attached to the lease are developed through the planning process. This can occur at the RMP level or through the RMP amendment process. The amendment process is basically the same as the land use planning process used in creating or revising RMPs. The main difference is that circumstances may allow for completing a plan amendment through the Environmental Assessment (EA) process, rather than through the EIS process.

If stipulations are developed through the plan amendment process, the new stipulations can only be attached to future leases and not current leases. In developing stipulations, the BLM interdisciplinary team considers the following: If standard lease terms (mentioned briefly above) and existing non-discretionary laws provide or require sufficient protection to assure that resource condition objectives, uses and public land health standards can be achieved, then leasing stipulations are not needed; if it is determined that a stipulation is needed, the least restrictive stipulation that effectively accomplishes the resource objectives or uses is used; if multiple stipulations are proposed for the same area, the potential effects of overlaps is considered in developing the appropriate stipulation.

The RMP also serves as the vehicle for explaining to industry and the public the conditions under which exceptions, modifications, or waivers of lease stipulations may be granted. It also should identify the documentation requirements for supporting an exception, modification, or waiver and any public notification associated with granting them. An exception is a one-time exemption to a lease stipulation which is determined on a case-by-case basis. A modification is a change to the provisions of a lease stipulation, either temporarily or for the term of the lease. A waiver is a permanent exemption to a lease. If a proposed modification or waiver is found to be substantial, BLM is required to initiate a 30-day public comment period prior to deciding whether to approve the request.

Once decisions have been reached through the planning process as to what lands are available for leasing and under what conditions, they are offered for sale at auction. Those people interested in purchasing oil and gas leases may nominate a parcel, or the BLM may offer parcels of its choosing. In both cases, the proposal must conform to the RMP decisions and be offered for sale at a public auction. Those parcels which do not sell at the auction are available for non-competitive sale for a two-year period thereafter. Management decisions are incorporated in the lease document as stipulations and notices before it is issued. Public notice of the sale (which includes the list of parcels offered, their location, and stipulations to be attached) is given 45 days prior to the sale.

The purchaser of a lease at the auction must bid at least two dollars per acre. The bonus bid must be paid at the sale and the rental is due at the beginning of each new year as long as the lease is held and is not producing. Leases purchased at auction may be held for five years without production. Leases purchased non-competitively after the auction may be held in non-producing status for ten years. If the lessee establishes production, a royalty of 12.5 percent must be paid to the government. Half of that money is returned to the State and County of origin for their use. The other half goes into the Federal treasury earmarked for reclamation projects and other agencies.

Geophysical Exploration Process

Separate from leasing actions, geophysical exploration may be used to search for oil and gas on public land.

Application for a Permit to Drill (APD) Process

The operating regulations that are used to permit an oil and gas well are found in 43 CFR Part 3160. These regulations are implemented and supplemented with a set of Onshore Oil and Gas Orders. The Orders are also regulations and have the full force and effect of regulation. A well must be drilled in order to produce oil and/or gas from the lease. There are two ways to permit a well, either via a Notice of Staking (NOS), followed by the submittal of an Application for a Permit to Drill (APD), or directly through submittal of an APD.

The NOS option was implemented to provide a faster process once it is decided to drill a well. This process gives the BLM an opportunity to conduct an onsite inspection before the complete APD package is submitted. The NOS informs the BLM of the well location, the access road, any ancillary facilities, and the need to conduct an onsite inspection. If the well location needs to be moved or reoriented, then the necessary re-surveying and re-staking can be performed before all subsequent documents are submitted.

Before drilling a well, the lessee, or an operator for the lease, must file an APD. The operator must file an application with the Resource Area Office in which the action will take place. The application must include a plan for the drilling of the well and a plan for the protection of the surface and environment. The drilling plan (or 8-point plan) contains information as to the depth of the well, how it will be constructed, how groundwater and other mineral resources will be protected, and how blowouts and other emergencies will be prevented or dealt with. The surface use plan (or 13-point plan) covers such concerns as the location and amount of surface disturbance and how that disturbance will be reduced or eliminated. It covers mitigation of impacts to wildlife, cultural resources, vegetation, soils, surface water and other land uses and values. Each resource/value is evaluated in light of the RMP decisions. The operator is responsible for incorporating all RMP decisions in the proposed APD. If the APD does not have the appropriate information and mitigation incorporated, the application may be modified or rejected. In most APDs in Colorado, the few RMP decisions not incorporated by the operator are attached to the approved application by the BLM as COAs.

Onshore Oil and Gas Order No. 1 requires a field inspection as part of the review of an APD. The inspection is a meeting between the parties to explain and clarify the proposed action. If the inspection is conducted before filing the APD, then the applicant is more likely to submit a complete surface use plan without the need for amendments. The field meeting also helps to assure that the location is built as intended in the surface use plan.

The administrative review of the APD is usually led by the Field Office (FO) surface reclamation specialist who is responsible for evaluating the surface plan, checking the proposal against the RMP and other guidance, conducting the onsite inspection (with other appropriate specialists), and leading the preparation of the NEPA document (usually an EA) and its associated impact analysis and proposed mitigation. The surface reclamation is also responsible for calling upon other expertise as needed for the analysis of impacts and recommendation of mitigation. For example, other participants routinely include the archeologist for impacts to cultural resources and the biologist for impacts to threatened and endangered species.

The NEPA process provides a written documentation of the environmental review for an APD and the development of mitigation (COAs). The NEPA process also serves as the vehicle to check for conformance with the RMP. In most cases, two layers of NEPA are needed in the oil and gas process. The RMP/EIS determines if the public land is available for leasing and the appropriate stipulations for leasing. At the site-specific level, EAs are prepared for a majority of APDs in Colorado. In cases where the proposed well is obviously part of a larger field development, and such development has not already been analyzed by a NEPA document other than the RMP, a Field Development EA can be prepared. A Documentation of Land Use Plan Conformance and NEPA Adequacy (DNA) can then be prepared for future APDs within the oil and gas field, as long as the Field Development EA provides the site-specific analysis and the APD meets the DNA criteria and the criteria identified in the RMP/EIS. If an APD deviates from what was analyzed in a Field Development EA, a third layer of NEPA may be needed.

Another component of the review process is the technical review of the drilling plan portion of the APD. The APD review by the FO geologist includes the following items: geological markers and formation tops, oil, gas, and mineral bearing zones, potential hazards such as abnormal pressure, casing set points, and cement tops. A geologic review report documents the review and is incorporated in the APD case file. The APD review by the FO petroleum engineer includes the following items: casing and cement program, drilling fluid program, pressure control system, and testing, coring, and logging.

Once the resource specialists have accumulated all of the information about the proposed well operation, they need to determine how it will be used to protect the environment. As part of the impact analysis, each specialist must determine whether the APD needs to be supplemented with additional impact mitigation measures. These measures are called COAs. However, these mitigation measures are distinct from stipulations that are attached to the lease. COAs are developed through the NEPA compliance process for each APD. Stipulations which are attached to the lease are developed through the planning process. The COAs must be reasonable. This means they must be technically possible to accomplish, and they must allow the exercise of lease rights. They must also be plainly worded and justified by the NEPA process. A COA must not prevent an applicant form proceeding with development for either economic or technical reasons.

Once all of the BLM staff specialists have reviewed the APD and determined that the surface use plan and drilling plan are in compliance with BLM regulations, and all other impacts are addressed in the appropriate NEPA document, the APD is ready for approval, providing that the mandatory 30-day posting period has elapsed. At this point, any COAs that were suggested are attached to the APD, and the FO Manager signs and dates the APD. The approved APD is valid for one year, with a one-time extension of up to a one-year, if so requested. However, this is not required by regulation.

Within 24-hours after the operator starts the actual drilling of the well, they must notify the BLM jurisdictional office. This is culled the "Spud Notice." If the well will be completed as a producer, the drilling rig is moved off after production casing is cemented and a smaller rig, called a completion or work over rig, is moved in and utilized for running casing identification logs, perforating and for running down hole pumps, if necessary, running production tubing in the well bore and setting the wellhead valves and controls. The rest of the fluid treating and

handling systems are also installed at this time, such as production and storage tanks, dehydrators, separators, measuring systems, sales meters, and flow lines.

During production, field operations are inspected by the BLM to assure accountability of royalties and compliance with the lease and permit safety and environmental requirements. Usually, the last evolution in the life of an oil or gas well is when it is depleted and cannot produce in paying quantities any longer. At this stage, the operator submits a plug and abandonment plan and it is reviewed, and if necessary, modified by the BLM petroleum engineer and approved. When the downhole plugging is completed, the operator submits a Subsequent Report of Abandonment which is review by the BLM. When surface reclamation is completed and the vegetation has had a chance to establish itself, usually in two to three growing seasons, the operator will submit another subsequent report of a Final Abandonment Notice (FAN). The BLM will inspect the location to determine if it was reclaimed properly, and if so, approve the FAN.

B-2. Description of Typical Oil and Gas Operations

Site Preparation

An oil or gas well requires the construction of a level, structurally competent location for placement of the drilling rig and associated equipment. Wasatch and Mesaverde drill pads within the RPA will require an average of 3.4 acres for single wells and 5 acres where two wells are drilled from one surface location. Drill pads are cleared of all vegetation using a bulldozer or other earth-moving equipment. Topsoil is usually removed and stored for use in reclaiming the site.

An access road to the drilling location will also be constructed to transport the drilling rig, materials, and well servicing equipment to the site. These roads have a driving surface that is usually 16 to 18 feet wide and an assumed total disturbed width of 35 feet. Gross vehicle weights of vehicles using these roads may exceed 80,000 lbs. Each well access road constructed in the RPA will result in 1.5 acres of surface disturbance and has an average length of 1,900 feet.

During construction of the drilling location, one or two earthen pits will be constructed for storing drill cuttings and drilling mud reserves during drilling. Pits are usually unlined but may be lined with a plastic liner or bentonite clay to prevent fluid loss or contamination of subsurface water resources. Pitless or self-contained drilling systems are sometimes called for in areas of high ground water or sensitive resource values. These systems substitute portable tanks of water and drilling mud reserves and may include a reverse osmosis or centrifuge system to remove solids from drilling fluids.

The site preparation process may last several weeks, depending upon the length of access road and size of drilling pad that will be constructed.

Drilling

Oil and gas wells are drilled primarily with rotary drilling rigs. In the rotary method, a hole is drilled by means of a rotating bit to which a downward force is applied. The bit is attached to, and rotated by, a drill string, composed of drill pipe and drill collars, with new sections of pipe being added as drilling progresses. Drill cuttings are lifted from the hole by the drilling mud, which is continuously pumped down the drill string through nozzles in the bit and upward through the annular space between the drill pipe and the hole. At the surface, the drilling mud is diverted to tanks or pits for cleaning and treatment.

Water-based mud is used during drilling of Wasatch and Mesaverde wells. Water requirements range between 5,000 and 15,000 gallons per day, delivered to the site by truck. Operators in Region 4 typically reuse water from their drilling mud in order to reduce their water transportation costs. Drilling mud typically has several additives that are used to enhance the properties of the fluid. Typical mud additives include:

- Weighting materials to increase the density of the mud
- Corrosion inhibitors to protect metal components from corrosion
- Dispersants to break up solid clusters of clay particles
- Flocculants to cause suspended particles to group together for removal by settling
- Surfactants, such as fatty acids and soaps, to defoam and emulsify the mud
- Biocides to kill bacteria that may be inhabiting the mud
- Fluid loss reducers such as starch and polymers to limit the loss of drilling fluid to subsurface formations

The Wasatch and Mesaverde formations are susceptible to formation damage from water contained in the drilling mud. Clays within the rock pores swell in contact with the water, resulting in reduced well productivity. Wasatch and Mesaverde wells are generally drilled under-balanced, meaning that the pressure exerted on the formation by the

drilling mud is maintained at equal to, or slightly less than, the formation pressure, limiting the amount of water that is allowed to come into contact with the producing formation(s).

As the hole is drilled, casing is placed in the hole to prevent caving, and to isolate water- and hydrocarbon-bearing zones. Three or four separate casing strings may be used in wells within the RPA. Casing is secured in place by pumping cement down the inside of the casing, which travels to the bottom of the borehole, then upward into the annular space between the casing and the hole.

Directional drilling may be employed to reduce the amount of surface disturbance necessary to drill wells or to reach bottom-hole locations that may not be accessible from the surface with a straight hole. More than one well can be drilled from a single surface location using this technology with the objective of effectively accessing the producing horizon beneath areas where surface disturbance is not permitted. A directionally drilled well is more costly to drill than a vertical well to the same depth.

Typical Wasatch and Mesaverde wells within the RPA will take about 2 weeks to drill, log, and set casing. Following setting of the casing and any surface equipment, the drilling rig is moved from the well location. Drill cuttings are usually buried in the pit where they were accumulated during well drilling.

Well Completion

After drilling the well, several steps are required to start production. Well completion operations are generally performed by a completion rig — a small, truck-mounted rig used to complete the well and install downhole equipment. The casing and cement must be perforated to enable gas to enter the well bore. Several producing zones may be perforated by means of small, shaped explosive charges that create holes in the casing and cement.

The Wasatch and Mesaverde formations are considered low-permeability gas reservoirs and require hydraulic fracturing in order to produce at economic flow rates. Hydraulic fracturing is accomplished by pumping a water-based viscous fluid and sand down the well at high pressures and flow rates. After the fracture gradient (the pressure where the formation begins to break down) for the zone is reached and exceeded, the formation fractures and begins taking the fluid and remains propped open after pumping stops and pressure is released. The propped fracture provides a high-permeability channel for gas to enter the well bore. In some wells, hydrochloric or hydrofluoric acid may be pumped into the producing formation to enhance permeability.

Gas production from the well is controlled using an assembly of pipes, valves, and fittings at the surface (called the Christmas tree). Following completion, a well is allowed to flow back to the pit. This removes any excess fracturing fluid, spent acid, and remaining sand in the well bore. Any gas and oil that comes to the surface is burned off, or "flared." Some operators in Region 4 use specialized separation equipment, referred to as a super separator, to decrease the need for flaring. The well is then shut-in or connected to a gas flowline.

Infrastructure

Produced fluid flows from the wellhead into an on-site separator that removes water and condensate from the flow line. Natural gas is directed from the separator into a flowline, a 2- to 4-inch-diameter pipeline leading to a trunk line or natural gas compressor. Flowlines are usually buried but can be laid on the ground surface. Within the RPA, flowlines will primarily be built along the existing access road to minimize surface disturbance. Water and condensate are stored in on-site tanks and are removed by truck periodically. The condensate is sold and the water is transported to an approved disposal facility.

Trunk lines gather gas from a number of producing wells and are usually 6 to 8 inches in diameter and buried. Compressors are used to move gas from flowlines and trunk lines into transmission lines. Compressor stations range in size from one acre to as much as 20 acres, depending upon the number of compressors required and the need for additional support infrastructure. Natural gas is generally sold at the point at which it moves into a transmission line. Transmission lines range from 10 to 36 inches in diameter and transport natural gas to a facility to be conditioned for ultimate sale to a purchaser.

Maintenance

Natural gas wells may periodically require maintenance procedures called workovers. Workovers are performed using a completion rig and may include repairing leaks in the casing, tubing, or other downhole equipment, re-completing the well in additional producing formations, stimulating the well with supplemental fracturing or acid treatments, or removing scale and other accumulated deposits. Workovers may take one day to several days to complete, depending upon the complexity of the tasks to be undertaken.

Surface equipment may also require periodic maintenance. Valves, piping, tanks, and separators may require repair, cleaning, and adjustment. Each well is visited on a regular basis by the operator, who checks on the performance of the well, gauges condensate and water tanks, and is responsible for the proper functioning of the production equipment. The frequency of these visits may range from once per day to once per week. Some operators in the vicinity of the Roan Plateau use solar-powered remote telemetry facilities to monitor well performance, reducing the number of visits to the well site.

Reclamation and Abandonment

Disturbed areas will be partially reclaimed following well completion, based on a BLM-approved reclamation plan. This will include reclamation on that portion of disturbed areas that are not considered necessary during well production. Abandoned well locations will be completely reclaimed. Reclamation requirements are contained in the Conditions of Approval (COAs) applied by BLM during the permitting process.

Well abandonment involves placing cement plugs in the well bore to prevent fluid migration. Surface facilities are removed and the well is capped below the ground surface. Buried pipelines are usually left in place but plugged at intervals as a safety precaution.

References

Bureau of Land Management (BLM) 1998. Glenwood Springs Resource Area Oil & Gas Leasing & Development Draft Supplemental Environmental Impact Statement. Glenwood Springs, CO. June.

Bureau of Land Management (BLM) 1999. Glenwood Springs Resource Area Oil & Gas Leasing & Development Final Supplemental Environmental Impact Statement. Glenwood Springs, CO. January.

U.S. Environmental Protection Agency (EPA) 2000. Profile of the Oil and Gas Extraction Industry. Washington, D.C. October.

Form 3100-11
(October 1992)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Serial No.

OFFER TO LEASE AND LEASE FOR OIL AND GAS

The undersigned *(reverse)* offers to lease all or any of the lands in Item 2 that are available for lease pursuant to the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181 et seq.), the Mineral Leasing Act for Acquired Lands of 1947, as amended (30 U.S.C. 351-359), the Attorney General's Opinion of April 2, 1941 (40 Op. Atty. Gen. 41), or the

READ INSTRUCTIONS BEFORE COMPLETING

1. Name
   Street
   City, State, Zip Code

2. This application/offer/lease is for: *(Check only One)* ☐ PUBLIC DOMAIN LANDS ☐ ACQUIRED LANDS (percent U.S. interest _____)

Surface managing agency if other than BLM: _____ Unit/project _____

Legal description of land requested: *Parcel No.: _____ * Sale Date (m/d/y): ____/____/____

***SEE ITEM 2 IN INSTRUCTIONS BELOW PRIOR TO COMPLETING PARCEL NUMBER AND SALE DATE.**

T.	R.	Meridian	State	County

Total acres applied for _____

Amount remitted: Filing fee $ _____ Rental fee $ _____ Total $ _____

DO NOT WRITE BELOW THIS LINE

3. Land included in lease:

T.	R.	Meridian	State	County

Total acres in lease _____

Rental retained $ _____

This lease is issued granting the exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas (except *helium)* in the lands described in Item 3 together with the right to build and maintain necessary improvements thereupon for the term indicated below, subject to renewal or extension in accordance with the appropriate leasing authority. Rights granted are subject to applicable laws, the terms, conditions, and attached stipulations of this lease, the Secretary of the Interior's regulations and formal orders in effect as of lease issuance, and to regulations and formal orders hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.

NOTE: This lease is issued to the high bidder pursuant to his/her duly executed bid or nomination form submitted under 43 CFR 3120 and is subject to the provisions of that bid or nomination and those specified on this form.

Type and primary term of lease:

☐ Noncompetitive lease (ten years)

☐ Competitive lease (ten years)

☐ Other _____

THE UNITED STATES OF AMERICA

by _____
(Signing Officer)

_____ _____
(Title) (Date)

EFFECTIVE DATE OF LEASE _____

(Continued on reverse)

4. (a) Undersigned certifies that (1) offeror is a citizen of the United States; an association of such citizens; a municipality; or a corporation organized under the laws of the United States or of any State or Territory thereof; (2) all parties holding an interest in the offer are in compliance with 43 CFR 3100 and the leasing authorities; (3) offeror's chargeable interests, direct and indirect, in each public domain and acquired lands separately in the same State, do not exceed 246,080 acres in oil and gas leases (of which up to 200,000 acres may be in oil and gas options), or 300,000 acres in leases in each leasing District in Alaska of which up to 200,000 acres may be in options, (4) offeror is not considered a minor under the laws of the State in which the lands covered by this offer are located; (5) offeror is in compliance with qualifications concerning Federal coal lease holdings provided in sec. 2(a)(2)(A) of the Mineral Leasing Act, (6) offeror is in compliance with reclamation requirements for all Federal oil and gas lease holdings as required by sec. 17(g) of the Mineral Leasing Act; and (7) offeror is not in violation of sec. 41 of the Act.

(b) Undersigned agrees that signature to this offer constitutes acceptance of this lease, including all terms, conditions, and stipulations of which offeror has been given notice, and any amendment or separate lease that may include any land described in this offer open to leasing at the time this offer was filed but omitted for any reason from this lease. The offeror further agrees that this offer cannot be withdrawn, either in whole or in part unless the withdrawal is received by the proper BLM State Office before this lease, an amendment to this lease, or a separate lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States.

This offer will be rejected and will afford offeror no priority if it is not properly completed and executed in accordance with the regulations, or if it is not accompanied by the required payments. 18 U.S.C. Sec. 1001 makes it a crime for any person knowingly and willfully to make to any Department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Duly executed this _____ day of _____ 20 _____ _____

(Signature of Lessee or Attorney-in-fact)

LEASE TERMS

Sec. 1. Rentals - Rentals shall be paid to proper office of lessor in advance of each lease year. Annual rental rates per acre or fraction thereof are:

(a) Noncompetitive lease, $1.50 for the first 5 years; thereafter $2.00;
(b) Competitive lease, $1.50, for the first 5 years; thereafter $2.00;
(c) Other, see attachment, or
as specified in regulations at the time this lease is issued.

If this lease or a portion thereof is committed to an approved cooperative or unit plan which includes a well capable of producing leased resources, and the plan contains a provision for allocation of production, royalties shall be paid on the production allocated to this lease. However, annual rentals shall continue to be due at the rate specified in (a), (b), or (c) for those lands not within a participating area.

Failure to pay annual rental, if due, on or before the anniversary date of this lease (or next official working day if office is closed) shall automatically terminate this lease by operation of law. Rentals may be waived, reduced, or suspended by the Secretary upon a sufficient showing by lessee.

Sec. 2. Royalties - Royalties shall be paid to proper office of lessor. Royalties shall be computed in accordance with regulations on production removed or sold. Royalty rates are:

(a) Noncompetitive lease, 12 1/2 %;
(b) Competitive lease, 12 1/2 %;
(c) Other, see attachment; or
as specified in regulations at the time this lease is issued.

Lessor reserves the right to specify whether royalty is to be paid in value or in kind, and the right to establish reasonable minimum values on products after giving lessee notice and an opportunity to be heard. When paid in value, royalties shall be due and payable on the last day of the month following the month in which production occurred. When paid in kind, production shall be delivered, unless otherwise agreed to by lessor, in merchantable condition on the premises where produced without cost to lessor. Lessee shall not be required to hold such production in storage beyond the last day of the month following the month in which production occurred, nor shall lessee be held liable for loss or destruction of royalty oil or other products in storage from causes beyond the reasonable control of lessee.

Minimum royalty in lieu of rental of not less than the rental which otherwise would be required for that lease year shall be payable at the end of each lease year beginning on or after a discovery in paying quantities. This minimum royalty may be waived, suspended, or reduced, and the above royalty rates may be reduced, for all or portions of this lease if the Secretary determines that such action is necessary to encourage the greatest ultimate recovery of the leased resources, or is otherwise justified.

An interest charge shall be assessed on late royalty payments or underpayments in accordance with the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) (30 U.S.C. 1701). Lessee shall be liable for royalty payments on oil and gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator, or due to the failure to comply with any rule, regulation, order, or citation issued under FOGRMA or the leasing authority.

Sec. 3. Bonds - A bond shall be filed and maintained for lease operations as required under regulations.

Sec. 4. Diligence, rate of development, unitization, and drainage - Lessee shall exercise reasonable diligence in developing and producing, and shall prevent unnecessary damage to, loss of, or waste of leased resources. Lessor reserves right to specify rates of development and production in the public interest and to require lessee to subscribe to a cooperative or unit plan, within 30 days of notice, if deemed necessary for proper development and operation of area, field, or pool embracing these leased lands. Lessee shall drill and produce wells necessary to protect leased lands from drainage or pay compensatory royalty for drainage in amount determined by lessor.

Sec. 5. Documents, evidence, and inspection - Lessee shall file with proper office of lessor, not later than 30 days after effective date thereof, any contract or evidence of other arrangement for sale or disposal of production. At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing amounts and quality of all products removed and sold, proceeds therefrom, and amount used for production purposes or unavoidably lost. Lessee may be required to provide plats and schematic diagrams showing development work and improvements and reports with respect to parties in interest, expenditures, and depreciation costs. In the form prescribed by lessor, lessee shall keep a daily drilling record, a log, information on well surveys and tests, and a record of subsurface investigations and furnish copies to lessor when required. Lessee shall keep open at all reasonable times for inspection by any authorized officer of lessor, the leased premises and all wells, improvements, machinery, and fixtures thereon, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or in the leased lands. Lessee shall maintain copies of all contracts, sales agreements, accounting records, and documentation such as billings, invoices, or similar documentation that supports costs claimed as manufacturing, preparation, and/or transportation costs. All such records shall be maintained in lessee's accounting offices for future audit by lessor. Lessee shall maintain required records for 6 years after they are generated or, if an audit or investigation is underway, until released of the obligation to maintain such records by lessor.

During existence of this lease, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 6. Conduct of operations - Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.

Sec. 7. Mining operations - To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of such operations.

Sec. 8. Extraction of helium - Lessor reserves the option of extracting or having extracted helium from gas production in a manner specified and by means provided by lessor at no expense or loss to lessee or owner of the gas. Lessee shall include in any contract of sale of gas the provisions of this section.

Sec. 9. Damages to property - Lessee shall pay lessor for damage to lessor's improvements, and shall save and hold lessor harmless from all claims for damage or harm to persons or property as a result of lease operations.

Sec. 10. Protection of diverse interests and equal opportunity - Lessee shall: pay when due all taxes legally assessed and levied under laws of the State or the United States; accord all employees complete freedom of purchase; pay all wages at least twice each month in lawful money of the United States; maintain a safe working environment in accordance with standard industry practices; and take measures necessary to protect the health and safety of the public.

Lessor reserves the right to ensure that production is sold at reasonable prices; and to prevent monopoly. If lessee operates a pipeline, or owns controlling interest in a pipeline or a company operating a pipeline, which may be operated accessible to oil derived from these leased lands, lessee shall comply with section 28 of the Mineral Leasing Act of 1920.

Lessee shall comply with Executive Order No. 11246 of September 24, 1965, as amended, and regulations and relevant orders of the Secretary of Labor issued pursuant thereto. Neither lessee, nor lessee's subcontractors shall maintain segregated facilities.

Sec. 11. Transfer of lease interests and relinquishment of lease - As required by regulations, lessee shall file with lessor any assignment or other transfer of an interest in this lease. Lessee may relinquish this lease or any legal subdivision by filing in the proper office a written relinquishment, which shall be effective as of the date of filing, subject to the continued obligation of the lessee and surety to pay all accrued rentals and royalties.

Sec. 12. Delivery of premises - At such time as all or portions of this lease are returned to lessor, lessee shall place affected wells in condition for suspension or abandonment, reclaim the land as specified by lessor and, within a reasonable period of time, remove equipment and improvements not deemed necessary by lessor for preservation of producible wells.

Sec. 13. Proceedings in case of default - If lessee fails to comply with any provisions of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation unless or until the leasehold contains a well capable of production of oil or gas in paying quantities, or the lease is committed to an approved cooperative or unit plan or communitization agreement which contains a well capable of production of unitized substances in paying quantities. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time. Lessee shall be subject to applicable provisions and penalties of **FOGRMA** (30 U.S.C. 1701).

Sec. 14. Heirs and successors-in-interest - Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to the heirs, executors, administrators, successors, beneficiaries, or assignees of the respective parties hereto.