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With domestic supplies of crude oil decreasing and imports costing more, the search for new technologies to increase recovery efficiency escalates

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Now, when production of domestic crude oil in the United States is falling and the probability of finding new oil is dwindling, attention is turning to methods of increasing recovery from known oil fields—that is, to the development of enhanced recovery technology. Newly developed technology has already begun to influence and increase the supply of domestic crude oil, particularly in California, but there is a definite limit to the economic feasibility of such additional recovery, which is set by the physical characteristics of the reservoirs and their crude petroleum fluids.

The overall recovery of crude oil from reservoirs in the U.S., using proven, conventional technology, is now estimated at 148 billion barrels, or 32%, of the estimated 460 billion barrels originally in them. Of this, 121 billion barrels, or 82%, had already been produced by the end of 1979. If we

could increase the recovery rate to 42%, say, the present reserves of the U.S. would be more than doubled. This would put off the demise of the age of petroleum in the U.S. for another decade, but more important, it would provide time for society to plan orderly changes with respect to its fuel supplies. All enhanced recovery processes have a common goal: to increase the rate of flow of crude oil within the porous reservoir rock to economic levels.

Of the oil currently considered recoverable, some 20% had already been discovered by 1920, over a third of it in California. The two decades following World War I saw finds of great importance in Texas and Louisiana, and by 1940, 60% of the nation's now known recoverable oil—88 billion barrels—had been discovered. After World War II, the previous rate of discovery could not be maintained, despite the major find of Prudhoe Bay—the one supergiant field in the Western Hemisphere with approximately 10 billion barrels of recoverable oil. Despite an intensified exploration effort and growing expertise, it is increasingly difficult to find new, significant reserves in the U.S. (see Fig. 1).

In recent years, extensions and revisions of estimates of reserves in old fields—about 1.2 billion barrels per year—and the discovery of small fields—about 300 million barrels per year—have limited the annual decline in reserves in the U.S. to about 1.5 billion barrels. Nevertheless, oil reserves at the end of 1979—27 billion barrels—are now lower than at any time in the past three decades. Even if the trend of positive revisions and minor discoveries could be main-

tained, the nature of the reservoir production process would cause oil production in the U.S. to fall to half its present value before the turn of the century (see Fig. 2). Only the discovery of numerous giant and several supergiant fields can reverse this trend. However, since huge fields are usually the first to be found when a basin is explored, and since they contribute 65% or more of the oil produced by those basins (see, for example, Root and Drew 1979), the prospects for future discovery of such fields in the U.S. are not great, given the nature and the small number of still unexplored basins. The importance of enhanced recovery is thus apparent.

Formation and production of oil

In order to assess the potential of attempts to enhance oil recovery, it is necessary to understand how and under what geological conditions oil is formed, as well as how it is produced. Oil has its origin in organic debris—remains of dead organisms, probably algae for the most part—that accumulates in shallow seas and that is then entrapped in the silts and clays brought down to the seas by the rivers cutting through the continents. Over the years, layers of such sediments pile on top of one another and sink to lower and lower depths. As a result of burial, the temperatures and pressures to which these layers are subjected increase, and the organic material anaerobically decomposes into hydrocarbons. The liquid hydrocarbons that are produced are less dense than the interstitial water and are hence buoyed up and rise until they either encounter a barrier or escape to the surface of the earth. Oil

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that escapes is quickly oxidized or consumed by microorganisms.

Most oil is trapped in anticlinal folds beneath strata of shale, dense salt, anhydrite, or other impermeable material. Some very large accumulations of oil are found in stratigraphic traps formed when a layer of permeable sediment changes laterally to an impermeable sediment; still others are found in the traps formed where porous rock is sealed by a fault. If the seal on a reservoir is breached by erosion, the trapped oil will either escape or be converted to a bitumen through partial evaporation of its more volatile constituents. The great Athabasca bituminous sands of Alberta—the largest single accumulation of petroleum in the world—were perhaps formed in this manner.

Oil accumulates under pressure, which, in most cases, is hydrostatic. When the rate of sediment deposition is very rapid, however, equilibrium with the hydrostatic environment is not maintained, and the pressures under which the oil accumulates approach those of the lithostatic, or rock, overburden. It is the pressure differential between the fluids in the reservoir and the bore hole drilled into it that causes the oil to flow into the bore.

As the pressure in the reservoir decreases, gas is released from solution, thereby causing an increase in the total volume of reservoir fluids, some of which must flow out of the reservoir into the bore hole. Keeping the gradient in the bore hole low, artificially (for example, by pumping) if necessary, promotes the spontaneous flow of oil. The free gas is immobile at first, because the individual gas bubbles are not connected, and therefore only oil, saturated with gas, flows out of the reservoir. As more and more gas is released within the reservoir, a critical saturation is reached at which the gas phase becomes mobile; because it is far less viscous than oil and the saturation is increasing, the gas immediately begins to flow. As the flow of gas increases, the pressure in the reservoir decreases, owing to fluid withdrawal, which leads to a steady decline in oil production until the economic limit is reached (Fig. 3).

The economic limit is the production rate at which the value of the oil pro-

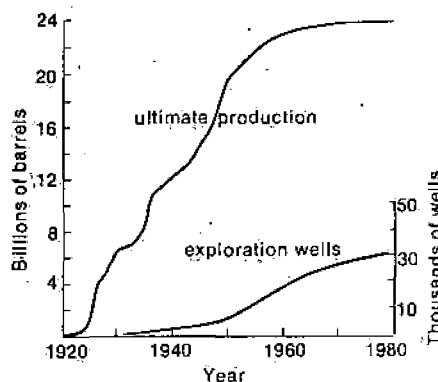


Figure 1. Immediately after the initial discovery of crude oil in west Texas and southeast New Mexico—the richest oil province in the U.S.—tremendous reserves were discovered, using clues from surface geological studies. As the rate of discovery waned, there was an exponential increase in the number of wildcat exploration wells drilled, but this failed to halt the decline.

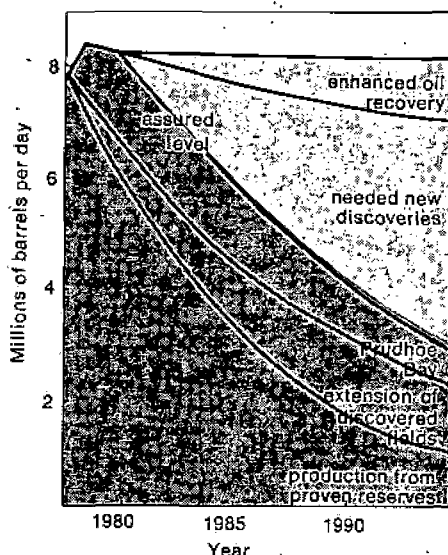


Figure 2. In order to maintain the present level of oil production in the U.S., the projected decline in production of crude oil from known reservoirs must be countered by the discovery of many new giant oil fields and the expansion of enhanced recovery operations.

duced is just sufficient to offset the operating costs, capital charges, overhead, royalties, insurance, and taxes incurred by the business operation. This limit is reached when anywhere from a few percent to, on the average, 25% of the original oil in place has been recovered, the actual percentage depending on numerous reservoir and fluid parameters. The

primary production phase of a solution gas-driven reservoir ends at this point.

The economic life of an oil field can be extended by an increase in the value of crude oil relative to the sum of all the costs involved in producing it. Thus, the primary effect of an increase in the price of crude oil is to extend the life of the reservoir at very low production rates. However, continued production at low and still decreasing rates will yield only a relatively small amount of additional oil.

Obviously, an important factor limiting recovery is the rate at which oil flows from the reservoir. The flow rate, q , is basically a function of the pressure gradient within the reservoir, dP/dr ; the viscosity of the oil, μ ; the thickness of the reservoir, h ; and the relative permeability of the reservoir rock to oil, k_r ; and is given by the differential form of Darcy's equation for radial flow

$$q = \frac{2\pi rh.k.k_r.dP/dr}{\mu}$$

where r is the distance between the bore and the point in the reservoir where the flow is measured, and k is the absolute permeability of the reservoir.

The flow rate can be increased either by increasing the pressure gradient, as in waterflooding, or particularly in viscous oil reservoirs, by heating the oil and thereby reducing the viscosity. While waterflooding is beneficial in maintaining the pressure, it also results in undisplaced oil being immobilized and trapped by capillary forces, thereby reducing its relative permeability to virtually zero. The relative permeability, and hence the rate of flow, can be increased by injecting either a surfactant, to reduce the interfacial tension between oil and water (micellar-polymer flooding), or a solute, to swell and reconnect the isolated oil masses (carbon dioxide flooding).

Thermal recovery

Reservoir fluids flow through the porous rock into one or more wells drilled into the reservoir. The pattern of flow as the well is approached is radial, and the fluid is crowded into an ever-decreasing cross-section. As a result, most of the pressure drop or

energy dissipation occurs very close to the producing well. Darcy's law, rewritten as

$$\frac{dP/dr}{q} = f(1/r)$$

or

$$\frac{dP}{q} = f \left(\ln \frac{r}{r_w} \right)$$

shows that the pressure drop per unit rate of flow is a logarithmic function of the ratio of the radius of the reservoir, r , to that of the well, r_w . One can readily conceive of drilling a larger bore hole to achieve an increased rate of flow under the pressure available within the reservoir, but the drilling of large holes all the way from the surface is exceedingly expensive.

In practice, a large hole is effectively created by hydraulic fracturing of the reservoir. The well is filled with a fluid, and the pressure is raised to a value comparable to, or greater than, that exerted by the overlying rocks on the reservoir rock (overburden pressure), causing the reservoir to fracture. A viscous gravel-laden fluid is then pumped into the fractures in order to keep them open after the pressure is released. However, the gain in production using this technique is limited to a factor somewhat less than one order of magnitude. Hence, for a viscous oil reservoir that can produce only one or two barrels a day, the absolute gain in productivity is usually insufficient to justify the cost of fracturing.

Because the viscosity of oil falls exponentially as the temperature rises, a more rewarding approach is to reduce the viscosity of the crude oil by heating the reservoir. In the past, many operators have attempted to heat reservoirs by inserting electric heaters down shallow wells or by circulating heated fluids through closed loops down to the bottoms of such wells. Both systems have failed. Inserting heaters down wells does not work satisfactorily because the conductivity of the reservoir rock is very poor, so only the region close to the well is heated. Furthermore, because convective flow is toward the well and not away from it into the reservoir, heat is returned to the well and is expelled with the heated oil. When hot fluids are circulated in closed loops, the returning fluids reach the surface at almost the same temperatures at which they are injected, because heat

is transferred from the descending hot fluids to the ascending fluids in the parallel or concentric pipes. Much to the chagrin of the operator, fluids reaching the bottom of the well are quite cool owing to heat loss both through the casing to the earth and as a result of heat transfer to the ascending fluid.

The first truly effective enhanced oil recovery technique for viscous crude oils, steam soaking, was discovered quite by accident in Venezuela. In the late fifties in the Mene Grande field, experiments were being conducted into the injection of steam down central wells into heavy-oil reservoirs, with the hope of driving the heated oil into nearby production wells. The steam-injection well blew out. The operators hastily set about repairing the well and resuming steam injection, but the well blew out again. (Blowouts occurred because of the presence of a nearby fault—the same type of fault as that through which the oil had oozed to the surface initially, giving evidence of the reservoirs below.) This second time, the flow of steam escaping from the injection well was followed by a flow of hot, low-viscosity oil that persisted for some time. An idea had been born.

A year later, the operator of the Venezuela field was steam-soaking wells in California: injecting steam for a few days, a week, or even a month, and then allowing the heated oil to flow back through the same well. The steam-soak method, also known as

huff-and-puff steaming, or cyclic steam stimulation, spread throughout California. By 1965 almost 20% of California's production was from wells stimulated by steam injection, and California was once again able to produce more than a million barrels of crude oil in a year.

The steam soak is economically efficient only when the reservoir contains more than 1,000 barrels of oil per acre-foot and is 50 or more feet thick, so that gravity drainage (the free fall of oil through the porous media) can occur. (Units in this paper are those used in the petroleum industry in the U.S.: metric units for viscosity and interfacial tension, British units for everything else.) For gravity drainage to be effective, the vertical permeability—which is usually much lower than the horizontal permeability because of the way in which the non-spherical sand grains are packed in the reservoir rocks—must be good, and in addition the sand layers must be relatively free of shale layers that interrupt vertical drainage. There are not many oil reservoirs in the U.S. that satisfy these criteria, and the steam soak is limited in its major utility to several large fields—Kern River, Midway Sunset, Belridge, San Ardo, and Yorba Linda—in the San Joaquin, Coastal, and Los Angeles basins. Because the steam-soak method was introduced twenty years ago, it is now considered conventional practice, and most of the oil recoverable by this technique has already been included in the estimated ultimate recovery of crude oil.

In most instances, the steam-soak method is being replaced by a steam-drive method that has proved to be extremely efficient in terms of oil recovery, in some cases increasing recovery to as much as 70% of the original oil in place. In a steam-drive operation, steam is injected into alternate wells in order to heat the oil and drive it to adjacent offsetting wells. The success of the method is a direct function of the quantity of latent heat injected, which puts a premium on the quality of the steam that reaches the reservoir. Unfortunately, the water available to most operators tends to be brackish at best, and even after it has been softened, it is impossible to generate steam of more than 80% quality (viz. weight fraction of vapor) without serious problems due to scale deposition in the steam

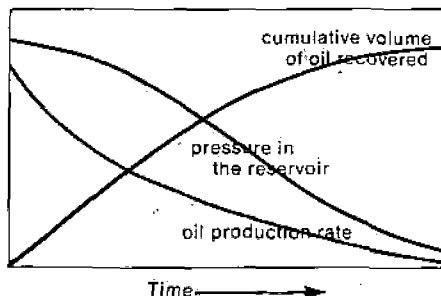


Figure 3. When fluid oil is first removed from a reservoir, the pressure differential is maintained by release of gas from solution. But as more fluid is withdrawn, the pressure drops, and the rate at which oil is produced declines. Therefore, although the reservoir never stops producing oil, at least in theory, it does so more and more slowly, and operations must cease when the value of the oil produced no longer offsets the operating costs.

generators. In order to conserve steam quality, the tubing strings that lead the steam down the well are frequently insulated.

Recent development work has been devoted to the fabrication of down-hole steam generators that would avoid the heat loss and resultant loss in quality between the surface generator and the sand face. One advantage of down-hole generators is that pollutants—sulfur and nitrogen oxides—that must now be removed from the stack gases by scrubbers, would be injected into the formation, where they might be efficiently captured by sorption and chemical reaction with the constituent minerals. Nevertheless, the reliability of down-hole generators is still to be demonstrated.

The steam drive works somewhat differently than might be expected from its name. Instead of pushing, or driving, the oil ahead of it, the steam flows over the oil, transferring heat by conduction to the column of oil beneath it. The oil at the interface between the steam and the oil column, its viscosity reduced, is then dragged along by the steam to the producing well. As the oil is depleted, the steam zone expands vertically and still maintains a steam-oil interface. In the steam-drive system, the steam is thus called upon to serve two functions: it both heats and transports the oil. It is difficult to optimize both functions simultaneously, and as a result, some steam must always be circulated through the formation without condensing, in order to provide the driving force to displace the heated oil. Even in some of the most favorable reservoirs, it is necessary to use energy equivalent to burning at least 25% of the crude oil produced, in order to generate the required amount of steam, and in California the current average is about 35%.

The extension of the steam-drive system to very viscous oils—bitumens—that must be heated to still higher temperatures than the lower-viscosity, but still viscous, crudes in California—say, 350°F—for the viscous oils to become sufficiently mobile is limited by the fact that still greater percentages of the oil produced must be consumed for boiler fuel. There is a similar limitation for reservoirs that contain less than 500 barrels per acre-foot, since it requires

almost that much fuel to generate enough steam to effectively heat an acre-foot of reservoir sand to the required temperature.

Research is currently underway to increase the efficiency of steam-drive systems. Physically scaled models of the crude oil reservoirs and the steam-drive process, which have been used to study the effect of various fluid and reservoir parameters on the steam drive, are now being used to study the possibility of substituting an inert gas for some of the steam and generating a foam of steam and a noncondensable gas that would be a more efficient displacing fluid. However, one of the best ways to increase the applicability of the steam drive is to substitute coal for crude oil (or residual fuel oil) as the boiler fuel. The cost of a coal-derived Btu of heat energy will probably always be less than that of an oil-derived Btu, and the substitution of coal for oil would release more crude oil for downstream refining and conversion to desirable liquid fuels. The use of coal for generating steam in the oil fields might be the most efficient coal-liquefaction process available to the nation!

In another thermal recovery method, quenched in-situ combustion, what amounts to a steam drive is generated in situ by the simultaneous or alternate injection of air and water into a burning reservoir. Originally in-situ combustion was expected to work simply by propagating a fire front within the reservoir. However, early attempts to employ dry in-situ combustion resulted in numerous operating problems: corrosion of the producing wells, production of very tight emulsions of water in oil that were difficult to treat, and high operating and maintenance costs of the high-pressure, high-volume air compressors that were used to deliver millions of cubic feet of air per day at discharge pressures of about 1,000 psi. Research studies at the Shell Laboratories in Holland revealed that it was possible to inject water and air simultaneously, thereby causing the water to absorb the heat of combustion and be converted to steam without dousing the fire or inhibiting the advance of the combustion wave. The water/air ratio is not very critical to the success of the operation. The chief advantage of this process over direct steam injection is that the steam is generated in situ, and the overall

thermal efficiency is therefore much higher. However, many of the operating problems associated with in-situ combustion persist, and use of the technique has not become widespread. Nevertheless, two very successful, low-pressure operations are now underway in northern Louisiana within reservoirs containing crude oil of intermediate viscosity.

No less than two billion barrels of crude oil will be recovered in the U.S. by steam-drive technology, a scheme conceived initially in a research laboratory and developed subsequently in numerous pilot operations in the field. If continued research and development are successful, it may be possible to recover by this method as much as five billion barrels of oil in the U.S. and a hundred billion or more barrels in Canada and Venezuela, where vast accumulations of bituminous sands are found.

Chemical flooding

During the fifties and sixties, waterflooding was the predominant method for supplementing recovery from solution gas-drive reservoirs. The technology was first developed in Pennsylvania in the 1890s. Corrosion of the casings—pipes cemented into the bore holes to prevent both their collapse and contamination of surface waters by oil—caused by electrochemical cells set up by contact with groundwaters of varying salinity and oxidation potential occurred relatively frequently in the early operations in Pennsylvania. Holes in casings opposing shallow aquifers permitted water to pour into the wells and down into the underlying reservoirs. The encroaching water had the effect of maintaining the pressure in the reservoir and physically displacing some of the crude oil ahead of it. Several operators, correlating a better-than-average oil production with the occurrence of casing problems in offsetting wells, conceived the idea of purposely injecting water into wells alternating with producing wells in order to offset the natural decline in reservoir pressure as oil is removed.

The state of Pennsylvania quickly outlawed this practice, on the basis of erroneous deductions by some geologists, who claimed that contamination of oil sands with water would destroy their productivity. This prohibition gave rise to gangs of moon-

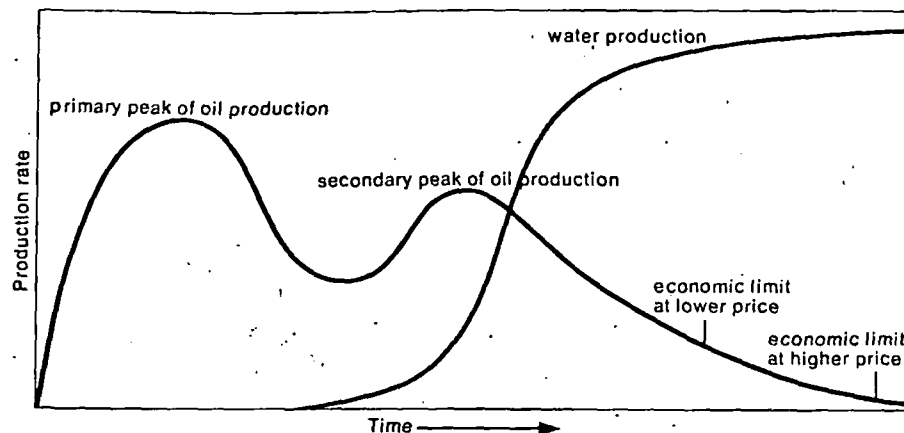
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Figure 4: As a result of waterflooding, an oil field shows a secondary peak in production. Shortly thereafter, the fraction of water in the fluids produced increases rapidly. Since it costs as much to lift a barrel of water as a barrel of oil, the net cost per barrel of oil goes up rapidly, and a second economic limit is reached.



light casing-cutters ("a leak is a leak"), who plied their trade throughout the oil fields of Appalachia. They, along with the rum runners, lost their jobs when the prohibition against waterflooding and the Volstead Act were simultaneously repealed.

Waterflooding rapidly became an art in the oil fields of Pennsylvania but did not begin to spread to the rest of the country until the late thirties, when the pace of new oil discovery slackened. The interest in waterflooding was further stimulated by the observation that in many of the giant reservoirs discovered in east Texas in the thirties, production was very prolific because there was no decline in pressure, due to natural influxes of water from adjacent aquifers. The recovery efficiency from the east Texas reservoirs, which contain uniform, clay-free sands, may exceed 70%. Unfortunately, the only other place where such reservoirs occur to any extent is south Louisiana.

Overall, waterflooding is raising recovery efficiency by a factor of about 1.5 to 2 over that produced by solution gas drive alone, to an average of about 40% of the original oil in place in the U.S. Not all reservoirs can be waterflooded, however, due to problems such as heterogeneous sand development or diverse ownership of the mineral rights to a reservoir. The production history of a reservoir subject to waterflooding is shown in Figure 4. The secondary development peak occurs relatively soon after the onset of waterflooding, and shortly thereafter, the production of water increases rapidly, at the expense of the oil production. Waterflooding

entails many additional costs: the costs of treating the water for injection into the fine pores (50–100 microns, say) of the reservoir; the cost of fighting brine-borne sulfate-reducing bacteria—*Desulphovibrio desulphuricans*, which is an extremely resistant strain—that lead to sulfide corrosion and the accumulation of organic masses on the reservoir sand face, which reduce its permeability to water; and the sheer cost of power for injecting and then lifting as much as ten volumes of brine for every volume of oil produced. The oil industry in the U.S. today produces about 6 to 7 barrels of water for every barrel of oil.

There are two principal reasons why a waterflood fails to recover more of the oil: the pores within the reservoir rock are not uniform in size (Fig. 5), and the water is usually less viscous than the oil. What happens is that the fluids move faster through the larger pores (Fig. 6), and once a water-oil interface gets ahead of the average position, the flow of water is accelerated relative to that of oil because of its lower viscosity. Hence, in most reservoirs, the water eventually tends to flow as a finger through the oil and bypass some of it. This effect is less pronounced than might be anticipated on the basis of the heterogeneity of the pores, owing to the fact that it is water, not oil, that preferentially wets the minerals comprising the reservoir. As a result, water is taken up by the fine pores of the reservoir rock. As the oil is forced through a constriction into a pore already filled with water, the changing curvature of the oil glob affects the distribution of capillary pressure on its surface in such a way that the water streams to the constriction and cuts off the oil

thread, leaving it surrounded by water. Once the leading edge of the oil glob has been snapped off, the pressure required to deform it so that it can squeeze through the constriction is so great as to be unattainable without rupturing the reservoir itself.

The injection of surfactants in aqueous solution to affect interfacial tension and reduce capillary pressure to a level that would permit release of immobilized oil was proposed many years ago. To lower the capillary pressure by this amount would require lowering the interfacial tension between oil and water to about 10^{-3} to 10^{-4} dyne/cm—several orders of magnitude less than the normal values of about 20 to 30 dynes/cm. Such a reduction can indeed be achieved in vitro, but in crude oil reservoirs the effectiveness of simple surfactants is vitiated by adsorption of the surfactant onto reservoir minerals, salting-out by reservoir brines, and bacterial degradation. Even more important, a low interfacial tension prevents the fine pores from taking up water and permits the surfactant solution to finger from the injection well to the production well quite rapidly. Very sophisticated solutions of surfactants, co-surfactants, and inorganic salts have been developed that overcome many of these problems. The solutions are frequently loaded with water-soluble polymers, hydrolyzed acrylate polymers, and polysaccharides, to prevent fingering and to improve the sweep of the reservoir by the injected solution. They are known as micellar-polymer fluids, because the surfactant is usually present at concentrations above the critical concentration for micelle formation; unfortunately they are very expen-



Figure 5. The chief factors limiting recovery efficiency are the heterogeneity in grain and pore sizes, shown in this scanning electron micrograph of a reservoir sand (enlarged ~75 times), and the viscosity of the crude oil, which is greater than that of water.

sive. Although extremely encouraging results have been obtained with numerous formulations in many laboratories, pilot studies in the field have so far been generally discouraging.

One of the great problems in developing effective chemical floods for use in real reservoirs is our inability to scale the process physically in the laboratory. The laboratory experiments are done on sand packs and stacked cores 5–7 cm in diameter that have been taken from the reservoir, and the experiments are over in hours or days; in the reservoir, however, dimensions are measured in hundreds of meters and time scales in years. The problem stems from the impossibility of simultaneously scaling adsorption and capillarity on the one hand and viscous fluid flow on the other. It is conservatively estimated that 250–500 million dollars has already been spent on research and development studies of chemical flooding. Reviewers of the technology on behalf of the U.S. Department of Energy and the Office of Technological Assessment of the U.S. Congress have concluded that there is not much prospect for a significant contribution to enhanced oil recovery from chemical flooding in the coming decades. The process seems to require more sophisticated control than can be achieved in the oil field, where, once the fluids are injected, the reservoir itself takes over. However, the promise of the method is so great that research is continuing despite the disappointments.

Carbon dioxide flooding

At the time of the Suez crisis in the late fifties, the oil industry, faced with the curtailment of supplies to western Europe (the U.S. was not a significant importer at the time), engaged in a sizable amount of research and development work in solvent, or miscible, flooding. The preferred solvent was LPG (liquefied petroleum gas, primarily propane), which was then in little demand and was relatively inexpensive. The theory behind the idea is quite straightforward. A slug of LPG—about 5% of the size of the reservoir, say—is injected into the reservoir, as a result of which the residual crude oil, which is miscible with LPG, is banked up ahead of it. The LPG is followed by natural gas, which, since the two are miscible, displaces it, and water, which, because of its higher viscosity, displaces the natural gas in a pistonlike fashion. Field tests gave rather disappointing results, however. The principal problem was traced to the fingering of LPG through any oil bank that developed, owing to its much lower viscosity. In other words, fingering due to an unfavorable viscosity ratio and reservoir heterogeneity occurs in both miscible and nonmiscible displacement. The ending of the Suez crisis

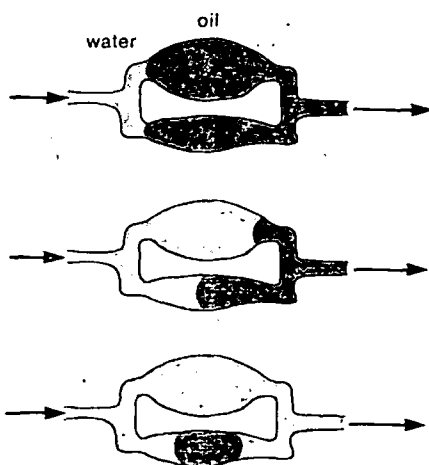


Figure 6. Water injected into the reservoir will advance faster in some interstices than others, because of the heterogeneity of the porous network. The oil in the bypassed channels becomes trapped by capillary forces. This schematic representation of water invasion in parallel pores originally filled with oil shows (top to bottom) the water as it first enters the pore, the oil/water boundary moving faster in the upper channel, and the snap-off and retraction of the oil thread in the lower pore. Once isolated, the pressure required to release the oil is unattainable in practice.

and the gradual increase in the value of LPG as a feedstock for the petrochemical industry terminated further work on this process.

Owing to the more sustained oil-supply problems of recent years, attention has again turned to the potential of so-called miscible flooding. It was discovered that carbon dioxide at high pressures has a significant solubility in most crude oils, although there is a miscibility gap at mol fractions above 60%, even at pressures as high as 5,000 psi. Field pilot studies have demonstrated conclusively that carbon dioxide at high pressures will mobilize and displace oil trapped by waterflooding. However, the amount of carbon dioxide required to recover an additional barrel of crude oil was found to be quite high—as much as 30,000 standard cubic feet, compared to a theoretical value on the order of 2,000. Such a high consumption of carbon dioxide negates the economic feasibility of the process.

The actual mechanism by which the carbon dioxide recovers crude oil is the subject of much discussion in the technical literature, but precise comprehension could lead to breakthroughs in the optimization of carbon dioxide use. Some investigators believe that carbon dioxide functions by extracting some of the lighter components of the crude oil, thereby forming a new phase that can miscibly bank up and displace the residual crude. Others believe that the carbon dioxide condenses in the residual oil to form such a new, miscible phase. Considering the experience with LPG flooding, it seems unlikely that a relatively small volume of a miscible fluid can maintain its integrity and stabilize the displacement process.

Studies based on scaled physical models have provided further insight into the mechanism of carbon dioxide displacement. In most applications, carbon dioxide is in dense gaseous form, since the critical temperature is only 88°F. At supercritical pressures, carbon dioxide may have a density that exceeds that of the crude oil and approaches that of water. The viscosity of the dense gas is usually less than 0.1 centipoise—much less than that of water—and when injected into a waterflooded reservoir, this low-viscosity carbon dioxide tends to finger through the more viscous aqueous phase that saturates most of

the reservoir volume. It is only after carbon dioxide has displaced a significant amount of water that it can reach the residual oil that has been occluded and immobilized by the water. Upon contact, it dissolves in and swells the oil globs. Erstwhile immobilized globs begin to touch each other, and the relative permeability to the oil phase again becomes large enough for oil to flow.

It can be seen that this process is basically inefficient, because the carbon dioxide has to displace the water before displacing the residual crude oil. As a result, the quantity of carbon dioxide theoretically required for mere volumetric replacement of the crude oil—about 2,000 standard cubic feet per barrel—cannot be achieved. The work to date suggests that 7,000–10,000 standard cubic feet per barrel may be the best that can be done. This is accomplished by injecting carbon dioxide in discontinuous slugs, rather than as a continuous stream. Although this lowers the amount of carbon dioxide that is required, it also reduces the percentage recovery of the residual crude oil.

The minimum cost of carbon dioxide consists of the costs of compression and prevention of corrosion—on the order of \$0.50 to \$1.00 per thousand standard cubic feet—plus the cost of procuring it. There are some natural, subsurface accumulations of carbon dioxide in the U.S., notably under the Jackson Dome in Mississippi and in several structures in the Rocky Mountains. Carbon dioxide from such sources would have to be piped to the oil fields, and the ultimate cost is estimated to be in the range of \$1 to \$2 per thousand cubic feet. Another potential source of carbon dioxide is in the stack gases of power plants and other industrial installations that burn fossil fuels; the gases would have to be purified to reduce—or virtually eliminate—the nitrogen content, since nitrogen is not as soluble in crude oil as carbon dioxide at comparable pressures. The cost of purification has been estimated to be on the order of \$1 to \$2 per thousand cubic feet. If adequate supplies of carbon dioxide can be made available, billions of additional barrels of crude oil may be recovered in the U.S. by this process; however, it is important to note that the use of carbon dioxide will add \$15–50 to the cost of each barrel of oil.

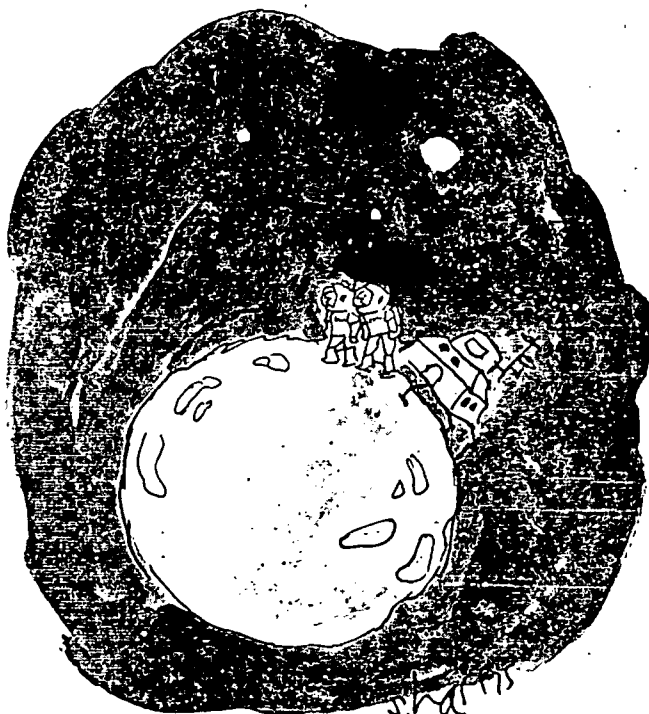
Research and development have already led to the implementation of the steam-drive process for the extensive recovery of viscous crude oils from reservoirs with a high saturation of petroleum. The additional production that results—over 300,000 barrels per day at the present time—may be increased to as much as 500,000 barrels per day by 1990 if developments in progress, including the substitution of coal as fuel for the steam generators, come to fruition. Although work with carbon dioxide has been transferred successfully from the research laboratory to demonstrations in the field, more optimization is required to ensure a marginal economic return. Currently available solutions for micellar-polymer flooding may be limited to use in shallow reservoirs, where many wells can be drilled per unit area and fluid velocities are consequently high, thereby compensating for the current failure to achieve ultralow interfacial tensions.

In view of the stark decline in producing capacity in the U.S. and the low probability of finding a significant number of giant and supergiant fields in the future, the enhanced oil

recovery technology developed to date can, at very best, be counted on only to slow down the decline in domestic crude oil supplies. Because of the national need, continuing efforts are certainly called for, but they should not be substituted for the development of alternate energy sources.

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“Another one inhabited. That’s three down and several hundred billion to go.”

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SEISMIC MAPPING OF HYDRAULIC FRACTURES MADE IN BASEMENT ROCKS

by

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ABSTRACT

A study of the phase arrival times and polarization of microseismic signals has provided sufficient information to define the size and orientation of hydraulic fractures created at a depth of 3 km in dry hot basement rocks. Seismic signals in the 750 to 2250 Hz bandpass have been detected by geophones positioned in a borehole adjacent to the well from which the fracture originates. Preliminary mapping of the fracture shows it to be vertical, or nearly so, at least 140 m in length and 300 m in height, and striking NNW.

INTRODUCTION

For the last three years, the Los Alamos Scientific Laboratory has been actively investigating the potential for, and problems associated with, extracting geothermal energy in those parts of the United States that contain dry, hot rock at moderate depths. At sufficient depth, rock hot enough to be potentially useful as an energy source exists everywhere, and in many places it is at depths shallow enough to be reached at moderate cost with existing equipment. In the Los Alamos concept, a man-made geothermal reservoir would be formed by drilling into an identified region of suitably hot rock, and then creating within the rock a very large surface area for heat transfer by use of large-scale hydraulic-fracturing techniques developed by the oil industry. After a circulation loop is formed by drilling a second hole into the top of the fractured region, the heat contained in this reservoir would be brought to the surface by the buoyant circulation of water. The water in the loop would be kept liquid by pressurization at the surface, thereby increasing the rate of heat transport up the withdrawal hole compared to that possible with steam. Figure 1 is a schematic diagram of a man-made geothermal system.

LASL'S GEOTHERMAL ENERGY PROJECT

The initial geothermal source demonstration presently being conducted by LASL is located on the Jemez Plateau in that part of the Rocky Mountains extending into northern New Mexico. As a result of relatively recent volcanic

Illustrations at end of paper.

activity, a large amount of heat is still retained in the rock underlying the area within a few kilometers of the surface. On the basis of extensive studies and field experiments, the "Fenton Hill" site (about 32 km west of Los Alamos) was selected for development of the first dry hot rock energy experiment. The primary objective of the dry hot rock geothermal energy extraction experiment is to investigate and demonstrate the techniques of drilling into hot granitic rock, fracturing it by hydraulic pressure, producing connected circulation loops and then circulating water to extract the heat and transport it to the surface.

The first exploratory borehole drilled at the Fenton Hill site was designated Geothermal Test Hole No. 2 (GT-2). The Precambrian granitic surface was reached at 733 m and drilling continued to a final depth of 2932 m. Numerous experiments were conducted in various zones extending from 2789 m to the bottom of the borehole. A series of hydraulic-fracture-initiation, fracture-extension, and pumping experiments were conducted in these zones to determine principal tectonic stress, stress variations, and the leak-off rate of the fracturing fluid. A fracture near the bottom of GT-2 was eventually extended to a radius of approximately 70 m and measurements were performed to characterize this fracture. The first energy extraction borehole (EE-1) was drilled adjacent to GT-2 to a depth of 3064 m with a measured bottom-hole temperature of 205°C. The first downhole circulation loop was attempted by employing directional drilling techniques to turn the EE-1 borehole to intercept the fracture created in GT-2. It was important to obtain the dimensions and orientation of the hydraulic fracture to achieve intersection of the fracture system with the second borehole (EE-1). Development of downhole instrumentation capable of characterizing the hydraulic fracture system in the high-temperature and high-pressure borehole environment was therefore required.

ACOUSTIC FRACTURE MAPPING TECHNIQUES

A downhole triaxial geophone package was employed to detect acoustic signals from discrete fracturing events as the hydraulic fracture was extended. Records obtained with this instrumentation established the existence of detectable microseismic events uniquely associated with the reinflation and extension of a hydraulic fracture previously created in GT-2. Signals from the microseismic events contained sufficient information to determine the foci of the events. By assuming that the locus of the events originated from the fracture plane intersecting GT-2, the fracture can be mapped in space (size, shape, and orientation) and time (growth during injection). The borehole and fracture geometry and the geophone positions for the experiment are shown in Fig. 2. The hydraulic fracture to be mapped originated at 2.8 km in a lined section of GT-2 that had been perforated and then milled out. Four observation stations were occupied in succession in an uncased section of EE-1 by a three-component geophone package capable of being repeatedly repositioned and coupled directly to the borehole walls. The magnetic orientation of the package at each depth was determined from an Eastman Whipstock magnetic survey tool attached to the bottom of the geophone package.

Fluid injection into the hydraulic fracture lasted for a period of 1 hour. Each geophone station was occupied in turn for 15 min, and at the termination of the experiment the first station was reoccupied for another 15 min. During the time the geophone package was positioned at the first location, the fracture was being inflated. Fracture extension commenced at some time during the

occupation of the last three stations. The fracture maps obtained are horizontal projections of microseismic event foci occurring within an inclination of ± 10 degrees of the horizontal at the specific depth of measurement. In effect then, the maps represent projections of horizontal bands across the fracture face in which seismic activity is occurring. The observed signals, which are bandpass filtered between 750 to 2250 Hz, exhibit both compressional wave, and shear wave arrivals. Hence from a determination of the arrival times of each phase the distance to the focus of an event can be measured. Furthermore, since the signals were recorded by orthogonally oriented geophones, hodograms or Lissajous figures of particle velocity can be used to determine the azimuthal approach of the signal.

ANALYSIS OF DISCRETE MICROSEISMIC SIGNALS

The events, originally recorded as analog signals on magnetic tape, were digitized at 50 μ s/sample and bandpass filtered between 750 and 2250 Hz for analysis. This filter selection was empirically determined as a compromise in avoiding high noise levels at low frequencies and aliasing in spectral analyses. The signals exhibit discernible p- and s-wave arrivals. The time interval between the arrivals can be measured, and the propagation velocity of the respective waves is known: therefore, the distance to the source of events can be determined. Generally, an s-wave arrival can be identified with little difficulty. It shows up clearly within the p-wave coda of signals as a high-amplitude arrival on vertical geophone records and as a phase and amplitude change on the horizontal geophone records. This is not the case with the p-wave onset, because the signal is emergent above the ambient noise level. The combined error in estimating the time interval between the p- and s-wave arrival times is about ± 0.5 ms, resulting in a 4-m uncertainty in distance determinations.

Provided that the time interval between p- and s-wave arrivals from an event can be determined and that the wave velocities are known, only the arrival direction of the signal is needed to define the focus of an event. Because p-waves are linearly polarized in the direction of signal propagation, the azimuth and inclination of the signal polarization describes the direction to an event focus. The signal azimuth and inclination can be determined by inspecting velocity hodograms of two components of the velocity amplitude of a signal constructed from the geophone recordings. Figure 3 is a sequence of hodograms of a signal arrival recorded by the horizontal geophones. Clearly shown is the noise before p-wave arrival, p-wave onset, linear polarization of the p-wave defining the signal azimuth, and s-wave onset. The inclination to the source can be determined from a similar hodogram, one axis of which would necessarily be the vertical component of velocity amplitude.

MEASUREMENTS OF CONTINUOUS RADIATION

Continuous seismic radiation was also observed during these experiments. The signal is clearly seen when records containing the microseismic events are low-pass filtered at 30 Hz. Although a thorough study of these signals has not been made, the radiation appears useful in determining fracture orientation. The dominant frequency of the radiation is 7 Hz, which corresponds to the frequency of pump strokes during injection. The signal appears only after the volume of fluid injected into the fracture approaches that necessary for extension.

A hodogram of the horizontal velocity amplitude components of the radiation, Fig. 4, shows that the radiation is elliptically polarized with the azimuth of the major axis of the ellipse closely corresponding to the fracture direction that is defined in maps of microseismic event foci. As a consequence, inferences can be made that the radiation is excited by pumping induced pressure fluctuations in the wellbore from which the fracture originates, and that the signal detected results from disturbances traveling along the fracture faces.

Measurements based on records of continuous radiation are of limited use, because without substantial advances in theory neither the distance to a hydraulic fracture from an observation station nor the size of a fracture can be determined. Nonetheless, the method has provided additional measurements of fracture orientation, and for this reason, is important to develop.

FRACTURE MAPPING EXPERIMENTS

Figure 5 shows a projection to the horizontal at a depth of 2.81 km of the foci of events occurring during the initial 13.5 m³ (3560 gal) inflation of the GT-2 fracture. EE-1 is located at the origin; radii are given for the distance to foci in terms of the time interval between p- and s-wave arrival times in milliseconds, and also in terms of the estimated distance to the events. Activity was clustered and is probably occurring near the GT-2 borehole. The trace of the fracture plane strikes NNW. Magnetic north at this depth in EE-1 is indicated on Fig. 5.

When the station at 2.81 km was reoccupied, fluid injection had been stopped at 45 m³ and the system had been shut in at the operating pressure. The events that occurred during this interval are shown in Fig. 6. Even though injection had ceased, activity was pronounced. Comparison with Fig. 5 shows that in the period between successive observations at this depth, activity had increased to extend along a line exceeding 140 metres. The orientation of the fracture is clearly defined as N27W. Figure 7 combines the data of Figs. 5 and 6 and shows how the locus of events along the fracture has grown with time. These data suggest that the fracture should be able to be defined from geophones positioned in the borehole in which the fracture originated.

Hydraulic fracture microseismic event foci were also determined at depths of 2.94 km and 3 km during inflation and extension of the fracture. The data were of sufficient quality and number to define the fracture orientation and length. The activity was observed to be less pronounced than at the 2.81 km depth and it occurred over a shorter band. The strike of the fracture exhibited a considerable counterclockwise rotation of 30°. The length of the fracture at 3 km is considerably less than that at 2.8 km. This observation, combined with the reduced activity at 3 km is evidence that the fracture probably terminates near this depth. Pronounced activity and the greatest fracture length is found at 2.8 km - an indication that the fracture extends upward from this depth. Induced potential logs indicate that the fracture probably extends upward at least to 2.7 km. The total vertical dimension of the fracture must therefore exceed 300 m.

The apparent warp of the fracture is best shown by the three-dimensional perspectives given in Figs. 8 and 9. The horizontal lines denote equivalent depths. In the model the fracture is shown asymmetric about the GT-2 wellbore, and the shape of the fracture is represented as a regular form with

lateral dimensions corresponding to those determined from microseismic event foci. The orientation of the fracture with respect to magnetic north changes 30° counterclockwise in the depth interval in which the measurements were made. This amount of rotation is beyond the range of the experimental error. One interpretation of the apparent rotation is that the hydraulic fracture itself may not be warped, but rather the direction of the ambient magnetic field may change over the vertical distance of measurement. Because conventional magnetic borehole surveys of GT-2 before fracturing did not show any anomaly at the depths in question, this is probably not the case. If, on the other hand, the warp of the fracture is real, it must be produced by the stress distribution changing with depth in the host rock.

CONCLUSIONS

When taken collectively the results of each of these measures of fracture size and orientation gives confidence that the immediate goal of drilling through a hydraulic fracture targeted in space by remote geophone sensors may soon be realized. The downhole acoustic experiment has proven to be a successful field technique. One area of major concern in the true orientation of the seismic sonde downhole. It is important to determine the position of the tri-axial geophone cradle once the instrument package is locked into the borehole wall.

ACKNOWLEDGMENT

The introductory text contains excerpts from Los Alamos Scientific Laboratory Reports authored by members of the Geothermal Energy Group.

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20 MW (THERMAL) DRY HOT ROCK ENERGY SOURCE DEMONSTRATION

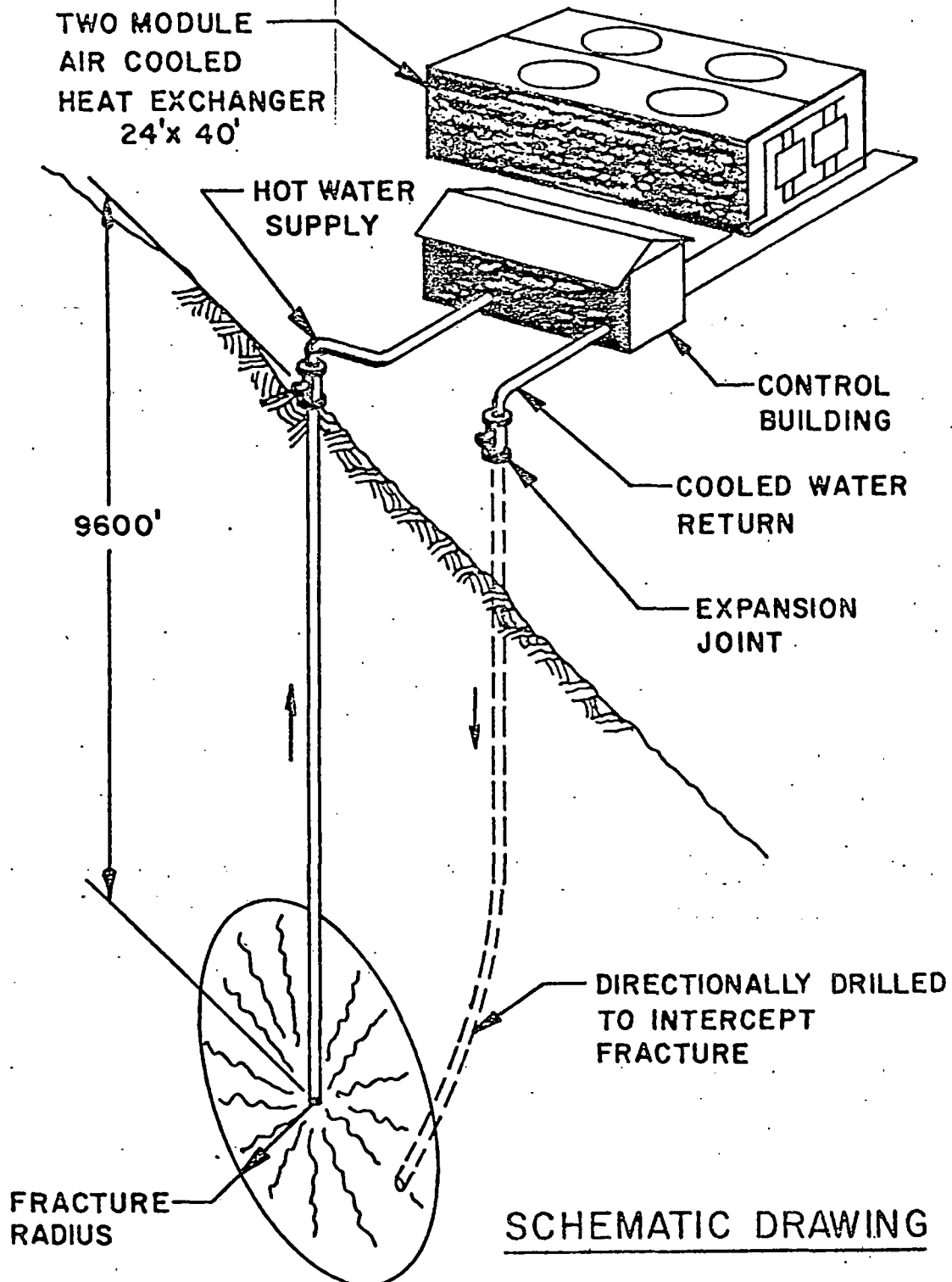


Figure 1. Dry-Hot-Rock Geothermal-Energy System Developed by Hydraulic Fracturing.

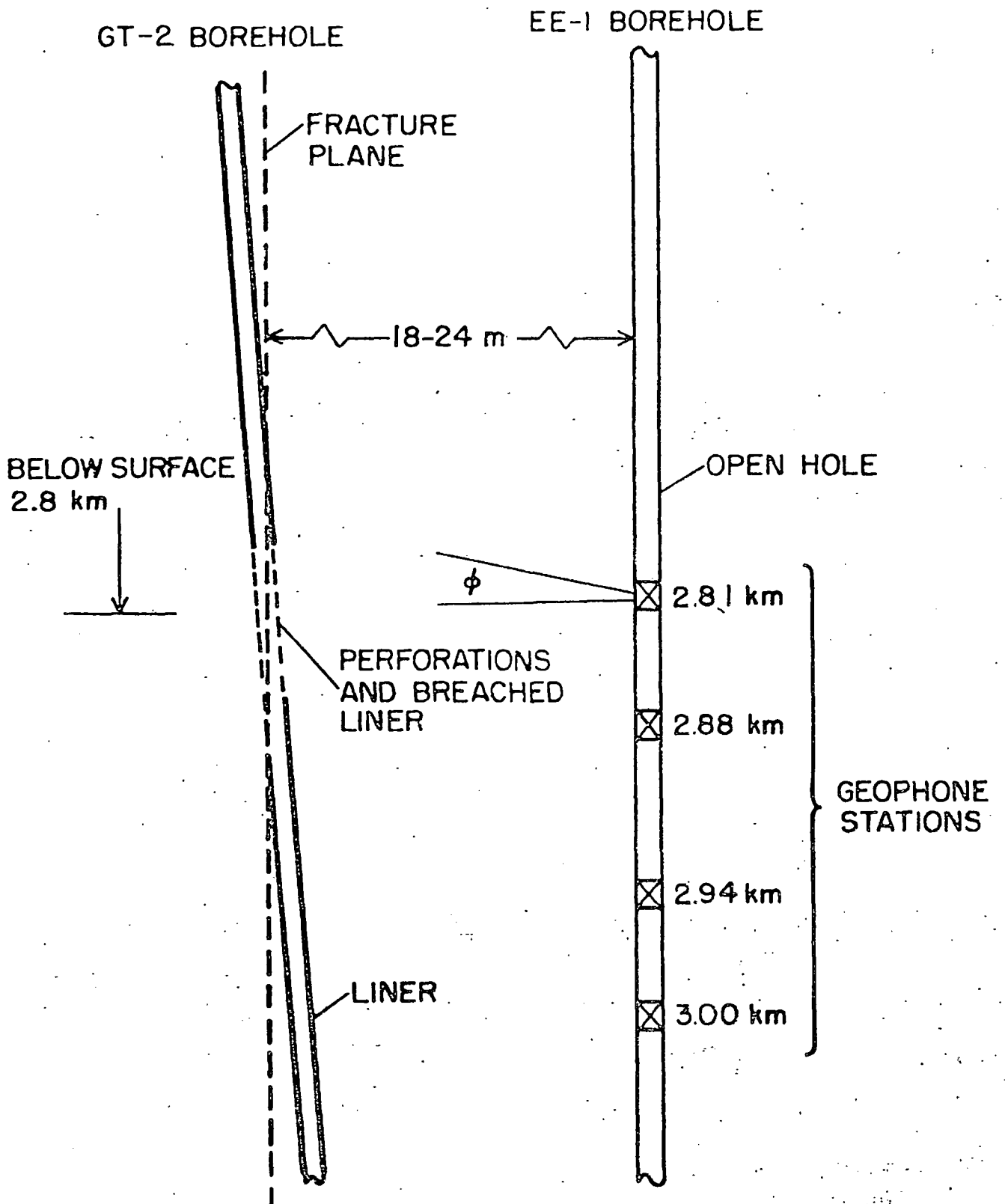


Figure 2. Downhole Acoustic Fracture Mapping Experiment.

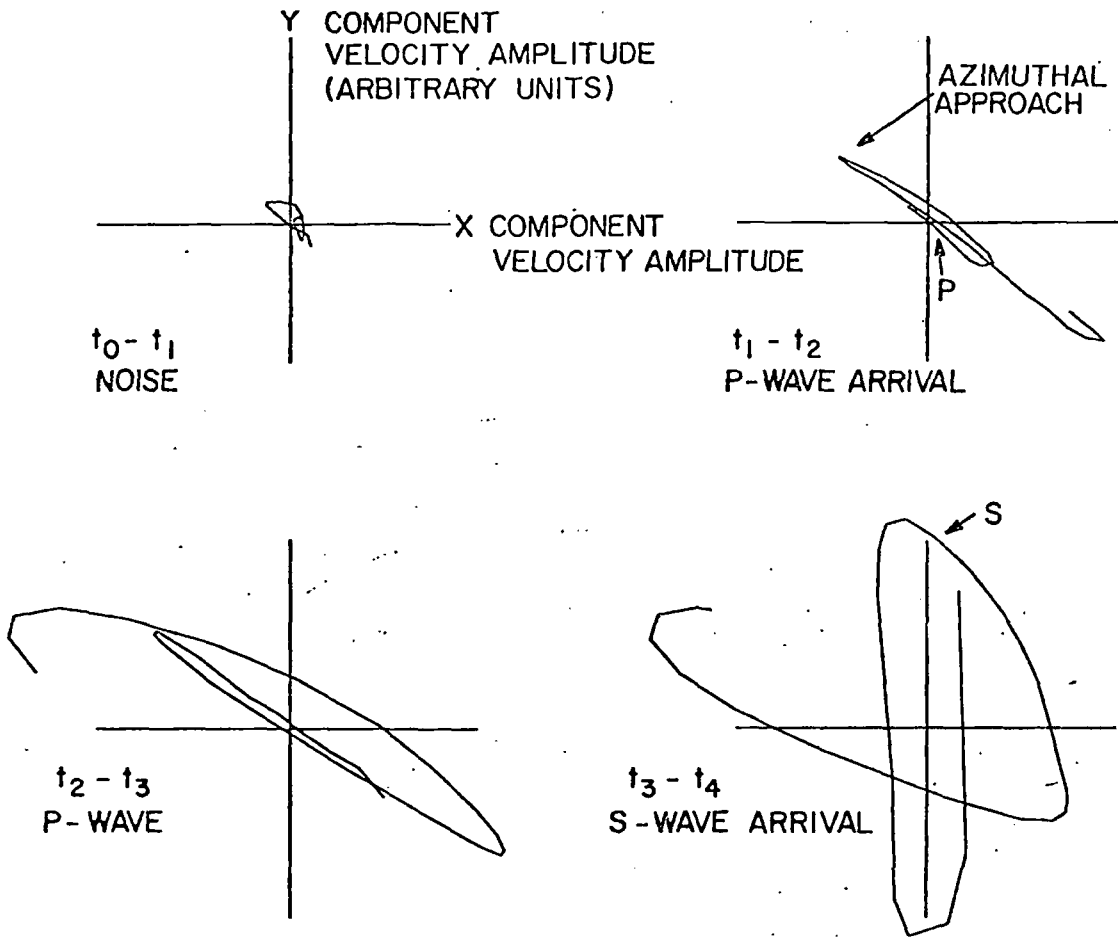


Figure 3. Representative Hodograms of a Microseismic Signal (8-ms total time) Received at the Horizontal Geophone.

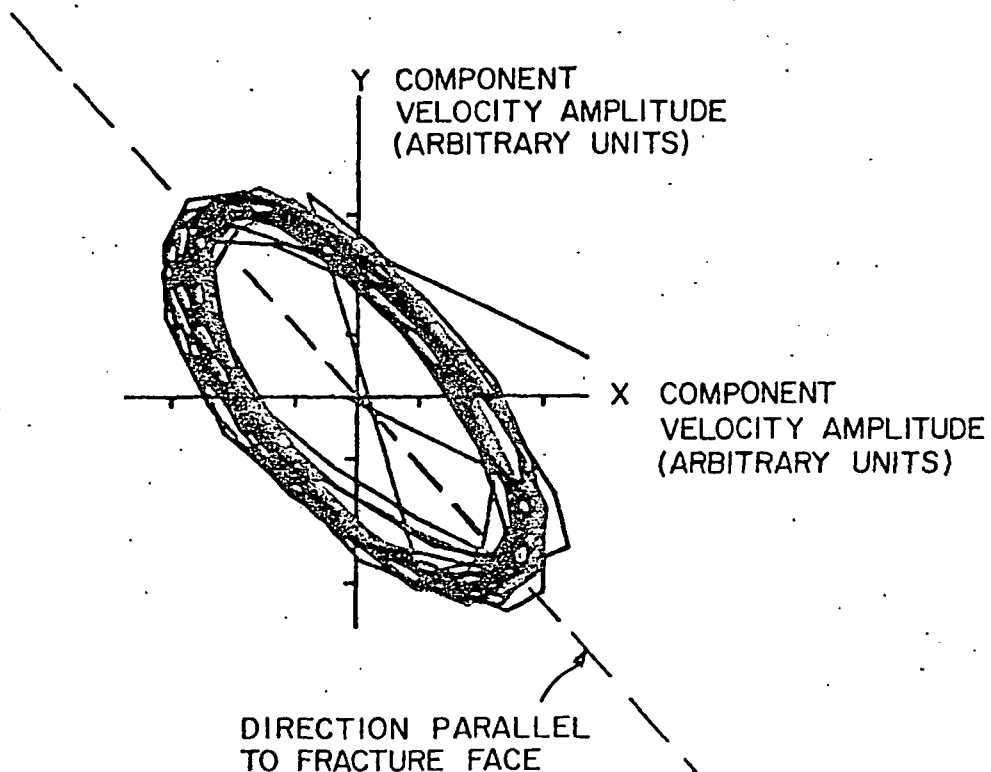


Figure 4. A Hodogram Representative of the Continuous Seismic Radiation from the GT-2 Fracture Induced by Pumping.

GT-2 HYDRAULIC FRACTURE

MICROSEISMIC EVENT FOCI

$\phi < 20^\circ$

○ 0-13 m³ INFLATION

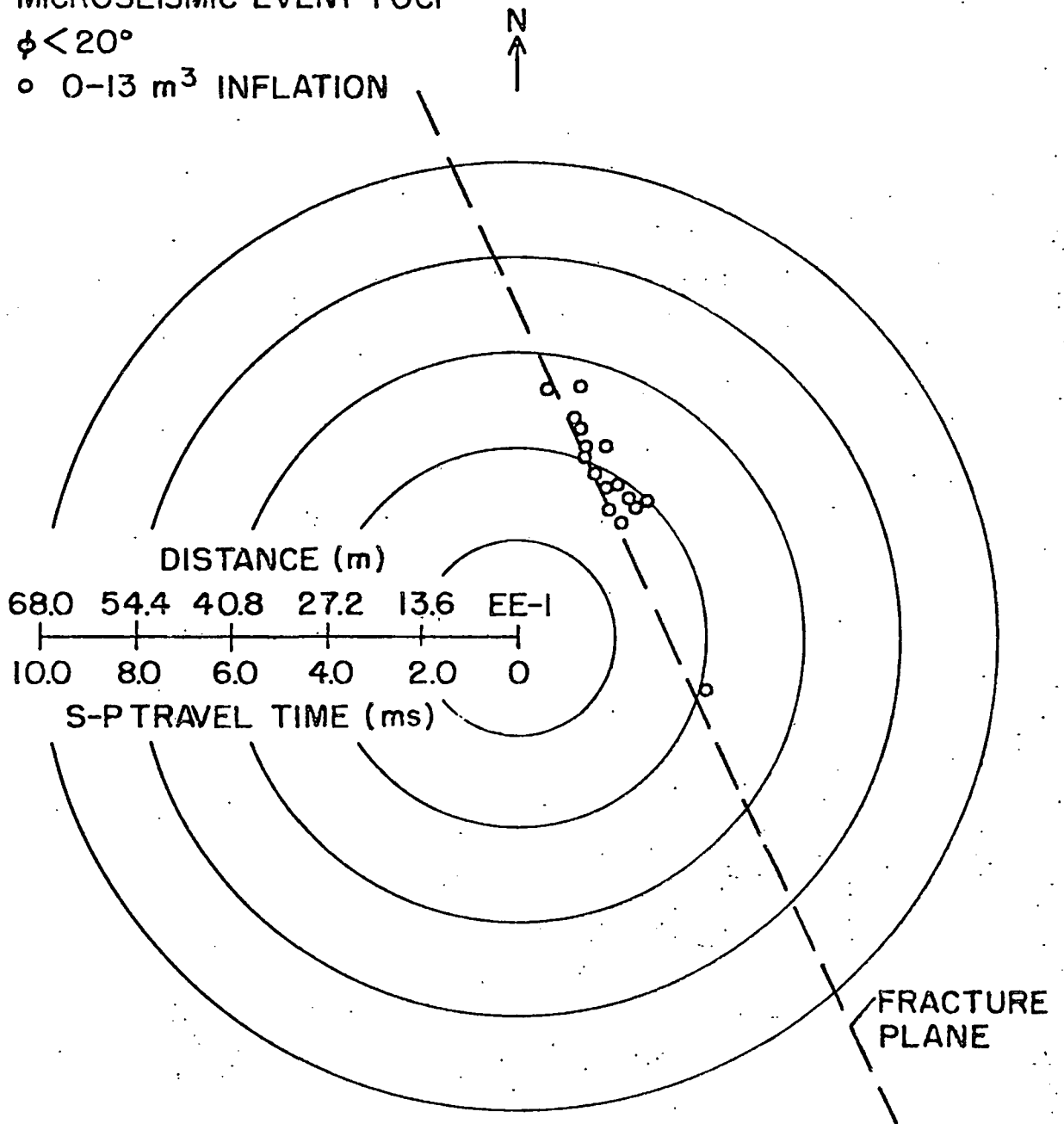


Figure 5. Foci of Microseismic Events Recorded at a Depth of 2.81 km During the Initial Period of Inflation.

GT-2 HYDRAULIC FRACTURE
 MICROSEISMIC EVENT FOCI
 $\phi < 20^\circ$
 Δ SHUT-IN SUBSEQUENT TO
 45 m³ INFLATION

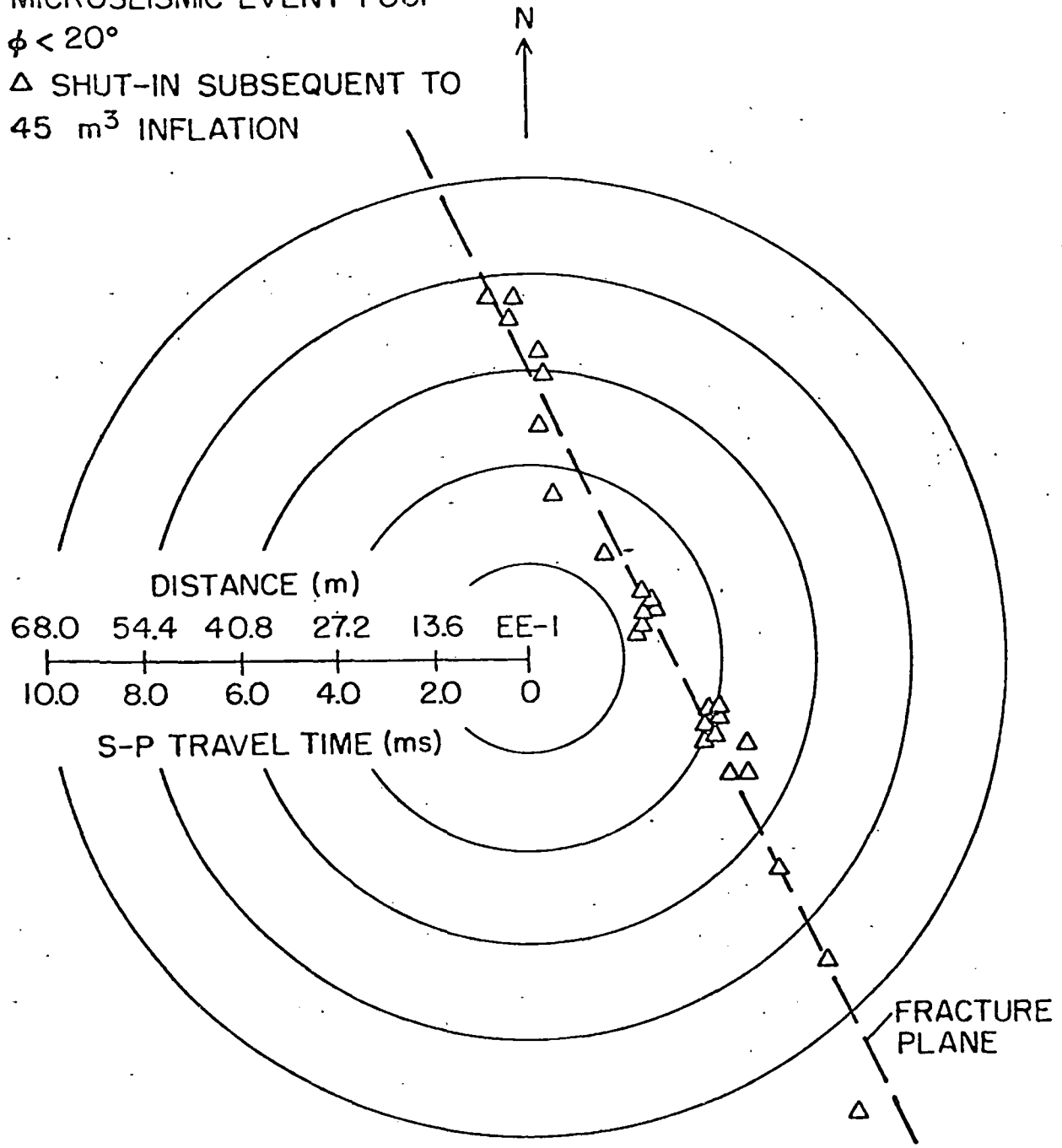


Figure 6. Foci of Microseismic Events Recorded at a Depth of 2.81 km During Shut-In Subsequent to Inflation.

GT-2 HYDRAULIC FRACTURE
MICROSEISMIC EVENT FOCI

$\phi < 20^\circ$

○ 0-13 m³ INFLATION

△ SHUT-IN SUBSEQUENT TO
45 m³ INFLATION

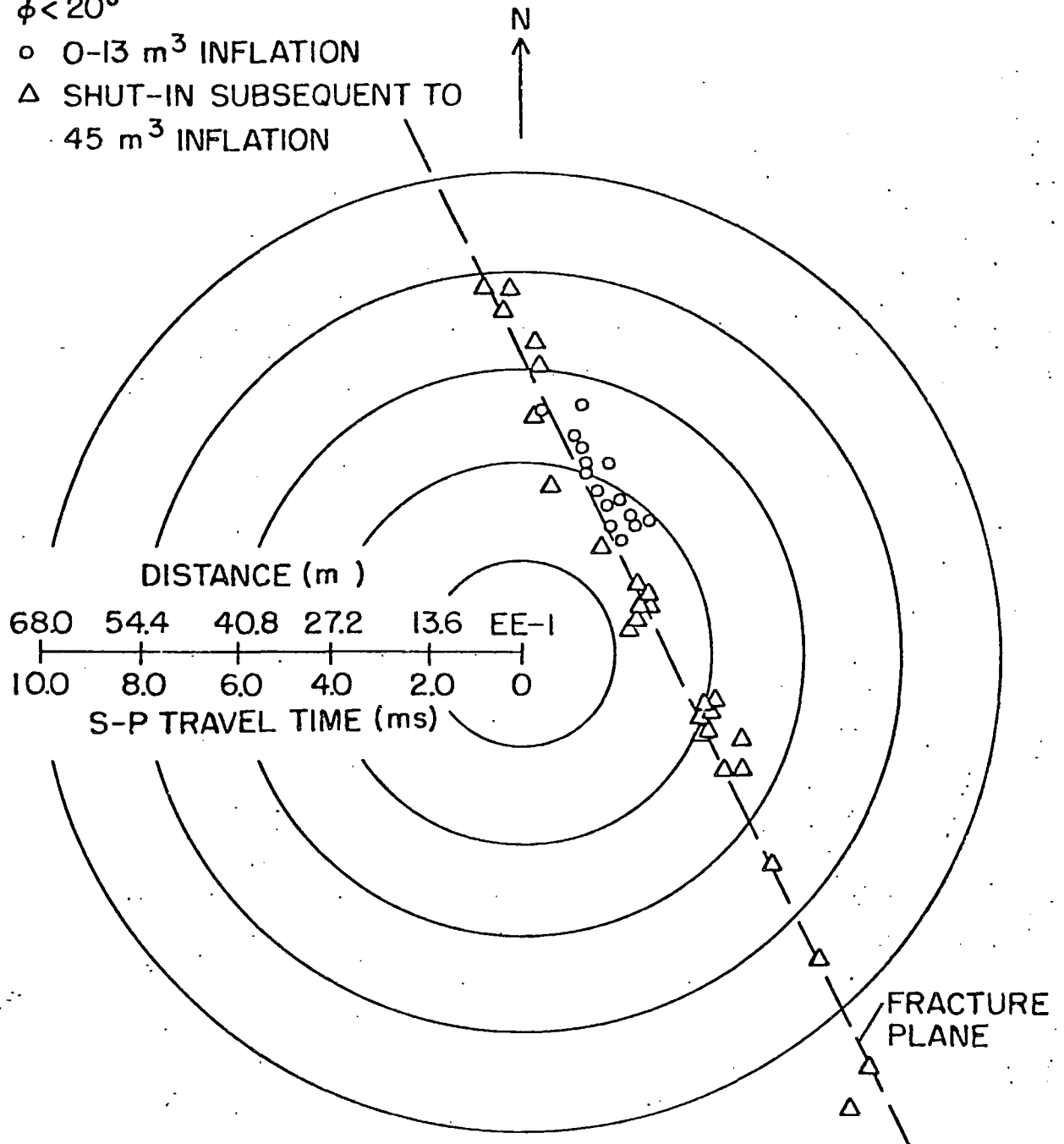


Figure 7. Foci of Microseismic Events Recorded at a Depth of 2.81 km (Combined Data of Figure 5 and 6).

Drill Hole and Fracture GT-2

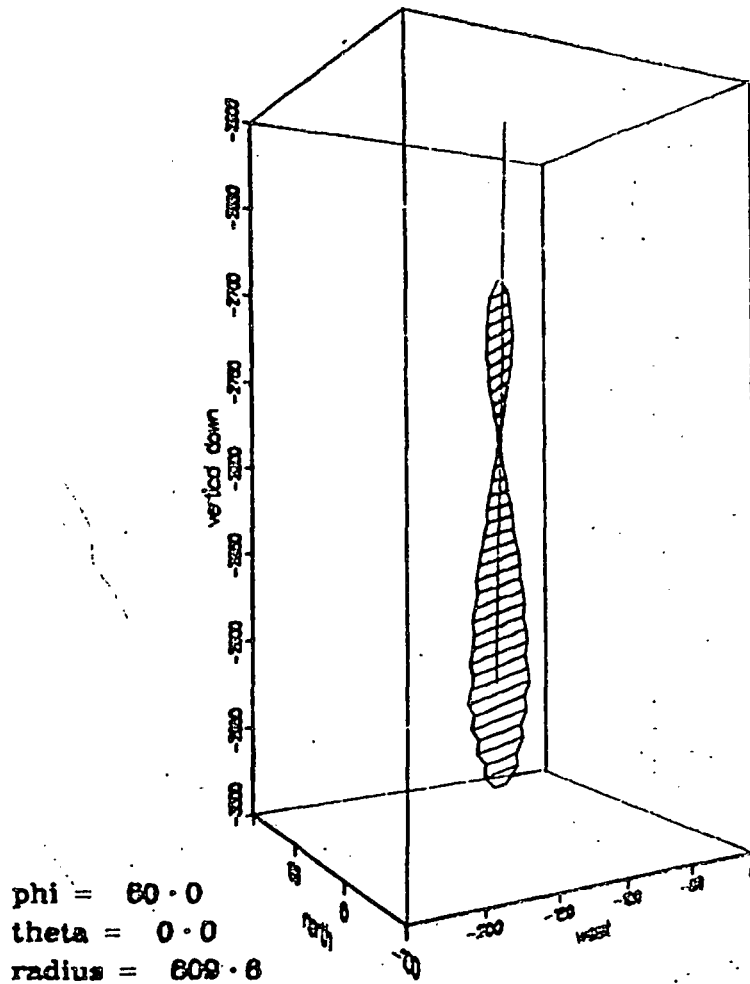


Figure 9. Three-Dimensional Perspective of the Fracture Originating in GT-2 (at 60° to the Fracture Surface at 2.81 km).

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As contained in Title 43 of the Code of Federal Regulations

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Bureau of Land Management

Reprint of regulations current as of January 8, 1974

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Subpart 3100—Oil and Gas Leasing

§ 3100.0-3 Authority.

(a) *Public domain.* (1) The act of February 25, 1920 (41 Stat. 437; 30 U.S.C. 181 et seq.), as amended and supplemented, including the amendatory act of August 8, 1946 (60 Stat. 950; 30 U.S.C. sec. 181 et seq.) and the act of September 2, 1960 (74 Stat. 781; 30 U.S.C. sec. 181 et seq.).

(2) Prior to the filing of the notice of election hereinafter referred to, the act of August 8, 1946 (60 Stat. 950; 30 U.S.C. 181) applies to leases issued prior to the date of that act only where the amendatory act so provides. The owner of any lease issued prior to August 8, 1946, may elect pursuant to section 15 to come entirely under the provisions of that act by filing a notice of election to have his lease governed by the amendatory act, accompanied by the consent of the surety if there is a bond covering the lease. A notice of election so filed shall constitute an amendment of all provisions of the lease to conform with the provisions of the amendatory act and the regulations issued hereunder.

(b) *Acquired lands.* The Mineral Leasing Act for Acquired Lands, enacted on August 7, 1947 (61 Stat. 913; 30 U.S.C. 351-359). The authority conferred upon the Secretary by the act, supersedes the authority conferred upon him by section 402 of Reorganization Plan No. 3, effective July 16, 1946 (3 CFR 1946 Supp. chapter IV) except as to leases or permits outstanding on August 7, 1947.

(c) *Withdrawn, reserved and segregated lands—(1) Protective leasing.* Issuance of protective leases authorized under sec. 441, Revised Statutes; 5 U.S.C. 485; see also Attorney General's Opinion of April 2, 1941 (Vol. 40 Op. Atty. Gen. 41).

(d) *Special Acts—(1) Rights-of-way.* The act of May 21, 1930 (46 Stat. 373; 30 U.S.C. 301-306), authorizes the Secretary of the Interior to lease deposits of oil and gas in and under railroad and other rights-of-way acquired under any law of the United States. The right of lease is restricted to the owner of the right-of-way, or his assignees.

(2) *Nevada.* The act of May 9, 1942 (56 Stat. 273) as amended by the act of October 25, 1949 (63 Stat. 886).

(3) *Lands patented to State of California.* The act of March 3, 1933 (47 Stat. 1487) as amended by the act of June 5, 1938 (49 Stat. 1482) and the act of June 29, 1938 (49 Stat. 2026).

(4) *National Forest Lands in Minnesota.* The act of June 30, 1950 (64 Stat. 311; 16 U.S.C. 508(b)).

(5) *Lake Mead Recreation Area.* The act of October 8, 1964 (78 Stat. 1039; 16 U.S.C. 460n).

(6) *National Forest Wilderness.* Until midnight, December 31, 1983, all laws pertaining to mineral leasing and the regulations of this chapter pertaining thereto effective during such period, shall, to the same extent as applicable before September 3, 1964, extend to National Forest Wilderness, subject to the provisions of such regulations as may be prescribed by the Secretary of Agriculture pursuant to section 4(d)(3) of the Wilderness Act.

(7) *Whiskeytown-Shasta-Trinity National Recreation Area.* Section 6 of the act of November 8, 1965 (Public Law 89-336; 79 Stat. 1295), authorizes the Secretary of the Interior to permit the removal of the nonleasable minerals from lands (or interest in lands) under his jurisdiction within the Whiskeytown-Shasta-Trinity National Recreation Area in the manner prescribed by section 10 of the Act of August 4, 1939, as amended (53 Stat. 1196; 43 U.S.C. 387), and from those under the jurisdiction of the Secretary of Agriculture within the recreation area in accordance with the provisions of section 3 of the Act of September 1, 1949 (63 Stat. 683; 30 U.S.C. 192c); and he may permit the removal of leasable minerals from lands (or interest in lands) within the recreation area in accordance with the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181 et seq.), or the Acquired Lands Mineral Leasing Act of August 7, 1947 (30 U.S.C. 351-359), if he finds that such disposition would not have significant adverse effects on the purpose of the Central Valley project or the administration of the recreation area.

§ 3100.0-5 Definitions.

(a) *Known geologic structure.* A known geologic structure is technically the trap in which an accumulation of oil or gas has been discovered by drilling and determined to be productive, the limits of which include all acreage that is presumptively productive.

(b) *Sole party in interest.* A sole party in interest in a lease or offer to lease is a party who is and will be vested with all legal and equitable rights under the lease. No one is, or shall be deemed to be, a sole party in interest with respect to a lease in which any other party has any of the interests described in this section. The requirement of disclosure in an offer to lease of an offeror's or other parties' interest in a lease, if issued, is predicated on the departmental policy that all offerors and other parties having an interest in simultaneously filed offers to lease shall have an equal opportunity for success in the drawings to determine priorities. Additionally, such disclosures provide the means for maintaining adequate records of acreage holdings of all such parties where such interests constitute chargeable acreage holdings. An "interest" in the lease includes, but is not

limited to, record title interests, overriding royalty interests, working interests, operating rights or options, or any agreements covering such "interests." Any claim or any prospective or future claim to an advantage or benefit from a lease, and any participation or any defined or undefined share in any increments, issues, or profits which may be derived from or which may accrue in any manner from the lease based upon or pursuant to any agreement or understanding existing at the time when the offer is filed, is deemed to constitute an "interest" in such lease.

(c) *Regional oil and gas supervisor.* The Regional Oil and Gas Supervisor of the Geological Survey for the region in which lands under lease are situated.

(d) *Rule of approximation.* Where an application embraces an acreage in excess of the acreage limitation, it may be allowed for the excess acreage if exclusion of the smallest legal subdivision involved would result in a deficiency which would be greater than the excess resulting from the inclusion of such subdivision.

§ 3100.0-7 Cross-reference.

43 CFR 16.

§ 3100.0-9 Limitation on time to institute suit to contest a Secretary's decision.

No action contesting a decision of the Secretary involving any oil and gas lease shall be maintained unless such action is commenced or taken within 90 days after the final decision of the Secretary relating to such matter.

§ 3100.1 Helium.

§ 3100.1-1 Ownership and rights.

The ownership of and the right to extract helium from all gas produced from lands leased or otherwise disposed of under the act have been reserved to the United States. Appropriate provision is made in leases with respect to the recovery of helium. (See 43 CFR Part 16.)

§ 3100.2 Minerals subject to leasing.

§ 3100.2-1 Oil and gas.

§ 3100.3 Drainage.

§ 3100.3-1 Compensation for drainage.

Upon a determination by the Director of the Geological Survey that lands owned by the United States are being drained of oil or gas by wells drilled on adjacent lands, the authorized officer of the Bureau of Land Management, may execute agreements with the owners of adjacent lands whereby the United States, or the United States and its lessees, shall be compensated for such drainage, such agreements to be made with the consent of any lessee affected thereby. The precise nature of any agreement will depend on the conditions and circumstances involved in the particular case.

§ 3100.3-2 Drilling or payment of compensatory royalty.

Where land in any lease is being drained of its oil or gas content by a

well either on a Federal lease issued at a lower rate of royalty or on land not the property of the United States, the lessee must drill and produce all wells necessary to protect the leased lands from drainage. In lieu of drilling such wells, the lessee may, with the consent of the Director of the Geological Survey, pay compensatory royalty in the amount determined in accordance with 30 CFR 221.21.

§ 3100.3-3 Protective leasing.

Where jurisdiction over disposition of mineral deposits in land set apart for other Government agencies has been transferred to the Department of the Interior because of drainage of its oil or gas content, such land must be offered for lease by competitive bidding. Protective leases may cover public domain lands which have been withdrawn from oil or gas leasing or acquired lands not subject to leasing under the Acquired Lands Leasing Act.

§ 3100.4 Multiple development.

The granting of a permit or lease for the prospecting, development, or production of deposits of any one mineral will not preclude the issuance of other permits or leases for the same land for deposits of other minerals with suitable stipulations for simultaneous operation, nor the allowance of applicable entries, locations, or selections of leased lands with a reservation of the mineral deposits to the United States.

§ 3100.5 Options.

§ 3100.5-1 Enforceability.

(a) *Approval of Secretary required.* No option to acquire any interests in an oil and gas lease shall be enforceable if entered into for a period of more than 3 years (inclusive of any renewal period, if provided for in the option) without the prior approval of the Secretary.

(b) *Notice required.* No option or renewal thereof executed after September, 1960, shall be enforceable until notice thereof has been filed in the appropriate land office. No such notice shall be required for options or renewals executed prior to September 2, 1960. Each such notice shall include (i) the names and addresses of the parties thereto; (ii) the serial number of the lease or application for lease to which the option is applicable; (iii) a statement of the number of acres covered thereby and of the interests and obligations of the parties thereto; and (iv) the interest to be conveyed and retained on exercise of the option. Such notice shall be subscribed by all parties to the option or their duly authorized agents. The filing of an executed copy of the option containing the above information shall satisfy the foregoing requirement. In addition, the notice of option must contain or be accompanied by a signed statement, by the holder of the option, that he is the sole party in interest in the option; if not, he shall set forth the names and nature and extent of the interest therein of the other interested parties, the nature of the agreement between them if oral, and a copy of such agreement, if written.

§ 3100.5-2 Chargeable acreage.

(a) *How charged.* The acreage to which the option is applicable shall be charged both to the optionor and to the optionee, but the charge to the optionor shall cease when the option is exercised. If the option covers only a part of the optionor's interest in the acreage included in a lease, the acreage to which the option is applicable shall be fully charged to the optionor, and a share thereof shall also be charged to the optionee as his interest may appear. Upon the exercise of the option, the acreage shall be charged to the parties pro rata as their interests may appear. An unexercised option remains charged during its term until notice of its relinquishment or surrender has been filed in the appropriate land office.

(b) *When charged.* Within the meaning of this section, options may be taken only on lands embraced in leases and offers or applications for leases and the acreage included in any such option taken upon an application or offer for a lease shall be chargeable from and after the date of such option.

§ 3100.5-3 Period of option.

An option hereafter taken on a lease application or offer may be for the period of time until issuance of the lease and 3 years thereafter. Where it is sought to obtain options for periods in excess of those provided in the preceding sentence, an application should be filed with the authorized officer of the Bureau of Land Management, accompanied by a complete showing as to the special or unusual circumstances which are believed to justify approval of the application.

§ 3100.5-4 Acreage in cooperative or unit plan.

It shall be permissible for any such option to provide that where all or any part of the land covered thereby is included in a cooperative or unit plan (as defined in § 3105.1) duly executed by the parties and submitted to the Secretary for final approval prior to the expiration of the three-year option period, then, as to that part of the land covered by said option which is included in said cooperative or unit plan, such option shall not expire until a date 30 days after the date of final approval or disapproval by the Secretary of that cooperative or unit plan.

§ 3100.5-5 Option statements.

Each holder of an option must file in the appropriate land office within 90 days after June 30 and December 31 of each year duplicate statements showing as of the prior June 30 and December 31, respectively (1) his name and the name and address of each grantor of an option held by him, the serial number of every lease, application or offer for lease subject to option; (2) date and expiration date of each option; (3) number of acres covered by each option; (4) aggregate number of options held in each State, and total acreage thereof; and (5) a statement of his interest and obligation under each option; provided, that

the statement of his interest and obligation with respect to any option shall not be required where such interests and obligations have been set forth in the notice required under § 3100.5-1(b) of this section and there have been no changes in such interests and obligations since such filing. Option statements covering lands in the State of California shall be filed in the land office at Sacramento, California. The failure of the holder of an option to file such statement shall render the option unenforceable by him, but this shall not diminish the acreage deemed to be held under option by the optionee in computing the amount chargeable and shall not relieve any party thereto of any liability to cancellation, forfeiture, forced disposition, or other sanction provided by law. If the statement shows or it is otherwise ascertained that the optionee holds options in excess of the prescribed limitation, he will be given 30 days within which to file proof of reduction of his option holdings to the limitations prescribed by the act.

§ 3100.6 Leases within unit areas.

§ 3100.6-1 Joinder evidence required.

Before issuance of an oil and gas lease for lands within an approved unit agreement, the lease applicant or offeror or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in his lease under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently but will be required to conform to the terms and provisions of the agreement with respect to such operations.

§ 3100.6-2 Separate leases to issue.

In case an application or offer for a noncompetitive lease embracing lands partly within and partly without the exterior boundaries of a unitized area is found acceptable, separate leases will be issued, one embracing the lands within the unit area, and one the lands outside of such area.

§ 3100.7 Boundaries of known geologic structures.

§ 3100.7-1 Determination by Geological Survey.

The Director of the Geological Survey will determine the boundaries of the known geologic structures of producing oil or gas fields, and, where necessary to effectuate the purposes of the act, the productive limits of producing oil or gas deposits as such limits existed on August 8, 1946.

§ 3100.7-2 Notice of determination.

Determinations of "structures defined" will be followed, as soon as practicable, by the filing in the appropriate land office of maps or diagrams showing the structure boundaries, and by publication in the FEDERAL REGISTER of notices that the determinations have been made. Because determinations of

"structures undefined" are usually of a more temporary nature, maps or diagrams thereof will not be filed and notices thereof will not be published; however, a memorandum of each such determination will be filed in the appropriate land office and will be available for public inspection. Additional information concerning the procedures used in making the determinations may be obtained from the Geological Survey, Washington, D.C. 20240.

§ 3100.7-3 Date of determinative of rights.

In accordance with long-standing rulings of the Department, if the producing character of a structure underlying a tract of land is actually known prior to the date of the Department's official pronouncement on that subject, it is the date of the ascertainment of the fact, and not the date of the pronouncement, that is determinative of rights which depend upon whether the land is or is not situated within a known geologic structure of a producing oil or gas field. Ernest A. Hanson, A-26375 (May 29, 1952), and cases cited therein. All determinations are subject to change at any time upon receipt of further information through the drilling of wells and other sources. Accordingly, lessees or applicants for leases should not rely upon the maps, diagrams, determinations or notices thereof, as currently controlling documents.

§ 3100.7-4 Request for determination.

Any lessee or his operator may apply to the Director of the Geological Survey for a determination whether the land in his lease is inside or outside the productive limits of a producing oil or gas deposit as such limits existed on August 8, 1946.

Subpart 3101—Lands Subject to Leasing

§ 3101.1 Public Domain.

§ 3101.1-1 Classes and terms.

All lands subject to disposition under the act which are known or believed to contain oil or gas may be leased by the Secretary of the Interior. When land is within the known geologic structure of a producing oil or gas field prior to the actual issuance of a lease, it may be leased only by competitive bidding and in units of not more than 640 acres to the highest responsible qualified bidder at a royalty of not less than 12½ percent. Leases for not to exceed 2,560 acres, except where the rule of approximation applies, entirely within an area of six miles square or within an area not exceeding six surveyed sections in length or width measured in cardinal directions, may be issued for all other land subject to the act to the first qualified offeror at a royalty of 12½ percent.

(a) Exceptions: (1) National parks and monuments.

(2) Indian reservations.

(3) Incorporated cities, towns, and villages.

(4) Naval petroleum and oil shale reserves.

(5) Lands acquired under the act of March 1, 1911 (36 Stat. 961; 16 U.S.C. 513-519) known as the Appalachian Forest Reserve Act, or other acquired lands.

(6) Lands within 1 mile of naval petroleum or helium reserves. No oil and gas lease will be issued for land within 1 mile of the exterior boundaries of a naval petroleum or a helium reserve, unless the land is being drained of its oil or gas deposits or helium content by wells on privately owned land or unless it is determined by the authorized officer, after consultation with the agency exercising jurisdiction over the reserve, that operations under such a lease will not adversely affect the reserve through drainage from known productive horizons.

§ 3101.1-2 Lands in entries or claims not impressed with reservation of oil and gas.

(a) Where an offer is filed to lease lands noncompetitively in an entry or settlement claim not impressed with an oil or gas reservation, the offer will be rejected unless it is found that the land is prospectively valuable for oil or gas. An offeror for a lease for land already embraced in a nonmineral entry without a reservation of the mineral, and likewise a nonmineral entryman or settler who is contending that the land is nonmineral in character should submit with their respective offer and application, showings of as complete and accurate geologic data as may be procurable, preferably the reports and opinions of qualified experts.

(b) Should the land be found to be prospectively valuable for oil or gas, the entryman or settler will be notified thereof and allowed a reasonable time to apply for reclassification of the land as nonmineral, submitting a showing therewith, and to apply for a hearing in the event that reclassification is denied, or to appeal. If he does neither, or he is unsuccessful, the entry or settlement rights and any patent issued pursuant thereto will be impressed with a reservation of oil and gas to the United States. In such circumstances a lease will be granted to the offeror, all else being regular, unless the entryman or settler has a preference right.

§ 3101.1-3 Unsurveyed lands.

(a) *Showing required.* Every offeror for oil and gas lease for unsurveyed lands, must state in his offer that there are no settlers upon the land, or if there be settlers, give the name and post office address of each and a description of the lands claimed, by metes and bounds and approximate legal subdivisions.

(b) *Survey for leasing (competitive).* The survey of unsurveyed lands for a competitive lease for oil and gas will be made at the expense of the Government prior to the issuance of a lease of the lands.

§ 3101.1-4 Description of lands in offer.

(a) *Surveyed lands.* If the lands have been surveyed under the public land rectangular system, each offer must describe the lands by legal subdivision, section, township, and range.

(b) *Unsurveyed lands.* If the lands have not been so surveyed, each offer must describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, in cardinal directions except where the boundaries of the lands are in irregular form, and connected by courses and distances to an official corner of the public land surveys. In Alaska the description of unsurveyed lands must be connected by courses and distances to either an official corner of the public land surveys or to a triangulation station established by any agency of the United States (such as the U.S. Geological Survey, the Coast and Geodetic Survey, or the International Boundary Commission). If the record position thereof is available to the general public.

(c) *Unsurveyed public lands adjacent to tidal waters in southern Louisiana and in Alaska.* In lease offers embracing unsurveyed public lands adjacent to tidal waters in southern Louisiana and in Alaska, if the offeror finds it impracticable to furnish a metes and bounds description, as required in paragraph (b) of this section with respect to the water boundary, he may, at his option, extend the boundary of his offer into the water a distance sufficient to permit complete enclosure of the water boundary of his offer by a series of courses and distances in cardinal directions (the object being to eliminate the necessity of describing the meanders of the water boundary of the public lands included in the offer). The description in the lease offer shall in all other respects conform to the requirements of paragraph (a) of this section. Such description would not be deemed for any purpose to describe the true water boundaries of the lease, such boundaries in all cases being the ordinary high water mark of the navigable waters. The land boundaries of such overall area shall include only the public lands embraced in the offer. The offeror shall agree to pay rental on the full acreage included within the description with the understanding that rights under any lease to be issued on that offer will apply only to the areas within that description properly subject to lease under the act, but that the total area described will be considered as the lease acreage for purposes of rental payments, acreage limitations under § 3101.1-5 and the maximum or minimum area to be included in a lease pursuant to § 3111.1. The tract should be shown in outline on a current quadrangle sheet published by the U.S. Geological Survey or such other map as will adequately identify the lands described.

(d) *Protracted surveys.* (1) When protracted surveys have been approved and the effective date thereof published in the FEDERAL REGISTER, all offers to lease lands shown on such protracted surveys, filed on or after such effective date, must, except as provided below, include only entire sections described according to the section, township, and range shown on the approved protracted surveys.

(2) An offer may include less than an entire protracted section where only a

portion of such a section is available for lease. In such case the offer must describe all the available lands by subdivisional parts in the same manner as provided in paragraph (a) of this section for officially surveyed lands. If this is not feasible, as e.g., in the case of an irregular section, the offer must describe the entire section and contain a statement that it shall be deemed to include all of the land in the described section which is available for lease.

(e) *Conforming land descriptions.* The descriptions in leases issued pursuant to offers filed after the effective date of this section will be conformed to the subdivisions of the approved protracted surveys if and when such surveys have been adopted for the area; and the description and acreage of leases issued pursuant to offers filed after May 22, 1959, will be adjusted to the official public land surveys when such surveys have been extended over the leased area.

§ 3101.1-5 Acreage limitations.

(a) *Maximum holdings.* No person, association, or corporation shall take hold, own, or control at one time oil and gas leases (including options for such leases or interests therein) whether directly through ownership of leases or interests in leases and applications, or offers therefor or indirectly as a member of an association or associations or as a stockholder of a corporation or corporations, holding leases or interests therein and applications or offers therefor for more than 246,080 acres in any one State, of which no more than 200,000 acres may be held under option.

(1) *Exception.* (i) In the State of Alaska the acreage limitation is 300,000 acres in the northern leasing district and 300,000 acres in the southern leasing district, of which no more than 200,000 acres may be held under option in each of the two leasing districts.

(ii) The boundary between the two leasing districts in the State of Alaska is the left limit of the Tanana River from the boundary between the United States and Canada to the confluence of the Tanana River and Yukon River and the left limit of the Yukon River from said confluence to its principal southern mouth.

(b) *Excepted acreage.* Leases or offers or applications for leases committed to any unit or cooperative plan approved or prescribed by the Secretary of the Interior shall not be included in computing accountable acreage. Leases or offers or applications for leases subject to an operating, drilling or development contract approved by the Secretary of the Interior pursuant to section 17(j) of the act, other than communication agreements, shall be excepted in determining the accountable acreage of the lessees or operators.

(c) *Excess acreage.* (1) Where, as the result of the termination or contraction of a unit or cooperative plan, or the elimination of a lease from operating, drilling, or development plan, a party holds or controls excess accountable acreage, such party shall have 90 days from such termination or contraction or elimination in which to reduce his holdings to the prescribed limitation and to

file proof of such reduction in the proper land office.

(2) If any person holding or controlling only leases or interests in leases or options or interests in options is found to hold accountable acreage in violation of the provisions of this section and of the act, the last lease or leases or interest or interests acquired by him which with the options or interests in options created the excess acreage holdings shall be canceled or forfeited in their entirety, even though only part of the acreage in the lease or interest constitutes excess holdings, unless it can be shown to the satisfaction of the Director of the Bureau of Land Management that the holding or control of the excess acreage is not the result of negligence or willful intent in which event the lease or leases shall be canceled only to the extent of the excess acreage.

(3) Any person holding or controlling leases or interests in leases only, or applications or offers for leases only, or both leases or interest in leases and applications or offers or options or interests in options below the acreage limitation provided in this section, shall be subject to these rules:

(i) If he files an application or offer or option or interest in option which causes him to exceed the acreage limitation, that application or offer will be rejected.

(ii) For tracts not subject to the simultaneous filing procedures of subpart 3112, if he files a group of applications or options or offers or interests in options at the same time, any one of which causes him to exceed the acreage limitations the entire group applications, offers, options, or interests in options will be rejected.

(iii) If he files an offer for inclusion in the drawing procedures under subpart 3112, he shall be charged with the acreage thereof only if his offer is successfully drawn so that his offer has first priority. If that offer causes him to exceed the acreage limitation, the offer will be rejected. If he files at the same time a group of offers for tracts subject to the drawing procedures under subpart 3112, any offer which is successfully drawn after he reaches the acreage limitation shall be rejected.

(iv) An optionee is chargeable only for that acreage for which the optionor is chargeable.

(4) If any person holding or controlling both leases or interests in leases and applications or offers for leases, or options or interests in options or only applications or offers for leases below the acreage limitation provided in this section, acquires a lease or leases, or an option or options or interests therein; which cause him to exceed the acreage limitation, his most recently filed application or offer for lease or applications or offers for lease then containing acreage in excess of the limitation provided in this section will be rejected in its or their entirety. For the purpose of this subparagraph, time of filing shall be determined by the time of filing marked on the application or offer or, if the same time is marked on two or more applications or offers, by the serial number of the applications or offers.

(5) The provisions of this paragraph shall not limit any action which the Department may take with respect to excess acreage holdings in cases not otherwise covered by this paragraph.

(6) An association shall not be deemed to exist between the parties to a contract for development of leased lands, whether or not coupled with an interest in the lease, nor between co-lessees, but each party to any such contract or each co-lessee will be charged with his proportionate interest in the lease. No holding of acreage in common by the same persons in excess of the maximum acreage specified in the law for any one lessee or permittee for the particular mineral deposit so held will be permitted.

(d) *Computation.* In computing acreage holdings or control, the accountable acreage of a party owning an undivided interest in a lease shall be such party's proportionate part of the total lease acreage. Likewise, the accountable acreage of a party owning an interest in a corporation or association shall be his proportionate part of the corporation's or association's accountable acreage, except that no person shall be charged with his pro rata share of any acreage holdings of any association or corporation unless he is the beneficial owner of more than ten per centum of the stock or other instruments of ownership or control of such association or corporation. An option held by a corporation or an association on September 2, 1960, shall not, for a period of 3 years, be charged to any stockholder of the corporation or member of the association so long as it is so held. Parties owning a royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with a similar percentage of the total lease acreage.

(e) *Showing required.* No lease will be issued and no transfer or operating agreement will be approved until it has been shown that the offeror, transferee, or operator is entitled to hold the acreage or obtain the operating rights. At any time upon request by the authorized officer of the Bureau of Land Management, the record title holder of any lease or a lease operator or a lease offeror or the holder of any lease option may be required to file in the appropriate land office a statement, showing as of a specified date the serial number and the date of each lease of which he is the record holder, or under which he holds operating rights, or for which he holds an option, and each application or offer for lease held or filed by him in the particular State setting forth the acreage covered thereby, and the nature, extent and acreage interest, including royalty interests held by him in any oil and gas lease of which the reporting party is not the lessee of record, whether by corporate stock ownership, interest in unincorporated associations and partnerships, or in any other manner.

§ 3101.1-6 Effect of Multiple Mineral Development Act of August 13, 1954.

If any oil and gas lease issued under Section 17 of the Mineral Leasing Act, as amended (30 U.S.C. sec. 226), includes an area with respect to which a verified statement is filed by a mining claimant

under section 7(c) of the Multiple Mineral Development Act of 1954 (68 Stat. 708), as amended, asserting the existence of a conflicting unpatented mining claim or claims upon which diligent work is being prosecuted the payment of rentals and the running of time under such lease shall be suspended as to the lands in conflict from the first day of the month following the filing of such verified statement until a final decision is rendered in the matter.

§ 3101.2 Acquired lands.

§ 3101.2-1 Lands to which the Act does not apply.

(a) Acquired for the development of their mineral deposits.

(b) Acquired by foreclosure or otherwise for resale.

(c) Reported as surplus under the Surplus Property Act of October 3, 1944 (58 Stat. 765; 50 U.S.C. 1611, et seq.).

(d) In incorporated cities, towns, and villages.

(e) In national parks and monuments.

(f) Set apart for military or naval purposes, including lands within naval petroleum and oil shale reserves, or

(g) Which are tide lands, submerged coastal lands, within the continental shelf adjacent or littoral to any part of land within the jurisdiction of the United States.

§ 3101.2-2 Sale or conveyance of lands.

Any sale or conveyance of lands subject to the act by the agency having jurisdiction thereof, shall be subject to any lease or permit theretofore issued under the act.

§ 3101.2-3 Description of lands in offer.

(a) *Surveyed lands.* If the land has been surveyed under the rectangular system of public land surveys, and the description can be conformed to that system, the land must be described by legal subdivision, section, township, and range. Where the description cannot be conformed to the public land surveys, any boundaries which do not so conform must be described by metes and bounds, giving courses and distances between the successive angle points with appropriate ties to the nearest existing official survey corner. If not so surveyed and if within the area of the public land surveys, the land must be described by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected with a reasonably nearby corner of those surveys by courses and distances.

(b) (1) *Lands not surveyed under the rectangular survey system.* If the lands have not been surveyed under the rectangular system of public land surveys, and the tract is not within the area of the public land surveys, it must be described as in the deed or other document by which the United States acquired title to the lands or minerals. If the desired land constitutes less than the entire tract acquired by the United States, it must be described by courses and distances between successive angle points on its boundary tying by course and distance into the description in the deed or other document by which the United States

acquired title to the land. In addition, if the description in the deed or other document by which the United States acquired title to the lands does not include the courses and distances between the successive angle points on the boundary of the desired tract, the description in the offer must be expanded to include such courses and distances.

(2) Each offer or application must be accompanied by a map upon which the desired lands are clearly marked showing their location with respect to the administrative unit or project of which they are a part (such map need not be submitted where the desired lands have been surveyed under the rectangular system of public land surveys, and the land description can be conformed to that system).

(3) If an acquisition tract number has been assigned by the acquiring agency to the identical tract desired, a description by such tract number will be accepted. Such offer or application must be accompanied by the map required by subparagraph (2) of this paragraph.

(c) *Accreted lands.* Where an offer or application includes any accreted lands that are not described in the deed to the United States, such accreted lands must be described by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to an angle point on the perimeter of the acquired tract to which the accretions appertain.

§ 3101.2-4 Acreage limitation.

The amount of acquired lands acreage that may be held under lease or permit either directly or indirectly, individually or as a member of an association or a corporation may not be in excess of the amount of public domain acreage for the same minerals permitted to be held under the mineral leasing laws. Public domain lease holdings shall not be charged against acquired lands lease holdings; such respective holdings shall not be interchangeable. Where the United States owns only a fractional interest in the mineral resources of the lands involved, only that part of the total acreage involved in the lease which is proportionate to the ownership by the United States of the mineral resources therein shall be charged as acreage holdings. The acreage embraced in a future interest lease is not to be charged as acreage holdings until the lease for the future interest takes effect.

§ 3101.2-5 Present interest.

(a) *Full and fractional.* Ordinarily, the issuance of a lease to one who, upon such issuance, would own less than 50 percent of the operating rights in any such tract, will not be regarded as in the public interest, and an offer leading to such results will be rejected.

§ 3101.2-6 Future interest.

(a) *Full or fractional.* A noncompetitive lease for a whole or fractional future interest will be issued only to an offeror who owns all or substantially all of the present operating rights to the minerals in the lands in the offer as mineral fee owner, as lessee or as operator holding such rights.

§ 3101.2-7 Exchange of leases.

Oil and gas leases, outstanding on August 7, 1947, and which cover lands subject to the act, may be exchanged for new leases to be issued under the act. New leases shall be issued for a term of 5 years and so long thereafter as oil or gas is produced in paying quantities, and shall be dated to be effective as of the first of the month after the filing of the application to exchange. The rental rates for the new lease, for lands not within the known geologic structure of a producing oil or gas field at the time of the filing of the application for exchange, shall be the same as those set forth in § 3103.3-2, and the royalty rate for such lands shall be 12½ percent. For all other lands, the rental rate for the new lease shall be \$1 per acre per annum, and the royalty requirements shall be the same as those stipulated in the lease offered in exchange.

§ 3101.3 Withdrawn, reserved, and segregated lands.

§ 3101.3-1 Drainage.

In instances where it is determined by the Geological Survey that any of the lands mentioned in § 3101.3-3 of this section and defined in this section as not available for leasing are subject to drainage, the Bureau of Land Management, with the concurrence of the U.S. Fish and Wildlife Service, will process an offering inviting competitive bids in accordance with the then existing regulations relating to competitive oil and gas leasing. Such leases shall be issued only upon approval by the Secretary of the Interior and shall contain such stipulations as are necessary to assure that leasing activities and drilling shall be carried out in such a manner as will result in a minimum of damage to wildlife resources.

§ 3101.3-2 Requirements.

(a) *Publication and filing of agreements.* The agreements referred to in § 3101.3-3 of this section shall be published in the FEDERAL REGISTER and shall contain a description of the lands affected thereby which are not subject to oil and gas leasing, together with a statement of the stipulations agreed upon by the parties thereto for inclusion in such leases to assure that all operations under the lease shall be carried out in such a manner as will result in a minimum of damage to wildlife resources. The agreements, as supplemented by maps or plats specifically delineating the lands will be filed in the appropriate land offices of the Bureau of Land Management where they may be inspected by the public at the usual hours specified for that purpose.

(b) *Filing of lease offers.* Lease offers for such lands will not be accepted for filing until the 10th day after the agreements and supplemental maps or plats are noted on the land office records.

(c) *Suspension of pending applications.* (1) All pending offers or applications heretofore filed for oil and gas leases covering game ranges, coordination lands, and Alaska wildlife areas, will continue to be suspended until the agreements referred to in § 3101.3-3(b) (1) of this section shall have been completed.

(2) *Proposed withdrawals.* All existing offers or applications for oil and gas leases covering lands included in request for withdrawals for wildlife refuges, game ranges, coordination lands or Alaska wildlife areas, as defined herein, shall be suspended until after the consummation of the withdrawal, and thereafter such offers shall be considered in accordance with the provisions of this section.

(d) *Special stipulations.* For inclusion in oil and gas leases entered into pursuant to this section relating to oil and gas leases in wildlife refuge, game range, and coordination lands.

Instructions. (1) The following stipulations will be made a part of Interior Department lease forms. These stipulations will be made applicable as terms and conditions of performance by lessees under all oil and gas leases entered into under authority vested in the Secretary of the Interior over game range, coordination or Alaska Wildlife lands pursuant to the order of the Secretary of the Interior published in 23 F.R. 227, January 11, 1958.

(2) Should compliance with one or more of these terms and conditions be considered unduly burdensome and unnecessary to the protection of wildlife resources, the lessee may request waiver thereof by letter addressed to the Secretary of the Interior setting forth, in full, the reasons why a waiver is considered necessary. The authority to grant such waivers shall be discretionary and may be exercised only by the Secretary or the Under Secretary of the Interior.

(3) The authorized officer shall (a) approve no plan of operation that contains provisions inconsistent with the stipulations hereinafter set forth; (b) waive no term or condition in a lease; or (c) exercise no discretion vested in him unless he is satisfied the exercise of that discretion will not damage any wildlife resource.

(4) Drilling and production operations under the lease shall be under the direction of the Geological Survey.

Terms and conditions. (1) as used herein:

(a) The term "lessee" includes the lessee, heirs and assigns of the lessee and persons operating on behalf of the lessee;

(b) The term "wildlife resources" includes fish and wildlife resources and concentrations, fish and wildlife management operations and range improvements and facilities;

(c) The term "authorized officer" means the State Director of the Bureau of Land Management in the State in which the land is located, and, in Alaska, the Refuge Manager of the Bureau of Sport Fisheries and Wildlife;

(2) The lessee shall:

(a) Comply with all the rules and regulations of the Secretary of the Interior;

(b) Prior to the beginning of operations, appoint and maintain at all times during the term of the lease a local agent upon whom may be served written orders or notices respecting matters contained in these stipulations and to inform the authorized officer in writing of the name and address of such agent. If a substitute agent is appointed, the lessee shall immediately inform the said representative;

(c) Conduct all authorized activities in a manner satisfactory to the authorized officer with due regard for good land management and avoid damage to improvements, timber, crops, and wildlife cover, and fill all sump holes, ditches, and other excavations or cover all debris, and so far as reasonably possible, restore the surface of the leased lands to their former condition and when required to bury all pipelines below plow depth. The authorized officer shall have the right to enter

all the premises at any time to inspect both the installation and operational activities of the lessee;

(d) Take such steps as may be necessary to prevent damage to wildlife;

(e) Do all in his power to prevent and suppress forest, brush, or grass fires and to require his employees, contractors, subcontractors and employees of contractors or subcontractors to do likewise;

(f) Install adequate blow-out prevention equipment;

(g) Construct ring dikes and sump pits to confine drilling mud and other pollutants and make safe disposition of salt water by use of injection wells or such other method as may be approved in the plan of operation;

(h) Cover bare pits in areas of wildlife concentration;

(i) Remove derricks, dikes, equipment, and structures not required in producing operations within 60 days after the completion of drilling;

(j) Comply with and see to it that his agents and employees comply with all Federal, State, or Territorial laws relating to hunting, fishing, and trapping;

(k) Commit the lease to any unit plan required in the interest of conservation of oil or gas resources or for the protection of wildlife;

(l) Prior to the conduct of geological, geophysical, or core drilling operations or construction of any facilities, or prior to operations to drill or produce, submit in triplicate for approval in writing by the authorized officer a plan of operation that will include detailed statements indicating the manner in which the lessee will comply with these stipulations together with a statement that the lessee agrees that compliance with these stipulations and with the approved plan of operations are conditions of performance under this lease and that failure to comply with these provisions (unless they are waived by the Secretary or the Under Secretary of the Interior) will be grounds for cancellation of the lease by the United States. Notwithstanding other provisions in these stipulations, the lessee shall include in any plan of operation specific provisions relating to: The time, place, depth and strength of seismic shots, maps showing the location of his leases included in the plan, actual and proposed access roads, bunkhouses, proposed well locations, storage and utility facilities, water storage, pipelines and pumping stations; the type of safety equipment that will be employed; the methods to be used to assure the disposition of drilling mud, pollutants, and other debris; the location of facilities in relation to flood levels; and such other specific matters as the authorized officer may require. The plan of operation shall be kept current in all respects and all revisions and amendments submitted to the authorized officer for written approval;

(m) Do all things reasonably necessary to prevent or reduce to the fullest extent scarring and erosion of the land, pollution of the water resources and any damage to the watershed. Where construction, operation, or maintenance of any of the facilities on or connected with this lease causes damage to the watershed or pollution of the water resource, the lessee agrees to repair such damage, including reseeding and to take such corrective measures to prevent further pollution or damage to the watershed as are deemed necessary by the authorized officer;

(n) File the bond required by section 2a (4) of the lease before conducting any operations on the leasehold, and file any additional bond required by the authorized officer to pay for damages to wildlife habitat, including trees and shrubs, or wildlife improvements;

(o) Agree to respect and comply with any new requirements imposed by the Secretary of the Interior, or the authorized officer, on

the operating program as operating experience proves necessary in order to give complete protection to wildlife populations and wildlife habitat on the areas leased.

(3) The lessee shall not:

(a) Construct roads, pipelines, utility lines, and attendant facilities that are either unnecessary or which might interfere with wildlife habitat or resources or with drainage;

(b) Modify or change the character of streams, lakes, ponds, water holes, seeps, and marshes, except by advance approval in writing by the authorized officer, nor shall he in any way pollute such streams, lakes, ponds, water holes, seeps, or marshes;

(c) Conduct operations at such times as will interfere with wildlife concentrations;

(d) Conduct geological or geophysical explorations that might damage any wildlife resource and such operations shall be conducted only in accordance with advance approval in writing by the authorized officer as to the time, manner of travel and disturbances of surfaces and the facilities required for the protection of wildlife;

(e) Use explosives in fish spawning or rearing areas, nesting areas, lambing grounds, or other areas of wildlife concentration during periods of intense activity or at any other time or in any manner that might damage any wildlife resources; the pattern, size, and depth of seismicographic shots shall be submitted to the authorized officer for advance approval in writing and immediately following the detonation of any seismicographic charge, the hole shall be filled or plugged and any surface damage repaired to the satisfaction of the authorized officer;

(f) Without advance approval in writing, use any water or water source controlled or developed by the United States;

(g) Use mobile equipment under such conditions as to permanently damage surface resources, cause scarring and erosion, or interfere with wildlife concentration;

(h) Conduct geological, or geophysical, or core drilling operations or construct roads, bunkhouses or any facilities or drill or produce under a lease until the submittal and approval in writing of a plan of operation pursuant to section (2) (m) supra or deviate therefrom until any revisions or amendments of said plan have been approved in writing by the authorized officer;

(i) Burn rubbish, trash, or other inflammable materials or use explosives in a manner or at a time that would constitute a fire hazard.

§ 3101.3-3 Reserved and segregated lands.

(a) *Wildlife refuge lands.* Such lands are those embraced in a withdrawal of public domain and acquired lands of the United States for the protection of all species of wildlife within a particular area. Sole and complete jurisdiction over such lands for wildlife conservation purposes is vested in the U.S. Fish and Wildlife Service even though such lands may be subject to prior rights for other public purposes or, by the terms of the withdrawal order, may be subject to mineral leasing.

(1) *Leasing.* No offers for oil and gas leases covering wildlife refuge lands will be accepted and no leases covering such lands will be issued except as provided in § 3101.3-1. There shall be no drilling or prospecting under any lease heretofore or hereafter issued on lands within a wildlife refuge except with the consent and approval of the Secretary of the Interior with the concurrence of the Fish and Wildlife Service as to the time, place and nature of such operations in order

to give complete protection to wildlife populations and wildlife habitat on the areas leased, and all such operations shall be conducted in accordance with the stipulations of the Bureau of Land Management on a form approved by the Director.

(b) *Game range lands and Alaska wildlife areas.* Game ranges created by a withdrawal of public lands and reserved for dual purposes, namely, protection and improvement of the public grazing lands and natural forage resources and conservation and development of natural wildlife resources, are under the joint jurisdiction of the Bureau of Land Management and the U.S. Fish and Wildlife Service. Alaska wildlife areas are areas in Alaska created by a withdrawal of public lands for the management of natural wildlife resources and administered by the U.S. Fish and Wildlife Service.

(1) *Leasing.* As to game range lands and Alaska wildlife areas, representatives of the appropriate office of the Bureau of Land Management and the U.S. Fish and Wildlife Service will confer for the purpose of entering into an agreement specifying those lands which shall not be subject to oil and gas leasing. No such agreement shall become effective, however, until approved by the Secretary of the Interior. Lands not closed to oil and gas leasing will be subject to leasing on the imposition of such stipulations agreed upon by the U.S. Fish and Wildlife Service and the Bureau of Land Management.

(c) *Coordination lands.* These lands are withdrawn or acquired by the Government and made available to the States by cooperative agreements entered into between the U.S. Fish and Wildlife Service and the game commissions of the various States, in accordance with the act of March 10, 1934 (48 Stat. 401), as amended by the act of August 14, 1946 (60 Stat. 1080), or by long-term leases or agreements between the Department of Agriculture and the game commissions of the various States pursuant to the Bankhead-Jones Farm Tenant Act (50 Stat. 525), as amended, where such lands were subsequently transferred to the Department of the Interior, with the U.S. Fish and Wildlife Service as the custodial agency of the Government.

(1) *Leasing.* As to coordination lands, representatives of the Bureau of Land Management and the U.S. Fish and Wildlife Service will, in cooperation with the authorized members of the various State game commissions, confer for the purpose of determining by agreement those lands which shall not be subject to oil and gas leasing. Lands not closed to oil and gas leasing will be subject to leasing on the imposition of such stipulations agreed upon by the State Game Commission, the U.S. Fish and Wildlife Service, and the Bureau of Land Management.

§ 3101.4 Special leasing acts (areas).

§ 3101.4-1 Rights-of-way.

Lands in and under railroad and other rights-of-way acquired under any law of the United States.

(a) *Acreage limitations.* No statutory or regulatory limitations.

§ 3101.4-2 Nevada.

All of Township 15 South, Ranges 66, 67, 68, East, M. D. M.

All of Township 16 South, Ranges 66, 67, 68, East, M. D. M.

All of Township 17 South, Ranges 66, 67, 68, East, M. D. M.

and also a tract described as follows:

That area of unsurveyed land east of Timber Mountain bounded on the north by latitude 37°10'20", on the south by latitude 37°7'46", and lying between meridians of longitude 116°20'18" and 116°23'28" comprising an area of 9 square miles and including what is known as Fortymile Canyon Pueblo.

(a) *Acreage limitations.* See § 3101.1-5.

§ 3101.4-3 Lands patented to the State of California.

The regulations in this subpart apply to the lands patented to the State of California for park purposes.

(a) *Acreage limitations.* See § 3101.1-5.

§ 3101.4-4 National Forest lands in Minnesota.

Public domain lands, including lands received in exchange for public domain lands, or for timber on such lands pursuant to Part 2240 of this chapter, situated within the exterior boundaries of the national forests in Minnesota, which because of withdrawal, reservation, statutory limitation, or otherwise, are not subject to the general mining laws of the United States or to mineral leasing laws, and for the development and utilization of which no other authority exists.

(a) *Acreage limitations.* See § 3101.1-5.

§ 3101.4-5 Lake Mead Recreation Area.

The area subject to the regulations in this part is that area of land and water which is shown on a certain map identified as "boundary map, RA-1M-7060-B, revised July 17, 1963," which is on file and which is available for public inspection in the office of the Director of the National Park Service and in the headquarters office of the superintendent of the Lake Mead National Recreation Area. The area subject to these regulations may be revised by the Secretary as authorized in the act.

(a) *Acreage limitations.* See § 3101.1-5.

§ 3101.4-6 National Forest Wilderness.

As used in this subpart the term "National Forest Wilderness" means an area or part of an area of National Forest land designated by the Wilderness Act as a wilderness area within the National Wilderness Preservation System.

(a) *Acreage limitations.* See § 3101.1-5.

§ 3101.4-7 Whiskeytown-Shasta-Trinity National Recreation Area.

The area subject to the regulations in this subpart is that shown in drawing numbered BOM-WEST 1004, dated July 1963, entitled "Proposed Whiskeytown-Shasta-Trinity National Recreation Area," which is on file and available for public inspection in the office of the

Director of the Bureau of Outdoor Recreation, Department of the Interior, Washington, D.C. 20240.

(a) *Acreage limitations.* See §§ 3101.1-5 and 3101.2-4.

Subpart 3102—Qualifications of Lessees

§ 3102.1 General.

A statement over the offeror's signature setting forth whether the offeror's direct and indirect interests in oil and gas leases, applications, and offers therefor and options exceed 246,080 acres in the same State of which no more than 200,000 acres are under option, or exceed 300,000 acres in each of the northern and southern leasing districts of Alaska, of which no more than 200,000 acres are held under option in each of said leasing districts is required.

§ 3102.1-1 Who may hold interests.

Mineral leases may be issued only to (a) citizens of the United States; (b) associations of such citizens organized under the laws of the United States or of any State thereof, which are authorized to hold such interests by the statute under which organized and by the instrument establishing the association; (c) corporations organized under the laws of the United States or of any State thereof; or (d) municipalities. As used in this group, "association" includes "partnership."

(a) *Aliens.* Aliens may not acquire or hold any direct or indirect interest in leases, except that they may own or control stock in corporations holding leases if the laws of their country do not deny similar or like privileges to citizens of the United States. If any appreciable percentage of the stock of a corporation is held by aliens who are citizens of a country denying similar or like privileges to U.S. citizens, its application will be denied.

(b) *Minors.* A mineral lease will not be issued to a minor, but oil and gas leases may be issued to legal guardians or trustees of minors in their behalf.

§ 3102.1-2 Bona fide purchasers.

(a) *Provisions of statute.* The Act of September 21, 1959 (73 Stat. 571), as amended by the Act of September 2, 1960 (74 Stat. 781; Public Law 86-705), provides that the right to cancel or forfeit for violation of any of the provisions of this Act shall not apply so as to affect adversely the title or interest of a bona fide purchaser of any lease, option to acquire a lease or an interest therein, or permit which lease, interest, option or permit was acquired and is held by a qualified person, association, or corporation in conformity with those provisions, even though the holdings of the person, association, or corporation from which the lease, interest, option, or permit was acquired, or of his predecessor in title (including the original lessee of the United States) may have been cancelled or forfeited or may be or may have been subject to cancellation or forfeiture for any such violation.

(b) *Sale of underlying interests.* If in any proceeding to cancel or forfeit a lease, interest in a lease, option

to acquire a lease or an interest therein, or a permit acquired in violation of any of the provisions of this Act, an underlying lease, interest, option, or permit is cancelled or forfeited to the Government and there are valid interests therein or valid options to acquire the lease or an interest therein which are not subject to cancellation, forfeiture, or compulsory disposition, such underlying lease interest, option, or permit shall be sold to the highest responsible, qualified bidder by competitive bidding in a manner similar to that provided for in the offering of leases by competitive bidding subject to all outstanding valid interests therein and valid options pertaining thereto. However, if less than the whole interest in the lease, interest, option, or permit is cancelled or forfeited, such partial interest shall likewise be sold in similar manner. If no satisfactory offer is obtained as a result of the competitive offering of such whole or partial interests, such interests may be sold by such other methods as the authorized officer deems appropriate, but on terms not less favorable to the Government than those of the best competitive bid received.

(c) *Right of dismissal.* Effective as of September 21, 1959, any party to any proceedings with respect to a violation of any provision of the Act, whether initiated prior or subsequent to that date, has the right to be dismissed promptly as such a party by showing that he holds and acquired the interest involving him as a bona fide purchaser without having violated any provisions of the Act. No hearing shall be necessary upon such showing unless prima facie evidence is presented to indicate a possible violation on the part of the alleged bona fide purchaser.

(d) *Suspension.* If during any such proceeding a party thereto files a waiver of his rights under his lease to drill or to assign his interest thereto, or if such rights are suspended by order of the Secretary pending a decision, payment of rentals and the running of time against the term of the lease or leases involved shall be suspended as of the first day of the month following the filing of the waiver or the Secretary's suspension until the first day of the month following the final decision in the proceeding or the revocation of the waiver for suspension.

§ 3102.2 Individuals.

§ 3102.2-1 Statement of citizenship.

A statement over the offeror's signature setting forth his citizenship shall accompany each offer when first filed.

§ 3102.2-2 Preference right of patentee or entryman.

(a) *Requirements.* An entryman or patentee who made entry prior to February 25, 1920, or an assignee of such entryman or a vendee of such patentee if the assignment or conveyance was made prior to January 1, 1918, for lands not withdrawn or classified or known to be valuable for oil and gas at date of entry shall be entitled, if the entry or patent is impressed with a reservation of the oil or gas, to a preference right to a lease for

the land. A settler whose settlement was made prior to February 25, 1920, on land in the same status but which has since been withdrawn, classified, or is known to contain oil or gas, also has such a preference right.

(b) *Notice required.* Any offeror for a lease to lands owned, entered or settled upon as stated above must notify the person entitled to a preference right of the filing of the offer and of the latter's preference right for 30 days after notice to apply for a lease. If the party entitled to a preference right files a proper offer within the 30-day period, he will be awarded a lease; but if he fails to do so, his rights will be considered to have terminated.

§ 3102.3 Associations including partnerships.

§ 3102.3-1 Statements.

If the offeror is an association which meets the requirements of § 3102.1-1 of this chapter, the offer shall be accompanied by a certified copy of its articles of association or partnership, together with a statement showing (1) that it is authorized to hold oil and gas leases; (2) that the member or partner executing the lease is authorized to act on behalf of the association in such matters; and (3) the names and addresses of all members owning or controlling more than 10 percent of the association. A separate statement from each person owning or controlling more than 10 percent of the association, setting forth be furnished. Where such material has his citizenship and holdings, shall also previously been filed, a reference by serial number to the record in which it has been filed, together with a statement as to any amendments, will be accepted.

(a) *Exception.* If the offer is made by an association which does not meet the requirements of § 3102.1-1 of this chapter, the same showing as to citizenship and holdings of its members shall be made as is required of an individual.

§ 3102.4 Corporations.

§ 3102.4-1 Statements.

If the offeror is a corporation, the offer must be accompanied by a statement showing (1) the State in which it is incorporated, (2) that it is authorized to hold oil and gas leases and that the officer executing the lease is authorized to act on behalf of the corporation in such matters, (3) the percentage of voting stock and of all the stock owned by aliens or those having addresses outside of the United States, and (4) the names and addresses of the stockholders holding more than 10 percent of the stock of the corporation. Where the stock owned by aliens is over 10 percent, additional information may be required by the Bureau before the lease is issued or production is obtained. A separate statement from each stockholder owning or controlling more than 10 percent of the stock of the corporation setting forth his citizenship and holdings must also be furnished. Where such material has previously been filed a reference by serial number to the record in which it has been filed, together with a statement as to any amendments will be accepted.

§ 3102.5 Guardian or trustee.

§ 3102.5-1 Statements.

If the offer is made by a guardian or trustee, a certified copy of the court order authorizing him to act as such and to fulfill in behalf of the minor or minors all obligations of the lease or arising thereunder; his statements as to the citizenship and holdings of each of the minors, and a similar statement as to his own citizenship and holdings under the leasing act, including his holdings for the benefit of other minors.

§ 3102.5-2 Evidence previously filed.

Where evidence of the authority to act as a guardian, trustee, an executor or administrator, or where articles of association, including partnership agreements, have previously been filed pursuant to regulations in this section, a reference by serial number to the record in which such evidence has previously been filed, together with a statement as to any amendments thereof will be accepted.

§ 3102.6 Attorney-in-fact.

§ 3102.6-1 Statements.

(a) *Evidence required.* (1) Except in the case where a member or a partner signs an offer on behalf of an association (as to which, see § 3102.3-1), or where an officer of a corporation signs an offer on behalf of the corporation (as to which, see § 3102.4-1), evidence of the authority of the attorney-in-fact or agent to sign the offer and lease, if the offer is signed by such attorney or agent on behalf of the offeror. Where such evidence has previously been filed in the same land office where the offer is filed, a reference to the serial number of the record in which it has been filed, together with a statement by the attorney-in-fact or agent that such authority is still in effect will be accepted.

(2) If the offer is signed by an attorney in fact or agent, it shall be accompanied by separate statements over the signatures of the attorney-in-fact or agent and the offeror stating whether or not there is any agreement or understanding between them or with any other person, either oral or written, by which the attorney in fact or agent or such other person has received or is to receive any interest in the lease when issued, including royalty interest or interest in any operating agreement under the lease, giving full details of the agreement or understanding if it is a verbal one. The statement must be accompanied by a copy of any such written agreement or understanding. If such an agreement or understanding exists, the statement of the attorney-in-fact or agent should set forth the citizenship of the attorney-in-fact or agent or other person and whether his direct and indirect interests in oil and gas leases, applications, and offers including options for such leases or interests therein exceed 248,080 acres in any one State, of which no more than 200,000 acres may be held under option, or exceeds the permissible acreage in Alaska as set forth in § 3101.1-5. The statement by the principal (offeror) may be filed within

15 days after the filing of the offer. This requirement does not apply in cases in which the attorney-in-fact or agent is a member of an unincorporated association (including a partnership), or is an officer of a corporation and has an interest in the offer or the lease to be issued solely by reason of the fact that he is a member of the association or a stockholder in the corporation.

(3) If the power of attorney specifically limits the authority of the attorney in fact to file offers to lease for the sole and exclusive benefit of the principal and not in behalf of any other person in whole or in part, and grants specific authority to the attorney-in-fact to execute all statements of interest and of holdings in behalf of the principal and to execute all other statements required, or which may be required, by the Acts and the regulations, and the principal agrees therein to be bound by such representations of the attorney-in-fact and waives any and all defenses which may be available to the principal to contest, negate or disaffirm the actions of the attorney-in-fact under the power of attorney, then the requirement that statements must be executed by the offeror will be dispensed with and such statements executed by the attorney-in-fact will be acceptable as compliance with the provisions of the regulations.

§ 3102.7 Showing as to sole party in interest.

A signed statement by the offeror that he is the sole party in interest in the offer and the lease, if issued; if not he shall set forth the names of the other interested parties. If there are other parties interested in the offer a separate statement must be signed by them and by the offeror, setting forth the nature and extent of the interest of each in the offer, the nature of the agreement between them if oral, and a copy of such agreement if written. All interested parties must furnish evidence of their qualifications to hold such lease interest. Such separate statement and written agreement, if any, must be filed not later than 15 days after the filing of the lease offer. Failure to file the statement and written agreement within the time allowed will result in the cancellation of any lease that may have been issued pursuant to the offer. Upon execution of the lease the first year's rental will be earned and deposited in the U.S. Treasury and will not be returnable even though the lease is canceled.

§ 3102.8 Heirs and devisees (estates).

If an offeror dies before the lease is issued, the lease will be issued to the executor or administrator of the estate if probate of the estate has not been completed, and if probate has been completed, or is not required, to the heirs or devisees, provided there is filed in all cases an offer to lease in compliance with the requirements of this section which will be effective as of the effective date of the original application or lease offer filed by the deceased. If there are any minor heirs or devisees, such offer can only be made by their legal guardian or trustee in his name. Each such offer must be accompanied by the following information:

(a) Where probate of the estate has not been completed:

(1) Evidence that the person who as executor or administrator submits the offer, and bond form if a bond is required, has authority to act in that capacity and to sign the offer and bond forms.

(2) A statement over the signature of each heir or devisee, similar to that required of an offeror under § 3102.1 and 3102.2-1 concerning citizenship and holdings.

(3) Evidence that the heirs or devisees are the heirs or devisees of the deceased offeror and are the only heirs or devisees of the deceased.

(b) Where the executor or administrator has been discharged or no probate proceedings are required:

(1) A certified copy of the will or decree of distribution, if any, and if not, a statement signed by the heirs that they are the only heirs of the offeror and the provisions of the law of the deceased's last domicile showing that no probate is required.

(2) A statement over the signature of each of the heirs or devisees with reference to holdings and citizenship, similar to that required under § 3102.1 and § 3102.2-1 except that if the heir or devisee is a minor, the statement must be over the signature of the guardian or trustee.

§ 3102.9 Municipalities.

A municipality must submit evidence of: (a) The manner in which it is organized; (b) that it is authorized to hold a permit or lease; and (c) that the action proposed has been duly authorized by its governing body. Where such material has previously been filed a reference by serial number to the record in which it has been filed, together with a statement as to any amendments, will be accepted.

Subpart 3103—Fees, Rentals and Royalty

§ 3103.0-3 Authorities.

(a) Fees. Act of August 31, 1951 (5 U.S.C. 140).

(b) Rentals. See § 3100.0-3.

§ 3103.1 Payments.

§ 3103.1-1 Form of remittance.

Cash, money order, check, certified check, bank draft, and bank cashier's check.

§ 3103.1-2 Where submitted.

(a) *Proper land office.* Unless otherwise directed by the Secretary, rentals and royalties under all leases and permits issued under the act shall be paid to the Manager of the appropriate land office. All remittances to Bureau of Land Management offices shall be made payable to the Bureau of Land Management.

(b) *Geological Survey.* (1) All rentals and royalties on producing oil and gas leases, communitized leases in producing well units, unitized leases in producing unit areas, leases on which compensatory royalty is payable, and all payments under subsurface storage agreements and easements for directional drilling are to be paid to the Regional Oil and Gas Supervisor of the U.S. Geological Survey.

(2) Rentals and royalties on producing mining leases are to be paid to the Regional Mining Supervisor. All remittances to Survey offices shall be made payable to the U.S. Geological Survey.

§ 3103.1-3 When submitted.

Each offer, when first filed, shall be accompanied by a filing fee of \$10 which will be retained as a service charge, even though the offer should be rejected or withdrawn in whole or in part. See also §§ 3103.3-1 and 3103.3-2.

§ 3103.2 Fees.

§ 3103.2-1 General statement.

(a) *Offers and applications.* Offers for noncompetitive oil and gas leases must be accompanied by a filing fee of \$10 for each application or offer. Such a fee will be retained as a service charge even though the application or offer should be rejected or withdrawn in whole or in part.

(b) *Transfers.* An application for approval of any instrument of transfer of a lease or interest therein or a filing of any such instrument under § 3106.4 must be accompanied by a fee of \$10, and an application not accompanied by payment of such a fee will not be accepted for filing by the manager. Such fee will not be returned even though the application later be withdrawn or rejected in whole or in part.

§ 3103.3 Rentals and royalties.

§ 3103.3-1 Rental requirement.

Each offer, when first filed, shall be accompanied by full payment of the first year's rental based on the total acreage if known, and if not known, on the basis of 40 acres for each smallest legal subdivision. An offer deficient in the first year's rental by not more than 10 percent will be approved by the signing officer provided all other requirements are met. The additional rental must be paid within 30 days from notice under penalty of cancellation of the lease.

§ 3103.3-2 Advance rental payments.

Rentals shall be payable in advance at the following rates:

(a) On noncompetitive leases issued on and after September 2, 1960, under section 17 of the act for lands which on the day on which the rental falls due lie wholly outside of the known geologic structure of a producing oil or gas field, or on which on the day on which the rental falls due the thirty days' notice period under paragraph (b)(1) of this section has not yet expired, an annual rental of 50 cents per acre or fraction thereof for each lease year.

(1) For the sixth and each succeeding year of a lease which issued prior to September 2, 1960, and in the State of Alaska of any lease whose initial term expired on or after July 3, 1953, rental shall be payable at the rate of 50 cents per acre or fraction thereof.

(2) For each year of the primary term of a lease which issued prior to September 2, 1960, rental shall be payable at the rate set forth in the lease.

(b) On leases wholly or partly within the known geologic structure of a producing oil gas field:

(1) If issued noncompetitively under section 17 of the act, and not committed

to a cooperative or unit plan which includes a well capable of producing oil or gas and contains a general provision for allocation of production, beginning with the first lease year after the expiration of thirty days' notice to the lessee that all or part of the land is included in such a structure and for each year thereafter prior to a discovery of oil or gas on the leased lands, rental of \$2 per acre or fraction thereof.

(2) If issued noncompetitively under section 17 of the act, and committed to an approved cooperative or unit plan which includes a well capable of producing oil or gas and contains a general provision for allocation of production, the rental prescribed for the respective lease years in paragraph (a) of this section shall apply to the acreage not within a participating area.

(3) If issued competitively, unless a different rate of rental is prescribed in the lease, an annual rental of \$2 per acre or fraction thereof prior to a discovery on the leased lands. After a discovery, if the lease is unitized, such rental shall be payable on the nonparticipating acreage only, and royalty as provided in the lease and elsewhere in this Part shall be payable on the participating acreage.

(c) On leases issued in any other way, an annual rental of \$1 per acre or fraction thereof.

(d) A lease subject to the provisions of section 31 of the act, as amended by section 1(7) of the Act of July 29, 1954 (30 U.S.C. 188) on which there is no well capable of producing oil or gas in paying quantities, shall automatically terminate by operation of law if the lessee fails to pay the full rental due on or before the anniversary date of the lease. However, if the time for payment falls upon any day in which the proper office to receive payment is not open, payment received on the next official working day shall be deemed to be timely. The "anniversary date" of a lease means the same day and month in succeeding years as that on which the lease first became effective. The anniversary date of a lease does not change.

(e) If on the anniversary date of the lease less than a full year remains in the lease term, the rentals due shall be in the same proportion to the annual rental as the period remaining in the lease term is to a full year. The rentals shall be prorated on a monthly basis for the full months, and on a daily basis for the fractional months remaining in the lease term. For the purpose of prorating rentals for a fractional month, each month will be deemed to consist of 30 days.

(1) If the term of a lease for which prorated rentals have been paid is further extended to or beyond the next anniversary date of the lease, rentals for the balance of the lease year shall be due and payable on the date following the date through which the prorated rentals were paid. If the rentals are not paid for the balance of the lease year, the lease will be subject to cancellation by the Secretary after he has given notice to the lessee in accordance with section 31 of the act. However, if the anniversary date occurs before the end of

the notice period, the rental for the ensuing lease year shall nevertheless be due on the anniversary date, and failure to pay the full rental for that year, on or before that date shall cause the lease to terminate automatically by operation of law, without relieving the lessee of liability for rental due for the balance of the previous lease year. (30 U.S.C. 189; 41 Stat. 437.) If the time for payment falls upon any day in which the proper office to receive payment is not open, payment received on the next official working day shall be deemed to be timely.

§ 3103.3-3 Fractional interests.

Rentals, minimum royalties and royalties payable for lands in which the United States owns an undivided fractional interest shall be in the same proportion to the rentals, minimum royalties and royalties provided in §§ 3103.3, 3103.3-4, and 3103.3-5, respectively, of this part, as the undivided fractional interest of the United States in the oil and gas underlying the leased lands is to the full mineral interest.

§ 3103.3-4 Royalty on production.

(a) On and after August 8, 1946, the following royalty rates shall be paid on the production removed or sold from leases:

(1) 12½ percent royalty on noncompetitive leases issued under section 17 of the act: *Provided, however,* That any holder of a lease for lands in Alaska which issued and was outstanding prior to May 3, 1958, who shall drill and make the first discovery of oil or gas in commercial quantities in any geologic structure under the lease of 5 percent for 10 years following the date of such discovery and thereafter the royalty rate shall be 12½ percent. If such lease is committed to an approved unit or cooperative plan under which such a discovery is made, the 5 percent rate herein provided shall, for the purpose of computing royalty due the United States, inure to the benefit of all the land to which an allocation is made under such plan.

(2) Such rates as are prescribed in the notice of sale in the case of all leases thereafter issued by competitive bidding.

(3) 12½ percent on all leases theretofore issued, except competitive leases, and on exchange and renewal leases thereafter issued, as to production from

(i) Land determined by the Director, Geological Survey, not to be within the productive limits of any oil or gas deposit on August 8, 1946.

(ii) An oil or gas deposit which was discovered after May 27, 1941, by a well or wells drilled within the boundaries of the lease and which is determined by the Director, Geological Survey, to be a new deposit.

(iii) Or allocated to a lease pursuant to an approved unit or cooperative agreement from an oil or gas deposit which was discovered on unitized land after May 27, 1941, and determined by the Director, Geological Survey, to be a new deposit, but only if at the time of discovery the lease or, in the case of an exchange lease, the lease for which it was

exchanged was committed to the agreement or was included in a duly executed and filed application for approval of the agreement.

(4) From lands within exchange and renewal leases not subject to subparagraph (3) of this paragraph the rate of royalty shall be identical to that prescribed in the prior lease, except that for a lease issued in exchange for or as a renewal of a lease carrying a flat royalty rate of 5 percent to the United States the royalty shall be as follows:

(i) When the average production of oil for the calendar month in barrels per well per day is:

Not over 110 the royalty shall be 12½%.
Over 110 but not over 130 the royalty shall be 18% of all production.

Over 130 but not over 150 the royalty shall be 19% of all production.

Over 150 but not over 200 the royalty shall be 20% of all production.

Over 200 but not over 250 the royalty shall be 21% of all production.

Over 250 but not over 300 the royalty shall be 22% of all production.

Over 300 but not over 350 the royalty shall be 23% of all production.

Over 350 but not over 400 the royalty shall be 24% of all production.

Over 400 the royalty shall be 25% of all production.

(ii) On gas, including inflammable gas, helium, carbon dioxide, and all other natural gases and mixtures thereof, and on natural or casinghead gasoline and other liquid products obtained from gas: when the average production of gas per well per day for the calendar month does not exceed 5,000,000 cubic feet, 12½ percent; and when the production of gas exceeds 5,000,000 cubic feet, 16½ percent of the amount or value of the gas and liquid products produced.

(5) In the case of competitive leases, and other leases theretofore issued, insofar as subparagraphs (3) and (4) of this paragraph are inapplicable, the rates specified in the lease.

(b) The average production per well per day for oil and for gas shall be determined pursuant to 30 CFR Part 221, "Oil and Gas Operating Regulations."

(c) In determining the amount or value of gas and liquid products produced, the amount or value shall be net after an allowance for the cost of manufacture. The allowance for cost of manufacture may exceed two-thirds of the amount or value of any product only on approval by the Secretary of the Interior.

(d) The Secretary of the Interior may establish reasonable values for purposes of computing royalty on any or all oil, gas, natural gasoline, and other liquid products obtained from gas, due consideration being given to the highest price paid for a part or for a majority of production of like quality in the same field, to the price received by the lessee, to posted prices and to other relevant matters. In appropriate cases this will be done after notice to the parties and opportunity to be heard.

§ 3103.3-5 Minimum royalties.

On leases issued on or after August 8, 1946, and on those issued prior thereto if the lessee files an election under section 15 of the act of August 8, 1946, a

minimum royalty of \$1 per acre in lieu of rental, shall be payable at the expiration of each lease year after a discovery has been made on the leased lands, commencing with the lease year, beginning on or after the date of such discovery, except that on unitized leases the minimum royalty shall be payable only on the participating acreage. If the actual royalty paid during any year aggregates less than \$1 per acre the lessee must pay the difference at the expiration of the lease year.

§ 3103.3-6 Limitation of overriding royalties.

An agreement creating overriding royalties or payments out of the production of oil which, when added to overriding royalties or payments out of production of oil previously created and to the royalty payable to the United States, aggregate in excess of 17½ percent shall be deemed a violation of the terms of the lease unless such agreement expressly provides that the obligation to pay such excess overriding royalty or payments out of production of oil shall be suspended when the average production of oil per well per day averaged on the monthly basis is 15 barrels or less. The limitation on overriding royalties or payments out of production is not applicable to the production of gas. The limitation in this section will apply separately to any zone or portion of a lease segregated for computing Government royalty.

§ 3103.3-7 Waiver, suspension or reduction of rental or minimum royalty.

(a) In order to encourage the greatest ultimate recovery of oil or gas and in the interest of conservation, the Secretary of the Interior whenever he determines it necessary to promote development or finds that the leases cannot be successfully operated under the terms provided therein may waive, suspend, or reduce the rental or minimum royalty or reduce the royalty on an entire leasehold, or on any deposit, tract, or portion thereof segregated for royalty purposes.

(b) An application for any of the above benefits shall be filed in triplicate in the office of the Oil and Gas Supervisor for oil and gas leases. It must contain the serial number of the leases, the land office name, the name of the record title holder and operator or sublessee and the description of the lands by legal subdivision.

(1) Each application involving oil or gas shall show the number, location, and status of each well that has been drilled, a tabulated statement for each month covering a period of not less than six months prior to the date of filing the application of the aggregate amount of oil or gas subject to royalty computed in accordance with the oil and gas operating regulations, the number of wells counted as producing each month, and the average production per well per day.

(c) Every application must contain a detailed statement of expenses and costs of operating the entire lease, the income from the sale of any leased products, and all facts tending to show whether the wells can be successfully operated upon the royalty or rental fixed in the lease.

Where the application is for a reduction in royalty full information shall be furnished as to whether royalties or payments out of production are paid to others than the United States, the amounts so paid and efforts made to reduce them. The applicant must also file agreements of the holders to a permanent reduction of all other royalties from the leasehold to an aggregate not in excess of one-half the Government royalties.

§ 3103.3-8 Suspension of operations and production.

(a) Applications by lessees for relief from the producing requirements or from all operating and producing requirements of mineral leases shall be filed in triplicate in the office of the Regional Oil and Gas Supervisor for oil and gas leases, and in the office of the Regional Mining Supervisor for all other leases. By Departmental Order No. 2699 and Geological Survey Order No. 218 of August 11, 1952, the Regional Oil and Gas Supervisors and the Regional Mining Supervisors are authorized to act on applications for suspension of operations or production or both filed pursuant to this section and to terminate suspensions of this kind which have been or may be granted. As to oil and gas leases, no suspension of operations and production will be granted on any lease in the absence of a well capable of production on the leasehold, except where the Secretary directs a suspension in the interest of conservation. Complete information must be furnished showing the necessity of such relief.

(b) The term of any lease will be extended by adding thereto any period of suspension of all operations and production during such term pursuant to any direction or assent of the Secretary.

(c) A suspension shall take effect as of the time specified in the direction or assent of the Secretary. Rental and minimum royalty payments will be suspended during any period of suspension of all operations and production directed or assented to by the Secretary, beginning with the first day of the lease month on which the suspension of operations and production becomes effective or, if the suspension of operations and production becomes effective on any date other than the first day of a lease month, beginning with the first day of the lease month following such effective date. The suspension of rental and minimum royalty payments shall end on the first day of the lease month in which operations or production is resumed. Where rentals are creditable against royalties and have been paid in advance, proper credit will be allowed on the next rental or royalty due under the lease.

(d) No lease shall be deemed to expire by reason of a suspension of either operations or production only, pursuant to any direction or assent of the Secretary.

(e) If there is a well capable of producing on the leased premises and all operations and production are suspended pursuant to any direction or assent of the Secretary, the commencement of drilling operations only will be regarded

as terminating the suspension as to operations but not as to production, and as terminating the period of suspension to be added to the term of the lease as provided in paragraph (b) of this section and the period of suspension of rental and minimum royalty payments as provided in paragraph (c) of this section. However, as provided in paragraph (d) of this section, the term of the lease will not be deemed to expire so long as the suspension of operations or production remains in effect.

(f) The relief authorized under this section may also be obtained for any oil and gas leases included within an approved unit or cooperative plan of development and operation.

Subpart 3104—Bonds

§ 3104.0-5 Definitions.

(a) General lease bond.

§ 3104.1 Types of bonds.

Bonds shall be either corporate surety bonds or personal bonds except that bonds with individual sureties may be furnished for the protection of the entryman or owner of surface rights.

(a) *General lease or drilling bond.* All leases shall provide that where a \$10,000 bond is not already being maintained a general lease bond in the penal sum of \$10,000 conditioned upon compliance with all lease terms covering the entire leasehold, shall be furnished by the lessee prior to the beginning of drilling operations.

(b) *Known structure or competitive lease bond.* The successful bidder for a competitive lease prior to the issuance of the lease must furnish a corporate surety bond in the sum of at least double the amount of the \$2 per acre annual rental but in no case less than \$1,000 nor more than \$10,000 conditioned on compliance with all the terms of the lease, and such a bond also must be filed when all or any part of the land in a lease issued noncompetitively is included within the limits of a known geologic structure of a producing oil or gas field.

(c) *Bond for protection of surface owner.* Un. a general lease bond is filed, a noncompetitive lessee will be required prior to entry on the leased lands to furnish and maintain a bond in the penal sum of not less than \$1,000 in those cases in which a bond is required by law for the protection of the owners of surface rights.

§ 3104.1-1 Where filed and copies.

(a) Proper land office, in single copy.

§ 3104.1-2 When filed.

(a) Prior to commencement of drilling operations.

(b) After notice that lands have been included within the limits of a known geologic structure.

(c) Prior to entry on surface of patented lands.

(d) Prior to issuance of a competitive lease.

§ 3104.1-3 Form of bonds.

The bonds furnished will be on forms approved by the Director.

§ 3104.2 Operator's bond.

§ 3104.2-1 Compliance.

An operator or, if there is more than one operator covering different portions of the lease, each operator may furnish a \$10,000 general lease bond in his own name as principal on the bond in lieu of the lessee. Where there are one or more operator's bond affecting a single lease, each such bond must be conditioned upon compliance with all lease terms for the entire leasehold.

§ 3104.2-2 Approval.

An operator's bond will not be accepted unless the operator holds an operating agreement which has been approved by the Department or has pending an operating agreement in proper condition for approval. The mere designation as operator will not suffice.

§ 3104.2-3 Default.

Where a bond is furnished by an operator, suit may be brought thereon without joining the lessee if he is not a party to the bond.

§ 3104.3 Individual sureties.

§ 3104.3-1 Protection.

(a) Entry to leased lands.

(b) Bonds with individual sureties may be furnished for the protection of the entrymen or owner of surface rights.

§ 3104.3-2 Net worth statement.

Each surety must execute a statement showing that he is worth in real property not exempt from execution, double the sum specified in the undertaking, over and above his just debts and liabilities and that he is either a resident of the same State and the U.S. Judicial District as the principal on the bond, or of the State and the Judicial District in which the lands involved are located.

§ 3104.3-3 Certificate required.

There also must be furnished a certificate by a judge or clerk of a court of record, a U.S. Attorney, a U.S. Commissioner, or a U.S. Postmaster, as to the identity, signature, and financial competency of the sureties.

§ 3104.3-4 Requirements.

All bonds furnished with individual sureties will be examined every 2 years, or at any other time when found advisable, and the principal on the bond will be required to furnish new statements of justification by the sureties and a new certificate of financial competency, and if such sureties are unable to qualify additional security will be required.

§ 3104.3-5 Terms.

Where surety bonds are tendered with individuals as sureties they must be executed by not less than two qualified individual sureties to cover compliance with all terms and conditions of the lease or permit or the applicable law or regulations.

§ 3104.3-6 Forms.

The statement of justification required to be furnished by the sureties, and the certificate of competency should be on a form approved by the Director.

§ 3104.4 Personal bond or corporate bond.

§ 3104.4-1 Amount.

(a) *Personal bond.* In lieu of a surety bond, a personal bond in a like amount may be given by the obligor with the deposit as security therefor of negotiable bonds of the United States of a par value equal to the amount specified in the bond.

(b) *Corporate bond.*

§ 3104.4-2 Deposit of securities.

Personal bonds must be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the conditions of the lease bond.

§ 3104.4-3 Qualified sureties.

(U.S. Treasury list.)

§ 3104.5 Nationwide bond.

§ 3104.5-1 Amount.

The holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessees pending departmental approval of operating agreements, may furnish a bond the amount of which must be \$150,000 for full nationwide coverage under both the Mineral Leasing Act and the Mineral Leasing Act for Acquired Lands of 1947 (61 Stat. 913; 30 U.S.C. 351-369).

§ 3104.6 Statewide bond.

§ 3104.6-1 Amount.

The holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessees pending departmental approval of operating agreements, may furnish a bond the amount of which must be at the rate of \$25,000 for each unit of coverage.

§ 3104.6-2 Unit of coverage.

A unit of coverage shall be all the lands in any one State held by the principal under either the Mineral Leasing Act or the Mineral Leasing Act for Acquired Lands. Coverage under both acts in one State constitutes two units.

§ 3104.7 Default.

§ 3104.7-1 Payment by surety.

Where upon a default the surety makes payment to the Government of any indebtedness due under a lease, the face amount of the surety bond and the surety's liability thereunder shall be reduced by the amount of such payment.

§ 3104.7-2 Penalty.

Thereafter, upon penalty of cancellation of all of the leases covered by such bond that principal shall post a new nationwide bond in the amount of \$150,000 or a unit bond, as the case may be, within 6 months after notice, or within such shorter period as the authorized officer of the Bureau of Land Management may fix.

§ 3104.7-3 Relief.

However, in lieu thereof, the principal may within that time file separate bonds for each lease.

§ 3104.7-4 Applicability of provisions to existing bonds.

The provisions hereof may be made applicable to any nationwide or statewide bond in force at the time of the approval of the amendment of this paragraph by filing in the appropriate land office a written consent to that effect and an agreement to be bound by the provisions hereof executed by the principal and the surety. Upon receipt thereof the bond will be deemed to be subject to the provisions of this paragraph.

§ 3104.8 Unit bond form.

(See 30 CFR § 226.15.)

§ 3104.9 Exploration bond.

(a) *Individual.* Simultaneously with the filing of the Notice of Intent to Conduct Oil and Gas Exploration Operations, and before entry is made on the land, the party or parties filing the "Notice of Intent to Conduct Oil and Gas Exploration Operations" must file with the District Manager a surety company bond in the amount of \$5,000, conditioned upon the full and faithful compliance, for each oil and gas exploration operation, with all of the terms and conditions of the regulations in this subpart and of that notice.

(b) *Nationwide.* A \$50,000 nationwide bond.

(c) *Statewide.* A statewide bond in the amount of \$25,000 covering all oil and gas exploration operations in the same State.

§ 3104.9-1 Riders to existing bond forms.

(a) *Nationwide and statewide bonds.* Holders of nationwide and statewide oil and gas lease bonds shall be permitted to amend their bonds to include exploration activities in lieu of furnishing additional bonds.

§ 3104.9-5 Termination of period of liability.

The District Manager will not give his consent to the cancellation of the bond if an individual bond was submitted, or to the termination of liability if a State or nationwide bond was submitted, unless and until all of the terms and conditions of the "Notice of Intent to Conduct Oil and Gas Exploration Operations" have been complied with. Should the District Manager or any other authorized officer of the Bureau of Land Management fail to notify the party within 90 days from the filing of "Notice of Completion" that all terms and conditions have been complied with or that additional corrective measures must be taken to rehabilitate the land, liability under an individual bond or liability for a particular oil and gas exploration operation under a state or nationwide bond shall automatically terminate on the 91st day.

Subpart 3105—Cooperative Conservation Provisions

§ 3105.0-7 Cross-references.

The procedure in obtaining approval of a cooperative or unit plan of development including suggested text of an agreement acceptable to the Department is contained in 30 CFR Part 226 "Unit or Cooperative Agreements".

§ 3105.1 Cooperative or unit plans.

§ 3105.1-1 Where filed.

All applications to unitize and all documents incident thereto shall be filed in the office of the Oil and Gas Supervisor, Geological Survey in the region in which the unit area is situated.

§ 3105.1-2 Purpose.

The agreement must be for the purpose of more properly conserving the natural resources of any such oil or gas pool, field, or area covered thereby and must be determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest.

§ 3105.1-3 Protection of public interest.

The Secretary, with the consent of the lessees, is authorized to establish, alter, change or revoke drilling, producing, rental, minimum royalty, and royalty requirements of the leases and to make such regulations with reference to such leases as he may deem necessary or proper to secure the protection of the public interest.

§ 3105.1-4 Acreage chargeability.

All leases committed to any unit or cooperative plan approved or prescribed by the Secretary of the Interior shall be excepted in determining acreage charges. For the extension of leases committed to a unit plan, see section 3107.4.

§ 3105.1-5 Requirements.

The act authorizes lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any oil or gas pool, field, or like area, or any part thereof (whether or not any part of such pool, field, or like area is then subject to any cooperative or unit plan of development or operation).

§ 3105.2 Communitization or drilling agreements.

§ 3105.2-1 Where filed.

(a) *Preliminary request.* Preliminary requests to communitize separate tracts shall be filed in triplicate with the Oil and Gas Supervisor.

(b) *Executed agreements.* Executed agreements shall be submitted in sufficient number to permit retention of five copies by the Department after approval.

§ 3105.2-2 Purpose.

The Secretary is authorized when separate tracts under lease cannot be independently developed and operated in conformity with an established well-spacing or well-development program, to approve communitization or drilling agreements for the lease or any portion thereof with other lands, whether or not

owned by the United States, when in the public interest. Operations or production pursuant to such an agreement shall be deemed to be operations or production as to each lease committed thereto.

§ 3105.2-3 Requirements.

The agreement shall describe the separate tracts comprising the drilling or spacing unit, shall show the apportionment of the production or royalties to the several parties and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the United States. The agreement must be signed by or in behalf of all necessary parties and will be effective only after approval by the Secretary of the Interior as provided therein.

§ 3105.3 Operating, drilling, or development contracts.

§ 3105.3-1 Where filed.

A contract submitted for approval under this provision should be filed with the appropriate Land Office Manager, Bureau of Land Management, together with enough copies to permit retention of five copies by the Department after approval.

§ 3105.3-2 Purpose.

The authority of the Secretary to approve operating, drilling, or development contracts without regard to acreage limitations ordinarily will be exercised only to permit operators or pipeline companies to enter into contracts with a number of lessees sufficient to justify operations on a large scale for the discovery, development, production, or transportation of oil or gas and to finance the same.

§ 3105.3-3 Requirements.

The contract should be accompanied by a statement showing all the interests held by the contractor in the area or field and the proposed or agreed plan of operation or development of the field. All the contracts held by the same contractor in the area or field should be submitted for approval at the same time, and full disclosure of the project made. Complete details must be furnished in order that the Secretary may have facts upon which to make a definite determination in accordance with the provisions of the act, and prescribe the conditions on which approval of the contracts is made.

§ 3105.4 Combination for joint operations or for transportation of oil.

§ 3105.4-1 Where filed.

An application under this section together with enough copies to permit retention of five copies by the Department after approval should be filed with the Director, Bureau of Land Management.

§ 3105.4-2 Purpose.

Upon obtaining the approval of the Secretary, lessees may combine their interests in leases for the purpose of constructing and carrying on the business of a refinery, or of establishing and constructing as a common carrier a pipe line

or lines of railroads to be operated and used by them jointly in the transportation of oil from their several wells or from the wells of other lessees, or to increase the acreage which may be acquired or held under the provisions of section 17 of the act relating to competitive leases.

§ 3105.4-3 Requirements.

The application must show a reasonable need for the combination and that it will not result in any concentration of control over the production or sale of oil and gas which would be inconsistent with the anti-monopoly provisions of the law.

§ 3105.4-4 Rights-of-way.

Rights-of-way for oil and gas pipe lines may be granted as provided for in Group 2800 of this chapter.

§ 3105.5 Subsurface storage of oil and gas.

§ 3105.5-1 Where filed.

(a) *Application.* Applications for subsurface storage shall be filed in triplicate with the Oil and Gas Supervisor.

(b) *Final agreement.* Enough copies of the final agreement signed by the parties in interest shall be submitted for the approval of the Secretary to permit retention of five copies by the Department after approval.

§ 3105.5-2 Purpose.

In order to avoid waste or to promote conservation of natural resources, the Secretary of the Interior, upon application by the interested parties, may authorize the subsurface storage of oil or gas, whether or not produced from federally owned lands, in lands leased or subject to lease under the act. Such authorization will provide for the payment of such storage fee or rental on the stored oil or gas as may be determined adequate in each case, or, in lieu thereof, for a royalty other than that prescribed in the lease when such stored oil or gas is produced in conjunction with oil or gas not previously produced.

§ 3105.5-3 Requirements.

The final agreement shall disclose the ownership of the lands involved, the parties in interest, the storage fee, rental, or royalty offered to be paid for such storage and all essential information showing the necessity for such project.

§ 3105.5-4 Extension of lease term.

Any lease used for the storage of oil or gas shall be extended for the period of such storage and so long thereafter as oil or gas not previously produced is produced in paying quantities.

§ 3105.6 Consolidation of leases.

Consolidation of leases may be approved if it is determined that there is sufficient justification. Each application will be considered on its own merits. Ordinarily, leases to different lessees for different terms, rental, and royalty rates as well as those containing provisions of law which cannot be reconciled, will not be considered for consolidation. The effective date of the consolidated lease will be that of the oldest lease involved.

Subpart 3106—Assignment or Transfers and Subleases

§ 3106.1 Qualifications.

§ 3106.1-1 Who may file.

Leases may be assigned or subleased as to all or part of the leased acreage and as to either a divided or undivided interest therein to any person or persons qualified to hold a lease.

(a) *Minors*—(1) *Exception*. A minor, except a minor heir or devisee of a lessee, is not qualified to hold a lease and an assignment to a minor will not be approved.

§ 3106.1-2 Failure to qualify.

No assignment will be approved if the assignee or sublessee or any other parties in interest are not qualified to take and hold a lease or if their bond is insufficient or if they fail to file the statement of interest required by section 3106.1-4.

§ 3106.1-3 Number of copies required.

A single copy of any additional information relating to citizenship and qualifications of corporations will be sufficient. Except for assignments of royalty interests all instruments of transfer of a lease or of an interest therein, including assignments of working interests, operating agreements, and subleases, must be filed for approval within 90 days from the date of final execution and, except for record title assignments, must contain all of the terms and conditions agreed upon by the parties thereto, together with similar evidence and statements as that required of an offeror under subpart 3102.

§ 3106.1-4 Sole party in interest.

The assignment or sublease must be accompanied by a signed statement by the assignee or sublessee that he is the sole party in interest in the assignment or sublease; if not, he shall set forth the names of the other interested parties. If there are other parties interested in the assignment or sublease, a separate statement must be signed by them and by the assignee or sublessee setting forth the nature and extent of the interest of each, the nature of the agreement between them, if oral, and a copy of the agreement if written. Such separate statement and written agreement, if any, must be filed not later than 15 days after the filing of the assignment or sublease.

§ 3106.1-5 Attorney-in-fact.

Where an attorney-in-fact or agent, in behalf of the assignor or assignee, signs the instrument of transfer or the application for approval, evidence of the authority of the attorney-in-fact or agent to sign such assignment or application must be furnished. Where such evidence has previously been filed in the same land office where the assignment is filed, a reference to the serial number of the record in which it has been filed will be accepted. In those cases where the application for approval of an assignment is signed by an attorney-in-fact or agent there must also be submitted similar statements and evidence from the principal and the agent or attorney-in-fact to that required by § 3102.6.

§ 3106.1-6 Heirs and devisees.

In order for the heirs or devisees of a deceased holder of a lease, an operating agreement, or a royalty interest in a producing lease, to be recognized by the Department as the holder of the lease, agreement, or interest, there must be furnished the appropriate showing required under § 3102.8.

§ 3106.2 Requirements.

§ 3106.2-1 Where filed and filing fee.

An application for approval of any instrument of transfer of a lease of interest therein or a filing of any such instrument under § 3106.4 must be filed in the proper land office and accompanied by a fee of \$10. An application not accompanied by payment of such a fee will not be accepted for filing by the manager. Such fee will not be returned even though the application later be withdrawn or rejected in whole or in part.

§ 3106.2-2 Forms and statements.

(a) *Record title; copies required*. Assignments of record title interests must be filed in triplicate.

(1) *Approved form*. A form approved by the Director, or unofficial copies of that form in current use may be used for such transfers and requests for approval: *Provided*, That the unofficial copies are exact reproductions on one sheet of both sides of the official approved one-page form, and are without additions, omissions, or other changes, except that the copies shall include the following statement above the signature of the assignee: "This form is submitted in lieu of the official form and contains all of the provisions thereof as of the date of filing of this assignment." In addition, the name and address of the printer or other party issuing unofficial reproductions of the official form shall be printed thereon. This form may be used for any assignment which affects a transfer of the record title to all or part of an oil and gas lease, but it is not to be used for any other type of transfer. The official form, or a valid reproduction of the official form, will also constitute approval of the assignment when signed by the manager of the land office in behalf of the United States.

(2) *Separate instruments required*. A separate instrument of assignment must be filed for each oil and gas lease when transfers involve record titles. When transfers to the same person, association, or corporation, involving more than one oil and gas lease are filed at the same time for approval, one request for approval and one showing as to the qualifications of the assignee will be sufficient.

(b) *Other than record title; copies required*. A single executed copy of all other instruments of transfer, or of an operating agreement is sufficient.

§ 3106.2-3 Bonds.

(a) *Coverage*. If a bond is necessary, it must be furnished. Where an assignment does not create separate leases the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. Any assignment which does not convey the assignor's record

title in all of the lands in the lease must also be accompanied by consent of his surety to remain bound under the bond of record for the lease interest retained by said assignor, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a nationwide or statewide bond, no additional showing is necessary by such party as to the bond requirement.

(b) *Continuing responsibility*. The assignor or sublessor and his surety will continue to be responsible for the performance of any obligation under the lease until the assignment or sublease is approved. If the assignment or transfer is not approved, their obligations to the United States shall continue as though no such assignment or transfer had been filed for approval. After approval the assignee or sublessee and his surety will be responsible for the performance of all lease obligations notwithstanding any terms in the assignment or sublease to the contrary.

§ 3106.2-4 Royalty and production payments.

(a) *Royalty*. If any overriding royalty or payments out of production are created which are not shown in the instrument or agreement, a statement must be submitted describing them.

(b) *Production payments*. If payments out of production are reserved, a statement should be submitted stating the details as to the amount, method of payment, and other pertinent terms. A single copy of any additional information relating to citizenship and qualifications of corporations, will be sufficient.

Unless the lease account is in good standing as to the area covered by the assignment when the assignment and bond are filed, or is placed in good standing before the assignment is reached for action the lease will be canceled as provided in subpart 3108.

§ 3106.2-6 Description of lands.

Each instrument of transfer must describe the lands involved in the same manner as described in the lease or in the manner required by § 3101.1-4.

(a) *Effect of assignment*. An assignment of a definitely described portion of the lands in a lease segregates the assigned and the retained portions into separate and distinct leases. An assignment of an undivided interest either in the entire leasehold or in any definitely described portion thereof shall not segregate or have the effect of segregating the lease into separate or distinct leases.

§ 3106.3 Approval.

§ 3106.3-1 Approval.

To obtain approval of a transfer affecting the record title of an oil and gas lease, a request for such approval must be made, within 90 days from the date of the execution of the assignment by the parties.

§ 3106.3-2 Separate zones.

An assignment of a separate zone or deposit or of a part of a legal subdivision will not be approved unless the necessity therefor is established by clear and convincing evidence.

§ 3106.3-3 Effective date.

Subject to final approval by the Bureau of Land Management, assignments or subleases shall take effect as of the first day of the lease month following the date of filing in the proper land office of all the papers required by this subpart.

§ 3106.3-4 Transfer of offer.

A transfer of the whole interest in all or any part of the offer may be approved as an incident to the transfer, by assignment or otherwise, of the whole interest in all or any part of the lease. A transfer of an undivided fractional interest in the whole offer may be approved as an incident to the transfer of an undivided fractional interest in the whole lease. An application for approval of a transfer of an offer must include a statement that the transferee agrees to be bound by the offer to the extent that it is transferred and must be signed by the transferee. In other instances transfers of an offer will not be approved prior to the issuance of a lease for the lands or deposits covered by the said transfers.

§ 3106.4 Royalty interests.

Royalty interests in oil and gas leases constitute holdings or control of lands and deposits within the meaning of section 27 of the act. In order that the holdings of the assignee may be verified, all assignments of royalty interests should be filed for record purposes within 90 days from the date of execution, but no formal approval will be given. Any such assignment will be deemed to be valid provided it is accompanied by a statement over the assignee's signature that he is a citizen of the United States and that his interests in oil and gas leases do not exceed the acreage limitation as provided in § 3101.1-5 and by the statement as to overriding royalties required by § 3103.3-6. If any portion of this statement is found to be false the assignment shall be invalid.

§ 3106.5 Extensions.

See § 3107.6.

Subpart 3107—Continuation, Extension or Renewals

§ 3107.1 Single extensions.

§ 3107.1-1 Requirements.

(a) *Who may apply.* Under the conditions set out in the following paragraphs of this section, the record title holder of any noncompetitive lease maintained in accordance with the statutory requirements and the regulations in this part which issued prior to September 2, 1960, shall be entitled, to a single extension of the lease at the expiration of the initial five-year term unless then otherwise provided by law. An application for such extension may be filed by the record title holder of the lease, by an assignee whose assignment has been filed for approval, or by an operator whose operating agreement has been filed for approval.

(b) *Application.* The application for extension must be filed, within ninety days before the expiration date of the lease, on a form approved by the Director.

"Application for Extension of Oil and Gas Lease", or unofficial copies of that form in current use and must be accompanied by a filing fee of \$10 which will be retained as a service charge even though the application is later withdrawn or rejected and, unless previously paid, the sixth year's rental: *Provided*, That the unofficial copies are exact reproductions on one sheet of both sides of the official approved one-page form, and are without additions, omissions, or other changes or advertising. The official form or a valid reproduction of the official form, will also constitute approval of the extension when signed by an authorized officer.

§ 3107.1-2 Effect of withdrawal of lands.

Where, upon the expiration of the initial 5-year lease term, the leased lands or any part thereof, have been withdrawn from leasing, the lease will not be extended as to such lands, except that, a withdrawal shall not affect the right to an extension if drilling operations were actually commenced on the withdrawn lands prior to the effective date of the withdrawal and such operations were being diligently prosecuted on the expiration date of the lease, or if notice of the withdrawal has not been sent by registered mail to each lessee to be affected thereby, at least 90 days prior to the termination date of the lease.

§ 3107.1-3 Term of extension.

Upon compliance with, and in accordance with, the provisions of this section, the lease will be extended, subject to the rules and regulations in force at the expiration of the initial term, (1) as to the lands not within the known geologic structure of a producing oil or gas field, for a period of 5 years, and so long thereafter as oil or gas is produced in paying quantities, and (2) as to lands within the known geologic structure of a producing oil or gas field, for a period of 2 years and so long thereafter as oil or gas is produced in paying quantities.

§ 3107.1-4 Segregative effect of application.

The timely filing of an application for extension shall have the effect of segregating the leased lands until the final action taken on the application is noted on the tract book, or, for acquired lands, on the official records relating thereto, of the appropriate land office. Prior to such notation, the lands are not available to the filing of offers to lease. Offers to lease filed prior to such notation will confer no rights in the offeror and will be rejected.

§ 3107.1-5 Rejection.

If during the 90-day period prior to the expiration date of the lease, the record title holder, assignee or operator files an application or request for an extension not on the prescribed form or unofficial copies thereof, or fails to file the prescribed number of copies, or pay the sixth year's rental, a notice will be issued allowing him 30 days to do so.

The application will be rejected if such filing or payment is not made within the time allowed.

§ 3107.1-6 Expiration by operation of law.

Upon failure of the lessee or the other persons enumerated in paragraph (a) of this section to file an application for extension within the specified period, the lease will expire at the expiration of its primary term without notice to the lessee. Notation of such expiration need not be made on the official records, but the lands covered by such expired lease will be subject to the filing of new lease offers only as provided in subpart 3112.

§ 3107.2 Continuation by drilling.

§ 3107.2-1 Terms defined.

(a) *Actual drilling operations.* As used in this section "actual drilling operations" shall include not only the physical drilling of a well but the testing, completing or equipping of such well for the production of oil or gas.

(b) *Primary term.* "Primary term" means all periods in the life of the lease prior to its extension by reason of production of oil or gas in paying quantities.

§ 3107.2-2 Diligent operations.

Actual drilling operations must be conducted in such a way as to be an effort which one seriously looking for oil or gas could be expected to make in that particular area, given existing knowledge of geologic and other pertinent facts.

§ 3107.2-3 Period of extension.

Any lease on which actual drilling operations, or for which under an approved cooperative or unit plan of development or operation, actual drilling operations were commenced prior to the end of its primary term and are being diligently prosecuted at that time, shall be extended for 2 years and so long thereafter as oil or gas is produced in paying quantities.

§ 3107.3 Continuation of lease on termination of production.

§ 3107.3-1 Cessation of production.

A lease which is in its extended term because of production shall not terminate upon cessation of production if, within 60 days thereafter, reworking or drilling operations on the leasehold are commenced and are thereafter conducted with reasonable diligence during the period of nonproduction.

§ 3107.3-2 Nonproduction from lease capable of production.

No lease for lands on which there is a well capable of producing oil or gas in paying quantities shall expire because the lessee fails to produce the same, unless the lessee fails to place the well on a producing status within 60 days after receipt of notice by registered mail from the Regional Oil and Gas Supervisor to do so: *Provided*, That after such status is established production shall continue on the leased premises unless and until suspension of production is allowed by the Secretary of the Interior under the provisions of the act.

§ 3107.4 Extension for terms of cooperative or unit plan.

§ 3107.4-1 20-year lease or any renewal thereof.

Any lease issued for a term of 20 years, or any renewal thereof, committed to a cooperative or unit plan approved by the Secretary of the Interior, or any portion of such lease so committed, shall continue in force so long as committed to the plan, beyond the expiration date of its primary term. This provision does not apply to that portion of any such lease which is not included in the cooperative or unit plan unless the lease was so committed prior to August 8, 1946.

§ 3107.4-2 Other leases committed to plan.

Any other lease issued under any section of the act, committed to any such plan that contains a general provision for the allocation of oil or gas, shall continue in effect as to the land committed so long as the lease remains subject to the plan: *Provided*, That production of oil or gas is had in paying quantities under the plan prior to the expiration date of such lease, whether it be in its primary term or its extended term.

§ 3107.4-3 Segregation of leases committed in part.

Any lease committed after July 29, 1954 to such a plan, which covers lands within and lands outside the area covered by the plan, shall be segregated, as of the effective date of unitization, into separate leases; one covering the lands committed to the plan and the other the lands not so committed. The segregated lease covering the nonunitized portion of the lands, shall continue in force and effect for the term thereof but for not less than two years from the date of segregation, and so long thereafter as oil or gas is produced in paying quantities.

§ 3107.5 Extension by elimination.

Any lease eliminated from any approved or prescribed cooperative or unit plan or from any communization or drilling agreement authorized by the act, and any lease in effect at the termination of such plan or agreement, unless relinquished, shall continue in effect for the original term of the lease, or for 2 years after its elimination from the plan or agreement or the termination thereof, whichever is the longer, and so long thereafter as oil or gas is produced in paying quantities.

§ 3107.6 Extension of leases segregated by assignment.

§ 3107.6-1 Extension after discovery on other segregated portions.

Any lease segregated by assignment, including the retained portion, shall continue in effect for the primary term of the original lease, or for two years after the date of discovery of oil or gas in paying quantities upon any other segregated portion of the original lease, whichever is the longer period.

§ 3107.6-2 Undeveloped parts of leases in their extended term.

Undeveloped parts of leases retained or assigned out of leases which are in their extended term under any provision of the act shall continue in effect for two years after the effective date of assignment and so long thereafter as oil or gas is produced in paying quantities, provided the parent lease was issued prior to September 2, 1960.

§ 3107.6-3 Undeveloped parts of producing leases.

Undeveloped parts of leases retained or assigned out of leases which are extended by production, actual or suspended, or the payment of compensatory royalty shall continue in effect for two years after the effective date of assignment and so long thereafter as oil or gas is produced in paying quantities.

§ 3107.7 Exchange leases.

§ 3107.7-1 20-year leases.

(a) *Requirements and terms.* Any lease which issued for a term of 20 years, or any renewal thereof, or which issued in exchange for a 20-year lease prior to August 8, 1946, may be exchanged for a new lease. Such new lease will be issued for a primary term of 5 years and so long thereafter as oil or gas is produced in paying quantities and will contain the rental and royalty rates prescribed in §§ 3103.3-2, 3103.3-4, and 3103.3-5. An application to exchange a lease for a new lease should be filed in triplicate by the lessee with the manager of the appropriate land office, must show full compliance by the applicant with the terms of the lease and applicable regulations, and must be accompanied by a nonrefundable filing fee of \$10.

§ 3107.8 Renewal leases.

§ 3107.8-1 Requirements.

(a) Such application should be made by the record title holder or holders of the lease and may be joined in or consented to by the operator of record. The application should show whether all moneys due the United States have been paid and whether operations under the lease have been conducted in accordance with the regulations of the Department.

(b) The applicant or his operator shall furnish in triplicate with the application for renewal, copies of all agreements not theretofore filed providing for overriding royalties or other payments out of production from the lease which will be in existence as of the date of its expiration. When such payments, including overriding royalties, are in excess of 5 percent of gross production a detailed statement of the income from and costs of operation of the lease for the twelve month period immediately preceding the month in which the application for renewal is filed must also be furnished.

§ 3107.8-2 Terms.

Twenty-year leases or renewals thereof may be renewed for successive terms of 10 years at the rental and royalty rates specified for such renewal leases in

§§ 3103.3-2, 3103.3-4 and 3103.3-5. An application to renew should be filed in triplicate, in the proper office as prescribed in § 3000.5 at least 90 days, but not more than 6 months, prior to the expiration of its term, and must be accompanied by a nonrefundable filing fee of \$10.

§ 3107.8-3 Approval.

(a) *Acceptable application.* If the outstanding obligations in excess of 5 percent of gross production payable from production do not constitute a burden on the lease prejudicial to the interests of the United States, they will not be considered a bar to its renewal but any lease that may be issued will be upon the condition, to be incorporated in the lease, that if and when the cost of operations, including the payment of overriding royalties or payments out of production, shall be determined by the authorized officer of the Bureau of Land Management to constitute such a burden such royalties and payments shall be reduced to not more than 5 percent of the value of the production. If no objection to the renewal of the lease appears, copies of a renewal lease, in triplicate, dated the first day of the month in which the original lease terminated, will be forwarded to the lessee for execution. If upon receipt of the executed lease forms and a satisfactory lease bond, the lease is executed, one copy thereof will be delivered to the lessee.

(b) *Unacceptable application.* If a determination is made that overriding royalties and payments out of production in excess of 5 percent of gross production constitute a burden on lease operations to the extent that proper and timely development will be retarded, or continued operation of the lease impaired, or premature abandonment of the wells caused, the lease application will be suspended and the parties in interest will be offered an opportunity to reduce the excessive overriding royalties or other payments out of production to not more than 5 percent of the value of the production. If the holders of outstanding overriding royalty or other interests payable out of production, the operator, and the lessee are unable to enter into a mutually fair and equitable agreement, any of the parties may apply for a hearing at which all interested parties may be heard and written statements presented. Thereupon a final decision will be rendered by the Department outlining the conditions acceptable to it as a basis for a fair and reasonable adjustment of the excessive overriding royalties and other payments out of production, and an opportunity will be afforded within a fixed period of time to submit proof that such adjustment has been affected. Upon failure to submit such proof within the time so fixed, the application for renewal will be denied.

§ 3107.8-4 Form of lease.

Renewal and exchange leases will be issued on a form approved by the Director. The rentals and royalties payable thereunder will be set out on such schedule as may be appropriate.

§ 3107.9 Other types.

§ 3107.9-1 Payment of compensatory royalty.

The payment of compensatory royalty shall extend the primary or extended term of any lease for the period during which such compensatory royalty is paid, and for a period of 1 year from the discontinuance of such payments, and for so long thereafter as oil or gas is produced in paying quantities.

§ 3107.9-2 Proceedings under Multiple Mineral Development Act of August 13, 1954.

See § 3101.1-6.

Subpart 3108—Terminations and Expirations

§ 3108.1 Relinquishments.

A lease or any legal subdivision thereof may be surrendered by the record title holder by filing a written relinquishment, in triplicate, in the proper land office. A relinquishment shall take effect on the date it is filed subject to the continued obligation of the lessee and his surety to make payments of all accrued rentals and royalties and to place all wells on the land to be relinquished in condition for suspension or abandonment in accordance with the regulations and the terms of the lease. A statement must be furnished that all moneys due and payable to workmen employed on the leased premises have been paid.

§ 3108.2 Operation of law.

§ 3108.2-1 Automatic terminations and reinstatement.

(a) *Automatic terminations.* Except as provided in paragraph (b) of this section, any lease subject to the provisions of section 31 of the act, as amended by section 1(7) of the Act of July 29, 1954 (30 U.S.C. 188) on which there is no well capable of producing oil or gas in paying quantities, shall automatically terminate by operation of law if the lessee fails to pay the rental on or before the anniversary date of such lease. However, if the time for payment falls upon any day in which the proper office to receive payment is not open, payment received on the next official working day shall be deemed to be timely. The termination of the lease for failure to pay the rental must be noted on the official records of the appropriate land office. Upon such notation the lands included in such lease will become subject to the filing of new lease offers only as provided for in Subpart 3112.

(b) *Exceptions.* If the rental payment due under a lease is paid on or before its anniversary date but either the amount of the payment has been or is hereafter deficient and the deficiency is nominal as defined in this section, or the amount of payment made was determined in accordance with the rental or acreage figure stated in the lease or stated in a bill or decision rendered by an authorized officer and such figure is found to be in error resulting in a deficiency, such lease shall not have automatically terminated unless (1) a new lease had been issued prior to May 12, 1970, or (2) the lessee

fails to pay the deficiency within the period prescribed in the Notice of Deficiency provided for in this section. A deficiency will be considered nominal if it is not more than \$10 or five per centum (5 percent) of the total payment due, whichever is more. The authorized officer will send a Notice of Deficiency to the lessee on a form approved by the Director. The notice will be sent by certified mail, return receipt requested, and will allow the lessee 15 days from the date of receipt or until the due date, whichever is later, to submit the full balance due to the appropriate office. If the payment called for in the notice is not paid within the time allowed, the lease will have terminated by operation of the law as of its anniversary date.

(c) *Reinstatement.* (1) Except as hereinafter provided, the authorized officer may reinstate a terminated lease which has been or is hereafter terminated automatically by operation of law for failure to pay on or before the anniversary date the full amount of rental due, provided that (i) such rental was paid or tendered within 20 days thereafter, and (ii) it is shown to the satisfaction of the authorized officer that such failure was either justifiable or not due to a lack of reasonable diligence on the part of the lessee, and (iii) a petition for reinstatement, together with the required rental, including any back rental which has accrued from the date of termination of the lease, is filed with the appropriate office within 15 days after receipt of Notice of Termination of Lease due to late payment of rental. The Notice of Termination will be sent by certified mail, return receipt requested. Notices of Termination will not be sent to lessees whose leases terminated prior to May 12, 1970. Lessees whose leases terminated prior to May 12, 1970, must file petitions for reinstatement with the appropriate office by close of business on December 31, 1971. Such petitions are subject to all other appropriate provisions of this section.

(2) The burden of showing that the failure to pay on or before the anniversary date was justifiable or not due to lack of reasonable diligence will be on the lessee. Reasonable diligence normally requires sending or delivering payments sufficiently in advance of the anniversary date to account for normal delays in the collection, transmittal, and delivery of the payment. The authorized officer may require evidence, such as post office receipts, of the time of sending or delivery of payments.

(3) Under no conditions will a terminated lease be reinstated if (i) a valid oil and gas lease has been issued prior to the filing of petition for reinstatement affecting any of the lands covered by that terminated lease, or (ii) the Federal oil and gas interests in the lands have been withdrawn or disposed of, or have otherwise become unavailable for oil and gas leasing; however, the authorized officer will not issue a new lease for lands covered by a lease which terminates automatically until 90 days from the date of termination.

(4) Reinstatement of terminated leases is discretionary with the Secretary.

(d) *Extension of terms of reinstated leases.* In any case where a reinstatement of a terminated lease is granted under this section and the authorized officer finds that the reinstatement of such lease will not afford the lessee a reasonable opportunity to continue operations under the lease, the authorized officer may, at his discretion, extend the term of such lease for such period as he believes will give the lessee such an opportunity. Such extensions shall be subject to the following conditions:

(1) No extension shall exceed a period equivalent to the time (i) beginning when the lessee knew or should have known of the termination and (ii) ending on the date on which the authorized officer grants such petition.

(2) No extension shall exceed a period equal to the unexpired portion of the lease or any extension thereof remaining at the date of termination.

(3) When the reinstatement occurs after the expiration of the term or extension thereof, the lease may be extended from the date the authorized officer grants the petition.

(e) *Service of documents.* The rules governing filing and service of documents set out in § 1840.0-6(e) of this chapter shall apply to notices of deficiency and termination issued under the provisions of this section.

§ 3108.2-2 Expiration.

§ 3108.2-3 Noncompliance with leasing act or lease terms.

Whenever the lessee fails otherwise to comply with any of the provisions of the act, of the regulations issued thereunder, or of the lease, such lease may be canceled by the Secretary of the Interior if not known to contain valuable deposits of oil or gas after notice to lessee in accordance with section 31 of the act, if default continues for the period prescribed in that section after service of notice thereof. Any lessee of a lease which issued prior to July 29, 1954, may, at any time prior to the anniversary date of such lease and the accrual of rental, elect to subject his lease to the automatic termination provisions of this section by notifying, in writing, the manager of the appropriate land office to that effect.

§ 3108.3 Judicial proceedings.

Leases known to contain valuable deposits of oil or gas may be cancelled only by judicial proceedings in the manner provided in sections 27 and 31 of the act.

Subpart 3109—Surface Management Requirements

§ 3109.1 General.

§ 3109.1-1 Surface, natural resources, and improvements.

§ 3109.1-2 Antiquities and objects of historical value.

§ 3109.2 Public domain.

§ 3109.2-1 Bureau of Land Management stipulations.

The Bureau of Land Management may require such special stipulations as are

necessary for the protection of the lands embraced in any permit or lease.

(See Montana Power Decision A 30310 December 3, 1965, L.M. No. 65-360 December 23, 1965)

§ 3109.3 Acquired lands.

§ 3109.3-1 Consent of agency.

Leases or permits may be issued only with the consent of the head or other appropriate official of the executive department, independent establishment or instrumentality having jurisdiction over the lands containing the deposits, or holding a mortgage or deed of trust secured by such lands, and subject to such conditions as that official may prescribe to insure adequate utilization of the lands for the primary purpose for which they were acquired or are being administered.

§ 3109.4 Reserved, withdrawn, or segregated lands.

§ 3109.4-1 Requirements.

With respect to lands embraced in a reservation or segregated for any particular purpose the lessee shall conduct operations in conformity with such requirements as may be made by the Bureau of Land Management for the protection and use of the land for the purpose for which it was reserved or segregated, so far as may be consistent with the use of the land for the purpose of the lease, which latter shall be regarded as the dominant use unless otherwise provided or separately stipulated.

§ 3109.4-2 Special stipulations.

Offerors for noncompetitive oil and gas leases and applicants for permits, leases, and licenses for lands, the surface control of which is under the jurisdiction of the Department of Agriculture, will be required to consent to the inclusion therein of the stipulation on a form approved by the Director. Where the lands have been withdrawn for reclamation purposes the offeror or applicant will be required to consent to the inclusion of a stipulation on the approved forms. If the land is potentially irrigable, or if the land is within the flow limits of a reservoir site or within the drainage area of a constructed reservoir, or if withdrawn for power purposes, or where the lands have been withdrawn as Game Range Lands, Coordination Lands, or Alaska Wildlife Areas, the offeror or applicant will be required to consent to the inclusion of a stipulation on an approved form. Additional conditions may be imposed to protect the land withdrawn if deemed necessary by the agency having jurisdiction over the surface.

§ 3109.5 Special acts.

§ 3109.5-1 Requirements.

§ 3109.5-2 Special stipulations.

(a) Rights-of-way.

(b) Nevada.

(c) Lands patented to the State of California.

(d) National forest lands in Minnesota. Leases or permits under the act of June 30, 1950, may be issued only with the prior consent of the Secretary of Agriculture or his delegate, and subject

to such conditions and stipulations as that official may prescribe to insure adequate utilization and protection of the lands for the primary national forest purpose for which they are being administered.

(e) Lake Mead recreation area.

(f) National Forest Wilderness. (1) All mineral leases, licenses, and permits covering lands within National Forest Wilderness, issued on or after September 3, 1964, shall contain such stipulations as may be prescribed by the Secretary of Agriculture pursuant to section 4(d)(3) of the Wilderness Act for the protection of the wilderness character of the lands consistent with the use of the lands for the purposes for which they are leased, licensed, or permitted. In addition to containing such stipulations as may be prescribed by the Secretary of Agriculture, any mineral lease, license, or permit covering lands within National Forest Wilderness shall contain a provision that it is issued subject to the provisions of the Wilderness Act and the regulations issued thereunder.

(2) All persons seeking or holding a mineral lease, license, or permit covering lands within National Forest Wilderness, issued on or after September 3, 1964, should make inquiry of the officer in charge of the National Forest in which the lands are located concerning the applicable regulations of the Secretary of Agriculture.

(g) Whiskeytown-Shasta-Trinity national recreation area. Any lease or permit respecting minerals in lands administered by the Secretary of Agriculture shall be issued only with his consent and subject to such conditions as he may prescribe.

PART 3110—NONCOMPETITIVE LEASES

Subpart 3110—Noncompetitive Leases

Sec.

- 3110.1-1 Duration of lease.
- 3110.1-2 Dating of leases.
- 3110.1-3 Acreage limitation.
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Subpart 3110—Noncompetitive Leases

§ 3110.1-1 Duration of lease.

All noncompetitive leases shall be for a primary term of 10 years and so long

thereafter as oil or gas is produced in paying quantities.

(a) *Special acts*—(1) *Rights-of-way*. The term of the lease will be for a period of not more than 20 years and the compensatory royalty agreement will be for the period necessary to reasonably extract all oil and gas from the right-of-way.

§ 3110.1-2 Dating of leases.

All noncompetitive oil and gas leases, excepting renewal leases, will be dated as of the first day of the month following the date the leases are signed on behalf of the lessor except that where prior written request is made a lease may be dated the first of the month within which it is so signed.

§ 3110.1-3 Acreage limitation.

(a) *Public domain*. An offer may be made by a legal guardian or trustee in his name for the benefit of a nonalien minor or minors but an offer may not be filed by a minor. An offer may not include more than 2,560 acres except where the rule of approximation applies. The lands in the offer must be entirely within an area of 6 miles square or within an area not exceeding six surveyed sections in length or width. No offer may be made for less than 640 acres except where the offer is accompanied by a showing that the lands are in an approved unit or cooperative plan of operation or such a plan which has been approved as to form by the Director of the Geological Survey, or where the land is surrounded by lands not available for leasing under the act.

(b) *Acquired lands*. An offer may not include more than 2,560 acres except where the rule of approximation applies. That portion of § 3110.1-3(a) providing that an offer may not be made for less than 640 acres is not applicable to acquired lands lease offers.

§ 3110.1-4 Withdrawal of offer.

(a) *Regular filings*. An offer may not be withdrawn, either in whole or in part, unless the withdrawal is received by the land office before the lease, an amendment of the lease, or a separate lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States.

(b) *Simultaneous filings*. An applicant may withdraw his simultaneous offer drawing card prior to the drawing.

§ 3110.1-5 Amendment to lease.

If any of the land described in item 2 of the offer is open to oil and gas filing when the offer is filed but is omitted from the lease for any reason and thereafter becomes available for leasing to the offeror, the original lease will be amended to include the omitted land unless, before the issuance of the amendment, the land office receives a withdrawal of the offer with respect to such land or an election to receive a separate lease in lieu of an amendment. Such election shall consist of a signed statement by the offeror asking for a separate lease accompanied by a new offer on the required form describing the remaining lands in his original offer, executed pursuant to this section. The new offer will have the same priority as

the old offer. It need not be accompanied by the filing fee. The rental payment held on the original offer will be applied to the new offer. The rental and the lease term for the land added by such an amendment shall be the same as if the land had been included in the original lease when it was issued. If a separate lease is issued, it will be dated in accordance with § 3110.1-2.

§ 3110.1-6 Determination of priorities.

(a) *Regular filing.* No lease shall be issued before final action has been taken on (a) any prior offer to lease the land, (b) any subsequent offer to lease the land that is based upon an alleged preferential right and (c) any petition for the renewal or reinstatement of an existing or former lease on the land. If a lease is issued before final action has been taken on such an offer or petition, it shall be canceled, after due notice to the lessee, if the offeror or petitioner is found to be qualified and entitled to receive a lease on the land. Offers to lease which cover lands subject to regular filings and which are received in the same mail or over the counter at the same time, will be considered as having been filed simultaneously and priority to the extent of the conflicts between them will be determined by a public drawing.

(b) *Simultaneous filings.* If more than one offer to lease all or any part of the acreage covered by an expired, canceled, relinquished, or terminated lease is filed during the period provided for in subpart 3112, their priorities will be determined by a public drawing.

§ 3110.1-7 Land description.

(a) *Variation in land description.* If there is any variation in the land descriptions among the five copies of the official forms, the copy showing the date and time of receipt in the land office will control.

§ 3110.1-8 Rejections.

If, after the filing of an offer for a noncompetitive lease and before the issuance of a lease pursuant to that offer, the land embraced in the offer becomes within a known geological structure of a producing oil or gas field, the offer will be rejected and will afford the offeror no priority.

Subpart 3111—Regular Offers

§ 3111.1 Requirements.

§ 3111.1-1 Public domain.

(a) *Application—(1) Forms.* Except as provided in subpart 3112, to obtain a noncompetitive lease an offer to accept such lease must be made on a form approved by the Director, "Offer to lease and lease for oil and gas," or on unofficial copies of that form in current use: *Provided*, That the copies are exact reproductions of one page of both sides of the official approved one page form and are without additions, omissions or other changes or advertising. The official form or a valid reproduction of the official form will also constitute the lease when signed by the Manager of the Land Office. Each offer must be filled in by typewriter or printed plainly in ink and signed in ink by the offeror or the offeror's duly authorized attorney-in-fact or agent. Five

copies of the official form, or valid reproduction thereof, for each offer to lease shall be filed in the proper land office (see § 3000.5 of this chapter). For the purpose of this part an offer will be considered filed when it is received in the proper office during business hours.

(b) *Qualifications.* Compliance with subpart 3102 is required.

(c) *Approval.* The United States will indicate its acceptance of the lease offer, in whole or in part, and the issuance of the lease by the signature of the appropriate officer thereof in the space provided. An executed copy of the lease will be mailed to the offeror at the address of record.

(d) *Rejection.* Except as provided in this section an offer which is not filed in accordance with the regulations in this part will be rejected and will afford the offeror no priority.

(e) *Curable defects.* An offer to lease containing any of the following deficiencies will be approved by the signing officer provided all other requirements are met:

(1) An offer deficient in the first year's rental by not more than 10 percent. The additional rental must be paid within 30 days from notice under penalty of cancellation of the lease.

(2) An offer covering not more than 10 percent over the maximum allowable acreage of 2,560 acres. The lease will be approved for 2,560 acres in the discretion of the signing officer or so much over that amount as may be included under the rule of approximation.

(3) An offer completed in pencil or script.

(4) An offer on a lease form not currently in use.

(5) An offer on a form not correctly reproduced provided it contains the statement that the offeror agrees to be bound by the terms and conditions of the lease form in effect at the date of filing.

§ 3111.1-2 Acquired lands.

(a) *Application—(1) Forms.* Except as provided in subpart 3112, to obtain a noncompetitive oil and gas lease of an existing mineral interest whether the Government's interest be whole or fractional, an offer to lease must be made on a form approved by the Director, "Offer to Lease and Lease for Oil and Gas; Noncompetitive Acquired Lands" or unofficial copies of that form in current use: *Provided*, That the copies are exact reproductions of one page of both sides of the official approved one-page form and are without additions, omissions, or other changes or advertising. An official form approved by the Director, or a valid reproduction, will also constitute the lease, when signed by the authorized signing officer of the Bureau of Land Management. Seven copies of the official form, or valid reproduction thereof, for each offer to lease shall be filed in the proper land office (see § 3000.5). For the purposes of this part an offer will be considered filed when it is received in the proper office during business hours.

(2) *Qualifications.* Compliance with subpart 3102 is required.

(3) *Approval.* Such application or offer will be considered only as to the acquired

lands described therein. If public domain lands or minerals are also included the application or offer will be rejected as to such lands or minerals.

(4) *Rejection.* Except as provided in subpart 3112 an offer which is not filed in accordance with the applicable regulations in subpart 3110 or this part will be rejected and will afford the applicant no priority.

(5) *Surface jurisdiction—(i) Showing required.* All applications and offers for permits or leases should name, if practicable, the Government agency from which consent to the issuance of a permit or lease must be obtained, or the agency that may have title records covering the ownership of the mineral interest involved, and identify the project, if any, of which the land is a part. Permits or leases to which such consent is necessary will not be issued until the lessee or permittee executes such stipulations as may be required by the consenting agency.

(ii) *Transfer of surface control.* Where the United States has conveyed the title to, or otherwise transferred the control of the surface of the lands containing the deposits to any State or any political subdivision, agency or instrumentality thereof, or a college or any other educational corporation, or association, or a charitable or religious corporation or association, such party shall be given written notification by certified mail of the application for the permit or lease, and shall be afforded a reasonable period of time within which to suggest any stipulations deemed by it to be necessary for the protection of existing surface improvements or uses to be included in the permit or lease, setting forth the facts supporting the necessity thereof, and also to file any objections it may have to the issuance thereof. Where such party opposes the issuance of the permit or lease, the facts submitted in support must be carefully considered and each case separately decided on its merits. However, such opposition affords no legal basis or authority to refuse to issue the permit or lease for the reserved minerals in the lands; in such case, the final determination whether to issue the permit or lease depends upon whether the interests of the United States would best be served thereby.

(6) *Acreage holdings.* Each offer or application for a lease or permit must contain a statement that applicant's interest, direct or indirect, in leases, permits, or applications for similar minerals does not exceed the maximum chargeable acreage permitted to be held for that mineral in federally owned acquired lands in the same State.

(7) *Other regulations applicable.* Except as otherwise specifically provided in this part the regulations prescribed under the mineral leasing laws, and contained in subpart 3110 and § 3111.1 shall govern the disposal and development of minerals under the act.

§ 3111.1-3 Special acts.

(a) *Rights-of-way—(1) Application.* No particular form of application for lease of land in a right-of-way will be required. Applications shall be filed in

the appropriate land office. Such applications must be filed by the owner of the right-of-way or by his assignee and be accompanied by a filing fee of \$10, and, if filed by an assignee, by a duly executed assignment of the right to lease. The application should detail the facts as to the ownership of the right-of-way, and of the assignment if the application is filed by an assignee; the development of oil and gas in adjacent or nearby lands, the location and depth of the wells, the production, and the probability of drainage of the deposits in the right-of-way. Since rights-of-way are of record in the Bureau of Land Management, a description by metes and bounds is not necessary or required, but each legal subdivision through which the portion of the right-of-way desired to be leased extends should be described.

(2) *Compensatory royalty.* After the Bureau of Land Management has determined that a lease of a right-of-way or any portion thereof is consistent with the public interest, either upon consideration of an application for lease or on his own motion, the manager of the land office will serve notice on the owner or lessee of the adjoining lands, as provided in section 3 of the act of May 21, 1930 (46 Stat. 374; 30 U.S.C. 303), allowing him 30 days or such other time as may be provided in the notice within which to submit an offer or bid of the amount or percentage of compensatory royalty such owner or lessee will agree to pay for the extraction through wells on his adjoining land of the oil and gas under and from such right-of-way. Notice to the owner of the right-of-way will be given at the same time allowing him opportunity within the same period to submit a bid or offer as to the amount or percentage of royalty he will pay if a lease is awarded to him.

(3) *Award of lease or compensatory royalty agreement.* Award of lease to the owner of the right-of-way, or of a contract for the payment of compensatory royalty by the owner or lessee of the adjoining lands, will be made to the bidder whose offer is determined to be to the best advantage to the United States, considering the amount of royalty to be received and the better development of the oil and gas deposits in the right-of-way under the respective means of production and operation.

(4) *Forms.*—(i) *Compensatory royalty agreement.* The agreement with the owner or lessee of the adjoining land to pay compensatory royalty for the extraction through wells on his adjoining land of the oil and gas in or under the right-of-way will be on a form approved by the Director.

(ii) *Lease.* The lease issued to the owner of the right-of-way or assignee of such owner will be on a form approved by the Director, modified to conform to the requirements of the law and these regulations.

(iii) *Bond.* The bond required under section 2(a) of the lease and by the contractor under agreement to pay compensatory royalty, should be on a form approved by the Director.

(5) *Royalty charge.* The royalty to be charged will be fixed by the Bureau of Land Management, after consideration of all the facts and circumstances in each case, but will not be less than 12½ percent.

(6) *Duration.* The term of the lease will be for a period of not more than 20 years, and the compensatory royalty agreement will be for the period necessary to reasonably extract all oil and gas from the right-of-way.

(b) *Nevada.*—(1) *Applicability of regulations.* Deposits of oil and gas within the lands shall be subject to disposal pursuant to the applicable regulations issued under the Act of February 25, 1920 (41 Stat. 437) as amended.

(c) *Lands patented to the State of California.*—(1) *Minerals to be leased.* All disposal of minerals within the reserved areas covered by this section shall be by lease.

(2) *Applicability of other regulations.* The regulations contained in subparts 3110 and 3111 to the extent that they are applicable and not inconsistent with this section shall govern oil and gas leases issued under this section.

(3) *Notice of application.* The Manager of the Land Office will notify the surface owner or his authorized representative of each application received. Notice of any proposed offer of lands for lease will also be given to the surface owner prior to publication thereof. Should the surface owner object to the leasing of any tract for reasons determined by the authorized officer to be satisfactory the application will be rejected or the offer of the land for lease will be withheld.

(4) *Terms and conditions.*—(1) *Protection of surface.* All leases issued shall be conditioned upon compliance by the lessee with all of the laws or rules and regulations of the surface owner for the safeguarding and protection of the plant life, scenic features and park or recreational improvements on the land, not inconsistent with the terms of the lease or this section. The lease shall also provide that any mining work performed upon the lease shall be located consistent with any requirements of the owner of the surface necessary to the protection of the surface rights and uses and so conducted as to result in the least possible injury to plant life, scenic features and improvements and that, upon completion of the mining operation, all excavations, including wells, shall be closed and the property be conditioned for abandonment to the satisfaction of the surface owner. The lease shall further provide that any use of the lands for ingress to and egress from the mine for all necessary purposes shall be on a route to be first approved by the surface owner or his duly authorized representative.

(ii) *Bonds.* Each lessee will be required to furnish a bond in such sum as may be determined adequate, in no case less than \$1,000, to insure compliance with the terms of the lease and for the protection of the surface owner.

(iii) *Form of lease.* Oil and gas leases will be issued on forms approved by the

Director, with such changes in language as may be required.

(5) *Operating regulations.* All lessees will be required to operate under the applicable operating regulations of this Department. The operating regulations are contained in 30 CFR Chapter II Part 221.

(d) *National forest lands in Minnesota.*—(1) *Minerals to be leased.* All disposal of mineral resources covered by this regulation shall be by lease or permit.

(2) *Consent of Secretary of Agriculture.* Leases or permits under the act of June 30, 1950, may be issued only with the prior consent of the Secretary of Agriculture or his delegate, and subject to such conditions and stipulations as that official may prescribe to insure adequate utilization and protection of the lands for the primary national forest purpose for which they are being administered.

(3) *Regulations applicable.* See subparts 3110 and 3111. Any lease issued under this subpart shall state that it is subject to the terms and provisions of the act of June 30, 1950.

(e) *Lake Mead Recreation Area.*—(1) *Authority to lease.* The Act of October 8, 1964 (78 Stat. 1039; 16 U.S.C. 460n) provides for mineral leasing within the Lake Mead Recreation Area, subject to such limitations, conditions, or regulations as the Secretary may prescribe, and to such extent as will not be inconsistent with either the recreational use or the primary use of that portion of the area heretofore withdrawn for reclamation purposes.

(2) *Regulations applicable.* Mineral deposits of oil and gas shall be governed by regulations issued under the Act of February 25, 1920 (41 Stat. 437; 30 U.S.C. 181), as amended.

(3) *Area subject to lease.* The area subject to the regulations in this part is that area of land and water which is shown on a certain map identified as "boundary map, RA-LM-7060-B, revised July 17, 1963," which is on file and which is available for public inspection in the office of the Director of the National Park Service and in the headquarters office of the Superintendent of the Lake Mead National Recreation Area. The area subject to these regulations may be revised by the Secretary as authorized in the act.

(4) *Excepted areas.* Mineral deposits and materials in the following areas shall not be open to disposal under the provisions of this part:

(i) All lands within 200 feet of the center line of any public road, or within 200 feet of any public utility including, but not limited to, electric transmission lines, telephone lines, pipe lines, and railroads.

(ii) All land within the smallest legal subdivision of the public land surveys containing a spring or water hole, or within one-quarter of a mile thereof on unsurveyed public land.

(iii) All land within 300 feet of Lake Mead or Lake Mohave, measured horizontally from the shore line at maximum water surface elevation and all lands

within the area of supervision of the Bureau of Reclamation around Hoover and Davis Dams as shown on the map of the Lake Mead National Recreation Area (NRA—L.M. 2291).

(iv) All land within any developed and/or concentrated public use area or other area of outstanding recreation significance as designated by the Superintendent on the map (NRA—L.M. 2297), of Lake Mead National Recreation Area which will be available for inspection in the office of the Superintendent.

(c) *National Forest Wilderness—(1) Applicability of laws and regulations.* Until midnight, December 31, 1983, all laws pertaining to mineral leasing and the regulations of this chapter pertaining thereto effective during such period, shall, to the same extent as applicable before September 3, 1964, extend to National Forest Wilderness, subject to the provisions of such regulations as may be prescribed by the Secretary of Agriculture pursuant to section 4(d) (3) of the Wilderness Act.

(2) *Stipulations required.* All mineral leases, licenses, and permits covering lands within National Forest Wilderness, issued on or after September 3, 1964, shall contain such stipulations as may be prescribed by the Secretary of Agriculture pursuant to section 4(d) (3) of the Wilderness Act for the protection of the wilderness character of the lands consistent with the use of the lands for the purposes for which they are leased, licensed, or permitted. In addition to containing such stipulations as may be prescribed by the Secretary of Agriculture, any mineral lease, license, or permit covering lands within National Forest Wilderness shall contain a provision that it is issued subject to the provisions of the Wilderness Act and the regulations issued thereunder.

(3) *Applicable regulations of Secretary of Agriculture.* All persons seeking or holding a mineral lease, license, or permit covering lands within National Forest Wilderness, issued on or after September 3, 1964, should make inquiry of the officer in charge of the National Forest in which the lands are located concerning the applicable regulations of the Secretary of Agriculture.

(4) *Withdrawal from mineral leasing.* Effective at midnight, December 31, 1983, subject to valid rights then existing, the minerals in lands within National Forest Wilderness are withdrawn from leasing by virtue of the provisions of section 4(d) (3) of the Wilderness Act.

(g) *Whiskeytown-Shasta-Trinity National Recreation Area.* Applicability of regulations. Mineral deposits of oil and gas shall be governed by the Act of February 25, 1920 (41 Stat. 437; 30 U.S.C. 181-263), as amended.

Subpart 3112—Simultaneous Offers
§ 3112.1-1 Availability of lands.

(a) Lands in canceled or relinquished leases or in leases which terminate by operation of law for non-payment of rental pursuant to 30 U.S.C. sec. 188, which are not withdrawn from leasing nor on a known geological structure of a producing oil and gas field shall be subject to the filing of new lease offers only after notation on the official record of the cancellation, relinquishment, or

termination of such lease and only in accordance with the provisions of this section. All lands covered by leases which expire by operation of law at the end of their primary or extended terms shall likewise be subject to the filing of new lease offers only in accordance with the provisions of this section except that notation of such expiration of the leases need not be made on the official records.

(b) If no offers to lease all or any portion of the lands in the expired, canceled, relinquished or terminated leases are received during the period provided for in § 3112.1-2, the lands for which no offers are received will thereafter become subject to lease in accordance with regulations in this part.

§ 3112.1-2 Posting of notice.

On the third Monday of each month, or the first working day thereafter, if the land office is not officially open on the third Monday, there will be posted on the bulletin board in each land office a list of the lands in leases which expired, were canceled, were relinquished in whole or in part, or which terminated, together with a notice stating that such lands will become subject to the simultaneous filings of lease offers, from the time of such posting until 10 a.m. on the fifth working day thereafter. The posted list will describe the lands by leasing units identified by parcel numbers, which will be supplemented by a description of the lands in accordance with § 3101.1-4, by subdivision, section, township and range if the lands are surveyed or officially protracted, or if unsurveyed, by metes and bounds.

§ 3112.2 Forms.

§ 3112.2-1 Offer to lease.

(a) *Entry Card.* Offers to lease such designated leasing units by parcel numbers must be submitted on a form approved by the Director, "Simultaneous Oil and Gas Entry Card" signed and fully executed by the applicant or his duly authorized agent in his behalf. The entry card will constitute the applicant's offer to lease the numbered leasing unit by participating in the drawing to determine the successful drawee.

(1) The entry card must be accompanied by a remittance covering the filing fee of \$10. The filing fee may be paid in cash or by money order, bank draft, bank cashier's check or check.

(2) Only one complete leasing unit, identified by parcel number, may be included in one entry card. Lands not on the posted list may not be included. An offeror (applicant) is permitted to file only one offer to lease (entry card) for each numbered parcel on the posted list. Submission of more than one entry card by or on behalf of the offeror for any parcel on the posted list will result in the disqualification of all the offers submitted by that applicant for that particular parcel.

(3) Three entry cards will be drawn for each numbered leasing unit, and the order in which they are drawn will fix the order in which the successful drawee will be determined. Where less than three entry cards have been filed, all cards will be drawn to determine priority.

(4) Unsuccessful drawees will be notified by the return of their respective entry cards.

§ 3112.3 Qualifications.

§ 3112.3-1 Compliance with subpart 3102 is required.

§ 3112.4 Approval.

By signing and submitting the entry card, the applicant agrees that he will be bound to a lease on a current form approved by the Director for the described parcel if such a lease is issued to him as a result of the drawing.

§ 3112.4-1 Rental payment.

A lease will be issued to the first drawee qualified to receive a lease upon payment of the first year's rental. Rental must be received in the proper office of the Bureau of Land Management within fifteen (15) days from the date of receipt of notice that such payment is due. The drawee failing to submit the rental payment within the time allowed will be automatically disqualified to receive the lease, and consideration will be given to the entry of the drawee having the next highest priority in the drawing.

§ 3112.5-1 Unqualified offeror.

If the successful drawees for a particular leasing unit are unqualified to receive the lease for any reason, including timely payment of the first year's rental, the lands in the numbered leasing unit shall be included in a subsequent list of lands available for filing under the simultaneous drawing procedure.

§ 3112.5-2 Multiple filings.

When any person, association, corporation, or other entity or business enterprise files an offer to lease for inclusion in a drawing, and an offer (or offers) to lease is filed for the same lands in the same drawing by any person or party acting for, on behalf of, or in collusion with the other person, association, corporation, entity or business enterprise, under any agreement, scheme, or plan which would give either, or both, a greater probability of successfully obtaining a lease, or interest therein, in any public drawing, held pursuant to § 3110.1-6(b), all offers filed by either party will be rejected. Similarly, where an agent or broker files an offer to lease for the same lands in behalf of more than one offeror under an agreement that, if a lease issues to any of such offerors, the agent or broker will participate in any proceeds derived from such lease, the agent or broker obtains thereby a greater probability of success in obtaining a share in the proceeds of the lease and all such offers filed by such agent or broker will also be rejected. Should any such offer be given a priority as a result of such a drawing, it will be similarly rejected. In the event a lease is issued on the basis of any such offer, action will be taken for the cancellation of all interests in said lease held by each person who acquired any interest therein as a result of collusive filing unless the rights of a bona fide purchaser as provided for in § 3102.1-2 intervene, whether the pertinent information regarding it is obtained by or was available to the Government before or after the lease was issued.

PART 3120—COMPETITIVE LEASES

Subpart 3120—Competitive Leases

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§ 3120.1 Terms.

§ 3120.1-1 Duration of lease.

All competitive leases shall be for a primary term of 5 years and so long thereafter as oil or gas is produced in paying quantities.

§ 3120.1-2 Dating of leases.

All competitive oil and gas leases, excepting renewal leases, will be dated as of the first day of the month following the date the leases are signed on behalf of the lessor except that where prior written request is made, a lease may be dated the first of the month within which it is so signed.

§ 3120.1-3 Acreage limitation.

(a) *Maximum lease size.* The lands and deposits subject to disposition under the act which are within the known geologic structure of a producing oil or gas field will be divided into leasing blocks or tracts in units of not exceeding 640 acres each, which shall be as nearly compact in form as possible.

(b) *Consolidation of units.* If two or more units are awarded to any bidder, such units where the acreage does not exceed 640 acres, may be included in a single lease if circumstances warrant.

§ 3120.1-4 Qualifications.

(a) *Compliance with subpart 3102 is required.*—(1) Statement required. Each bidder must submit with his bid a statement over the bidder's own signature with respect to citizenship and interests held. If the successful bidder is a corporation, it must also file a statement similar to that required by § 3102.4-1.

(b) *Deposit required.* The successful bidder at a sale by public auction must on the day of the sale, deposit with the Manager of the Land Office or other officer conducting the sale, and each bidder, if the sale is by sealed bids, must submit with his bid the following: Certified check on a solvent bank, money order, or cash, for one-fifth of the amount bid by him.

§ 3120.2 Notice of lease sale.

§ 3120.2-1 Initiation of offer.

§ 3120.2-2 Publication of notice.

Notice of the offer of lands for lease at a royalty and rental to be specified in the notice of sale, to the qualified person who offers the highest bonus by competitive bidding either at public auction, or by sealed bids as provided in the

notice of sale will be by publication once a week for five consecutive weeks, or for such other period as may be deemed advisable, in a newspaper of general circulation in the county in which the lands or deposits are situated, or in such other publications as the authorized officer of the Bureau of Land Management may authorize.

§ 3120.2-3 Contents of notice.

The notice published in a newspaper of general circulation in the county will contain a statement that the successful bidder will be required, prior to the issuance of a lease to pay his proportionate share of the total cost of publication of that notice which shall be that portion of the total advertising cost that the number of parcels of land awarded to him bears to the number of parcels for which high bidders are declared. The notice will also state the time and place of sale, the manner in which bids may be submitted, the description of the lands, and the terms and conditions of the sale.

§ 3120.3 Approval.

§ 3120.3-1 Award of lease.

Following receipt of the report of the auction, or the opening of the sealed bids, the authorized officer, subject to his right to reject any or all bids, will award the lease to the successful bidder. Notice of his action will be forthwith transmitted to the interested parties through the local office.

§ 3120.3-2 Compliance with award notice.

If the lease be awarded, three copies of the lease on a form approved by the Director, with rental and royalty schedules made a part thereof, will be sent to the successful bidder and he will be required not later than the 15th day after his receipt thereof, or the 30th day after the date of the sale, whichever is later to execute them, pay the balance of his bonus bid, the first year's rental and file a bond as required in subpart 3104. If the lease awarded to the successful bidder is executed by an attorney acting in behalf of the bidder, the lease must be accompanied by evidence that the bidder authorized the attorney to execute the lease.

§ 3120.4 Rejection.

§ 3120.4-1 Failure to comply with award notice.

If a bidder, after being awarded a lease, fails to execute it or otherwise comply with the applicable regulations, his deposit will be forfeited and disposed of as other receipts under this act.

§ 3120.4-2 Deposits on rejected bids.

If any bid be rejected, the deposit will be returned.

PART 3130—FRACTIONAL OR FUTURE INTEREST LEASES AND PERMITS

Subpart 3130—Fractional or Future Interest Leases and Permits

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3130.1	Competitive and noncompetitive.
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3130.4-5	Future and fractional interest offers.

§ 3130.1 Competitive and noncompetitive.

Competitive and noncompetitive oil and gas leases for lands in which the United States owns an undivided fractional oil and gas interest may be issued pursuant to the regulations in this part and subpart 3120.

§ 3130.2 Rental and royalties.

Rentals, minimum royalties and royalties payable for lands in which the United States owns an undivided fractional interest shall be in the same proportion to the rentals, minimum royalties and royalties provided in subpart 3103 as the undivided fractional interest of the United States in the oil and gas underlying the leased lands is to the full mineral interest.

§ 3130.3 Public domain.

§ 3130.3-1 Fractional interest offers.

(a) *Application.* An offer for a fractional interest noncompetitive oil and gas lease must be filed on a form approved by the Director in accordance with subpart 3111. The offer must be accompanied by a statement showing the extent of the offeror's ownership of the operating rights to the fractional mineral interest not owned by the United States in each tract covered by the offer to lease. Ordinarily, the issuance of a noncompetitive fractional interest oil and gas lease to one who, upon such issuance, would own less than 50 percent of the operating rights in any such tract, will not be regarded as in the public interest, and an offer leading to such result will be rejected.

§ 3130.4 Acquired lands.

§ 3130.4-1 General statement.

Subject to the provisions of section 3 of the Act, noncompetitive leases for future or fractional interests in lands believed, but not known to contain mineral deposits may be issued whenever the public interest will be best served thereby. Applications and requests to have leases offered competitively for lands known to contain mineral deposits should, to the extent possible, conform to and include the information required by §§ 3101.2-3, 3111.1-2 and this section. The terms and conditions of competitive leases for future or fractional interests in oil and gas deposits within the known geological structure of a producing oil or gas field, and of compensatory royalty agreements

under §3100.3-1 covering future or fractional interests, will be established on an individual case basis.

§ 3130.4-2 Consent of agency and stipulations required.

All applications and offers for permits or leases should name, if practicable, the Government agency from which consent to the issuance of a lease must be obtained, or the agency that may have title records covering the ownership of the mineral interest involved, and identify the project, if any, of which the land is a part. Leases to which such consent is necessary will not be issued until lessee executes such stipulations as may be required by the consenting agency.

§ 3130.4-3 Forms.

All oil and gas leases for existing interest on acquired lands whether the Government's interest be full or fractional shall be issued on a form approved by the Director. Leases of future interest and fractional future interest shall be issued on a form approved by the Director.

§ 3130.4-4 Fractional present interests.

An offer for a fractional present interest noncompetitive lease must be executed on a form approved by the Director and it must be accompanied by a statement showing the extent of the offeror's ownership of the operating rights to the fractional mineral interest not owned by the United States in each tract covered by the offer to lease. Ordinarily, the issuance of a lease to one who, upon such issuance, would own less than 50 percent of the operating rights in any such tract, will not be regarded as in the public interest, and an offer leading to such results will be rejected.

§ 3130.4-5 Future and future fractional interest offers.

(a) *Application.* A noncompetitive lease for a whole or fractional future interest will be issued only to an offeror who owns all or substantially all of the present operating rights to the minerals in the lands in the offer as mineral fee owner, as lessee or as an operator holding such rights. An application for a future interest lease filed less than 1 year prior to the date of the vesting in the United States of the present interest in the minerals will be rejected. Upon the vesting in the United States of the present possessory interest in the minerals, all applications for future interest leases outstanding at

that time will automatically lapse and thereafter only offers for a present interest lease will be considered. There is no required form for an application or offer to lease a whole or fractional future interest. The application or offer therefor should, however, to the extent applicable, conform to and include the information required by §§ 3101.2-3, 3111.1-2, and this section, and must be accompanied by a certified abstract of title containing record evidence of the creation of, and offeror's right to, the claimed mineral interest. If the offeror acquired the operating rights under a lease or contract, the offer shall also be accompanied by three copies of such lease or contract. In lieu of an abstract, a certificate of title may be furnished. A future interest offer may include tracts in which the United States owns a fractional present interest as well as the future interest for which a lease is sought, but it shall not include tracts where the United States owns the entire mineral interest at the time the offer is made.

(b) *Effective date of lease.* Future interest leases will become effective on the date when the United States becomes vested with the mineral rights as stated in the lease. Where the effective dates of the vesting of the Government's title to the minerals are different for different tracts, separate leases covering each of such different tracts will be issued.

(c) *Supplemental agreement.* As part of the consideration for the issuance of a future interest oil and gas lease and as supplemental thereto, the applicant shall execute and file in triplicate an agreement for approval by the Director. Such agreement will provide for the payment of annual rental in advance at the rate of 25 cents an acre for each tract until the future interest therein becomes possessory or until production is had on the lands described in the lease. After discovery, and until the lease becomes effective as to the respective tracts, the agreement will provide for the payment of a royalty on production, not less than 25 cents per acre per annum, at the particular rate that is applicable; when the interval from the date of receipt of said lease application to the date that the future interest will become possessory is:

	Percent
Not more than 5 years.....	5
More than 5 years, but not more than 10 years.....	4
More than 10 years, but not more than 15 years.....	3
More than 15 years.....	1

Such agreement will be effective as of the date the lease issues. Such agreement will govern the relationship of the applicant and the United States between its effective date and the respective dates when the lease becomes effective as to each future interest, as set forth in the lease. Where the United States owns both a fractional interest and a fractional future interest in the minerals in the same tract, the supplemental agreement will cover only the fractional future interest in that tract. The lease when issued shall cover both the present and future interests in the land and shall be effective for the present interest held by the United States as of the date for which the lease issues. In such cases and also in all cases where the United States owns only part of the future mineral interest the percentage of royalty specified in the supplemental agreement shall apply to the fractional future interest in that proportion. In lieu of a provision in the agreement for the payment of royalty by the future interest lease holder, the applicant, if not the owner of the present mineral interest, may obtain and file with the Bureau of Land Management an instrument executed in duplicate by the present mineral owner conveying or assigning to the United States the royalty interest set forth in the agreement applicable to the particular terms of years which will elapse before the United States becomes the owner of the mineral rights. If found acceptable, one original of such assignment will be returned to the applicant for recordation at his expense and for return to the Bureau of Land Management. In such case, the supplemental agreement should have endorsed on it by the applicant the statement that the assignment of such royalty interest to the United States is recognized by the holder of the agreement.

(d) *Approval.* Leases for a whole or fractional interest will be issued on a form approved by the Director. Such leases will be sent to the applicant or offeror for execution and return to the proper land office for execution by the appropriate officer. Thereafter, an executed copy will be mailed to lessee.

This Circular replaces Circulars 2334 and 2348.



United States Department of the Interior

IN REPLY REFER TO
3100
(U-942)

BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE
136 E. SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

GENERAL OIL AND GAS INFORMATION

Land in a known geologic structure is leased by competitive bidding. Other lands may be leased noncompetitively. Enclosed is a copy of the pertinent regulations.

A notice of lands subject to simultaneous filings of noncompetitive oil and gas offers is posted on the first working day of January, March, May, July, September, and November of each year. Offers to lease individual parcels can be filed until 4:30 on the fifteenth working day thereafter. Successful offerors will be determined by a random selection process. Offers to lease are made on a Simultaneous Oil and Gas Lease Application (Form 3112-1) and must be accompanied by a \$10 filing fee. The filing fee shall be paid for in U.S. currency, post office or bank money order, bank cashier's check or bank certified check, made payable to the Bureau of Land Management. Checks drawn on foreign banks are not acceptable.

If a person's lease offer is accepted as a result of the selection process, that person must make an advance rental payment of \$1 per acre or fraction of an acre, before the lease may be issued. A list of available lands can be purchased from this office for \$5 per listing, and a list of successful applicants is \$2 per listing. These lists may be ordered for any length of time but must be paid for in advance. The regulations governing the simultaneous leasing process are in 43 CFR Subpart 3112.

Lands never before leased or for which no offers were received in the simultaneous selection process may be leased noncompetitively by the regular or "over-the-counter" method in accordance with the regulations in 43 CFR Subpart 3111. These tracts may be determined by searching records in our office and lease offers may be made at any time. Official records of this office can be consulted on weekdays between 7:45 a.m. and 4:30 p.m. for information pertaining to specific areas. Names of private firms or individuals who perform this service may be obtained from the classified pages (under "Oil Land Leases") of the Salt Lake City telephone directory.

All offerors should be aware that noncompetitive oil and gas leasing is highly speculative. There is no assurance that oil and gas deposits exist. All persons dealing with the Government are presumed to have knowledge of duly promulgated rules and regulations regardless of their actual knowledge of what is contained in such regulations. Bernard B. Gencorelli, 43 IBLA 7 (1979).

Enclosures
Order Form
Applications
Copy of Regulations



Save Energy and You Serve America!



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
UTAH STATE OFFICE

IN REPLY REFER TO

3112
(U-952)

Date

Bureau of Land Management
University Club Building
136 East South Temple
Salt Lake City, Utah 84111

Re: Simultaneous Oil & Gas
Leasing System

Gentlemen:

Enclosed is my remittance of the amount of \$ _____ to cover the cost
of the Availability List (s) and/or Results List (s) as indicated below:

_____ Entire List (Utah) at \$5.00 each, beginning with the
month of _____, 19__.

_____ Results List (Utah) at \$2.00 each, beginning with the
month of _____, 19__.

Please print or type:

Name _____

Address _____

City _____

State _____

Zip _____

Signature _____

Date _____



Save Energy and You Serve America!