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CONCEPTS IN UNITIZATION OF FEDERAL GEOTHERMAL LEASES

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This paper presents some of the concepts of unitization, to help the operator understand what to expect from a Federal unit agreement. Federal units are authorized for geothermal resources under the Geothermal Steam Act of 1970^{1/}, and are provided for in detail in the regulations.^{2/} Guidelines and procedures for preparation of agreements and formation of units are available from the Office of the Area Geothermal Supervisor, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025.

Definition and Objective of Unitization

Unitization (as it relates to the exploration, extraction, and development of geothermal resources on Federal lands) can be defined as the consolidation or merger of all interests in a given geothermal reservoir or resource area in order that the area or part thereof so designated can be developed or operated as an entity without regard to separate ownerships.^{3/}

Unitization also characterizes the joint operations through a specified operator for explorations on designated parcels of land for the development of all or part of a producing reservoir. It effects a merging of all the involved geothermal leases into one contract and a vesting in the lessors of a right to participate in any royalty produced on any tract.^{4/}

Unitization is a conservation measure that benefits both the lessor and lessee, tending to promote economic development of steam which must be utilized near^{5/} the producing area, and to prevent waste of the resource.

Further, unitization permits the exploration and development of a geothermal resources area by a single operator without regard to the surface or lease boundary lines. The integration of field operations over a unit area will permit, for example, the drilling and operations of only those wells necessary to produce the required amounts of steam for electrical generation purposes, the use of field gathering steamlines, and the control of pressures and heat flows, and reinjection, as necessary, for stable field operations.

^{1/} Section 18, 30 U.S.C. § 1007

^{2/} 30 CFR, Part 271

^{3/} cf. Campbell v. Field, 229 F. 2d 197 (1956)

^{4/} cf. Ambassador Oil Corp. v. Robertson, (Tex Civ App.) 384 S.W. 2d 752

^{5/} cf. Phillips Petroleum Co. v. Peterson, (CA10 Utah), 218 F. 2d 926, Cert. den., 349 U.S. 947, 99 L. Ed 1273 (1954)

In many respects, all leases that are committed to a unit agreement are treated as a single lease.^{6/}

Advantages of Unitization

In order to fulfill its purpose, a unit agreement should be advantageous to all committed lands and interests. While the owners of the various lands and interests that may be committed to a unit agreement have many diverse purposes, there are several advantages common to both lessees and lessors:

a. Wells can be drilled on the basis of geology instead of lease lines. Normally unit areas are not subject to spacing requirements, and locations are selected according to the optimum probabilities of finding and producing the resource.

b. An area usually can be fully developed with fewer wells when development takes place under a unit instead of under a lease, particularly when an area contains small leases. Under a unit agreement small drainable leases need not be drilled in order to receive their full participation.

c. Except for drilling near the unit boundary, drainage is not a problem. Selecting drilling locations to avoid drainage is easier and frequently fewer wells are drilled.

d. The use of common facilities avoids duplication of equipment. Under a unit agreement, right-of-way permits are not required for gathering lines to cross lease boundaries.

e. The fewer wells, roads, or facilities needed not only cut the expense of producing geothermal power, but also make the geothermal industry more acceptable to the public by lessening the environmental impact of development.

f. The development and operation of an area under a unit agreement conserves the geothermal resource, prevents waste, and increases profit for both lessee and lessor. Because lessees are no longer in competition for production, the unit operator can analyze and plan for maximum production and minimum waste. Proper planning of a unit area will result in lower drilling and equipment costs because fewer wells will be drilled. The geothermal industry is still young and we know

^{6/} cf. 69 I.D. 110, M-36629 (1962); 64 I.D. 405 (1957); 59 I.D. 383 (1947)

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little about the effect of production rates on ultimate recovery. Unitization will enhance our chances to learn and apply methods to protect the reservoir and ensure maximum recovery.

g. The simplified reporting for unitized lands may not seem to be a great advantage, but all of us engaged in today's paper storm appreciate any decrease in paperwork. Any lease report may be applied to all leases in the unitized area and copies made for each lease. Common reporting is easier than preparing separate reports for each lease. The Federal unit-agreement form provides that work performed on one lease is treated as work performed on or for all leases. Federal reports presumably will meet requirements for State and local reports.

h. Preparing an environmental analysis (EA) for a unit area takes less time than preparing individual EA's for each lease. Subsequent EA's for a unit area are handled in the same way as subsequent EA's for a single lease.

i. Certain environmentally sensitive areas will not be leasable unless all operations are done under an approved unit agreement.

Certain advantages of unitization are of primary concern to the lessee:

a. Unitized acreage is not charged against the 20,480-acre limit allowed to each lessee in each State.^{7/}

b. Drilling on one committed lease amounts to drilling on all committed leases. Therefore, drilling in progress on a unit across the 10th anniversary of a Federal lease extends that lease for another 5 years.^{8/}

c. Production from any committed lands will extend the term of any lease as long as the lease remains committed to the unit agreement.

d. Reinjection problems are simplified. The unit operator can inject into any suitable well on any committed lands. Reinjection sites can be selected solely by reservoir characteristics and not because of availability.

e. The unit operator can commit larger areas as reserves to individual plants and is in an improved position to negotiate for the sale of the resource. Production from any well or group of wells is not necessarily tied to one plant but can be shifted as the need arises.

f. Unitization simplifies the sale of the resource because only one sales contract is needed instead of a contract for each lease.

g. The operator can spread costs of reducing environmental impacts. These costs could impose an excessive burden on a single lease.

Some advantages pertain primarily to lessors:

a. Unitization assures rapid, continuous exploration and development. The terms of most exploratory unit

agreements require the commencement of drilling within 6 months after the effective date of the agreement. Thereafter a well must be commenced within 6 months after the completion of the previous well until completion of a well capable of production in paying quantities.

b. Administration of leases is simplified when only one operator is involved.

c. Unitization simplifies the mitigation of environmental impacts.

Form of Unit Agreement

An exploration unit agreement is used for the exploration, development, and production of geothermal resources in unproved areas. A producing unit agreement is used for the production of the resource when only limited development remains. The form of unit agreement set forth in the regulations (modified to fit the circumstances) is recommended for use in unproved areas.^{9/} For a producing unit considerable modification is done, usually including changing the formula for allocation; these modifications do not affect the amount of Federal control. If the Federal lands involved exceed 10% of a unit area, the usual Federal form is generally required. If less than 5% of the lands are in Federal ownership, a lessee's adapted form relinquishing all Federal control over the unit area, but not control over Federal lands, will be acceptable. When Federal ownership is 5%-10%, the form of unit agreement is determined by the location of the Federal lands and other circumstances at the time of unitization.

Each agreement, upon approval of the Secretary of the Interior, is a separate contract between private parties, and its terms control the exploration, drilling, development, or utilization of geothermal resources on the lands committed to the contract.^{10/} Article 17 of the unit agreement modifies and amends the regulations and lease terms to conform to the provisions of the agreement so that the agreement governs the activities of the parties in the operations thereunder.

Any subsequent modifications require the same approvals under similar procedures of all parties executing the original agreement.

Commitment Status Necessary for Final Approval

No unit agreement can be approved by the Director of the U.S. Geological Survey unless at least one party holds a Federal lease embracing lands being committed to the agreement.^{11/} The percentage of fully committed lands necessary for approval of a unit agreement is not fixed, but the commitment status must be sufficient to give the unit operator effective control of operations within the unit area. A commitment status of at least 80% of the lands is desirable; however, lands believed to be only marginally productive have less impact than lands believed to be in a more productive part of the area. Each application is judged independently as to whether the unit operator can effectively control operations in the unit area.

^{7/} 43 CFR § 3201.2(c)
^{8/} 43 CFR § 3203.1-4(c)

^{9/} 30 CFR § 271.12
^{10/} Shannon Oil Co., 62 I.D. 252 (1955)
^{11/} 30 CFR 271.8

Size and Boundary Considerations

The acreage in a unit area varies to fit the circumstances of each case. Ideally the area should consist of one entire reservoir. This condition is not always possible, either because of lack of geologic knowledge or because the reservoir is too large for one unit area to be practical. The area should be defined on all sides by a geologic feature such as faults or contours of thermal gradient. Normally the unit boundary follows section lines, but with sufficient justification, the boundary can follow smaller legal subdivision lines. Setting unit boundaries on the basis of legal subdivisions is usually easier for producible or production units than for exploratory units.

For an exploratory unit, the unit area may consist of all those sections which are cut by an appropriate geologic feature or may consist of all those sections of which at least 50% of the section is located within the geologic feature. The unit operator may use either method to determine the boundary but must consistently use the chosen method.

More subsurface knowledge is available to the operator when forming producing or producible units. Therefore, the unit boundary can be more precisely determined for a producing or producible unit than for an exploratory unit. The boundary must not split a lot or quarter-quarter section because these are the smallest legal subdivisions recognized by the Bureau of Land Management.

A unit area may require more than one initial test well in order to adequately test the potential of the geothermal resource. If the proposed unit area exceeds 25,000 acres, Article XI of the unit agreement may require the drilling of two or more wells located in different blocks or separated by a specific distance, regardless of the results of the first well. The 25,000-acre figure is somewhat flexible and is used as a guideline only. For example, two wells might be required for an elongate or irregular unit of 20,000 acres whereas a single well might adequately test a roughly square area of 28,000 acres.

Unit Operating Agreement

The unit operating agreement is an agreement entered into by the working interest owners when more than one working interest is involved. The U.S. Geological Survey is not a party to this agreement. The Survey does require that in case of conflict the unit agreement prevail over the unit operating agreement.

Unit Well

To qualify as the initial unit well, the well must be drilled under an approved plan of operation. The well also must be drilled diligently to the target formation or depth, or must be proved producible in paying quantities, at a lesser depth, or further drilling must be declared unwarranted or impractical.

Forming the Participating Area

Article II (d) of the unit agreement defines a participating area as "That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner

described in the unit agreement assuming that all lands are committed to the unit agreement." All geologic information known on the effective date of the participating area will be used to determine the lands reasonably proven productive for inclusion in the participating area. An allocation schedule effective on a particular date will remain effective until new information is obtained. The new information usually results from the drilling of a well, but there are other sources of data. For example, production over an extended period of time may indicate that an original assumption regarding reservoir extent was incorrect. A revision of an existing participating area can eliminate lands as well as add lands. Land can never be eliminated from a participating area because of depletion of the resource, but land can be eliminated from a participating area when new information indicates that the land should never have been included.

Allocation Formula for the Exploration Unit

The formula for the allocation of production from a participating area must be agreed upon by all parties and contained in the unit agreement before the various interests can be committed. For an exploration unit, acreage is the only parameter known with certainty throughout the area. Therefore, except in rare and unusual circumstances, the allocation formula for an exploration unit is based solely on the acreage in the participating area.

Once a unit's allocation formula is established, it cannot be changed without the consent of every party to the agreement. This consent is virtually impossible to obtain because any change in allocation obviously reduces someone's allocation. Probably no party will be willing to accept less because of information not known at the time of the original agreement. When acting as a party to a unit agreement, the executive branch of the Federal government does not have the authority to waive a contractual right and to accept a lesser share than in the previous allocation formula.

Members of the oil and gas industry are well aware that prolonged legal controversy can be avoided only if the matter of allocation is permanently settled before the exploration unit is formed. Probably, the geothermal industry practice will not differ.

Allocation Formula for a Producing Unit

When an extensively studied area is unitized after production has begun, the formula for allocation of unitized substances can be based on several parameters. The actual selection of the parameters and the percentage weight given to each depend on the circumstances involved. Some common parameters that can be used under certain circumstances are acre-feet of pay, productivity of wells, past production, and pseudo-productivity factors. To be considered productive, an area must be nearly developed or completely developed. Again, we emphasize that parties to the unit agreement should realize that the agreed-upon formula is fixed and virtually impossible to change.

All adjustments of investments must be set forth in the unit operating agreement. Basing any portion of the allocation formula on adjustment of investment is unfair to the basic royalty owners.

Uncommitted Lands in a Participating Area

Only geologic and engineering information is used to determine the participating area. Whether or not all lands in the participating area are committed to the unit agreement is of no importance. Any uncommitted lands in the participating area receive zero percent allocation. If uncommitted lands in a participating area are committed later pursuant to Article XXV of the agreement, the allocation schedule is revised to reflect the new commitment status. The effective date of the revised schedule is the effective date of the subsequent joinder.

Automatic Elimination of Lands From a Unit Area

Pursuant to Article IV of the agreement, lands in the unit are automatically eliminated if they are not within a participating area on the fifth anniversary of the effective date of the initial participating area. The geothermal unit agreement allows for a time delay from the completion of a producible well until a plant is built and production commences.^{12/} This time delay is created because the drilling requirements cease upon the completion of a producible well, but the 5-year countdown before automatic elimination does not begin until production commences.

Extension of Time for Drilling

Under Article XI of the unit agreement, a unit well must be started within 6 months after the effective date of the agreement and the drilling program must be continuous thereafter with no more than a 6 months' lapse between the completion of one well and the beginning of another well unless unitized substances in paying quantities are discovered or unless an extension of time is granted by the Area Geothermal Supervisor.

An extension of time for the initial test well is granted only for very unusual and unavoidable circumstances. Therefore, a unit operator should not file an executed unit agreement with the Supervisor for final approval until the working interests are prepared to proceed with the initial test well.

After the initial well, or any subsequent well, has been drilled, an extension of time will normally be granted if the unit operator needs time to evaluate the resulting data. If one extension has been granted and another extension is requested before the drilling of another well, the second extension will require very strong justification. A third extension of time without the drilling of a well is rarely permitted.

An extension of time to meet a drilling requirement is usually from 2-6 months, depending on the circumstances. An extension of less than 2 months is rarely worthwhile for the operator, and an extension of more than 6 months requires very strong justification.

A unit operator must apply for an extension of time before the critical date under the drilling requirement. Because the unit agreement terminates automatically upon failure to fulfill the drilling requirement by the specified date, the Supervisor cannot grant an extension for an agreement which no longer exists.

^{12/} cf. Standard Oil & Gas Co., 60 I.D. 258 (1948)