

[COMMITTEE PRINT]

**ENERGY PROGRAM**

**11**

**GEOHERMAL TAX PROVISIONS  
AND  
MINIMUM TAX TREATMENT OF  
INTANGIBLE DRILLING COSTS  
FOR OIL AND GAS**

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PREPARED FOR THE  
COMMITTEE ON WAYS AND MEANS  
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BY THE STAFF OF THE  
JOINT COMMITTEE ON TAXATION



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## I. INTRODUCTION

This pamphlet is the eleventh in a series prepared for use by the Committee on Ways and Means during its consideration of the tax proposals in the Administration's energy program.

This pamphlet deals with two topics: (1) the Administration's proposal regarding tax treatment of geothermal resources, and (2) the Administration's proposal with respect to the minimum tax treatment of intangible drilling costs for oil and gas.

Each topic is divided into several subparts. A background section outlines certain facts concerning the energy situation in the area under consideration. A section on present law follows. Next there is a discussion of the Administration proposal, followed by the energy-related legislative proposals considered in the 94th Congress. Alternative proposals offered by the members of the Ways and Means Committee are set forth in the next section. Finally, there is a discussion of possible areas for committee consideration.

In the 94th Congress, the major bill considered in connection with energy tax proposals was H.R. 6860. The bill was reported by the Ways and Means Committee and was amended on the House floor. Markup sessions on H.R. 6860 were held by the Finance Committee in July 1975, and tentative decisions were made in many areas, but the bill was not reported at that time. Many of the provisions approved by the Finance Committee were added to H.R. 10612, the Tax Reform Act of 1976, as Title XX, but all of the energy provisions were deleted in conference. In August 1976, the Finance Committee reported the provisions of Title XX (as passed previously by the Senate in H.R. 10612) as an amended version of H.R. 6860. This bill was never taken up on the Senate floor and the provisions expired with the adjournment of the 94th Congress.

Unless otherwise indicated, the provisions discussed below with respect to action in the 94th Congress reflect H.R. 6860 as approved by the Ways and Means Committee. Also, unless otherwise specifically indicated, references to the Finance Committee bill refer to Title XX of the Tax Reform Bill (as passed the Senate) and the Finance Committee reported version of H.R. 6860. Floor amendments are specifically noted.



## II. GEOTHERMAL TAX PROVISIONS

### A. Background

Geothermal energy is the natural heat contained in the crust of the earth. While ubiquitous throughout the crust, only in a few geological formations is it sufficiently concentrated and near to the surface to make its recovery presently economically viable. The various classes of geothermal resources in the order of their relative ease of recovery and economic utilization are:

*Vapor-dominated.*—Vapor-dominated geothermal resources contain saturated or superheated steam. To date, only six major vapor-dominated reservoirs have been located in the world. In the United States, a field at The Geysers, California, is the only commercially producing geothermal field.

*Liquid-dominated.*—Liquid-dominated geothermal resources are those that have naturally occurring liquid water or a naturally occurring two-phase mixture of liquid water and steam at an elevated temperature and pressure. The water contains solids dissolved from the rocks. Most hydrothermal sites throughout the world are of the liquid-dominated type, perhaps 20 times more numerous than vapor-dominated sites. Potential resources are located throughout the western United States.

*Geopressured.*—Geopressured geothermal resources have extensive deep (1 to 4 miles) zones of pressurized water with widely varying salinity in which the pressure exceeds the corresponding hydrostatic pressure of the fluid at that depth. This overpressure is caused by the weight of the geological formation (overlying the trapped fluid), which is greater than the weight of an equal volume of fluids. Geopressured systems contain water at temperatures measured at approximately 60 to 180° C. and pressures from about 3,000 to 14,000 psi together with potentially exploitable dissolved methane. Areas for potential development are located in the Gulf Coast states.

*Hot dry rock.*—Hot dry rock geological formations are those having an abnormally high heat content, but not containing sufficient water or sufficient rock permeability to permit withdrawal of hot water as a heat transport medium.

*Magma.*—Magma formations comprise molten rocks at approximately 500 to 1500° C. Very deep drilling, 20 miles or more, will be required to reach magma in most regions of the United States. Magma is reachable at drillable depths in some active volcanic areas, such as in Hawaii.

The U.S. Geological Survey, to implement the Geothermal Steam Act of 1970, has designated about 1.8 million acres on the western United States as being "known geothermal resources areas" and an additional 96 million acres as having prospective value for geothermal resources.

The high-temperature hydrothermal convection systems (above 150° C.) with a potential for generating electricity are predominantly in the Western United States, including Alaska and Hawaii. The identified systems of this type are estimated by the Survey to have energy reserves of 3,500 megawatt-centuries (11,550 megawatts for 30 years) of electricity, producible at 1975 prices and technology, and about an equal amount of energy resources recoverable at costs between one and two times the 1975 price of competitive energy. Undiscovered high-temperature hydrothermal resources were predicted to be about five times greater than identified resources.

The intermediate-temperature hydrothermal convection systems (90° C.) have much potential for applying direct thermal energy for home and industrial heating, thereby releasing oil and gas for other uses. If this heat were to be supplied by electrical energy, the Survey estimates that the equivalent of about 27,500 megawatt-centuries (90,750 megawatts for 30 years) would be available.

The geopressed fluids of the Gulf Coast have a very large energy potential. The energy deliverable at the wellhead in the onshore part of the region that has been assessed by the Geological Survey was estimated to range from 9,000 to 35,000 megawatt-centuries (30,000 to 115,000 megawatts for 30 years). This range excludes the energy equivalent of the recoverable methane, which is thought to be at least equal in value. Other geopressed sections of the Gulf Coast and other regions of the country probably have at least three times more potential energy than the evaluated part, but the recoverable fraction may be considerably less because of a lower average porosity and permeability. Much of the geopressed resource was considered by the Survey to be recoverable at from one to two times 1975 prices.

Geothermal energy has been used for the generation of electricity in Italy since 1904 and has helped satisfy the space heating requirements in Reykjavik, Iceland. Other countries actively using or building geothermal plants for electric and/or nonelectric applications include Japan, New Zealand, Mexico, the Philippines, France, and the USSR. Other relatively small-scale applications of geothermal energy for space heating are widespread throughout the western United States. For example, at Klamath Falls, Oregon, the Oregon Institute of Technology and many private homes are heated by water from geothermal wells. Plans are underway to use geothermal energy for heating one of the capitol buildings in Boise, Idaho.

Presently, only the Pacific Gas and Electric Company has built a successful geothermal generating complex in the United States. It is located at The Geysers dry steam field about 80 miles north of San Francisco and has a production capacity of over 500 megawatts. The complex was developed and is operated with nongovernmental funds. The steam price is calculated from a base price which is adjusted by the cost of other fuels used by the utility in their other thermal plants.

Small geothermal plants can be economically constructed. The small size of the geothermal plant allows it a distinct advantage in areas that cannot finance the large investment required for the 1,000 megawatt installation usually needed for efficient plants using other fuels. However, the geothermal electrical plants must be located near the energy source as must any other facility that directly uses geo-

thermal heat. Any geothermal resources used for new generating plants would largely replace plants whose fuel would otherwise be Western coal.

### B. Present Law

Present law is unsettled as to whether a percentage depletion deduction or the intangible drilling cost deduction is allowable for the production of geothermal steam and associated geothermal resources. These questions were answered affirmatively in the case of steam in *Reich v. Commissioner*, 454 F. 2d 1157 (C.A. 1972).<sup>1</sup> However, the Internal Revenue Service is apparently not following that decision in cases arising outside of the Ninth Circuit.

The Tax Reduction Act of 1975 (94th Congress) generally eliminated the depletion allowance for oil and gas, except for a continued allowance for small producers. However, the question of whether geothermal resources qualify for percentage depletion was not affected by that Act. According to the Conference Report (H.R. Rep. No. 94-120, p. 67):

For geothermal steam, present law is unaffected, so that if steam is ultimately held by the courts to be a gas entitled to a 22-percent rate of depletion, this treatment will be continued.

As a result, the 22-percent depletion deduction allowable to gas wells immediately prior to the 1975 Tax Reduction Act is still available for geothermal energy if courts should decide, as did the *Reich* court, that a geothermal well is a gas well, and that the other requirements for depletion are met.

Under current law it is also possible that to the extent the costs of geothermal energy development (including intangible drilling and development costs) result in new processes or technology, they would be considered as research and experimental expenditures subject to the election to be currently deductible or to be amortized over a 60-month period. The Internal Revenue Service has ruled in Revenue Ruling 74-67, 1974-1 C.B. 63, that certain costs of developing a method for hydraulic mining of hard minerals, including a portion of the costs of drilling wells, are deductible as research and experimental expenditures. However, under present law the costs of ascertaining the existence, location, extent, or quality of any deposit of oil, gas, or other mineral are not deductible as research and experimental expenditures and must be capitalized.

The Geothermal Energy Research, Development, and Demonstration Act of 1974 authorizes a program of research, development, and loan guaranty for geothermal energy development. This program is managed by ERDA in coordination with other Federal agencies.

<sup>1</sup> In the *Reich* case, the Tax Court had held that the product of the taxpayers' geothermal steam wells was a gas, and that the taxpayers as a result were entitled to expense currently their intangible drilling costs (sec. 263(c) of the Code). The court held further that the plaintiffs were entitled to the then 27½ percent depletion deduction allowance for their product because (1) their product was steam, not inexhaustible earth heat, (2) the particular geothermal wells in question were exhaustible, (3) steam is a gas, and (4) the exclusion from the right to depletion of "water" in section 613(b)(7) of the code does not exclude steam from the depletion allowance.

### **C. Administration Proposal**

Intangible drilling cost deductions would be allowed in the case of wells drilled for geothermal steam and geothermal resources to the same extent and in the same manner as such expenses are deductible in the case of oil and gas wells. The deduction would be allowed for wells commenced after April 20, 1977.

Gain on the disposition of geothermal properties would be recaptured (that is, treated as ordinary income rather than capital gain) to the extent that such gain does not exceed the amount by which the intangible drilling cost deductions exceed the amount of such deductions which would have been allowable had the costs been capitalized and amortized over 120 months.

The excess of intangible drilling cost deductions for geothermal wells over the income from interests in geothermal wells would be included in the minimum tax base.

#### **Revenue effect**

The Administration estimates that the revenue loss from permitting the expensing of intangible drilling costs for geothermal discovery and development will be \$5 million in fiscal 1978, \$10 million in fiscal 1979 and will rise to a level of \$54 million by fiscal 1985.

#### **Energy savings**

The Administration estimates that the additional energy that this proposal would make available would reduce demand for oil and coal by .03 quads in 1980, by .11 quads in 1985 and by .55 quads in 1990. Of this reduced demand, over 80 percent would consist of reduced coal demand.

### **D. Action in the 94th Congress**

The Ways and Means Committee bill contained no provision concerning the intangible drilling cost or depletion deductions for geothermal steam production.

The Finance Committee provision would have allowed current expensing of intangible drilling costs for wells drilled for geothermal steam and associated geothermal resources. The bill also would have provided a deduction (in the nature of, but in lieu of, a depletion deduction) for 22 percent of the gross income from the property for the production of geothermal steam and associated geothermal resources, but not to exceed 50 percent of taxable income from this property. This deduction would have been considered a tax preference for purposes of the minimum tax.

### **E. Alternative Proposals**

#### **Members' proposals**

##### *Mr. Jones*

In addition to the deduction for intangible drilling costs, a 22-percent depletion deduction would be allowed for all geothermal income.

*F. Areas For Committee Consideration*

One argument for the Administration proposal is that competitors of geothermal energy (principally coal, and to some extent oil) receive tax advantages and therefore geothermal energy resources should be placed on a competitive footing.

On the other hand, it should be noted that there is a Federal program under the Geothermal Energy Research, Development, and Demonstration Act of 1974 supporting research and development in this area.

Also, it should be noted that over 80 percent of the possible energy savings from geothermal energy development would consist of reduced coal demand, and coal is not a scarce resource.

Moreover, while there has been relatively little experience with the development of geothermal energy in the United States (only one field has been developed thus far), our experience suggests that the situation with respect to drilling for geothermal energy may be somewhat different from the case of conventional oil and gas wells. Some have argued that once a geothermal energy field has been located, the risk of an unsuccessful well (or dry hole) is relatively slight. It also appears that geothermal energy fields producing steam, once located, are highly profitable. This suggests that tax incentives for the development of geothermal fields may be less important than in the case of conventional oil and gas wells. Dry holes incurred in connection with the exploratory phase of geothermal energy are deductible under present law at the time the well is abandoned.



### III. MINIMUM TAX TREATMENT OF INTANGIBLE DRILLING COSTS FOR OIL AND GAS

#### *A. Background*

Between 1960 and 1973, the combination of gradually increasing difficulty of finding new oil and a decline in the price of oil relative to other goods and services led to a sharp decline in drilling activity. The number of wells drilled declined from 44,000 in 1960 to 26,000 in 1973, and the footage drilled fell from 186 million feet to 137 million feet.

Since 1973, however, there has been a significant increase in drilling activity because of the sharp increase in oil prices. Footage drilled increased by 34 percent between 1972 and 1976, and the number of wells drilled rose by 51 percent.

#### *B. Present Law*

Under present law, the operator of an oil or gas well may elect to deduct the intangible drilling and development costs as an expense rather than capitalize the costs and recover them through depletion or depreciation deductions. In the 94th Congress, under the Tax Reform Act of 1976, the deduction for intangible drilling costs in excess of the amortization which would have been allowed on the basis of a 10-year life or cost depletion is treated as a tax preference for purposes of the minimum tax. Generally, intangible drilling and development costs are defined, in the case of oil and gas wells, as those expenditures made by the owner of the operating interest for wages, fuel, repairs, hauling, supplies, etc., incurred in preparing a drill site, drilling and cleaning a well, and constructing assets which are necessary in drilling the well and preparing it for production (such as derricks, pipelines, and tanks).

In the Tax Reduction and Simplification Act of 1977, the Congress provided that for taxable years beginning in 1977 only those intangible drilling and development costs (over the amount amortizable) in excess of oil and gas production income would constitute a tax preference. However, this rule would not apply for future years unless there is further Congressional action.

The Tax Reduction Act of 1975 generally eliminated percentage depletion for oil and gas wells. However, percentage depletion was retained for the independent producer to the extent that his average daily production does not exceed a specified exemption. The exemption for oil was 2,000 barrels a day in 1975 and is being reduced 200 barrels a year for 5 years from 1976 through 1980 when the permanent exemption will be 1,000 barrels a day. Gas wells are allowed an equivalent exemption. In addition, the depletion rate for the independent producer will remain at 22 percent through 1980, after which it will be phased down to a permanent level of 15 percent in 1984.

### **C. Administration Proposal**

Intangible drilling cost deductions for oil and gas wells would be included in the minimum tax base of individuals only to the extent that the intangible drilling and development costs (over the amount amortizable) exceed the taxpayer's income from oil and gas properties. If the committee should adopt the Administration proposal allowing the deduction of intangible drilling and development costs for geothermal wells, these deductions would constitute an item of tax preference to the extent that the deductions (over the amount amortizable on the basis of a 10-year life) exceed the individual's income from geothermal energy sources.

#### **Revenue effect**

The Administration estimates that the cost of limiting the minimum tax on intangible drilling costs to the amount in excess of net related income will be \$32 million in fiscal 1979, \$37 million in fiscal 1980 and will rise to \$74 million in 1985. There is no effect in fiscal 1978 because the Tax Reduction and Simplification Act of 1977 has already made this change effective in 1977.

#### **Energy savings**

The Administration has no estimate of the increase in the supply of oil and gas which would result from the adoption of this proposal.

### **D. Alternative Proposals**

#### **Members' proposals**

##### *Mr. Stark*

The percentage depletion deduction would be repealed for independent oil and gas producers and for recipients of oil and gas royalties in excess of \$10,000 per year (other than small farmers and land owners).

The minimum tax preference on intangible drilling costs would be extended to corporations.

##### *Mr. Jones*

Expenses for geological and geophysical expenditures incurred in oil and gas exploration could be deducted currently rather than over the life of any oil reserves discovered.

##### *Mr. Lederer*

The deduction for intangible drilling costs would be eliminated for developmental oil and gas wells (i.e., wells other than exploratory wells).

The percentage depletion deduction would not be available for income from royalties in excess of \$10,000 per year.

##### *Mr. Archer*

A 12½-percent tax credit would be provided for all expenditures paid in exploring for new oil and gas deposits and for expenditures paid to develop oil and gas deposits ascertained after the date of enactment.

Alternatively, for a 2-year period, a 10-percent tax credit would be provided for intangible drilling costs on exploratory wells, geological and geophysical costs and secondary and tertiary recovery costs.

Controlled foreign corporations would be allowed to invest in oil drilling operations on the continental shelf of the United States without the amount invested considered to be an "investment in U.S. property" and thus subject to dividend treatment to the U.S. parent corporation. The proposal would apply retroactively to years after 1969 on an elective basis.

*E. Areas For Committee Consideration*

It is argued by some that the action in the last Congress making intangible drilling costs part of the minimum tax based unfairly disadvantaged independent oil producers, as opposed to corporations, which are not subject to a minimum tax for intangibles. On the other hand, it may be pointed out that most independent oil producers qualify for percentage depletion, whereas percentage depletion is generally not available for large corporations.

In addition, it should be pointed out that the higher prices for oil in recent years have resulted in an increase in drilling activity, thus calling into question whether further incentives are needed for oil well drilling.

The decision which the Congress made in the Tax Reduction and Simplification Act of 1977 was to provide that intangibles would be a preference item only to the extent that this deduction exceeded net related income from oil and natural gas. This treatment was allowed only for 1977, however.

One approach which the committee might wish to consider would be to postpone a decision in this area pending a study of the effect of tax policy and higher oil prices on drilling activity during 1977.

Another approach might be to extend the 1977 tax treatment for an additional year, so that there would be a chance to reevaluate this area in the next Congress after statistics become available on drilling activity in 1977 and 1978.

