

## Depth Bracket Allowable Determination and Proration of Oil Production in Louisiana

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Of course, it is also possible that insertion of clauses of this type may not be satisfactory to lessors in many instances. Lessors' attorneys may find the prospect of interest as the sole compensation for failure to commence or continue payment of production royalties unacceptable. Therefore, the industry may be forced to accept some penalty more stringent than mere interest.

A third possible course is for the legislature to promulgate statutes governing the problem. In this writer's opinion, if a delay is unreasonable under the circumstances, the best solution would be to provide special damages (*e.g.*, treble damages) for the delay. The guiding principle should be to encourage greater alertness on the part of the lessee to make royalty payments promptly, yet at the same time eliminate the severity of cancellation as the appropriate remedy. Although such legislation would definitely appear to be remedial in nature, there is always the possibility that it would be held inapplicable to previously executed contracts. Therefore, the problem may not die with enactment of legislation.

*John J. Graham*

## DEPTH BRACKET ALLOWABLE DETERMINATION AND PRORATION OF OIL PRODUCTION IN LOUISIANA\*

### *Proration of Production*

The basic purpose of the Louisiana Conservation Act is to prevent both above and below ground waste of valuable mineral resources. The act recognizes that waste below ground can occur as the result of insufficient reservoir control which permits dissipation of the natural forces that aid in lifting oil and gas to the surface or withdrawal of petroleum unevenly from the reservoir formation, thus seriously reducing the amount recoverable from a given pool.<sup>1</sup> Above ground waste is defined as "inefficient storing of oil and the producing of oil or gas from

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1. LA. R.S. 30:3(1)(a) (1950).

the pool in excess of transportation or marketing facilities or of reasonable market demands.”<sup>2</sup>

The Conservation Act provides various means by which reservoir control is achieved. These include control of well density through spacing regulations,<sup>3</sup> formation of drilling and production units,<sup>4</sup> poolwide or fieldwide unitization,<sup>5</sup> control of gas-oil<sup>6</sup> and water-oil<sup>7</sup> ratios, and proration of production within each reservoir so as to assure even withdrawal of petroleum and efficient utilization of reservoir energy.<sup>8</sup>

Control of above ground, or economic, waste is achieved by limiting production in the state to the current market demand and storage facilities. To this end, the Commissioner of Conservation is granted authority to limit production.<sup>9</sup>

As market demand and storage facilities in the state may require that statewide production allowables be fixed at a total level less than would be produced if all wells in the state were allowed to operate at their maximum efficient rates, engineering efficiency must be subordinated to market demand. Therefore, production allowables in Louisiana are fixed primarily on the basis of market demand. A total market demand figure is computed which serves as a basis for prorating production among individual wells. Engineering considerations then become paramount when individual well allowables are set so as to achieve the most efficient reservoir control possible within the limitations imposed by the statewide market demand.

### *The Depth Bracket System*

The high cost of petroleum exploration and production is well known. Obviously costs increase with the depth of the well. To encourage exploration at greater depths and to offset the greater cost of deep drilling, the Commissioner of Conservation has adopted what is known as the “depth bracket system” for fixing oil allowables. Essentially this system provides incentive for deep exploration by gradually increasing allowables

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2. *Id.* 30:3(1)(b).

3. *Id.* 30:4C(13); Statewide Orders #29-E and 29-H.

4. *Id.* 30:9; Statewide Order #29-H.

5. *Id.* 30:5C.

6. *Id.* 30:4C(5); Statewide Order #45-I.

7. *Id.* 30:4C(4).

8. *Id.* 30:11; Statewide Orders #29-F and 29-H.

9. *Id.* 30:4C(11).

in direct ratio to increasing depths. (The possibility of being able to produce more at greater depths, permitting recovery of drilling costs in a proportionately shorter period of time, encourages exploration at deeper levels.)

The precise origin of the depth bracket allowable is not readily discoverable. The first general depth bracket allowable schedule was published in September 1939. The daily amount of oil production allowed from each depth interval under that schedule was apparently the end product of a trial and error process. The engineer for the department conferred at length with members of the industry in Louisiana concerning factors to be considered in fixing the depth bracket schedule. These conferences were informal and not the subject of any official hearing. For this reason, the exact considerations and method utilized cannot now be ascertained. It is known, however, that among the primary considerations for the schedule for each bracket were the cost of drilling to the various intervals and the value of the oil produced from those intervals. A statewide average of the drilling costs of all wells in each of the proposed intervals was made. An arbitrary amount of production was then assigned to wells in each interval which aimed at giving the operator an adequate return on his investment while preventing over-production which might cause a glut in the market or above ground waste. In September 1939, an order was published setting forth the depth bracket allowable schedule.<sup>10</sup>

#### *Procedures for Fixing the Depth Bracket Allowable Schedule*

Statewide Order #29-F sets forth the methods for determining gas allowables, but neither statute nor any order of the commissioner specifies the methods for fixing oil allowables. The procedures utilized to fix oil allowables are, however, closely similar to those used for gas. This discussion is concerned principally with the fixing of oil allowables, but differences between the methods and procedures applied to oil and gas will be noted.

For the past few years the Department of Conservation has fixed allowables on a bi-monthly basis. The procedure currently employed is commenced by issuance of a notice to each company purchasing production in Louisiana that a hearing has been

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10. See Exhibit A. Compare current schedule for March-April 1964 (Exhibit B).

scheduled for determination of the depth bracket allowable for the next two-month period. Companies are instructed to file their nominations — estimated quantities of oil which each purchaser expects or intends to purchase during the ensuing two-month period — with the conservation office in Baton Rouge within a period of ten days or two weeks, whichever is specified. As the commissioner is required by statute to issue any order fixing allowables on or before the 23d day of the month preceding the month for which it will be effective,<sup>11</sup> the process of proration must begin early in the second month of each period.

Nominations are compiled into a table showing each purchaser-nominator and the amount of his nomination, both for crude oil and condensate production.<sup>12</sup> The table also contains columns showing crude oil nominations for the current allowable period, the calculated increase or decrease of the new nominations, and the actual crude oil purchased by each nominator for the last month of the preceding allowable period. The table further gives totals for each column, a summary of the allowables set for the current period, total nominations for the month for which the actual purchases are shown, and the purchases made for which there were no crude nominations.

At the hearing called by the commissioner, purchasers are given an opportunity to express their views concerning current market demand, any fluctuations anticipated, the status of available supply, and, most important, the bases upon which their nominations are founded. In practice, the basis of each nomination is usually some percentage of the current depth bracket allowable, whether greater or less, adjusted by circumstances peculiar to each purchaser. For example, if a purchaser knows that his vendor is planning an extensive workover program resulting in production from a greater number of wells, he will make this known to the commissioner. The staff of the Department of Conservation must then compensate for this factor if it is substantial. A transcript of the hearing affords the commissioner and his staff ready reference to the views expressed by purchasers.

The staff then computes the new depth bracket allowable. In drawing the new allowable schedule consideration is given

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11. LA. R.S. 30:7A (1950).

12. See Exhibit C.

to past nominations and purchases, current national oil stocks as published weekly by the Bureau of Mines,<sup>13</sup> and the nominations by purchasers for the ensuing period. Consideration is also given to total production in the state, total productive capacity as revealed by producers' reports submitted bi-monthly on a per-well basis,<sup>14</sup> the number of wells currently producing from each depth bracket and the percentage of total production which each group comprises, and the total estimated production for the ensuing period.

Consideration of future production is essential because appreciable increases in production during the allowable period would seriously affect the market supply. If the allowable were set without consideration of future production an oversupply could result, and waste, as defined by the Conservation Act,<sup>15</sup> would ensue. Therefore, the staff relies on several factors to reach its final determination. It qualifies the nominations by a factor including new production from an estimated number of new-well completions and an estimated number of workovers placing nonproductive wells back on production. This is in turn offset by a factor constituting loss of production resulting from depletion of reservoirs, mechanical difficulties causing producing wells to be shut in, and underproduction from wells unable to meet their assigned allowable. These factors are derived from production histories and practical experience of the staff. The current net figure used by the department is approximately 15,000 barrels increase per month.

Obviously, recalculation of the entire depth bracket table for each allowable period would be a monumental task. Therefore, for convenience the commissioner has adopted a standard upon which each new allowable is based. This standard is the schedule for the month of March 1953. The allowables for that month were the highest in Louisiana to date under the present system of prorating production. This base is considered as 100%. A table has been computed setting forth allowables representing percentages of the March 1953 schedule from 25 to 50%. The 100% schedule and the percentile figures are computed in accordance with a formula set forth in Order #29-H.<sup>16</sup>

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13. U.S. BUREAU OF MINES, *A.P.I. Advanced News Bulletin for Immediate Release*.

14. Department of Conservation Form DM-1-R.

15. LA. R.S. 30:3(1)(b) (1950).

16. See Exhibit D. The formula is based on the allocation of forty acres to each well. Similarly, for all wells drilled since May 24, 1960, which pierced

The data compiled by the staff thus include all factors which can form a basis for predicting market demand for the coming bi-monthly period. The compiled information also furnishes a basis for accommodating natural growth in the industry. As the total number of wells in each depth bracket is known, the total production for any given percent schedule of the March 1953 norm can easily be calculated. The schedule whose total production most nearly equals the estimated market demand, including the growth factor, is designated as the allowable schedule for the succeeding two months.

#### *Computation of Well Allowables*

Within a few days after promulgation of the depth bracket schedule, all district managers are called to meet with the commissioner and his staff to adjust their tentative per-well daily allowables to the new depth bracket schedule. Each district manager has the responsibility for setting the individual daily allowables for each producing well in his district. It is at this point that engineering efficiency is taken into consideration by reference to current reports showing the latest test data on all producing, shut-in, dead or temporarily abandoned oil wells.<sup>17</sup> The allowable for each well is then set in light of both its productive capacity and the new depth bracket schedule. Finally, the individual allowables are published and circulated to producers.

In assigning individual well allowables, variation from the depth bracket schedule is permitted under the provisions of Statewide Order #29-H. Based on an average acreage assignment of forty productive acres to oil wells, the order permits proportionate increase or decrease in the depth bracket allowables according to well spacing. Within specified limits, the greater the acreage served by a well, the greater the allowable. This device not only encourages deep exploration by giving larger allowables to wells serving greater acreage, it also discourages the drilling of unnecessary wells at all depths.

#### *Gas Allowables*

The procedure for determining gas allowables on a quarterly

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previously unpenetrated reservoirs, a proration formula based on eighty-acre allocation is applicable and a 100 o/o schedule has been compiled for wells within this classification and is included on the table.

17. Department of Conservation Form DM-1-R.

basis detailed in Statewide Order #29-F are closely similar to those employed for oil except that there is no depth bracket allowable. The total indicated quarterly demand, expressed in daily demand by gas purchasers' nominations, is apportioned directly on a pool basis and allocated to the wells in the pool proportionately. The pool allocations are made either in accordance with a formula adopted for each pool by special order of the commissioner, or in absence of special order, in proportion to productive area assigned to each well.

### *Conclusion*

There is currently some discussion as to the wisdom of allowing market demand to control production allowables.<sup>18</sup> It is argued that a more rational basis for allowable control would be to allow each well to produce at its maximum efficient rate (M.E.R.), qualifying such rate by market conditions if necessary.<sup>19</sup> However, in Louisiana and other large producing states the result by either method would be roughly the same. If market demand is to exert any influence, as it must in order to prevent market instability and economic waste of oil, it does not seem to make much difference whether the starting point is a total market demand figure or a total efficient rate of production figure; the result is the same, for the engineering factors, represented by the maximum efficient rate computation, must inevitably be modified by the market demand figure.

In states where the available market is able to absorb all production obtainable, the maximum efficient rate method has been applied with great success.<sup>20</sup> Certainly it is theoretically superior from the engineering standpoint. It assures controlled depletion of reservoirs to obtain maximum recovery by precluding unnecessary dissipation of reservoir energy, establishing production rates which avoid untimely or uneven water encroachment or prevent formation damage, and controlling withdrawal in a manner assuring efficient maintenance of producing facilities.

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18. Lewis, *Market Demand and Oil Allocation Formulae*, in AMERICAN BAR ASSOCIATION, SECTION OF MINERAL AND NATURAL RESOURCES LAW 190 (1960 Proceedings); Marchi, *Conservation in Montana*, 17 MONT. L. REV. 100 (1955); O'Connor, *The Role of Market Demand in the Domestic Oil Industry*, 12 ARK. L. REV. 342, 345, 350 (1958); Thompson, *The Texas Market Demand Statute on Oil and Gas and Its Application*, 39 TEXAS L. REV. 139 (1960).

19. See note 18 *supra*.

20. O'Connor, *The Role of Market Demand in the Domestic Oil Industry*, 12 ARK. L. REV. 342 (1958).



## SCHEDULE A

GENERAL DEPTH BRACKET ALLOWABLE SCHEDULES  
LOUISIANA

DEPTH	SEPTEMBER
0 - 2000	150
2000 - 5000	200
5000 - 7500	250
7000 - 10000	300
10+	350

## SCHEDULE B

## STATE OF LOUISIANA

## DEPARTMENT OF CONSERVATION

February 24, 1964

## OIL

## PRODUCTION AND PRORATION ORDER No. 2

(Effective March &amp; April, 1964)

Under authority vested in the Commissioner of Conservation by laws of the State of Louisiana, for the purpose of adjusting Louisiana's oil production and proration quotas and the conservation of the State's oil and gas resources and the prevention of waste, the allocation of oil production in the State of Louisiana, for the months of March and April, 1964, is hereby fixed in accordance with the following:

Statewide Maximum Allowable by Depths for March and April, 1964  
(Not to Include Areas Covered by Department of Conservation Order 151)

DEPTHS	ONSHORE ALLOWABLES	DEPTHS	ONSHORE ALLOWABLES
0 - 2000	26	11 - 12000	115
2 - 3000	31	12 - 13000	126
3 - 4000	38	13 - 14000	142
4 - 5000	44	14 - 15000	159
5 - 6000	52	15 - 16000	184
6 - 7000	61	16 - 17000	213
7 - 8000	71	17 - 18000	240
8 - 9000	79	18 - 19000	269
9 - 10000	90	19 - 20000	306
10 - 11000	102	20 - 21000	349

**SCHEDULE C**  
**STATE OF LOUISIANA DEPARTMENT OF CONSERVATION**  
**SUMMARY OF CRUDE OIL PURCHASES AND NOMINATIONS**  
**1964**

COMPANY NAME	MARCH & APRIL	JAN. & FEB.	INCREASE/DECREASE	DEC. 1963
	CRUDE NOMINATIONS	CRUDE NOMINATIONS	OVER PREVIOUS PERIOD	CRUDE PURCHASES
Abney Oil Company.....	1,685	1,645	40	1,685
Ashland Oil & Refining Company.....	32,996	32,982	14	30,914
The Atlantic Refining Company.....	2,200	1,435	765	3,859
The California Company.....	122,000	122,400	(400)	94,916
Calumet Refining Company.....	1,905	1,905	.....	1,718
Cities Service Oil Company.....	30,250	30,449	(199)	35,332
Continental Oil Company.....	35,260	33,650	1,610	36,163
Cotton Valley Solvents Company.....	250	175	75	191
East End Oil Company.....	560	620	(60)	372
Egan Oil Purchasing Company.....	800	825	(25)	774
Falco, Inc. ....	1,712	1,711	1	1,785
Glassell & Glassell.....	200	200	.....	200
Gulf Oil Corporation.....	161,000	160,300	700	149,246
Hearin Tank Lines, Inc.....	100	90	10	99
Wm. G. Helis, Estate.....	800	800	.....	554
Humble Oil & Refining Company.....	210,000	210,000	.....	(Nov.) 227,369
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Texaco, Inc. ....	258,000	245,000	13,000	238,889
Tidewater Oil Company.....	12,500	12,500	.....	11,161
Union Oil Company of California.....	6,420	4,795	1,625	4,172
Union Producing Company.....	4,129	3,634	495	3,623
Union Texas Petroleum Corp.....	7,114	7,049	65	6,746
U. S. Oil of Louisiana.....	12,998	12,375	623	12,375
TOTALS .....	1,256,572	1,227,371	29,201	1,200,532
Total January and February Crude Oil Allowables.....	.....	1,353,449	.....	.....
Total December 1963 Crude Oil Nominations.....	.....	.....	.....	1,195,823
Net December 1963 Crude Oil Purchases For Which No Company Nominated.....	.....	.....	.....	4,709

## SCHEDULE D

## ONSHORE

	80 Ac. 29-H 100%	100%	25%	26%	✓	50%
0 - 2000	120	80	20	21		40
2 - 3000	143	95	24	25		48
3 - 4000	171	114	29	30		57
4 - 5000	201	134	34	35		67
5 - 6000	239	159	40	41		80
6 - 7000	279	186	47	48		93
7 - 8000	321	214	54	56		107
8 - 9000	359	239	60	62		120
9 - 10000	411	274	69	71		137
10 - 11000	465	310	78	81		155
11 - 12000	521	347	87	90		174
12 - 13000	575	383	96	100		192
13 - 14000	647	431	108	112		216
14 - 15000	725	483	121	126		242
15 - 16000	836	557	139	145		279
16 - 17000	968	645	161	168		323
17 - 18000	1,089	726	182	189		363
18 - 19000	1,224	816	204	212		408
19 - 20000	1,391	927	232	241		464
20 - 21000	1,586	1,057	264	275		529

It must be conceded that when the process of fixing state-wide allowables is begun by calculation of the market demand figure, engineering factors suffer. However, any consideration of market demand means that engineering considerations must suffer. Commencing with consideration of market demand does not require that engineering considerations suffer more than necessary. The procedures currently used in Louisiana demonstrate that upon determination of market demand engineering factors occupy their proper place. The problem is one of balancing two elements counterpoised against each other. Weighting one side of the scales before another would not assure a more perfect balance.

*Allen L. Smith, Jr.\**

\*This Comment is a byproduct of research by the writer in his capacity as research assistant to Associate Professor George W. Hardy, III, LSU Law School.