REPORT OF THE

NATIONAL PETROLEUM COUNCIL'S

COMMITTEE ON PETROLEUM PRODUCTION AND CRUDE AVAILABILITY

JULY 28, 1948

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Since this Committee submitted its report, dated July 10, 1947, to the National Petroleum Council, the production of crude petroleum in the United States rose from a daily average of 5,106,385 in June 1947, as reported by the Committee, to 5,500,000 barrels daily in the second quarter of 1948, according to the Bureau of Mines. Approximately four hundred thousand barrels of additional production was realized daily in the year ended June 30, 1948, an increase of eight percent in that period.

Based upon the estimates of the five district subcommittees whose reports are made a part hereof, it is believed that crude availability in this country, in the second quarter of 1949 will attain an average in excess of 5,700,000 barrels daily.

The upward trend of domestic crude production since 1934 has averaged nearly six percent per year. If that trend continues, daily crude availability may exceed 5,800,000 barrels by the middle of 1949.

Current crude petroleum production is over 1,650,000 barrels daily in excess of the daily average in 1941 - the year just prior to the entry of the United States into the last war. This is an increase of 43 percent in seven years. Second quarter 1948 daily crude averaged more than 600,000 barrels daily above the war-time peak of July 1945.

Domestic crude petroleum availability as of June 10, 1947 as estimated by this Committee in its previous report, actual production for the first half of 1948 and the Committee's estimate of crude availability in barrels per day for the next twelve months are as follows:

Production and Availability of Crude Petroleum In the United States

Period		Barrels Daily
June 10, 1947 (availability)	1/	5,271,421
First Quarter - 1948 (actual)	2/	5,347,000
Second Quarter- 1948 (preliminary)	2/	5,500,000
Third Quarter - 1948 (availability)	3/	5,567,100
Fourth Quarter- 1948 (availability)	3/	5,618,407
First Quarter - 1949 (availability)	3/	5,653,202
Second Quarter- 1949 (availability)	3/	5,706,124

1/ Committee estimate from previous report
2/ Bureau of Mines
3/ Committee estimate

In this Committee's previous report, it was pointed out that productive capacity in the petroleum industry is never a static condition but instead may and does change to a marked degree from month to month. It was further emphasized that the figures reported at that time, were limited to the situation then existing and in no sense represented future productive capacity or availability which is dependent upon the extent and results of exploration and development work in progress and not yet completed. The rising trend in production this past year reflects in substantial measure the added productive capacity resulting from increased exploration and development activities.

Exploration and development drastically retarded during the five war controlled years, has advanced substantially since the close of the war. Drilling records are reaching new highs in the number of oil and gas well completions. However, the overall footage drilled, in relation to crude oil produced, is considerably below the pre-war average.

The increase in exploration and development has been greater than could be anticipated, in the light of then existing conditions, at the time the previous report of this Committee was written, one year ago. So far this year, (January 1 to July 17), 570 more wildcat wells have been completed, than were completed in the same period last year, an increase of 22 percent. Total development well completions so far this year, exceeds the number drilled in the comparable period last year, by approximately 2,600, up 18 percent.

The average number of drilling rigs in operation during the first half of this year was approximately 4,500 as compared with 3,870 in the first half of last year - a gain of 630 or 16 percent more rigs in operation.

Footage drilled in the United States up to the middle of July this year totaled approximately 65 million feet - an average of about 60 feet to every thousand barrels of crude oil produced - so far this year.

In the years 1936 through 1939, the average footage drilled, per thousand barrels of crude oil produced, was 74.5. During the five years of war restriction - 1942-1946 inclusive, footage averaged 50.6 per thousand barrels of crude produced - only 68 percent of the 1936-1939 average.

Footage drilled in 1947 and on down to date this year, in relation to production of crude in the same period, has averaged 81 percent of the 1936-1939 figure.

It appears therefore, that although drilling is near an all-time peak, so far as numbers of wells or total footage drilled are concerned, the total oil and gas well drilling effort measured in relation to the volume of oil and gas being consumed, using 1936-1939 as a base, is only slightly more than 80 percent of the base period average.

This committee, in its previous report, said, "It had been estimated that approximately 67,000 wells were not drilled during the five (war restricted) years that should have been drilled to keep pace with the rising demands." To follow through with that reasoning, about 7,500 additional wells were necessary in 1947 and approximately 4,000 additional wells should have been drilled in the first six months of this year.

No part of the large deficiency in drilling, during the war years, has been made up. Total well deficiency - now about 75,000 continues to grow in number.

Except for an amount of shut-in production in the Rocky Mountain area estimated to be about 38,000 barrels daily, crude oil production in the United States is substantially up to maximum efficient productive capacity.

Increased exploration and development since the war has added substantially to the net productive capacity in this country. New Productivity has more than offset the declining production of older oil fields, but has gained practically no headway over increasing crude requirements.

Long curtailed drilling activities on account of war controls, material and equipment shortages, have absorbed substantially all of the domestic excess reserve crude oil productive capacity. It is of vital importance, if this country is to be adequately prepared for a national emergency, that the petroleum industry remain free of government restraints and controls and have available to it, in sufficient quantities, the necessary operating and capital funds, materials and manpower to pursue with increasing vigor, drilling and expansion programs designed to restore as rapidly as possible, a safe margin of reserve petroleum productive capacity in excess of crude oil demands and production.

District I.

District I (Florida was not covered) estimates a small decline in crude production in the third and fourth quarters of 1948 and first quarter of 1949. An upturn is indicated in the second quarter of next year.

New productivity from secondary and primary drilling projects in the producing fields of this area will just about offset the natural decline.

All fields are being produced up to the maximum efficient rate.

Inasmuch as Florida production has been averaging less than one thousand barrels daily, the subcommittee report which did not include Florida has not been revised to provide for this omission.

District II

District II indicates little change in crude production in the third and fourth quarters of this year, a moderate decline in the first quarter of 1949 and a small increase in the second quarter of next year.

New productivity is expected from fields already producing, provided sufficient steel in pipe and other producing equipment becomes available throughout the year.

In general, all fields are now considered to be producing at their maximum efficient rate.

District III

District III estimates based on fields producing on April 30, 1948, under present conditions, not including the effect of discoveries after that date, indicate available crude for production in the last quarter of 1948 will average approximately 1.6 percent in excess of estimated availability in the third quarter. However, the respective increases in each of the 1st and 2nd quarters of 1948 equal less than one-half of one percent over each of the immediately preceeding quarters. This may be accounted for in part since no provision has been made for probable discoveries.

The subcommittee is of the opinion that all fields in this area are producing at or near their maximum efficient rate.

District IV

The subcommittee for District IV calls attention to the fact that there is no shortage of crude supply in that area. There is every indication that there will be a steady increase in daily production in this District through each of the four next quarters.

The subcommittee cites three factors to be considered in the 1949 outlook, viz:

(1) Effect of anticipated pipeline construction in November and December of 1948, permitting movement of crude that is now shut-in because of lack of transportation.

(2) Increased drilling activity and exploratory work that is taking place has uncovered several new potential areas which give promise of substantially increasing production.

(3) If production availability materialized in 1949 as estimated, District IV will again be short in pipeline outlet capacity.

District V

The subcommittee for District V estimate an upward trend in crude production availability in the next 12 months - advancing from 955,000 barrels daily in July, 1948 to 975,000 barrels daily in June, 1949.

It is assumed by the subcommittee that new discoveries will account for an availability of 475 barrels daily in the first month, and attain a volume of 12,000 barrels daily 12 months later.

Estimated drilling may average 175 new wells per month and a continuation of the drilling rate even though the steel situation is tight.

Available supply of oil well casing and tubular goods is a limiting factor for the future outlook on drilling development wells and is retarding drilling activities in general.

Average footage on new well completions so far this year is running at the 1947 year average rate, substantiating the claim of a pipe shortage and drilling bottleneck.

A few fields in California are producing in excess of the maximum efficient rate. Excess production, however, is negligible and will shortly be resolved.

Table 1 presents a summary of production and crude availability figures by districts for the periods covered in this report. The figures reported herein cover crude petroleum only. Estimates of additional crude availability take into account production which may be expected from fields already producing and from such drilling and development, within the period covered, in fields previously discovered, as steel availability permits.

The subcommittees have not, excepting California, included any substantial estimates of expected availability of crude oil from new discoveries that may occur in the coming year. In California it is estimated there may be a recovery of approximately 12,000 barrels daily by the middle of 1949 from new discoveries. District III has specifically made no provision in its estimates for probable production from new fields to be found in the next twelve months. It should be recognized that crude availability in District III through the next twelve months period may be influenced upward by the volume of possible new discoveries in that area.

Conclusion:

It is the opinion of the committee that the productive capacity of crude and other liquid hydrocarbons will be increased in substantial volume if the necessary supplies of steel products, particularly tubular goods, can be made available to the industry.

Greater quantities of steel must be channeled into the production of pipe and oil field equipment if the petroleum industry is to carry out the oil and gas well drilling development and production programs in 1948 and 1949 necessary to meet the industry's responsibilities to consumers.

The steel requirements for the production branch of the oil and gas industry has been more fully presented in the report to the National Petroleum Council by the Committee on Petroleum Industry Steel Requirements. Those agencies of the Federal Government concerned with maintaining national welfare and security should consider the urgency of the petroleum industry's steel requirements.

It appears reasonable to assume that the historical relationship between exploration and development drilling, and additions to petroleum reserves and productive capacity, may be expected to prevail in the next twelve months.

The estimated availability of additional crude oil over the next year should keep pace with anticipated additional requirements, based on present conditions. Little, if any, build-up in excess capacity appears likely. It is therefore imperative that a still greater volume of drilling be undertaken if, and when sufficient additional quantities of pipe and oil field equipment become available.

Respectfully submitted

/s/ B. A. Hardey, Chairman

George S. Bays
J. S. Bridwell
F. S. Bryant
J. C. Donnell, II
Jake L. Hamon
A. Jacobsen
J. Sayles Leach
John M. Lovejoy
Frank M. Porter
E. E. Pyles
D. T. Ring
Chas. F. Roeser
J. M. Sands
R. S. Shannon
L. S. Wescoat
Ralph T. Zook

REPORT OF SUBCOMMITTEE FOR DISTRICT I

OF THE

COMMITTEE ON PRODUCTION AND CRUDE AVAILABILITY

Mr. B. A. Hardey
Commercial National Bank Building
Shreveport, Louisiana

Re: Petroleum Production and Crude Availability

Dear Mr. Hardey:

(1) Estimated Daily Average Pennsylvania Grade Crude Oil Production District I. (P.A.W.)

	S.E.Ohio	N.Y., Penna.W.Va.	Total
Third Quarter 1948	7,700	56,000	63,700 bbls.
Fourth " 1948	7,600	55,000	62,600 "
First " 1949	7,500	54,000	61,500 "
Second " 1949	7,500	55,000	62,500 "

We have included 18 counties of southeastern Ohio which produces Penn Grade crude in District I. The A.P.I. weekly production report has always included this area in the Penn Grade region. If you wish to separate it from the total and include it in District II, it can be readily deducted, however, it has always been considered as one of geographical and producing area for Penn Grade crude.

(2) A study of drilling progress to determine if new productivity can be expected in fields already producing.

(3) Answer: New Secondary Recovery and Primary drilling projects should just about take care of natural decline.

(3) A report on whether all fields in your area are producing below or above maximum efficient rate.

Answer: All fields are being produced up to M.E.R.

Yours very truly,

/s/ D. T. Ring

D. T. Ring, Chairman
John M. Lovejoy
A. Jacobsen
Ralph T. Zook

* Note - Estimates for S.E. Ohio are included in the District II subcommittee report and therefore the figures shown for S.E. Ohio in the District I subcommittee report are excluded.

REPORT OF SUBCOMMITTEE FOR DISTRICT II

OF THE

COMMITTEE ON PRODUCTION AND CRUDE AVAILABILITY

June 25, 1948

Mr. B. A. Hardey,
Commercial National Bank Building,
Shreveport, Louisiana

Dear Mr. Hardey:

We are enclosing herewith the report of your PAW District #2 Sub-Committee on Petroleum Production and Crude Availability of the National Petroleum Council, completing the assignment given us May 27th.

We have had the fullest cooperation among members of the Sub-Committee and members of the regulatory bodies of the various states consulted in each case.

The estimates given represent an agreement of state authorities and industry. We trust the report will fulfill your requirement.

Respectfully submitted by the Sub-Committee,

/s/ G. S. Bays,
Sub-Committee Chairman

J. C. Donnell, II
Frank M. Porter
J. M. Sands
L. S. Wescoat

Enc.

ESTIMATE, BY QUARTERS FOR THE YEAR BEGINNING JULY 1, 1948, OF THE PRODUCTION, IN BARRELS PER DAY, OF CRUDE PETROLEUM, NATURAL GASOLINE, AND LPG PRODUCTS, FOR THE STATES OF PAW DISTRICT #2, AS MADE BY THE SUBCOMMITTEE FOR THAT DISTRICT OF THE NATIONAL PETROLEUM COUNCIL'S COMMITTEE ON PETROLEUM PRODUCTION AND CRUDE AVAILABILITY

	3rd Quarter 1948	4th Quarter 1948	1st Quarter 1949	2nd Quarter 1949
	Crude	Crude	Crude	Crude
Illinois	170,450	169,000	167,750	167,000
Indiana	14,600	14,600	14,600	14,600
Kansas	290,000	290,000	290,000	290,000
Kentucky	25,000	25,000	24,500	24,500
Michigan	45,000	45,000	45,000	45,000
Missouri & Nebraska	500	450	450	450
Ohio	9,800	9,800	9,800	9,800
Oklahoma	427,500	430,000	426,000	440,000
Total	982,850	983,850	978,100	991,350

The above tabulation gives the crude availability in barrels per day, by quarters, for the next twelve months, requested by assignment No. 1 to the Subcommittee.

Assignment No. 2 was "A study of drilling progress to determine if new productivity can be expected in fields already producing". The quarterly production estimate above generally includes the new productivity to be expected from fields already producing, provided sufficient steel in pipe and other production equipment becomes available throughout the year. Notes on specific states follow:

Illinois - "Estimates of production take into account any production which may be expected in fields already producing".

Indiana and Ohio - It is expected that "new productivity from drilling in old fields will be sufficient to prevent a decline in production statewide".

Kansas - Total completions for this year were up 15%, oil well completions up 30%. A large part of development was infill drilling in old producing fields. No discoveries of outstanding importance have been made. Additional productivity from additional drilling is expected to be no more than sufficient to offset normal decline in other areas. At present discovery rate, total productivity will not change appreciably.

Kentucky - Additional steel will be needed to expand secondary recovery facilities and do wildcatting in areas already shown to be favorable.

Michigan - It is assumed that sufficient steel will be available to maintain the wildcatting program now contemplated, wherein favorable results are expected.

Missouri and Nebraska - No new activity is contemplated. Production shown is settled.

Oklahoma - Several pools are needing steel for continuation of development. Further exploratory work is expected along favorable trends if pipe is available. Productivity of new sands in some of the older areas is offsetting production declines. Better crude oil prices are responsible for re-conditioning old wells, and maintaining steady production.

Assignment No. 3 was "A report on whether all fields in your area are producing above or below the maximum efficient rate." For District No. 2, all fields are now considered to be producing at their maximum efficient rate. There may be some, as in Oklahoma, which should have their allowable somewhat restricted. Other fields, as in Kansas, might produce more oil but at a sacrifice of future ultimate recovery.

REPORT OF SUBCOMMITTEE FOR DISTRICT III

OF THE

COMMITTEE ON PRODUCTION AND CRUDE AVAILABILITY

June 29, 1948

Mr. B. A. Hardey, Chairman,
Committee on Petroleum Production and
Crude Availability,
Commercial National Bank Building,
Shreveport, Louisiana.

Dear Sir:

As requested in your letter of May 27, 1948, I have had a study made of present production rates against maximum efficient rates, and of drilling progress in all fields in the six states of PAW District 3.

Based on these studies we estimate the following crude oil availability from production for each quarter of the twelve months period beginning July 1, 1948:

ESTIMATED PRODUCTION AND AVAILABILITY OF CRUDE OIL
(Barrels per day)

AREA	JUL-SEP 1948	OCT-DEC 1948	JAN-MAR 1949	APR-JUN 1949	12 MONTH AVERAGE
Alabama	1,050	1,050	1,050	1,050	1,050
Arkansas	92,582	92,848	92,943	93,147	92,877
Louisiana,North	122,595	124,545	126,545	128,835	125,629
Louisiana,South	377,257	385,087	390,687	395,732	387,195
Mississippi	132,527	138,387	142,359	145,239	139,629
New Mexico	129,770	129,770	127,060	127,060	128,417
Texas:					
R.R.Com.Dist.1	27,825	27,825	28,132	28,132	27,956
" " 2	170,656	170,656	165,425	165,425	168,040
" " 3	493,661	493,661	482,681	482,681	488,186
" " 4	257,739	257,739	251,112	251,112	254,427
" " 5	54,685	56,331	57,922	59,488	57,104
" " 6*	315,000	315,000	315,000	315,000	315,000
" " 6**	123,145	123,862	124,779	125,496	124,320
" " 7B	46,678	47,427	48,101	48,674	47,720
" " 7C	43,769	48,313	52,177	53,141	49,344
" " 8	718,487	725,561	739,736	748,204	732,997
" " 9	144,057	148,895	152,826	156,125	150,482
" " 10	84,500	84,500	84,500	84,500	84,500
Total Texas	2,480,202	2,499,770	2,502,391	2,517,978	2,500,076
GRAND TOTAL DISTRICT #3	3,335,983	3,371,457	3,383,035	3,409,041	3,374,873

* (E.Tex.)
** (Other)

The studies have been made and the above figures prepared by a working subcommittee having the following members:

Mr. D. V. Carter, Magnolia Petroleum Company, Dallas, Texas

Mr. E. L. Hamner, Humble Oil & Refining Company, Houston, Texas

Mr. B. G. Martin, Gulf Oil Corporation, Houston, Texas

Mr. E. P. Hayes, Chairman, The Texas Company, Houston, Texas

The subcommittee wishes to emphasize that the estimates of crude availability are based on the fields producing on April 30, 1948, under present producing conditions, and do not include the effect of discoveries after that date.

The estimates include the increased production expected from anticipated development of the fields which were producing on April 30, 1948. It is the subcommittee's opinion that all fields in the states in PAW District 3 are producing at or near their maximum efficient rate, so that the net increases shown during the period are due primarily to the anticipated drilling in undeveloped and partially developed fields.

Yours very truly,

/s/ J. S. Leach, Chairman
J. S. Bridwell
Jake L. Hamon
Charles F. Roeser

REPORT OF SUBCOMMITTEE FOR DISTRICT IV

OF THE

COMMITTEE ON PRODUCTION AND CRUDE AVAILABILITY

Major B. A. Hardey, Chairman
Committee on Petroleum Production and
Crude Availability
National Petroleum Council
Commercial National Bank Building,
Shreveport, Louisiana.

Dear Major Hardey:

I send you herewith, by airmail special delivery, Statement of the status of the crude oil situation in District 4, as of June 30, 1948. I also send you herewith, a separate statement setting out an estimate of the daily crude oil production in barrels by States, estimated for the Third and Fourth Quarters of 1948, and the four Quarters of 1949. The status of the crude situation as set out on the first Statement, I believe you will find to be approximately correct as to actual conditions at this time. In assembling these figures and preparing this Report, I have had the good help of Mr. J. F. Cullen, Division Manager of the Stanolind Oil and Gas Company at Casper, Wyoming; Mr. R. P. Jackson, Secretary of the Oil and Gas Conservation Department, State of Montana, Great Falls, Montana; and Mr. H. H. Arnold, Jr., Division Manager of the Texas Company, Denver, Colorado. In considering this Statement on the Crude Situation, I would like to again call your attention to the fact that there is no shortage of crude supply in District 4 and there is every indication that there will be a steady increase in the daily production in this District thru the second half of this year and continuing thru 1949. This steady increase is quite clearly evidenced by the fact that the daily average production of crude oil for District 4 as of June 30, 1947, was 190,085 barrels with 36,285 barrels

of shut-in production at that time, whereas the daily average production as of June 30, 1948, was 229,051 barrels per day with an estimated shut-in production of 38,000 barrels. There was a substantial reduction in the amount of crude in storage in Wyoming during the first part of this year as compared with the same period last year, but this situation appears to be stabilized for the present, and there has been some increase in storage in Montana.

There are two factors now playing a very large part in the crude situation in District 4, which must be borne carefully in mind in considering the 1949 outlook, viz:

(1) The anticipated completion of a pipe line from Rangely, Colorado, to Salt Lake City, Utah, by the Standard of California, which line, it is anticipated, will move 23,000 to 25,000 barrels of crude per day additional from Rangely as soon as completed in November or December of 1948.

(2) The tremendous increase in drilling activity and exploratory work that is taking place in the State of Wyoming, and to a lesser extent, in Colorado, Utah and Montana. Already this step-up in exploratory drilling has uncovered several new potential areas which give promise of substantially increasing the production in Wyoming in 1949.

In estimating the quarterly production, therefore, for 1949, these factors have been considered, and the figures set out on the Quarterly Estimate Statement can only be considered as an educated guess. They could fall far short of what may be actual new production in District 4, should some of the fields in which new discoveries have indicated large production be the scene of large-scale drilling development.

There is, however, another factor that must be kept in mind with regard to the situation in District 4, and that is the fact that the pipe line expansion program now under way and which, in all probability, will be completed by the end of the year, will only serve to make it possible

to move approximately the amount of crude that is now shut in because of lack of transportation. If, therefore, the production in District 4 does increase as estimated in the attached Report during 1949, District 4 will again be short in pipe line outlet capacity.

We have done the best we could with this Report within the limited time for its preparation, and I hope you will find same satisfactory.

Yours very truly,

/s/ R. S. Shannon, Chairman,
Subcommittee

M. H. Robineau
Glenn E. Nielson

July 15, 1948

CRUDE SITUATION

District IV - June 30, 1948

State	Estimated Total Daily Avg. Production in Bbls. of Crude Oil	Est. Amt. of Daily Avg. Shut-in Production	Est. Daily Avg. Crude Being Charged to Stills	Est. Daily Amt. of Crude Going Into Storage	Est. Amt. of Crude Moving Out of District #4	Est. Total Amt. in Bbls of Crude Oil in Storage June 1
MONTANA	26,801	153	35,200	-	9,967	1,094,236 - 1948 749,835 - 1947
WYOMING	155,250	15,000	81,000	11,000	53,000	4,725,635 - 1948 5,996,342 - 1947
COLORADO	47,000	23,000	13,500	2,000	16,000	300,000 - 1948 319,934 - 1947
TOTAL	229,051	38,153	129,700	13,000	78,967	6,119,871 - 1948 7,066,111 - 1947

Daily Average Crude Being Charged to Stills of All Refineries in District #4

Wyoming	81,000 Barrels
Colorado	13,500 "
Montana	35,200 "
Idaho	3,700 "
Utah	26,000 "
Total	139,400 Barrels

DISTRICT IV

ESTIMATED DAILY CRUDE OIL PRODUCTION IN BARRELS BY QUARTERS FOR LAST HALF 1948 AND YEAR 1949

	3rd Quarter	4th Quarter 1948	1st Quarter 1949	2nd Quarter 1949	3rd Quarter 1949	4th Quarter 1949
Montana	28,000	28,000	30,000	33,000	35,000	37,500
Wyoming	160,000	165,000	170,000	175,000	180,000	190,000
Colorado	47,000	55,000	70,000	70,000	75,000	75,000
Total District IV	235,000	248,000	270,000	278,000	290,000	302,500

REPORT OF SUBCOMMITTEE FOR DISTRICT V

of the

COMMITTEE ON PRODUCTION AND CRUDE AVAILABILITY

I. ESTIMATED CALIFORNIA CRUDE OIL PRODUCTION FROM JULY 1, 1948 TO JUNE 30, 1949 (INCLUSIVE)

	Barrels Daily
1948 - July	955,100
August	958,300
September	952,400
October	955,900
November	960,400
December	964,000
Average 6 Months (184 days)	957,700
1949 - January	966,300
February	967,700
March	970,200
April	970,900
May	972,300
June	975,000
Average 6 Months (181 days)	970,400
Average Year July 1948 to June 1949	964,000

June 14, 1948

I-A. HIGHLIGHTS OF CRUDE OIL ESTIMATE

Drilled Wells:

(1) Divided into Unscheduled and Scheduled wells.

(2) Unscheduled:

Elk Hills separated from San Joaquin Valley. Balance of San Joaquin Valley, all of Coastal and L.A. Basin combined and declined at 11% per year, based on average well of about 24 B/D. Elk Hills production assumed to continue at average rate of withdrawal of 5,600 barrels per day for fiscal year.

(3) Scheduled:

Buena Vista 27 B Pool and Coalinga Nose treated as separate items. Balance of San Joaquin Valley scheduled, as one figure, was combined with Total Coastal and L.A. Basin, using 13.75%, yearly decline over next 12 months. Buena Vista 27 B Pool set at 35,000 B/D MER and declined 1% month. Coalinga Nose assumed to be unitized September 1, 1948, when field will produce 42,500 B/D, held constant at that rate thereafter.

New Wells:

Proved Locations

Unscheduled: 130 wells per month. July 1948 thru June 1949.
50 B/D initial. July thru December 1948.
43 B/D initial. January 1949 thru June.
16.5% year decline on 50 B/D wells.
13.3% year decline on 43 B/D wells.

Scheduled: 45 wells per month. July 1948 thru June 1949.
150 B/D initial. July thru December 1948.
129 B/D initial. January 1949 thru June.
13.75% year decline on all Scheduled new wells.

Total New Proved Wells:

At rate of 175 wells per month gives 2,100 wells for the year. July 1948 - June 1949. Divided 1,560 Unscheduled
540 Scheduled
2,100

New Discovery:

Assumed 95 million barrels ultimate recovery for this group of new discoveries over 12 months. This was translated to daily rate of production. Starting at 475 B/D first month, attaining about 12,000 B/D 12 months later. Representing about 90 discovery wells drilled by end of period, which include development wells in new areas.

II. NEW PRODUCTIVITY IN PRODUCING FIELDS

A. The California production estimate provides for drilling 2,100 wells to mid-1949, an average of 175 per month, and a continuation of the present drilling rate. We believe that this is reasonable, even when considering the tight steel situation. It also conforms to our knowledge of locations in proved fields drillable at present prices.

The overall average initial rate per new well completed was estimated at 75 B/D per well for the last 6 months of 1948, and at 65 B/D per well for the first 6 months of 1949. This is a continuation of present average initial rates for the first 6 months of the forecast with a drop of 10 B/D to line up with the diminishing trend experienced during the past year.

B. Available supply of oil well casing and tubular goods is the limiting factor for the future outlook on drilling development wells. This, particularly, has been a deterrent since last fall. Conditions known to be prevalent with a number of operators and equipment suppliers currently gives no indication of any easing in the pipe shortage. Regardless of this shortage, the number of new wells drilled during the first 5 months of 1948 was 876 compared to 600 new wells drilled during the same period in 1947, an increase of 46%.

The 276 increase in number of new wells completed so far in 1948 is accountable to the fact that a larger number of shallow wells are being drilled, resulting in nearly the same total footage of pipe used for fewer wells drilled during 1947.

	Number of New Wells Completed	Average Depth	Footage
1947 year average per month	132	4,080	538,600
1948 first 5 months avg. per month	175	3,060	535,600
Change, + or -	+43	- 1,020	

The fact that the average footage drilled so far during 1948 is running at the 1947 year average rate tends to substantiate the universal claim of a pipe shortage and drilling bottleneck.

It is recognized that any augmentation in quantity of tubular goods, particularly first grade new casing, will bring into operation a considerable increase in drilling strings for deeper and/or shallow high pressure zones where a large number of strings have been shut down, and where considerable proved locations are waiting to be drilled. Some outstanding cases may be sighted, such as Ventura Avenue, Kettleman North Dome, Paloma, Wilmington and Huntington Beach.

C. The effect of recent crude price increases, particularly the 50¢/bbl. raise effective December 1947, is believed to be a primary factor, affording the incentive to drilling up small volume shallow zone wells, mainly of heavy quality crude. In these cases more wells can be drilled with a given quantity of pipe as they permit use of second hand reclaimed pipe not suitable for use in deeper high pressure work. This type of new completion of small wells, say 10 - 30 B/D initial, has the effect of lowering the average per well initial rate for the State as a whole. While the overall rate of new well completions during the first 5 months of 1948 has increased by 46% over the same period of 1947, the shifting over to more small, shallow wells has resulted in little if any increase in overall daily rate of availability from all new wells drilled in the State.

D. The fields of active drilling can be split into these general classes: 1) Old settled fields, 2) Relatively flush fields still actively under development, and 3) New fields. Following is a list of the fields with active drilling divided into these three classes, showing the number of wells drilled during 1947, and the number drilled for the period January-April, 1948:

Group 1	Wells Drilled		Group 2	Wells Drilled		Group 3	Wells Drilled	
	1947	Jan.-Apr. 1948		1947	Jan.-Apr. 1948		1947	Jan.-Apr. 1948
San Joaquin Valley								
Belridge S.	43	19	Jacalitos	18	8	Kern Bluff	6	17
Coalinga E.	11	11	Coalinga NE.	7	3			
Coalinga W.	8	23	Kettleman N.D.	15	5			
Edison	12	8	Cymric Group	30	38			
Kern Front	31	21	Paloma Black Belt	26	10			
Kern River	129	151						
Lost Hills	105	40						
Midway Sunset	61	39						
Poso Creek	14	6						
Round Mt. Group	11	11						
Coastal District								
Casmalia	2	2	Cat Canyon West	38	21	Four Deer	4	4
Lompoc	40	15	Padre Canyon	13	0			
Orcutt	28	9	San Miguelito	7	2			
Santa Maria Valley	32	7	Ventura Ave.	45	12			
South Mt.	2	2	Del Valle	29	8			
			Newhall-Potrero	8	3			
Southern California								
Brea-Olinda	28	13	Coyote W.	25	12	Inglewood City	7	12
Huntington Beach	118	109	Newport	52	29			
Long Beach	9	8	Seal Beach	14	8			
Santa Fe Springs	2	6	Wilmington	253	90			

These fields accounted for 91% of all 1947 drilling and 89% of all wells drilled in the first 4 months of 1948. It is anticipated that they will continue to be the most active fields for the following 12 months, and probably wells drilled in the individual fields will, in general, be at a rate roughly proportional to their comparative activity for the January-April 1948 period.

Recently Discovered Fields

In addition to the above listed active fields there are several recently discovered fields which show promise of future activity. They are: Coal Oil Canyon, Cuyama Valley, San Ardo and Lawndale.

Estimated production for the ensuing 12 months from these recently discovered fields has been included as "new discoveries" along with other unknown future discoveries. In the latter case, recent years' experience of actual success in new discoveries has been used. The estimate for new discoveries as a group cumulates to 12,000 B/D at the end of the 12 month period, accounting for 90 new wells in addition to the 2,100 for old fields.

In line with the steel bottleneck, Kettleman Middle Dome and Montalvo, also new fields now under development, possibly will not see as heavy activity as could be expected from shallower pools.

III. Production in Excess of Maximum Efficient Rate

Excess production in appreciable quantities is negligible at the present time. In some fields the proper MER is questionable and legitimately the subject of review in the light of more complete evidence. Even under those circumstances in only 5 out of 68 fields or pools under restriction is there any appreciable presumed excess. A total of 46 fields are producing at or under MER, whereas the remaining 17 scheduled fields are overproducing in small amounts.

The greater portion of whatever excess production may actually exist over MERs, as indicated by published reports, will be found in two fields - one of which is in the process of being unitized and another in which engineering studies are now being made and as to which the operators are currently and actively negotiating for the adoption of a unit plan. Whatever actual excesses exist in these fields, over and above assumed and published MERs, will shortly be resolved. There are three smaller fields in which overproduction results from competitive circumstances which are presently unavoidable. In the aggregate, all of this will not approximate more than 2-1/2% to 3% of the total state production.

Recognizing the progress being made with respect to those fields now approaching unitization stage or in the process of negotiation to that end, the forecast indicates that any excess over MERs by the end of September 1, 1948, should not, in the aggregate, exceed 1-1/2% of the State total. This should be even further reduced by the end of the period of the estimate.

Respectfully submitted,

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E. E. Pyles