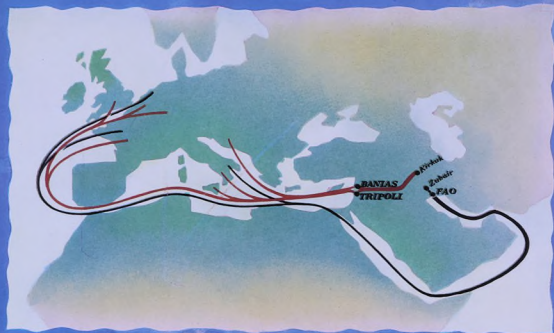


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Iraq Oil in 1951



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IRAQ PETROLEUM CO LTD

Iraq Oil

BASRAH PETROLEUM CO LTD

in 1951

MOSUL PETROLEUM CO LTD

IPC

BPC

MPC

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Typical of the terrain where the new
30-inch pipeline threads through rock and
sand from Kirkuk to the Mediterranean

FOREWORD



His Majesty King Faisal II of Iraq,
with the Regent
His Royal Highness Amir 'Abdul Illah



Admiral of the Fleet
Sir John Cunningham, G.C.B., M.N.O.
Chairman of the Companies



His Excellency Nuri Pasha El Said,
Prime Minister of Iraq



Mr. H. S. Gibson, C.B.E., M.A.
Managing Director
of the Companies

1951 was a year of intensive development by the Iraq Petroleum Company and its associated companies. New records both of drilling footage and of oil production were established, but of greater significance was the expansion of the outlets for Iraq crude oil, the effects of which did not become apparent until 1952.

Good progress was made with the new 30-inch pipeline from Kirkuk to Banias which, when completed, will add another 14 million tons per annum to the deliveries of Iraq oil at the Mediterranean seaboard. At the end of the year 308 miles, or 55 per cent of the total length of the line, were completed. Concurrently, production facilities at Kirkuk were expanded to handle the increased throughput.

In the Basrah Concession seven wells were completed, bringing the number of producing wells in the Zubair field to twelve. Pumping equipment for the 72 mile pipeline was installed and two loading jetties and eight 4½-million gallon storage tanks were completed at Fao. The first tanker loaded at this installation on December 19th and sailed on December 21st with a cargo of 11,000 tons of Zubair oil. By the end of the year 33,800 tons of crude oil had been exported from Fao and production from the Zubair field was running at a rate of 750,000 tons per annum.

During 1951, also, the Iraq Petroleum Company and its associated companies operating in Iraq, entered into a new relationship with Iraq by their offer on April 7th to share equally with the Government of Iraq the profits accruing from their operations in the country. Although not ready for ratification by the Iraq Parliament until February, 1952, the agreement, based on this offer, became operative with effect from January 1st, 1951.

The effect of this new agreement with Iraq, combined with increased production resulting from the construction of the 30-inch pipeline from Kirkuk to Banias, and the inauguration of production from the Basrah Concession, will result in greatly increased revenues for Iraq which, on the basis of present prices and costs, are expected to rise from £15 million in 1951 to £59 million in 1955. Under the Iraq Law of 1950, seventy per cent of these revenues will be devoted to capital schemes which will increase the productivity of the soil and enrich the lives of the people of Iraq.

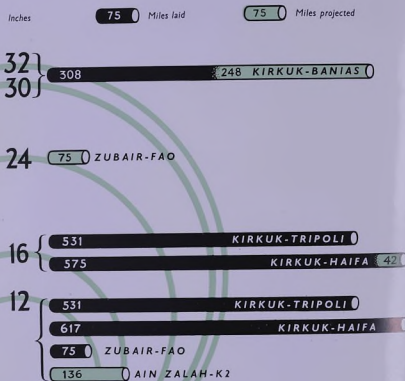
The Companies have pleasure in offering this booklet as a tribute to the unceasing efforts of all their personnel which have made possible the progress here recorded.

MANAGING DIRECTOR

PIPELINES

Pipelines, arteries of oil production, would deserve a high priority in any year's report, and the remarkable progress in construction of the 30-inch line from Kirkuk to the sea was one of the great achievements of 1951.

From this proud beginning the Report goes on to demonstrate graphically the major activities and developments of the Companies during 1951 and to tell, in Part II, the story of the Companies and their part in the economy of Iraq.



SOME PIPELINE FACTS

Off-loading THE PIPE



TRIPOLI 99,000 tons



BASRAH 34,000 tons

Transporting THE PIPE



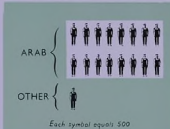
The pipeline Transport Fleet averaged more than **1,000,000 miles per month**

Stringing THE PIPE

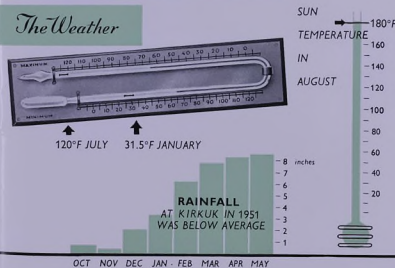


In 1951 **336 miles** equivalent to more than **13,200,000 ton-miles**

Construction Personnel



The Weather



CONSTRUCTION TRANSPORT FLEET

78

181

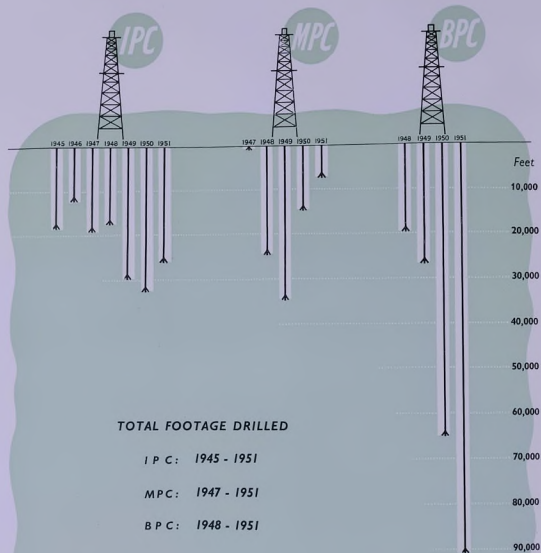
133

27

35

16

DRILLING



In 1951 the three companies achieved a total footage of 124,688 feet, surpassing the previous record established in 1950 by over 12,000 feet. This record is the more remarkable since more than one-third of the 1951 footage was at depths below 5,000 feet in the Basrah Concession, where completion depths are greater than in any other major oilfield in the Middle East.

IRAQ PETROLEUM COMPANY

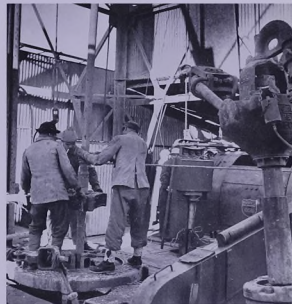
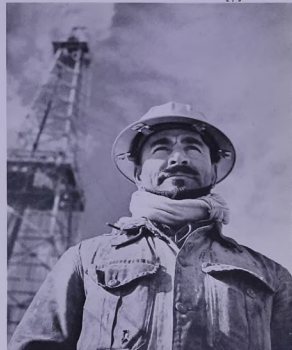
In the Iraq Petroleum Company concession 26,119 feet were drilled making the total footage drilled in the concession since the commencement of operations 372,132 feet. Two rigs were continuously employed in the Kirkuk field where seven wells were completed, and at the end of the year two others were drilling at depths of 3,374 feet and 6,267 feet, respectively. In October preparations commenced for drilling a test well at Chemchemal, where rigging up was three-quarters complete at the end of the year.

BASRAH PETROLEUM COMPANY

In the Basrah concession 90,833 feet were drilled in 1951, bringing the total footage drilled in the concession to 202,424 feet. Drilling effort was concentrated in the Zubair field with the object of commencing the export of oil at the earliest possible moment. Six drilling outfits were employed and seven wells were completed during the year at depths of between 10,000 and 11,000 feet, and at the end of the year five more were drilling at depths of 9,845 feet, 10,941 feet, 9,764 feet, 5,411 feet and 4,010 feet, respectively. A factor contributing to the increased footage in 1951 was the reduction of time spent in moving derricks from one location to another, which on three occasions were skidded for distances of from one-and-a-half to three miles.

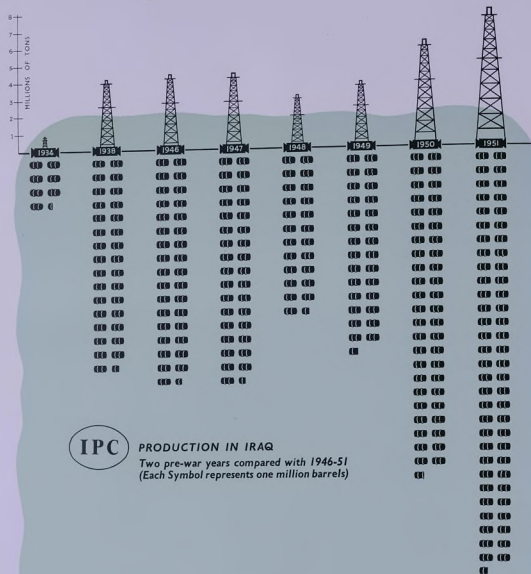
MOSUL PETROLEUM COMPANY

In the Mosul concession 7,236 feet were drilled during the year making a total of 81,372 feet since the commencement of operations in the concession. Two wells were completed in the Ain Zalah field at depths of 9,713 feet and 10,164 feet, respectively, while at the end of the year a test well at Butmah had reached a depth of 503 feet.



These men helped to establish new records of drilling footage in Iraq in 1951

PRODUCTION



PRODUCTION IN IRAQ

Two pre-war years compared with 1946-51
(Each Symbol represents one million barrels)

IRAQ PETROLEUM COMPANY

Total production from Kirkuk field in 1951 was 7,980,600 tons, bringing the cumulative production from the commencement of operations to 68 million tons. 7,863,200 tons were despatched from K.1,* an increase of 1,781,500 tons on last year's previous record for the field. Despatches from K.1 consisted of stabilised crude except for 3,500 tons of gas oil and 25,000 tons of fuel oil pumped to K.2.

Field output and despatches from K.1 averaged 159,800 barrels a day in January and rose to an average of 170,700 barrels a day in December, equivalent to a rate of 8,208,000 tons annually, nearly three-quarters of a million tons higher than the highest rate for 1950. With the exception of 24,600 tons produced during testing operations, the whole of the 1951 production was drawn from the Baba Dome.

Construction of production facilities has been pressed forward to ensure the availability of crude for the 30-inch pipeline. Modifications to the Hanjira, Shurau and Qutan Degassing Stations were completed, increasing the capacity of Hanjira and Shurau to 150,000 barrels a day and Qutan to 120,000 barrels a day. In addition, construction of two new degassing stations was commenced north of the Lesser Zab. At Saralu, the separators have been erected and the installation of manifolds and gaslines commenced. Flow lines and the pressure crude line have been laid, bunds constructed and the erection of flow tanks commenced. At Sarbashakh a test separator and one of the main separators were under erection. Flow lines and the pressure crude line have been laid, bunds constructed and the erection of flow tanks commenced.

A 24-inch line was laid from the Avanaah pump house to the stabilisation plant; the shell of the Avanaah pump house was built and work was well in hand on the erection of the pumps, Hortonsphere foundations and erection of relief tanks. At K.1 Tank Farm one new 164-foot diameter tank was completed and five more were under erection.

BASRAH PETROLEUM COMPANY

Although its contribution to Iraq's oil exports in 1951 was small, the outstanding event in the history of Iraq oil production was the commencement of production from the Basrah Concession.

Production from the Zubair field for filling the pipeline and the storage tanks at Fao started in mid-October and reached a total of 145,000 tons by the end of the year. The first tanker sailed from Fao on December 21st and by the end of the year 33,800 tons of crude had been exported.

*See map on pages 16 and 17

Above: a production well-head in the Kirkuk Field
Below: The Prime Minister of Iraq performs the inaugural ceremony at Zubair on January 10, 1952, and is thanked by the Managing Director



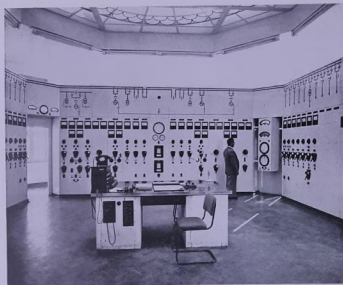
POWER AND PROCESS PLANTS

The new Power Station at Kirkuk, construction of which was started in 1947, was completed in April when the third turbo-alternator was commissioned. This Power Station supplied the whole of the power requirements of Kirkuk field and K.1 Station during the year and supplied two and a half million kWh to Kirkuk Town. Total output was 69 million kWh, an increase of 20

million over the 1950 total and four times as great as the 1947 total.

The increase in the value of the electrical plant installed at Kirkuk since the commencement of installation of the new Power Station is as follows:

1947	£193,300
1948	£321,700
1949	£1,383,400
1950	£2,619,000
1951	£2,790,400



Kirkuk—the new Power Station Control Room and a view of the Boiler House. On the right the Hortosphere installation



Units of the stabilisation plant operated for a total of 1,300 unit-days during the year and processed 2,200 million gallons of crude. In July, No. 3 Unit of the stabilisation plant was modified to produce fuel oil for distribution in Iraq to replace supplies previously drawn from Abadan.

Deliveries of stabilised crude to the pipeline were 2,100 million gallons and to distillation units 25 million gallons. 17 million gallons of fuel oil were processed by the stabilisation plant for distribution in Iraq.

Two distillation units were operated throughout the year and, from July onwards, supplied benzene, kerosene and gas oil for internal distribution in Iraq. In August, an acid soda washery was commissioned to reduce the sulphur content of kerosene supplied to the local market. The quantities of refined products delivered for distribution in Iraq were as follows:

Benzene	1,462,000 gallons
Kerosene	1,725,000 „
Gas Oil	2,275,000 „



PERSONNEL

The numbers of locally engaged personnel at the end of the year were as follows:

		Clerical and Supervisory	Other	Total
Iraq	I.P.C.	1,134	5,961	7,095
	B.P.C.	438	2,259	2,697
	M.P.C.	93	545	638
	Total	1,665	8,765	10,430
Syria	I.P.C.	347	2,222	2,569
Lebanon	I.P.C.	855	1,387	2,242
Jordan	I.P.C.	55	236	291
Israel	I.P.C.	54	92	146
Total all areas	2,976	12,702	15,678	

The total of 15,678 represents an increase of 1,445 as compared with the end of 1950.

Canteens

Canteens were maintained at all centres of the Companies' operations, where a total of 2,353,400 subsidised meals were served during the year. At the end of the year a new 500-man canteen at Kirkuk was approaching completion.

Saving Scheme

At the end of 1951 at Kirkuk 2,800 employees participated in the employees' savings group, representing 76 per cent of the total eligible personnel, as compared with 68 per cent participating at the end of 1950. The balance held by the group at the end of 1951 exceeded ID 60,000*.

Health and Safety

There were no epidemic diseases during the year and the sickness and accident rates were the lowest for many years. 4,100 in-patients were treated in Company hospitals for a total of 39,900 hospital-days. In addition, a total of 105,600 out-patients received attention at Company clinics and dispensaries and were given a total of 270,600 treatments. Over 16,000 routine

*The Iraq Dinar = £1 sterling

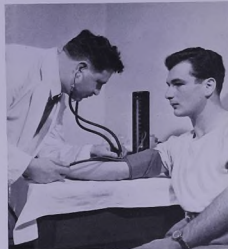
medical examinations were carried out.

In matters of public health and preventive medicine cordial and co-operative relations were maintained with the local health authorities. Twenty-six thousand vaccinations or inoculations were carried out.

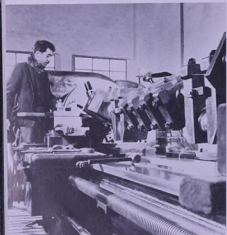
Training

During the year nineteen trainees completed a six months basic training course at Kirkuk and entered technical departments for a further 18 months' training. Twenty more trainees were approaching the completion of their basic training course at the end of the year. In addition, twenty-six trainees passed their Grade II Trade Tests on completion of the two years' training course. During the year, also, an apprenticeship training scheme was inaugurated with twenty trainees participating in a mechanical engineering course.

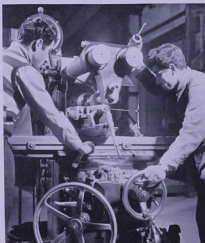
This scheme aims at giving a course of training of three to five years to young Iraqis to fit them



During the year 4,100 in-patients were treated in Company hospitals



To take employment with the IPC is to step over the threshold of a worthwhile career. Whether as students in the Kirkuk Training Centre or employees in the workshops, laboratories, repair shops, assembly shops, or communication centres, employees are encouraged to develop their abilities and skills



for employment in the Companies. The training will take place at Kirkuk, where a new Technical Centre and Training Workshops are at present being built.

Fifty new entrants will be admitted in 1952, limited to boys of 15 or 16 years of age, who have reached as a minimum, a complete primary schooling. They are to be recruited from the Kirkuk area, BPC, MPC, and Pipeline stations, or through the IPC Office in Baghdad.

Kirkuk apprentices will live at home. They will receive payment of approximately ID 10 per month during the first year of training, out of which a small charge for books and sports-gear will be made. This pay will be increased year by year during the training period, becoming about ID 20 per month in the fifth year.

Apprentices from other areas will be housed by the Company, unless they have relatives in Kirkuk with whom to live. They will receive the above rates of pay with deductions for rent and food amounting to approximately ID 7 per month. Cost of instruction will be borne by the Company, which

will provide all technical equipment.

The courses will be designed to give the training necessary for entry to all categories of employment, with excellent opportunities for apprentices who make satisfactory progress or show special aptitude. It is intended that, in the future, the majority of skilled employees, whether in the engineering, petroleum or commercial fields, should be drawn from the apprentice scheme. It is therefore greatly to the advantage of boys of suitable age and background schooling to grasp the unusual opportunities which the scheme presents.

The policy of selecting promising artisans already in Company employment and sending them to the United Kingdom for practical training, with part-time attendance at technical colleges where appropriate, was continued. During the year nineteen in all were under training in the U.K.

In accordance with the Companies' undertaking to finance up to fifty students per annum, selected by the Government of Iraq, for technical training in the U.K., seventy-five students were undergoing training during the year.



Iraq Oil in 1951



THE THIRTY-INCH PIPELINE
is the newest and greatest of the oil arteries
which circulate the lifeblood of modern Iraq

In 1951 great progress was made in the development of the oil resources of Iraq. Production from the Kirkuk field reached the record total of 7,980,000 tons, but more significant for the future of Iraq was the commencement of production from the Basrah Concession and the progress made with the construction of the 30-inch pipeline from Kirkuk to Banias. Exports from Basrah are scheduled to reach eight million tons per annum by 1955 and, when completed, the Kirkuk-Banias pipeline will bring deliveries of Kirkuk crude to the eastern Mediterranean seaboard up to 22 million tons per annum.

The commencement of exports from the Basrah Concession in December marked the culmination of six years of intensive effort, during which over £18 million was spent before it was possible to deliver Basrah crude oil to seaboard.

In the Kirkuk field £1,200,000 was spent in 1951 on the expansion of production facilities to ensure the availability of crude oil for the 30-inch pipeline, on which £21,750,000 was spent during the year.

In the Mosul Concession £14,500,000 have been spent, and plans are now well advanced for the construction of a pipeline link from the Ain Zalah field to the pipeline system at K.2.

These sums represent only part of the direct investment by the IPC, BPC and MPC to enable

Iraq oil to reach the world market. In addition, the companies associated in the Iraq, Basrah and Mosul Petroleum Companies have increased their refining capacity in Europe by 24 million tons in 1951 and at the end of the year had a further 11 million tons under construction. These facilities have created a market for Iraq crude oil, the export of which will reach the rate of 30 million tons per annum by the end of 1955. To transport this quantity from the Mediterranean terminals of Banias and Tripoli and the Persian Gulf terminal at Fao, requires a tanker fleet of 2,750,000 tons. During the year, the companies associated in the I.P.C. increased their tanker tonnage by 483,000 tons and at the end of the year had a further 2,100,000 tons under construction or on order.

As a result of the new agreement, negotiated in 1951, and ratified by the Iraq Parliament in February, 1952, the Iraq Government has a revenue expectation, on the basis of present prices and costs, of £31 million in 1952 rising to £59 million in 1955.

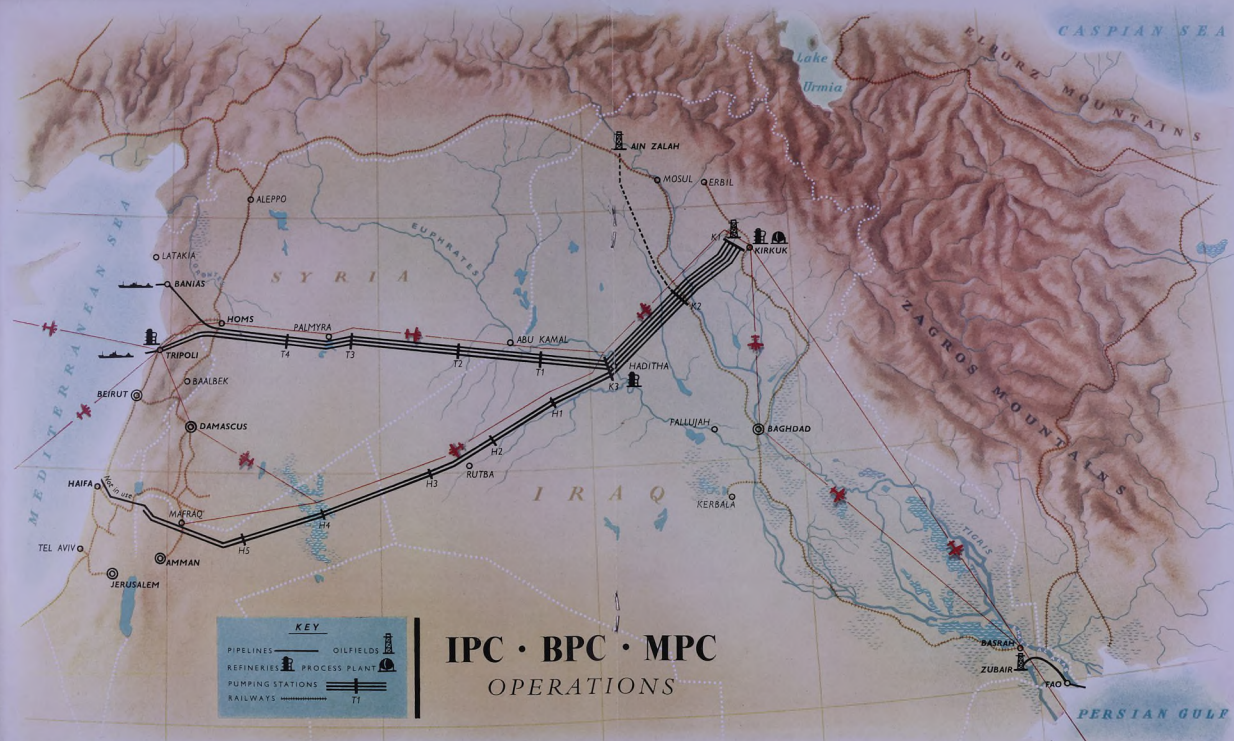
In 1950, discussions began between the Iraq Government and the Iraq Petroleum Company, Mosul Petroleum Company and Basrah Petroleum Company for the revision of the concessions granted to the Companies in 1925, 1932 and 1938 respectively. On April 7th, 1951, the Companies made to the

Iraq Government an offer to share equally with the Government the profits accruing from the operations of the three Companies in Iraq. This offer was accompanied by specific proposals for its implementation which were discussed with the Iraq Government during the next few months, and on August 13th, 1951, the Prime Minister, His Excellency Nuri Pasha El Said, announced the Government's acceptance of the offer.

Then followed a process of drafting an agreement embodying all the details and the signing of the final document on the 3rd February, 1952, by His Excellency Abdul Majid Mahmoud, Minister of Economics, on behalf of the Iraq Government, and Mr. H. S. Gibson, Managing Director of the Iraq, Mosul and Basrah Petroleum Companies. The terms of the Agreement are effective from the 1st January, 1951.

The Iraq Petroleum Company and the Mosul Petroleum Company, will together produce a minimum of 22 million tons of crude oil a year from 1954 onwards. The Basrah Petroleum Company, which started export from the Zubair Field in December, 1951, has undertaken to produce annually a minimum of 8 million tons from the end of 1955.

The Iraq Government is assured in all circumstances that its total income will not be less than 25 per cent of the seaboard value of all



KEY

PIPELINES	OILFIELDS
REFINERIES	PROCESS PLANT
PUMPING STATIONS	
RAILWAYS	T1

IPC • BPC • MPC

OPERATIONS

International boundaries drawn approximately



crude oil exported by the Iraq and Mosul Petroleum Companies, plus 33 1/3 per cent of the seaboard value of crude exported by Basrah Petroleum Company. Fluctuation of world prices is to be taken into account in ascertaining the profits to be shared between the Iraq Government and the oil Companies. The Iraq Government, as part of its 50 per cent share of profits, will be entitled to take in kind at seaboard 12 1/2 per cent of the oil produced for export by the three Companies. The Government can either dispose of this oil in the open market or receive its value from the Companies at prevailing world market prices. A large part of the balance of the Government's revenue will be received in the form of income tax.

Subject only to circumstances

beyond the control of the Companies, the Iraq Government is guaranteed that its share of profits shall not be less than £20 million (sterling) in 1953 and in 1954, and not less than £25 million in 1955 and each year thereafter.

The Government's interests are further safeguarded by the provision that, in the event of production of oil from Iraq being precluded by circumstances beyond the control of the Companies, they will pay the Iraq Government a minimum of £5 million annually for a period up to two years.

Provision has been made to increase the opportunities of Iraqi nationals to participate in the development of their country's oil resources and the number of Iraqi Directors on the boards of the Companies will be increased.



The eternal fires, that have flamed at Baba Gurgur since the days of King Nebuchadnezzar, bring home to visitors the age-long history of this ancient land



The signing of the Profit Sharing Agreement between the Iraq Government and the Iraq Petroleum Group of Companies in February, 1952, was the outcome of several months of friendly and successful negotiation. This picture, taken at the time of the signature, shows right to left H.E. Abdul Majid Mahmood, Iraq Minister of Economics, Mr. H. S. Gibson, Managing Director of the Iraq Petroleum Group of Companies, and Dr. Nadim Al Pachachi, Director General of Economics

Announcing the formal signature of the Agreement on February 3rd, 1952, His Excellency Nuri Pasha El Said, contrasted the benefits which will accrue to Iraq from this Agreement with the sterile stalemate in Persia, and asserted that they were such as to ensure the interests of the Iraq people and "to provide them and their posterity with a reasonable standard of living."

This is indeed the case, for under an act passed by the Iraq Parliament in 1950, seventy per cent of the Government's oil revenues will be devoted to capital schemes which will increase the productivity of the soil and will enrich the lives of the people.

In a report transmitted to the Iraq Prime Minister on February 11th, 1952, a Mission of the



Commenced in November, 1950, the Terminal at Banias (right) is already handling the 30-inch throughput, while the Tripoli Terminal (left) takes that of the older 12-inch and 16-inch pipelines—undertakings which are bringing wealth and employment to the countries through which the pipelines pass

International Bank for Reconstruction and Development wrote:

"Iraq possesses impressive potentialities for economic development. With a total population of about 5,000,000 and an area of 168,400 square miles, Iraq is sparsely populated in relation to its resources. Although all but a relatively narrow belt in the north and north-east has insufficient rainfall to sustain agriculture, the country's twin river systems—the Tigris and Euphrates—can provide large amounts of water for irrigation. Much of its soil is inherently fertile and with ample water, manpower and implements, the area under cultivation might be almost tripled. In oil, Iraq possesses a cheap source of power and raw materials essential to the development of industry, agriculture and transportation; and it may have other mineral resources susceptible of commercial exploitation. There is little doubt that the country can ultimately maintain a much larger population on a considerably higher standard of living.

"Fortunately prospective increases in Government revenues

The Signal Station, Tripoli Terminal



from oil now make it possible for the Government to undertake a large-scale programme for the development of the country. Past investments in the oil industry will in the future yield large dividends in the form of a rapidly increasing production of petroleum. In accordance with an agreement reached in August, 1951, the three internationally-owned oil companies operating in

Iraq have undertaken to raise oil output, which amounted to only about six million tons in 1950, to 30 million tons per year by the end of 1955 and to turn over to the Iraq Government half of the profits before the deduction of taxes. On this basis it is anticipated that, over the next five years, the Government may receive net revenues amounting to as much as 214 million dinars

from oil alone. Under the terms of a law passed in 1950 these revenues will be available to finance development."

The development programme places emphasis on agriculture and on irrigation and on flood control projects, which should provide enough water to extend the cultivable area under irrigation from about 11 million donums* at present, to approximately 15 million. Other projects of the Development Board to be financed by oil revenues are concerned with the improvement of communications and transport, the prevention of disease by improved standards of sanitation and hygiene, community planning and an improved and expanded educational service.

As a result of these projects, great changes can be expected which will affect the whole pattern of life of the people of Iraq. Increased productivity will promote higher standards of living and improved standards of health and housing will ensure their enjoyment. It is the privilege of the Companies to participate in these developments which have become possible by the past co-operation between the Government and the Companies.

*The donum equals 0.62 of an acre

This co-operation and the investment of many millions of pounds by the oil Companies is now beginning to yield substantial benefits to both. Increased rates of production will be reflected in increased profits from oil operations in Iraq which, as a result of the new agreement, will now be shared equally with the Government and will enable it to carry through the Development Programme on which it has so wisely embarked.

This new vista of prosperity for Iraq is the result not only of the application of the profit sharing principle, but is due also to the scheduled increase in oil exports made possible by the development of the Zubair field in the Basrah Concession and by the construction of the 30-inch pipeline from Kirkuk to Basnia. Great progress was made with both projects in 1951.

The Development of the Basrah Concession

In October, 1951, after six years of intensive effort, oil began to flow through a pipeline to Fao from an oil reservoir two miles below the surface of the ground at Zubair, which is thus one of the deepest producing oil fields in the world.

This oil field at Zubair owes its discovery to the modern science of geophysics. In the early days of the petroleum industry, seepages of oil or gas were the indications on which wells were drilled and oil fields found. Geologists then began to study the conditions under which oil occurred, and the structure of the earth's surface then provided the evidence by which many fields were discovered. At Zubair, there is neither seepage nor surface evidence of geological structure, so the geophysicists were called in, and the credit for the discovery goes to them.

The concession covering southern Iraq was granted to the Basrah Petroleum Company at the end of November, 1938, and geological exploration commenced immediately, extensive work being done in the Amara area before the outbreak of the Second World War. During that war, the whole of British industry was devoted entirely to the war effort, and so it was not possible to undertake active exploration. But the Company's geologists continued their careful and patient study of all the available evidence both from Iraq and from neighbouring countries. They concluded that conditions for the formation



Tripoli Terminal and Camp Leguult are typical of IPC installations, where employees work in modern airy offices and laboratories



Scenes during the construction of the Kirkuk-Baniyas 30-inch pipeline

Mechanical monsters of today—above: an Arabian Bechtel Company mobile crane unloads nested pipes at Homs; below: a coating and wrapping machine is set up



and accumulation of oil might be more favourable in the geologically unknown territory beneath the plains and marshes of the Basrah region than in those regions to the north where surface geology could be studied.

Even before the end of the war, the Company ordered deep drilling equipment, and having decided that geophysical surveys were necessary, arranged that they should be carried out in the vicinity of Basrah immediately the war finished. These arrangements enabled gravity, magnetic and seismic surveys of the Basrah area to begin in 1946. The results suggested the possibility of the existence of a number of potentially oil-bearing structures, and test wells were located on the most promising of these at Zubair, Nahr Umr and Ratawi.

As a result of its enterprise in sponsoring the manufacture of deep drilling equipment in the United Kingdom, and placing orders while the war was still in progress, the Basrah Petroleum Company and its associates obtained the first British outfits to be built after the war. Two of these commenced drilling in February and March, 1948, the one at Zubair and the other at Nahr Umr. Both wells penetrated oil-bearing sands, the former between 10,000 and 11,000 feet and the latter between 8,000 and 9,000 feet; and in September, 1948, the Company was able to inform the Government that oil in commercial quantities had been found.

Further wells were drilled at both places, but the second one at Nahr Umr encountered water, and in consequence, drilling effort was concentrated at Zubair with the



Tankers now call regularly at the new terminal at Fao, on the Shatt Al Arab, near Basrah





Top: surveyors are always first in the field. Middle: a back-acting shovel reaches the 466.4 signpost on the Kirkuk-Banias pipeline. Bottom: 30-inch pipe being aligned beside the ditch near T4 Pump Station

object of commencing the export of oil at the earliest possible moment. Six drilling outfits have been employed and by the end of 1951 twelve wells had been completed and five more were in progress. These wells are approximately four times as deep as the producing wells at Kirkuk and more than twice as deep as those in Kuwait, and a total footage of over 200,000 had been drilled by the end of the year.

But much more was necessary before oil could be exported: field installations, storage tanks, a power station and workshops have been constructed at Zubair; stores, offices, commissariat and transport depots at Makinah; a 70-mile pipeline to Fao; and at Fao, storage tanks, pumphouse and loading jetties.

At Zubair a single degassing station installed in a central position with reference to the 15 producing wells and employing horizontal separators stabilises the crude oil. The oil and its associated gas flow through individual high pressure flow lines from the wells to the station where gas is released in five stages, the final stage being to the flow tanks. From the flow tanks the stabilised crude oil is transferred by a small centrifugal pump to three large storage tanks from which it is pumped through the 72-mile line to Fao by four gas-driven and two diesel-driven pumps. The line is 12-inch in diameter except for the last 10 miles which is 16-inch. The line is laid on 8-foot concrete sleepers, expansion and contraction being compensated for by movement in a vertical plane.

At the Fao Terminal eight crude storage tanks have been erected each with a capacity of 4½ million gallons. Two oil loading jetties have been built each of which can load at a rate of 2,000 tons per hour



The desert draws vivid colour from pipe-laying activities



Left: a Buckeye Ditcher cuts part of the 556-mile 4 x 5-foot trench. Right: 30-inch pipe takes up a 15' bend like wax; pipe ends are bevelled before welding; a Mighly Anty, with trailer stowed, awaits its next 65-ton load of 30-inch pipe



by means of electrically-driven loading pumps. The jetties are equipped for night loading, and among other services fresh water and steam are available for tankers.

The first tanker loaded at Faou with Zubair oil on December 19th, nine months ahead of the original target date and anticipating by three weeks the inaugural ceremony which took place on January 10th, 1952. To accomplish this necessitated the importation of nearly 100,000 tons of material and equipment and the employment of 2,500 men directly by the Company, in addition to those employed by contractors.

Oil production from the Zubair field is expected to total 2.2 million tons by the end of 1952. Concurrently with the production of oil from Zubair, development of the Basrah concession will continue and, under its new agreement negotiated with the Iraq Government in 1951, the Basrah Petroleum Company has undertaken to attain a production of 8 million tons per annum by the end of 1955.

The Kirkuk-Mediterranean Pipelines

By 1931, adequate reserves of oil had been proven at Kirkuk to justify the construction of a pipeline system to the Mediterranean seaboard and the necessary transit arrangements were made with the Governments of Palestine, Transjordan, Syria and Lebanon to enable work to proceed. The two 12-inch lines projected, ran parallel from Kirkuk to the Euphrates and thence bifurcated, one traversing Transjordan and Palestine to the Bay of Acre (north of Haifa) and the northern line traversing Syria and Lebanon to Tripoli.

Final surveys of the alignments were completed in 1931 and in the first half of 1932 water wells were drilled; railhead depots constructed at Tripoli, Homs, Mafraq, Baiji and Haditha; and the organisation of the transport system completed. Actual construction of the 12-inch lines commenced in August, 1932, with a labour force of 4,878 local and 182 foreign employees.

Construction of the north line to Tripoli was completed in July, 1934, and the first oil reached Tripoli on July 14th. The southern line was completed in October, 1934, and oil was first delivered to the Haifa terminal on October 14th, exactly seven years after oil was first struck at Kirkuk.

The northern line is 531 miles long and the southern 617 miles. Each line has a capacity of 2,000,000 tons of crude per annum (42,500 barrels per day). These were the first all-welded pipelines to be built outside the United States.

Twelve pump stations were built, three near populated areas and nine out in the desert. They not only supply the power necessary to sustain the flow of oil at the designed throughput and act as control points for checking the quantities passing through the line, but also act as bases for line repair and maintenance. They are in fact miniature towns in artificial oases. Situated as they are in a desert

inhabited only by nomadic tribesmen, every need of the maintenance staff has to be provided by the Company.

In 1934 production from the Kirkuk field was 932,000 tons. By 1937 it had risen to 4 million tons per annum, the maximum capacity of the 12-inch pipelines from Kirkuk to Tripoli and Haifa. Plans made for the construction of new 16-inch lines to Tripoli and Haifa were frustrated by the war, during which the Middle East was the scene of military operations and when steel for pipe and machinery was not available. The pipe for these lines was ordered in 1945 and construction commenced in October, 1946. By the Spring of 1948 the southern line to Haifa was completed to within 50 miles of the Mediterranean seaboard. The disturbed conditions in Palestine caused suspension of operations on this line, and labour and materials were transferred to the northern line from Kirkuk to Tripoli. Pump-

ing through this line was commenced in July, 1949, reaching full capacity in 1950, when production from the Kirkuk field rose to an annual rate of 7½ million tons. In the meantime, the capacity of the 12-inch line to Haifa was denied as the result of the state of war between the Arab countries and Israel. But production facilities in the Kirkuk field were planned on the assumption that the 12-inch and 16-inch lines to Haifa would be in operation, and by 1950 were capable of a production of 15 million tons per annum, or nearly four times the pre-war production.

While construction of the 16-inch lines was still in its early stages, plans were made for laying a 30-inch line from Kirkuk to the Mediterranean seaboard at Banias. Steel pipe of this diameter was available in quantity only from the U.S.A., and due to the world steel shortage it proved impracticable to obtain a steel allocation or mill capacity for its manufacture until

Water is supplied all along the line by wells or pumping stations such as this at K3



1950. This large diameter pipe is not drawn but is rolled into its cylindrical shape from steel plate, welded along its length, inside and out. Hydraulic expanders then stretch the metal to give it greater tensile strength, producing a pipe of the required diameter, 31 feet long, with ends beveled for final welding. Approximately equal quantities of 30 and 32-inch diameter pipe were ordered to permit the 30-inch pipe being nested inside the 32-inch to halve the shipping space.

Transport across seas and deserts

160,000 tons of 30/32-inch and 23,000 tons of 26-inch pipe were brought in 35 ships chartered by Furness Withy & Company, two-thirds of them Liberty ships each capable of carrying 18 miles of pipe. It took 25,000,000 ton-miles of rail transport and 25,000,000 ton-miles of motor transport across the Iraq and Syrian deserts to distribute these cargoes from the port of Tripoli in Lebanon and from Basrah, 400 miles south-east of the nearest point on the pipeline.

The 30 and 32-inch pipe was manufactured by the Consolidated Western Steel Corporation of California. The first consignment left Los Angeles in September, 1950, on the *Middlesex Trader* which discharged her cargo at Basrah in November. The design of the pipeline provided that the seaward end of the pipeline, a 90-mile stretch downhill from the Homs Gap, 2,573 feet above sea-level to the port of Banias, should be 26-inch pipe. This was manufactured by the National Tube Company of Lorain, Ohio, and the first 3,224 tons of this was shipped in the *Isia* from Baltimore, reaching Tripoli on November 5th.



Man versus the elements

Construction and pipe-laying started in the rainy season, and the first Company report from Iraq for 1951 reads: 'Unusually heavy rain seriously delayed laying in the Beka'a Plain.' That winter was the worst in living memory, and the ditch excavated to receive the pipe was flooded. A great ditching machine cut four feet wide and five feet deep into the ground where the going was not too rocky, while 80 per cent of the route was blasted through solid rock. Yet at the end of January the gang was laying at the target rate of 13 miles a month.

The chief contractors for laying the pipe were the Arabian Bechtel Company, whose personnel included 2,500 Arabs and 250 British and Americans while another 2,500 Arabs were employed by subcontractors.

The first base camp was set up outside Homs, consisting of all-weather portable huts accommo-

dating four men each, either Swedish prefabs or British Supalite huts. Further on, in the Iraq desert, the Arabs built many houses of adobe brick with remarkable speed, and some of stone, lining them with a plaster of burnt gypsum mixture, obtainable nearby.

It was at Homs that the Bechtel engineers contrived a remarkable production line for triple-jointing the pipe into 93-foot lengths. This cut down the manual welding necessary on the right-of-way and contributed much to the success of the project. After dewatering apparatus had drawn the 32-inch joints away from their inner companions, each size was jockeyed into position for lining up by an automatic clamp.

Great trucks — some built by Thornycroft to I.P.C. specification and called Mighty Antars, after a legendary Arab warrior of immense strength — carried nine of these 93-foot lengths, weighing 65 tons, to the required sites. There,



Happy housewife, proud parents, eager schoolchildren—scenes in any of the Companies' areas, where education, recreational amenities, health services and up-to-date housing are provided

well-trained crews were waiting to unload them and string them along the route for the pipe-liners to line them up with the aid of clamps, ready for welding.

After the welders, came the doping crews, equipped with machines for scraping off rust and brushing away millscale before the application of a coating of coaltar primer. The coated pipe was then carefully feather-dusted before being suspended in roller cradles for an elaborate and spectacular coater-and-wrapper to slip along it. This, simultaneously flooded it with hot coaltar enamel, rolled on a reinforcing band of glass fibre, enamelled this again and bound the outside of it all with asbestos felt. It was the first time a big-inch long-distance pipeline had been given the continuous double-coat double-wrap treatment with hot coaltar enamel. Over the complete insulation a "holiday detector" was passed which gave audible warning of any flaw in this 1/2-inch protection against underground corrosion.

When the pipe was ready, heavy sideboom tractors carefully raised it in wide slings, the supporting timbers were removed, and it was gently brought to rest, for gangs to cover it with a protective layer of soft earth before the back-filling gangs moved in.

No mean task in favourable weather, this became herculean during the storms and rain (reaching 3.40 inches) of February: yet 30 miles were completed, with coating and burying only 7 miles behind the welding gang. Rainfall halved in March and by May was negligible; laying then proceeded rapidly and, despite an interruption for the Fast of Ramadhan, 29 miles

were welded in June, with 22 miles wrapped and backfilled. During the hot dry months the pace grew quicker and quicker. In September they were over the Tigris and had more than half of the Euphrates crossing welded.

Journey's end

In October the line was across the Euphrates and 45 miles laid during the month. Then the renewed onset of wet weather in November meant 43 miles welded, 48 coated and wrapped and 38 back-filled. In December, contending with bad weather, only 37 miles were welded; however, the total, including 26-inch pipe, had reached 335 of the 556 miles, 308 being back-filled. This was a remarkable achievement. Long before this report could be published the whole line was complete, the last 130-mile stretch from K.3 to Kirkuk having been laid at an even faster rate.

Growth of pumping and terminal facilities

Construction of the new T.2 Pump Station started early in the year when initial work covered the provision of facilities to enable personnel to be posted and construction to proceed with the minimum demand on operation services. Good progress was made on the generator house, pump house and ancillary buildings, the overall progress at the end of the year approximating 40 per cent. Machinery erection started at the end of June, using temporary connections where necessary. Extensions were made to the main manifold enabling the 30-inch line to be filled and tested without

interference with the operation of the 12 and 16-inch lines.

New construction at T.4 Station commenced in June. Work was done on the erection of the main generator and pump houses together with ancillary buildings, and at the end of the year overall progress was approximately 18 per cent.

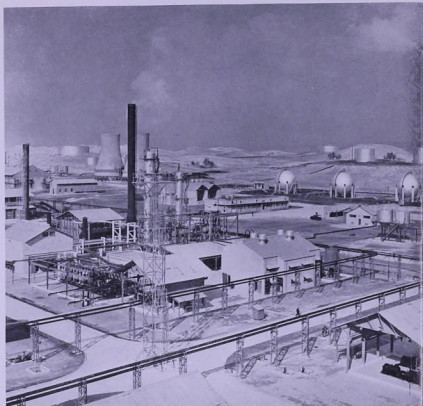
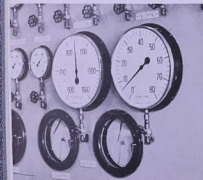
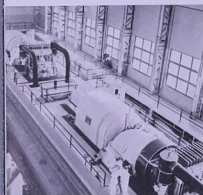
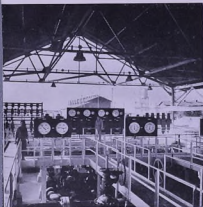
At the Banias terminal the motor transport garage and workshop, the carpenters' and blacksmiths' shops, the electrical, paint, oil and cement stores were completed and in service by the end of the year. In the Tank Farm eight storage tanks were approaching completion for which the pipe work and fire walls were also well advanced. On the foreshore a corridor 7,200 feet long and 270 feet wide was prepared for pulling sea lines, involving approximately 26,000 cubic yards of excavation and 24,000 cubic yards of back-filling. Six sea loading lines were successfully pulled and one was connected to the foreshore pipe work. Progress with the small-boat harbour, where 82,000 cubic yards of rock had been placed, was sufficiently advanced to afford some protection to the launches and small boats necessary to operate the terminal.

Concurrently with the construction of the pipeline and the Banias terminal, production facilities in the Kirkuk field have been expanded to ensure the availability of crude oil for its operation.

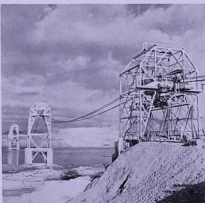
Building projects for the comfort and well-being of personnel have kept pace with other developments and ensure to Company employees the enjoyment of the improved standards of living which, as a result of their labours, will accrue to the people of Iraq.

From the Staff Club at Tripoli to indoor games in the Recreation Centre at Ain Zalah, these scenes are typical of the opportunities for relaxation afforded to staff, workers and students in the Companies





Where for centuries there was nothing but rock and sand and vestiges of forgotten empires, there spring these structures of a new era—marvels of engineering which transmute potential into useful wealth



All the resources of telecommunications are employed to keep in touch with tankers taking in oil from the submarine pipeline at the Terminals