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DEVELOPMENT OF THE PETROCHEMICAL INDUSTRY IN THE SYRIAN ARAB REPUBLIC[1]

by

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S.A.R.

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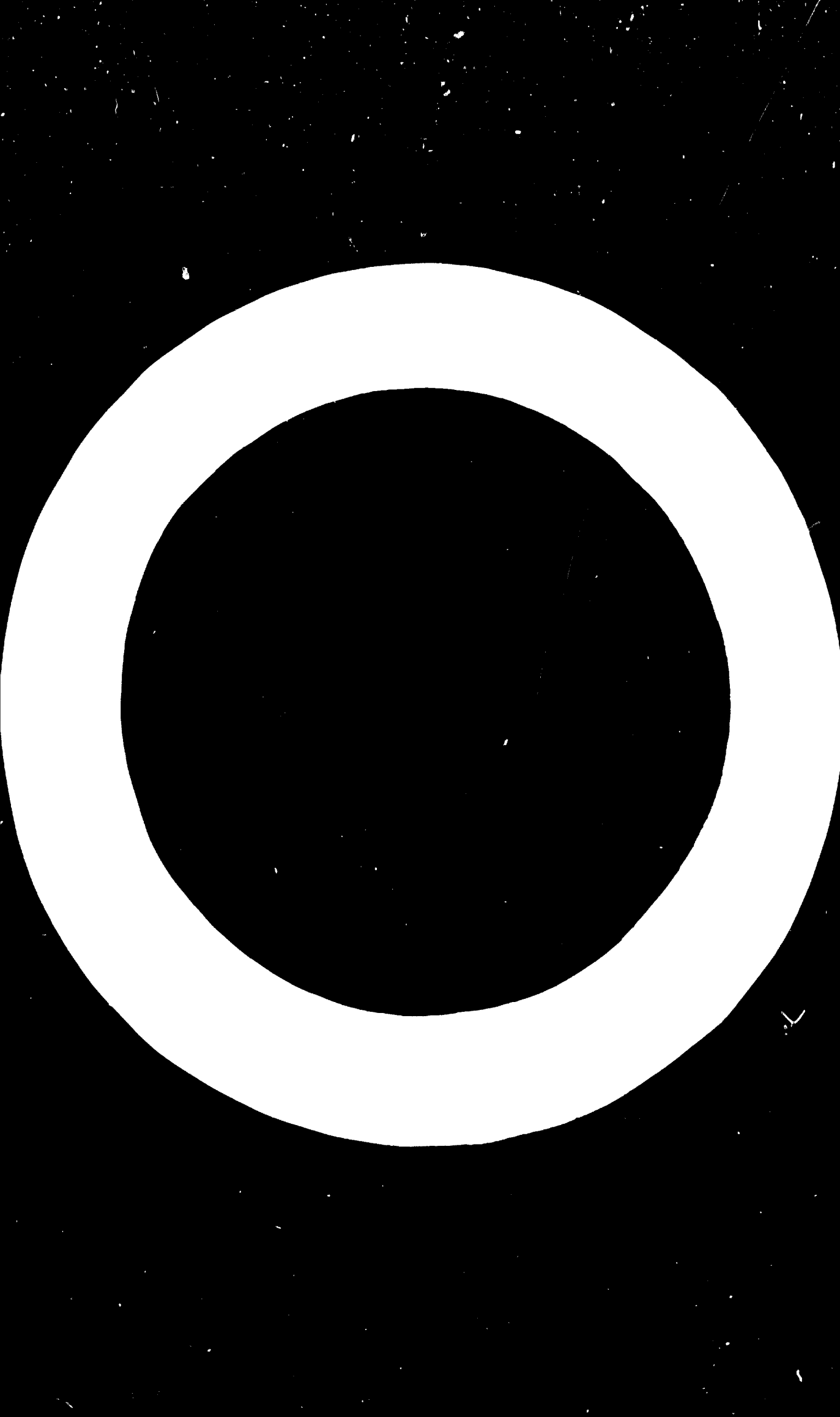


1. Petroleum in the S.A.R.

Petroleum was first discovered in "Karatchouk" field in the north-eastern part of S.A.R. in 1955. It is rich in asphalt and has an A.P.I. gravity of about 20°. It was later discovered in an adjoining field, "Owaydieh" of a slighily better quality (24-25° A.P.I.)

The recoverable reserves are presently estimated at 200 million tons. In the "Gibisseh", natural gas was discovered in 1940 and was not used pending more complete exploration for oil in the area. In 1968, oil was discovered in connexion with this natural gas deposit and prospecting work is still going on.

Three difficulties delayed the exploration of oil in the S.A.R. The rather modest reserves compared with the reserves of neighbouring oil-producing countries, the long distance that separates this oil from the sea (650 kms), and its heavy quality and high sulphur content (4.5 per cent). Foreign companies hesitated in investing in a pipe line connecting this oil with the sea and the oil consuming region. The Syrian Government finally laid this pipe line and the oil is now available for refining in Homs refinery and for export.

Oil flowed through S.A.R. from Iraq (Kirkuk) since 1933 and from Saudi Arabia since 1951. The agreements with the oil companies concerned provided for the supply of S.A.R. with crude oil for its local consumption at market prices.

Various geological structures showed also the presence of natural gas but no estimation of reserves has been made yet. Gases separated from the produced oil are presently the surest source. It is estimated that about 0.8 million cubic metres of gas per day will be produced. The following is a typical present composition of this gas:

Methane	28.6 per cent
Ethane	17.3 per cent
Propane	16.1 per cent
Butanes	21.3 per cent
Pentanes	16.5 per cent

This gas will be wasted unless a profitable utilization is found for it.

2. Petroleum refining

The S.A.R. was probably the first country in the Middle East to build a nationally owned petroleum refinery. The Homs refinery, using 20,000 barrels,

per day of Kirkuk oil, started operation in 1959. It included atmospheric distillation, gasolene platforming, an asphalt producing unit, an L.P.G. unit and normal facilities. A shortcoming of refining operation in S.A.R. was the excess of gasolene and the deficiency of gas oil. The decision to build a nitrogenous fertilizer plant consuming naphtha to generate hydrogen, promised to remedy the situation. The heavy yearly bill for Kirkuk crude oil and imported gas oil, prompted S.A.R. after the discovery of local oil, to utilize it for its own need. The studies made by the French Petroleum Institute (Institut Français du Pétrole) led to the need of coking to transform the large portion of heavy residuum of Swaydieh and Karatchouk oil into products more in demand. The new refinery to be operated soon in Homs includes other than the refining operations mentioned above, four coking drums, various hydrogenation units, and a sulphur production unit from H_2S (30,000 tons/year of sulphur). The capacity of the new refinery is 2.7 million tons/year.

The processing is directed towards meeting as far as possible the local requirements of various products, but there will still remain a large excess of naphtha that has to be used in the most profitable manner. Most of the produced coke (8.5 per cent sulphur) will be burned in an oil fuel power plant leaving about 30,000 tons to be utilized in some way, most probably in the production of cement.

3. The nitrogenous fertilizer plant

This plant is designed to produce 148,500 tons/year of an ammonium nitrate fertilizer diluted with dolomite to 25 per cent nitrogen. It will consume 50,000 tons/year of naphtha. The plant is expected to start production by the middle of 1970.

The consumption of chemical fertilizers in S.A.R. was less than 1,000 tons in 1950 and increased with the introduction of cotton planting to 6,000 tons of nitrogen in 1960 and 22,760 tons in 1970. The years 1968 and 1969 showed respectively 37 per cent and 25 per cent increase in the nitrogenous fertilizer consumption. This was attributed to the Government policy of lowering the selling price of nitrogenous fertilizers, equalizing the price and farmers reliance.

The consumption of 22,760 tons of nitrogen is only about 1% per cent of normal requirements of the cultivated land.

The continuation of the Government policy of encouraging the use of ferti-

lizer including the stabilization of crop prices and improving the ratio of crop prices to fertilizer prices will make it possible to absorb the total capacity of the nitrogenous fertilizer plant in the few years to come and to create a need for a urea plant.

4. Future of the petrochemical industry

The third five years plan in S.A.R. is being prepared and no final decision has been yet taken concerning the future development of petrochemical industry. The availability of natural gas, excess naphtha and other raw materials, and the urgent need for the economic development of the country are strong motives for the creation of a petrochemical industry in the next five or ten years.

Two projects stand out in term of immediate importance, namely the production of more fertilizers including phosphatic fertilizers, and the improvement of the quality of the heavy crude oil by hydrogenation. The manufacture of olefin-derived chemicals may come in a later stage.

(a) The urea plant

The plant will use excess natural gas as raw materials and the local market will absorb most of the production. It may be erected near the oil fields and the agricultural region of mid-Euphrates thus saving in raw-material and product transport. It might be located on the coast to serve both local and export needs.

The contemplated capacity is 330,000 tons/year of nitrogen. This plant together with the triple phosphate project will make the country in a good position to meet its requirements of chemical fertilizers and to export the excess.

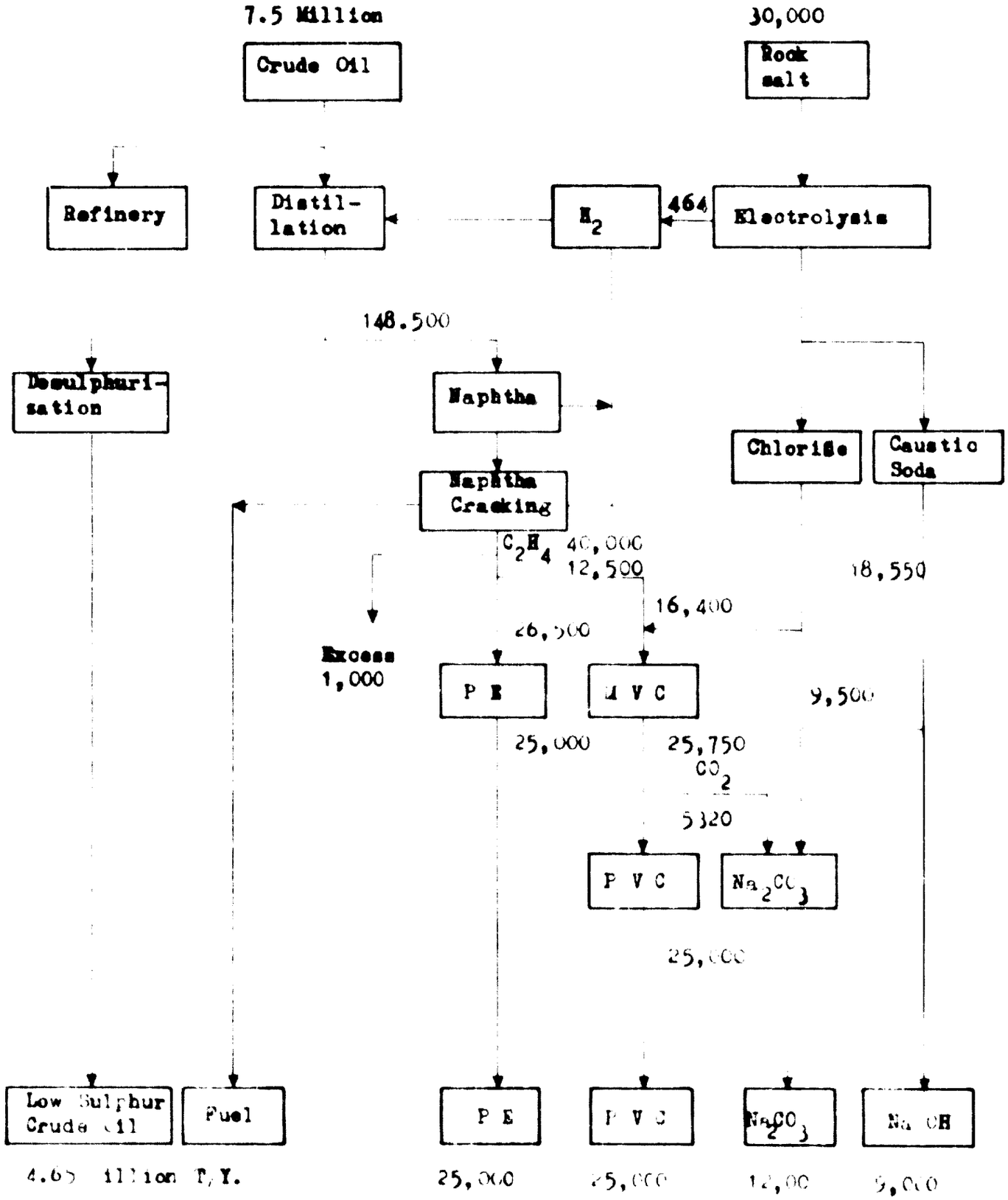
(b) The upgrading of oil

Syrian crude oil contains much sulphur and is rather poor in light and medium distillates. This is a handicap for both its local processing and export. Already the need is felt to expand once more the petroleum refining capacity in the country. Two possible choices exist: one, is to carry the upgrading to the oil fields and the refining plant near the coast and consume the gases. The second makes possible the utilization of excess petroleum field gases and the purpose of more oil in the present pipe line due to decreased viscosity of the up-graded oil.

The second choice is to make both hydrogenation and refining in a single plant closer to the coast and consuming areas. The technical advice of UNIDO with regards to this matter is of great importance.

(c) Olefins and derived chemicals

The enlarging of petroleum refining will bring more excess naphtha. It is envisaged to produce 40,000 metric tons of ethylene per year in the initial stage of a petrochemical complex. Such a small start is useful to gain experience in operation and maintenance and to push up the consumption of plastic and artificial-fibre raw materials. A proposed scheme is shown in the accompanying diagram.



Scheme for Petrochemical Production

(Figures: Ton Year)

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