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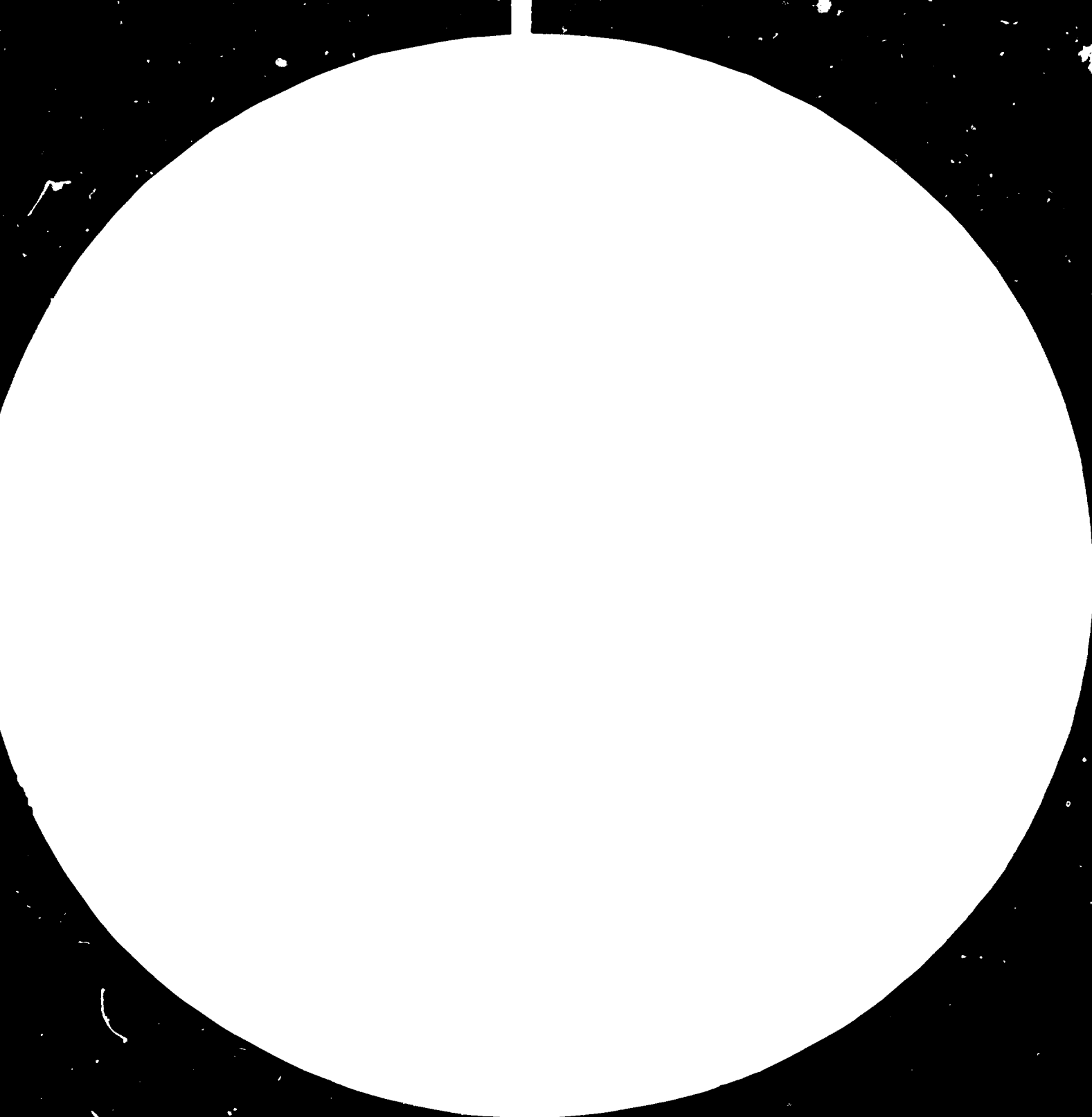

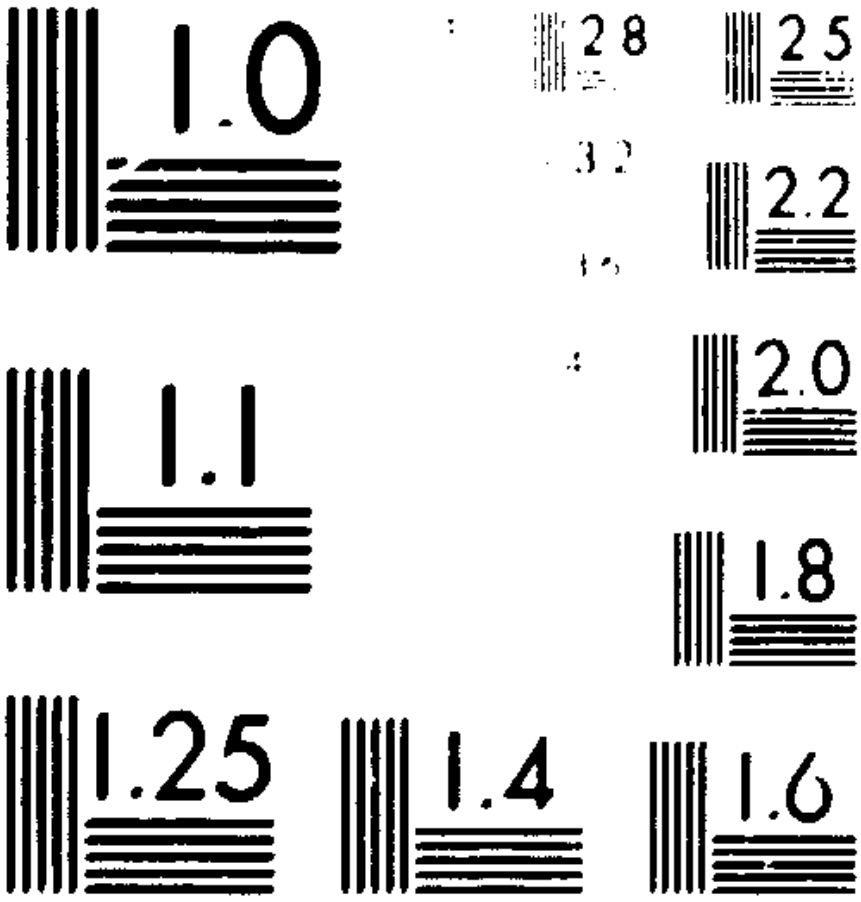
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FERTILIZER INDUSTRY IN THAILAND*

by

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FERTILIZER INDUSTRY IN THAILAND

Agriculture is a mainstay of Thailand's economy. The agricultural sector provides about one - third of gross domestic product and over two-thirds of the nation's export earnings.

Fertilizer demand has increased threefold in the past decade, growth has been particularly strong since 1975. Apparent consumption in 1981 is 966,000 mt of fertilizer products containing 169,000 mt N, 144,000 mt P_2O_5 and 39,000 mt K_2O. It is expected to be 260,000 mt N, 190,000 mt P_2O_5 and 60,000 mt K_2O . Almost of the fertilizer needs relies entirely on imports.

The domestic fertilizer production capability consists of a small fertilizer complex, a composting plant, less than ten granulation plants which convert purchased raw materials into granular form, and small quantities of phosphate rock produced locally.

The Chemical Fertilizer, Ltd.is the first nitrogen fertilizer manufacture in Thailand. It is restricted to a small, financially and technical beleaguered ammonia-from-lignite plant located in the northern part of Thailand since 1966.

The complex is based on a 100-tpd rated capacity amonia plant of Uhde design utilizing lignite as the hydrocarbon feedstock. Ammonia is converted to urea and ammonium sulfate. The urea unit, rated at 80 tpd, employs the Stamicarbon process. The ammonium sulfate, rated at 190 tpd of sulfuric acid import, employs Uhde process. The plant was shut down in 1978 because of its low capacity utilization. The major problems are technical problems which cause plant downtime and exceedingly poor production and the poor quality of lignite feed materials which need to be improved by selective mining and beneficiation.

The granulation of mixed fertilizers involves the combination and convertion of fertilizer raw materials ie. Ammonium Sulfate , Ammonium Chloride, Urea, Mono and Di-ammonium phosphate,muriate and sulfate of potash etc.into finished fertilizers of a more usable form in NP and NPK grades. The total capacity of the mixing plant is less than 400,000 tpy.

As the impending commercialization of natural gas reserves in the Gulf of Thailand and potential reserves in the North and North-eastern of Thailand provides an oportunity for producing ammonia and ammonia-based nitrogen fertilizer at a world competitive price. In 1979 the Ministry of Industry with the technical assistance of International Fertilizer Development Center (IFDC) and World Bank conducted the pre-feasibility study on "Thailand Strategy for ertilizer Development". The study recommended that Thailand should establish fertilizer Complex with the capacity of 1,000 mtpd of ammonia and 1,100 mtpd of urea in 1985. In 1981, Ministry of Industry with the recommendation of World Bank conducted the feasibility study of "Fertilizer Manufacture in Thailand" in order to confirm its economic and technical viability.

In 1980, Ministry of Industry has issued the Ministerial Announcement to invite the companies, either Thai or foreign to undertake their own feasibility study and to submit proposals to invest in the establishment of the fertilizer complex in Thailand. There were ten proposals submitted to the Ministry of Industry, out of which four propcsals has been shortlisted and the Scandinavian Group has been selected to be the investor of this project and this group is now invited for negotiating and drafting the agreement with the Sub-committee on "Negotiation and Drafting of Agreement for Fertilizer Complex", chaired by the Deputy Minister of Industry The agreement is expected to be entered in March 1982,and after that,the 34 months construction period will take place. The commercial production is expected to start in the early of 1985.

Details of the Proposed Project

Investor : Haldor Topsoe A.S., Norsk Hydro a.s. and Swedyards Development Corporation of the Scandinavia.

Kinds of fertilizer material

Urea, Di - ammonium phosphate, Mono-ammonium phosphate and other NP/NPK fertilizers.

Minimum production capacity

Calculated as N nutrient, not less than 260,000 mty, out of which not less than 100,000 mty shall be in the form of gramulated urea, plus not less than 190,000 mty of P_2O_5 nutrient.

Total Investment Cost US $ 590 million.

Process Ammonia plant shall be designed by Haldor Topsoe A.S. of Denmark, and the urea plant by Snamprogetti Sp. A. of Italy.

The process will be onshore barge - mounted process.

Construction period 34 months

Start production 1985

In this project, the Government of Thailand has formulated the terms and conditions especially on price of fertilizer materials that, the domestic market ex-factory price must be at a uniform rate of discount form CIF Bangkok price from the first year of commercial production through the twelfth year which is the terminating year of the project agreement.

The rate of discount will be mutually agreed upon. As to increase the economic viability, the Government decided to participate and assure in this project as follow :

(1) Participate from the outset and provide ten percent of the equity funds required and hold ten percent of the shares of the registered capital.

(2) Support in the receiving of maximum rights, benefits, guarantees authorized in the Investment Promotion Act.

(3) Provide all infrastructure and facilities required and assit in the acquiring land at its site.

(4) Make availability of Natural Gas at a price equal to its cost of gas delivered to the complex.

(5) Not permit the establishment of new fertilizer complex which produces the same kind of fertilizers during the first eight years of commercial operations of the complex, unless the domestic demand for that kind of fertilizer materials exceeds the existing production capacity, or for export.

The project is now under negotiation and drafting the agreement. The construction is expected to start in 1982 and have its commercial production in early 1985. The construction and operation of the complex will be maintain and control under the responsibility of Ministry of Industry. Since the knowledge and experiences of this kind of project is rather new to the Thai Nationals, the transfer of technology from the developed countries,

competence orgarizations, firms institution in the fertilizer business will be beneficial and fruitful to the implementation of this project and will support the agricultural development programme in Thailand.