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CENTRAL INTELLIGENCE AGENCY

REPORT

INFORMATION REPORT

CD NO. 25X1

COUNTRY	East Germany	DATE DISTR.	15 June 1955
SUBJECT	VEB Synthesewerk Schwarzheide Research and Development: Oxo-Synthesis	NO. OF PAGES	2
PLACE ACQUIRED		NO. OF ENCLS. (LISTED BELOW)	25X1
DATE OF INFO.		SUPPLEMENT TO REPORT NO.	

25X1

THIS IS UNEVALUATED INFORMATION

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1. Among the 1954 projects carried out by the Research and Development Department of VEB Synthesewerk Schwarzheide, was a project on "Experiments on a Small Technical Scale for Oxo-Synthesis". Its short designation was "Oxo-Synthesis". Its plan number was 013509b(F-4/02). It was under the supervision of Chem. Eng. Menzel (fnu).

2. The following information on the project was given in the 1954 research and development report of the Schwarzheide enterprise:

   a. Aldehydes can be obtained through the addition of CO and H_2 to olefines; these aldehydes can subsequently be hydrogenated into alcohols. As early as 1951 and 1952, successful laboratory experiments were carried out in the Schwarzheide enterprise in which olefines of primary products were transformed into primary alcohols.

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   b. During 1954, oxo-synthesis was again resumed because larger amounts of olefines were produced through benzine synthesis with iron contacts. The main problem was to carry out the oxo-process in a continuous [redacted]. Plans to import a high-pressure installation for this purpose [redacted] failed, so that no high-pressure installation for oxo-synthesis was available. However, the enterprise was in possession of an installation for Iso-synthesis. Through the cooperation of VEB Kombinat Otto Grotewohl, Boehlen, the individual parts of the Iso installation could be converted into an oxo-apparatus. This Oxo-apparatus was able to start operation in September 1954.

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   c. Up to September 1954, [redacted] experiments were carried out with a 1.6-liter high-pressure autoclave. These experiments aimed at finding out the most favorable reaction conditions with various gas compositions and various contacts. The following contacts were used: the normal cobalt contact (100 Co; 4.01 ThO_2; 8.64 MgO with kieselgur as a carrier); newly developed iron contacts, as well as sebacic cobalt and iron soaps. In particular, the effect on the reaction of CO_2 in the synthesis and/or the mixture gas was studied. Oxo reaction and subsequent hydrogenation with olefine contents of 30 to 35% resulted in products with 122 to 170 [redacted] an average turnover

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of 65 to 70% of the olefines used. The following alcohols could be isolated: hexanol; oktanol, as well as small amounts of higher alcohols; and heptanol.

d. The continuous high-pressure apparatus works according to the irrigation method (Rieselverfahren). Normal cobalt contact served as irrigation surface. In the beginning only a benzine fraction C_5-C_7 with 30% olefine contents was used as olefine material. This was done in order to determine the most favorable reaction conditions for continuous operation. Cobalt was continuously added in the form of sebacic cobalt solution in order to maintain the cobalt level of the contact. The synthesis gas used was $CO:H_2$ in the ratio of 1:2; in addition, mixture gas (1:1) was used at pressures of 150 to 180 atu. The temperature in the contact space was 150° to 160° C. 0.6 to 1 liter per hour of liquid product was processed. The corresponding figure for gas was 200 normal liters per hour.

e. The most favorable operational conditions so far determined were at the pressure of 180 atu. Hereby 50% of the olefines used were transformed in one step into aldehydes as well as into a small amount of alcohols.

f. The following difficulties were encountered in carrying out the project:

(1) The high-pressure installation was not available until August 1954.

(2) Olefines were not provided in the amount foreseen.

(3) The CO_2 pressure-wash installation for the elimination of carbon dioxide from the synthesis gas can not be put into operation until 1955. It is expected that synthesis gas with small CO_2 contents ($CO:H_2$ in the ratio of 1:2) will give better yields, as in the case of mixture gas ($CO:H_2$ in the ratio of 1:1).

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c. Up to September 1954, [redacted] experiments were carried out with a 1.5-liter high-pressure autocleve. These experiments aimed at finding out the most favorable reaction conditions with various gas compositions and various contacts. The following contacts were used: the normal cobalt contact (100 Co; 4.01 ThO_2; 8.64 MgO with kieselgur as a carrier); newly developed iron contacts, as well as sebacic cobalt and iron soaps. In particular, the effect on the reaction of CO_2 in the synthesis and/or the mixture gas was studied. Oxo reaction and subsequent hydrogenation with olefine contents of 30 to 35% resulted in products with 122 to 170 OHZ. This corresponds to an average turnover

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