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## OCCASION

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BEIJING CHEMICAL REAGENTS TECHNOLOGY DEVELOPMENT CENTRE

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PEOPLE'S REPUBLIC OF CHINA

Final Report\*

Prepared for the Government of the People's Republic of China  
by the United Nations Industrial Development Organization,  
acting as executing agency for the United Nations Development Programme

Based on the work of Mr. W. Zieger  
CTA

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As the expert on Mission to the above project, I have reviewed the objectives outlined in the initial document. The review was made with Madam Sun Jing-Yu, Director of the Beijing Chemical Reagent Research Institute and her staff. It is the opinion of this group that the following results have occurred on this project:

The new building for the housing of the research facility and the manufacturing facility for the electronics grade chemicals has been completed. Staff and equipment have been moved into these facilities and are now functional.

The high tech. research apparatus is installed and functioning.

The electronic grade manufacturing is producing the forecasted 50 tons per year throughput.

Process know-how for the medium scale batch production and purification has been developed for an ultra violet photopolymer. One positive photoresist has been developed. Three types of colour formers have also been formulated. The two high purity reagents  $\text{SOCl}_2$  (Sulfur Oxide Chloride) and  $\text{POCl}_3$  (Phosphorous Oxide Chloride) have been developed.

A few objectives in this project have not been completed to date:

1. One negative photo resist has not been developed for printing.
2. The study and recommendations for the packaging and transportation of the electronic grade chemicals.

Reviewing the budget of Project 1, we are satisfied that the Chinese government input has been satisfied in time. Also, the override of the budget can be justified with the increase of materials and labor over the three year span of the project.

Due to not having a chief technical adviser (CTA) assigned from the conception of the project and continuing through to completion of the project, it is felt some inefficiencies occurred. Deviations had to be made from time to time on the original outline of the program. All expert missions but two have been completed to date.

The expert (11-08) expert in preparation of colour former (colour couplers) and 1109, expert in analysis of colour formers, remains unfinished. I will try to locate one candidate for this. Past attempts in this sensitive field have lead to be unsuccessful.

Of the eleven people originally scheduled for training, six are presently abroad engaged in training on specific topics. Five people have not been keyed with locations, however. One employee will leave shortly for an assignment.

The following areas of training would accomodate those not trained to date.

- (1) Colour coupler or Organic Synthesis
- (2) Analyze Organic Chemicals
- (3) If item (1) is too sensitive, the training should pursue Organic Synthesis, only.

All study tours as requested have been completed.

In the scope of equipment requested, the following are in place:

- (1) NMR Spectrometer
- (2) FTUR Spectrometer
- (3) Elemental Analyzer
- (4) Mask Aligner

Some spare parts and small equipment will be purchased.

One three party review, (BICR), The Peoples Republic of China, and UNIDO has taken place at the request of UNIDO.

It is the opinion of the staff that a great sense of satisfaction and regard has been experienced by all who participated in the program. Effort will continue on behalf of the staff to complete the unfinished projects by March 1990 as outlined by UNIDO.

Expert on Mission (CTA)

*Walter Zieger*  
Walter Zieger