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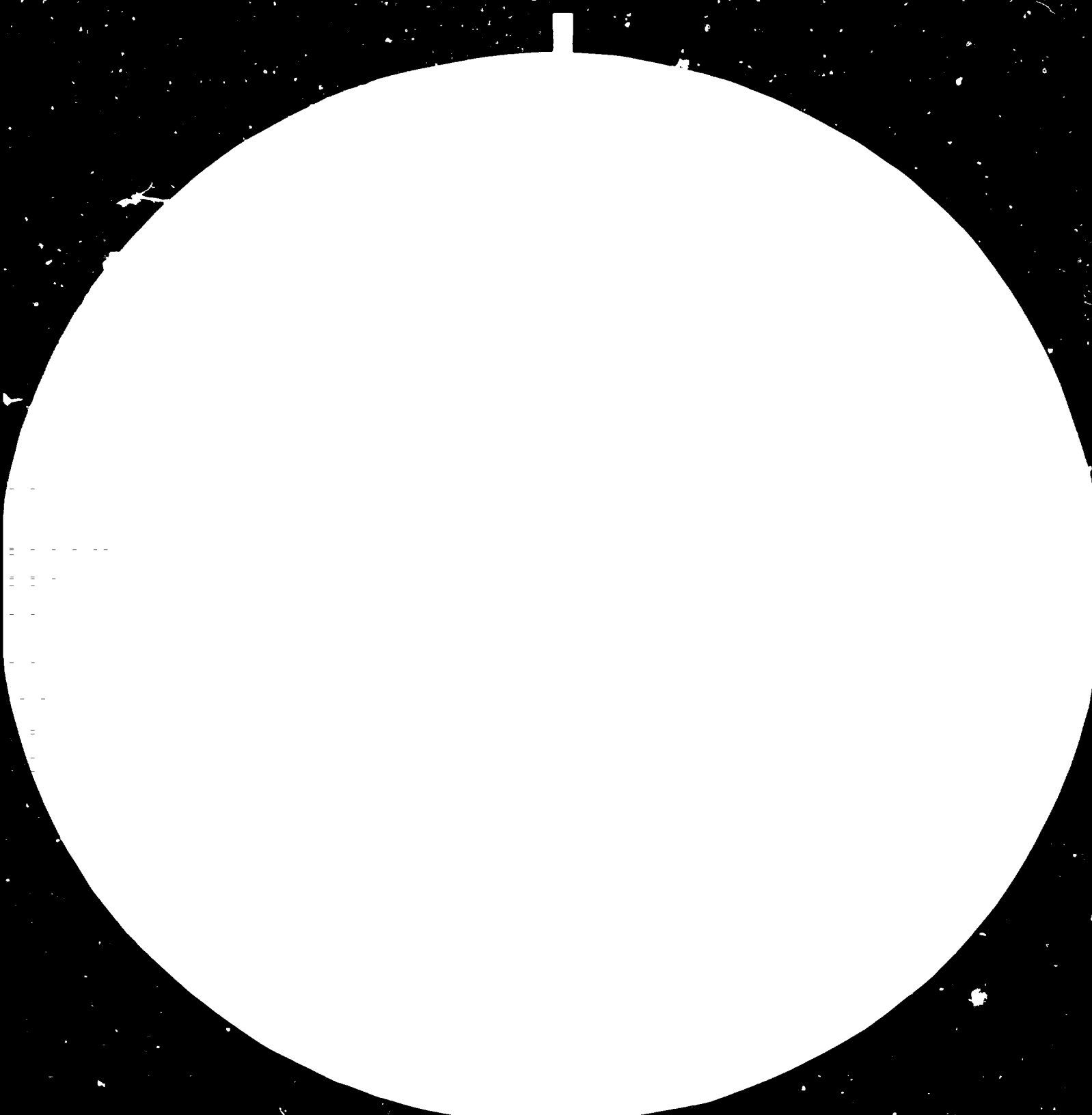

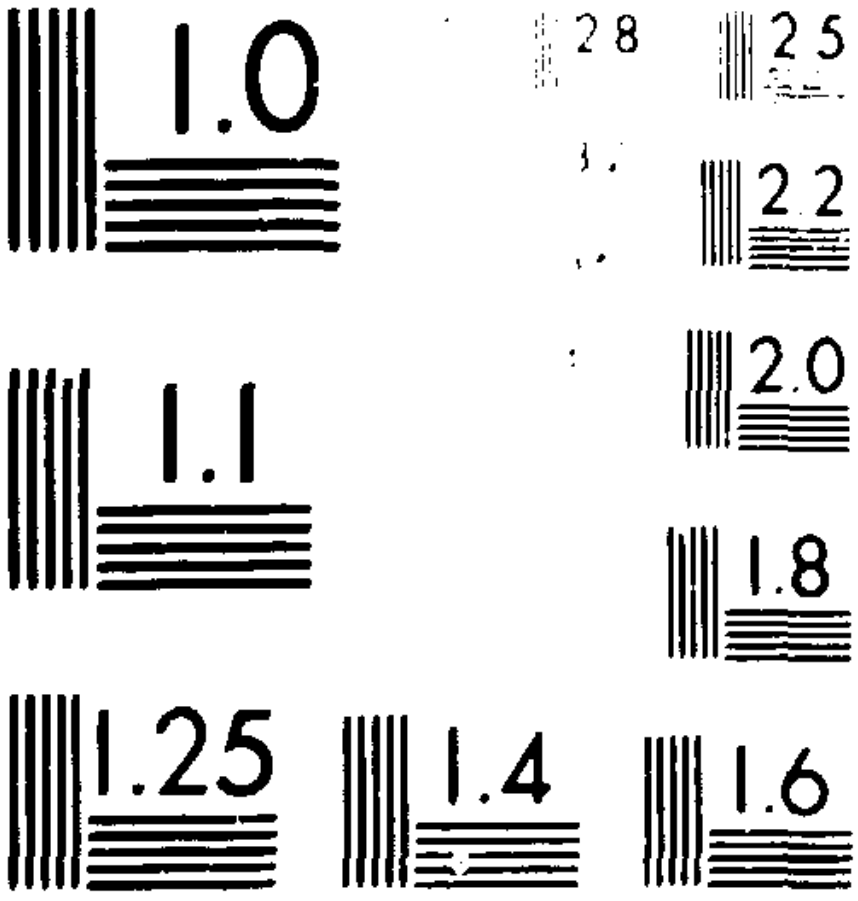
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English

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POLAND.

Technical Report*

Prepared for the Government of Poland by the
United Nations Industrial Development Organization, acting
as executing agency for the United Nations Development Programme

Based on the work of F.L. Scargill, Consultant in Coal Pyrolysis

United Nations Industrial Development Organization
Vienna

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V.82-34113

1. INTRODUCTION.

The project document requires that as Executive Agency UNIDO should organise the visits of Experts to Poland. In this instance the Polish Authorities requested that this expert should visit their Institute during the commissioning of their new pilot plant.(Activity 7c).

11. TECHNICAL REPORT BY EXPERT TO INSTITUTE OF CHEMICAL PROCESSING ZABRZE.24-3-1982 --- 30-3-1982.

25-3-1982. A meeting was held to discuss the current position with the new pilot plant (activity 7c) and associated subjects.

Those present.

Deputy Director Professor G.Yastrzebski
Professor O.Zbraniborski.
Dr.G.Kazmerchek.
MSc. A.Kubachka.

F.L.Scargill. UNIDO.

DISCUSSION.

MainSection of Pilot Plant.Activity 7c.

The pilot plant is now complete and ready for commissioning with the exception of the multi point programmer which has still not been delivered. The original equipment requested by the Institute and agreed by the Technical Committee was a micro processor. When this was placed on the restricted list it was agreed to substitute it with a multi-point programmer. All the connections from the control equipment on the plant to the point where the multi point programmer will be located are complete as are the connections from the computer. The effect of its absence will be the inability to use automatic on-line control and simultaneous data processing.The plant will be operated with information fed manually into the computer.
The software for the HP 1000 computer has now been delivered.

Gas cooling,cleaning and liquid extraction plant.

This section of the plant is designed to deal with the medium CV gas produced from the main section.of the plant. It will consist of a primary cyclone,a wet scrubber and an Electrostatic precipitator. It will allow the gas to be cleaned and cooled and tar and associated

liquids to be collected. This section is currently not complete in that the Electrostatic precipitator has still to be constructed on the prepared foundations. This section will be completed within the next six months which will be to schedule.
All work will be concentrated on section 1.

During the discussion which was technically wide ranging on both gasification and fluidized bed construction the Director stated that the existing equipment used for 7a and 7b activities had been retained for additional experiments on these two areas.

PRE-COMMISSIONING. (26-10-1982--27-10-1982).

All Electrical,Mechanical and Electronic equipment were run and adjustments made where necessary. These included Fans,Pumps,Feeders, Valves etc. The compressed air for the Combustors and the Fluidized bed are taken from the Works service as is the supply of gas for heating in the start up. Dried compressed air is also provided for the pnuematic control system.
An inert material (graded blast furnace slag) was introduced in the system and circulated. It was introduced into the gasifier via the screw feeder which is designed for the combined coal/dolomite feed. The system had been initially preheated with hot flue gas from one of the two combustors designed for start up.
Difficulties were encountered in the pnuematic transport system mainly due to partial blockages in the primary and secondary cyclones which in turn were due to condensation. The system was cleaned out and the secondary cyclones removed as a temporary measure. One effect of the blockage was to overload the gasifier due to the inability of the transport system to take it away.

HOT COMMISSIONING(28-10-1982).

The plant was prepared for a hot run. The system had been thoroughly cleaned out and thoroughly dried out. Blast furnace slag was again introduced into the plant via the gasifier. This material was transferred to the fluidized bed by the transport system. Hot gas from the main combustor both fluidized the slag and raised the temperature of the bed to 650 C. The plant was on manual control and time was allowed for the operators to become accustomed to adjusting bed levels and valves in the transport system before introducing the gasifier directly into the system.Hot ash to be used as the heat carrier was was diverted from the gasifier via the overflow.

The system ran smoothly for some hours after which time it was decided

to introduce the gasifier into the operation and at the same time take the fluidized bed up to the operational temperature of 850 C. The slag was mixed with approximately 50% of char andfed to the gasifier through the screw feeder. At the same time the gas to the combuster serving the fluidized bed was progressively reduced. The hot ash from the fluidized bed wasintroduced into the gasifier and diverted from he overflow.

The temperature of the fluidized bed rose rapidly and was easily contained at the design temperature of 850 C. The temperature in the gasifier began to rise and in a few minutes gas was being produced. The system was allowed to continue for some hours until it became dark. It was then closed down.

CONCLUSIONS.

This initial commissioning was a remarkably smooth operation and reflects much credit on the research workers.and Engineers and the work they have been engaged upon in these last four years. It also reflects credit on the UNIDO organisation who made it possible for much research work to be carried with the HP 1000 computer which has resulted in this most encouraging operation.

The way is now clear for a great quantity of information to be obtained from this plant to allow the design of a commercial process to proceed.