U. S. Government Technical Oil Mission
Microfilm Reel #4

In addition to the reports of which detailed abstracts are attached, the subject microfilm contains the following information which does not seem to be of sufficient general interest to warrant detailed abstracting at the present time. The numbers of the reports are the same as used in the index of the film published by PAW and serve to locate the position of the reports on the microfilm.

Summary Report of Not-Abstracted Information

The following group of reports give details of operating conditions and practices for the various coal hydrogenation units of the plant of I. G. Gelsenberg, Gelsenkirchen-Horst. The reports also comprise discussions of the operating difficulties encountered and the maintenance and repair work required. Some of the reports include description of bomb damage and the effect of air raids on the operations.

Bag 2745, Item 19 (1-6)	Monthly reports on the coal phase hydrogenation units, January - June, 1944.
" " " " (7-9)	Reports on high-pressure operations, June - July, 1944.
" " " " (10)	Monthly report on the coal phase hydrogenation units, March, 1943.
" " " " (11-13)	Monthly reports on the coal phase hydrogenation units, September - November, 1941.
" " " " (14-20)	Monthly reports on the coal phase hydrogenation units, February, April, May - August, 1942.
" " " " (21-22)	Reports on changes in equipment, February, 1942 and February 1943.

The following reports deal with individual parts of the hydrogenation units.

Bag 2745, Item 19 (25)	Memorandum on the experience made at Ludwigshafen with the injection of cold coal paste into the converter. November, 1941. It was found that this procedure is satisfactory and permits to increase the throughput of coal.
" " " " (26)	Report on the shut-down, inspection and repair of coal phase unit 704. April, 1944.
" " " " (29)	Report on the shut-down, of coal phase unit 704 giving a complete operational history of the unit. July, 1943.
" " " " (30)	Report on the shut-down and repair of coal phase unit 706. April, 1943.
" " " " (32)	Report on the inspection of coal phase unit 702. A leak in the heat exchanger was located and recognized as the cause for operating difficulties. April, 1943.

Bag 2745, Item 19 (33) Report on the inspection of the coked-up coal phase hydrogenation unit 703. April, 1943.

" " " " (36) Table of the on-stream time of various coal phase hydrogenation units, November, 1942.

" " " " (37) Memorandum on the repair of a preheater after fire on September 9, 1941.
The damage on tubes, shell and brick work is described.

" " " " (38) Memorandum on the shut-down of coal phase unit II. September, 1941.
The unit had to be shut down because of a fire in the preheater.

" " " " (39) Memorandum on repair work on the preheater of coal phase unit 5.

The following reports are concerned with engine testing and analytical methods. The methods are either known or the results of the work reported are restricted to special cases confined to local conditions.

Bag 2745, Item 19 (35) Schedule for plant control analyses. March, 1943.

" " Item 20 (6) Semi-annual report on the results of cooperative knock tests.
The deviations of octane number determinations by various laboratories are given but no inspection data on the fuels tested are given.

" " " " (4,5) Complaint and test report on aviation fuel. June, 1941.

" " " " (8) Memorandum on possible sources of error in determining octane numbers by the Oppau method.
A short summary of the corresponding information in the report which has been abstracted.

" " " " (10) Parts of a report on fuel testing by the Oppau method.
The report is reproduced only in parts and the information given is too incomplete to be useful.

" " " " (11) Sieve analysis of coal. September, 1938.

" " " " (12) Specifications for fuel gas. September, 1939.

" " " " (13) The present status of asphalt research.
A short survey of the literature practically limited to German contributions and without new findings. May, 1940.

" " " " (16) Memorandum on the determination of phenols in middle oil. September, 1944.
The composition of the phenolic material in one sample of middle oil is given.

" " " " (17) Memorandum on the basic constituents (pyridines) in the products from coal hydrogenation.
The approximate concentration of pyridine bases in separator product and middle oil was found to be about 1 lb. and 1-1.4 lbs./barrel, respectively.

Bag 2745, Item 20	(21)	Water determination by the carbide method.
" " " "	(22)	Determination of the softening point of asphalts and pitches. Kramer-Sarnov method.
" " " "	(24)	Instructions for vacuum distillation of oil samples. September, 1938.
" " " "	(25)	Instructions for the operation of a laboratory low-temperature carbonization retort.
" " " "	(26)	Determination of the benzol soluble matter in the residue from the laboratory low-temperature carbonization. September, 1938.
" " " "	(27)	Determination of bitumen in coal.
" " " "	(28)	Determination of volatile matter in coal.
" " " "	(29)	Instructions for the determination of carbon and hydrogen in the Rheilen-Weinbremer furnace.
" " " "	(30)	Nitrogen determination with the Weinbrenner furnace.
" " " "	(31)	Determination of chlorine by the Grote-Krekeler method.
" " " "	(32)	Determination of the ignition temperature in a special apparatus (not described).
" " " "	(35)	Iron determination in coal.
" " " "	(37)	Inspection of pasting oil.
" " " "	(38)	Inspection of separator product.
" " " "	(39)	Inspection of separator gasoline.
" " " "	(41)	Instructions for the distillation of gasoline separator product.
" " " "	(42)	Determination of phenols in separator product.
" " " "	(43)	Inspection of sludge from hydrogenation in the coal phase.
" " " "	(44)	Inspection of the residue from low-temperature carbonization.
" " " "	(45)	Specification for absorber and cooler oils.
" " " "	(46,47)	Inspection of the injection product including the determination of CO_2.
" " " "	(48)	Analysis of fuel gas.
" " " "	(49)	Analytical methods for fuel gas.
" " " "	(51)	Analysis of Alkasid solution.
" " " "	(52)	Analytical methods for the control of hydrogen purification (analysis of fresh and used copper solution, determination of CO in purified hydrogen).
" " " "	(53)	Methods for the determination of phenols in phenol containing waste waters.

The following group of documents consists of the minutes of meetings of the operating supervisors and the management of the plant of I. G. Gelsenberg. The problems of all operating departments are discussed briefly together with the necessary repair and maintenance work and changes in operating procedures.

Bag 2747, Item 1 (1,2,4,7,9,12, 13,14,15,16)	Minutes of the meetings of operating supervisors, March, January, 1944, November 1943, September 1943, July 1943, February 1943, December 1942, October 1942, June 1942.

Bag 2747, Item 1 (3,5,8,10,11) Minutes of the meetings of the plant management. November 1943, September 1943, July 1943, May 1943, February 1943.

Among the documents microfilmed are the following monthly production statements which also include the utilities required for the several operations.

Bag 2747, Item 2 (1) Monthly statements on water gas manufacture and the operation of the Alkacid and water gas conversion units. January - October, 1941, June - October, 1940.

" " " " Monthly statements on the production of power gas, N_2 and CO_2. February - October, 1941. Monthly statements on power gas distribution, January to October, 1940.

" " , Item 4 (1) Storage records for fuel gas and butane, January - October, 1941, February - December, 1940.

" " , Item 5 (1) Monthly statements on Alkacid unit building 6, January - May, 1940.

" " , Item 6 (1) Monthly statements on Alkacid unit buildings 52 and 53, February - December, 1941.

" " , Item 7 (1) Monthly statements on gas washing and compression, March - October, 1941, July - October, 1940.

" " , Item 8 (1) Monthly statements on the removal of CO_2 and CO. January - May, 1940.

" " , Item 9 (1) Monthly statements on the production of water gas, January - May, 1940, October, December, 1939.

The following monthly reports give details of the operations of the hydrogen manufacturing plant and discuss operating difficulties and repair work.

Bag 2747, Item 10 (1-4) Monthly reports, January - April, 1944.
" " " " (5-10) Monthly reports, June - December, 1943, except August.

The following documents are concerned with the composition of hydrogenation tail gas.

Bag 2747, Item 13 (1) Tabulations of the composition of the tail gas obtained during regeneration of absorption oil, tail gas from hydrogenation sludge, tail gas from the gasoline stabiliser, tail gas from the 3 stages of gasoline production by hydrogenation of middle oil, tail gas from the coal phase converters.

" " " " (2) Memorandum on the analysis of fuel gas.
" " " " (3) Calculation of the number of C atoms in fuel gas.
" " " " (4) Diagrammatic tabulation of monthly gas production in all departments of the plant. May, June, October, 1941.

Following are reports dealing with various aspects of the coal proposed or used for hydrogenation at I. G. Oelsenberg.

Bag 2747, Item 14 — Report on Brassert hydrogenation coal. October, 1942. A comparison of the economics concerning the use of coals from different sources on the basis of composition, cost of dressing, freight, handling, etc.

Analysis of coal from the Brassert mine. September, 1942.

Analysis of hydrogenation coal from the mine Thyssen 2/5. September, 1942.

Analysis of coal from various mines. September, 1942.

Weekly summaries of the operations of the plants for preparing coal for hydrogenation, March, 1943, May - July, 1942.

" " " " — Report on a detailed investigation of coal from the seam Chriemhilt I of the mine Nordstern 3/4. April, 1940.

The following microfilmed documents deal with miscellaneous subjects.

" " , Item 1 (18) — Coke in hydrogenation sludge. February, 1944. Difficulties in the centrifuge plant were caused by coke splinters in the sludge. Microscopic investigation of the coke showed that it had been formed at 1292-1472°F. Coke taken from the hot separator showed properties similar to those from the converters. The cause for the formation of coke in the converters is not clear.

" " " " (19) — Memorandum on fire in a waste pile for hydrogenation residue. June, 1942.

" " , Item 15 — Memorandum on the kind and quantity of phenols produced in various parts of the plant and experiments on the extraction of phenols from middle oil and separator product by means of water October, 1941.

The concentration of phenols in the hydrogenation waste water is too small to warrant processing, but this water can be used for the extraction of phenols from oils. It was found that the time required for the extraction is very short, that higher temperatures do not improve the extraction yield and that the completeness of the extraction is dependent on the ratio of oil and water. It appears best to wash only the fraction of the separator product which is rich in phenols. With a 1:2 ratio of oil to water a solution is obtained which contains 0.17 lbs. of phenolic matter (60% phenol) per gallon of solution.

Bag 2747, Item 16	Memorandum on the use of absorption gasoline as blending component. July, 1941. Report of the analysis of hydrogenation gasoline made with catalyst 7019. July, 1940.
Bag 2745, Item 20 (15)	Memorandum on the effect of hydrogenation sludge gas on compressor oil. August, 1943. Compressor oil which has become contaminated with hydrogenation sludge gas can be regenerated by steam distillation.