FILM STUDY GROUP

SUBJECT INDEX AND REPORT

T.O.M. REEL NO. 85

Prepared by

SOCONY VACUUM OIL COMPANY

SOCONY-VACUUM LABORATORIES

(A Division of Socony-Vacuum Oil Co., Inc.)
Research and Development Laboratories
Paulsboro, N. J.

Review of Microfilm Reel #85 U. S. Government Technical Oil Mission

I. G. Farbenindustrie-Leuna

Compiled by P. D. Branton and P. D. Caesar (Socony-Vacuum Oil Co.) 2-17-47

SOCONY-VACUUE LENGH-TORIES

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Technical Oil Mission Microfilm Reel No. 85

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I. G. Farbenindustrie, in Leuna (cont'd from T.O.M. Reel #84

Description of Individual Items (#6-52)

Bag #3979 Target #30/4.02

6 182p

frames 122-304

Specifications for High-Pressure Equipment (cont'd)

A list is given of standards for various metal parts used in hydrogenation equipment operating under a pressure of 325 atmospheres.

7**-**18 13p

frames 305-317

Hydrogenation Equipment

These items are blueprints, many of which are partially or totally illegible. Their titles are listed below:

<u>Item</u>	Drawing No.	Title	
7 8 9 10 11 12 13 14 15 16 17	M-5934-1 M-11688-2 M-4461d-1 N-10379c-2 M-9078-2 M-5496b-1 M-4892-1 M-4427a-1 M-5145-2 M-6126-1 M-8561-4 M-9850-4	Abstich Generator Abstich Generator DHD Converter Modified Cone Joint Extended Vessel Maulwurf Pump Silver-lined Converter 1000-atm. Pressure Ves Modified Converter Cov 1200 mm. Converter Lined Double Bend for Hydrogenation Gas H.O.L.D. Exchanger	sel er Pressure
19	20 p	frames 318-337	8/9/38

Comparison of Laboratory and Road

Tests on Knocking - by Dr. von Huhn and Scholz

This report describes 3 laboratory methods for measuring knocking; the CFR-Motor, the CFR-research, and the CFR-L3 methods.

20

7p -

frames 339-346

11/1/41

Miscellaneous Engine Test Data

Tables and graphs are given of various data on knock-rating of fuels produced in Leuna, and on the deviations from the average.

21

65p

frames 347-411

various dates

Standard Reference Curves

This item contains a series of graphs showing the correlation between Octane Number and Compression Ratio for mixtures of standard reference fuels with benzene or Di-1000 (presumably the code name for pure isodctane, cf. p. 354) and 0.1% Pb.

The data given are those obtained by both the CFR-Research and CFR-Motor methods. Analyses of several German standard reference fuels are also included.

Much of the data is blurred.

22

17p

frames 413-429

various dates

Comparative Engine Tests

A series of charts and data on the knock road-tests performed on various car engines are given.

23

62p

frames 431-492

1/9/40 **-** 4/27/44

Knock Test Report from the Oppau Test Station

This item contains inspection notes and reports, also curves on actual knock tests performed at the experimental station in Oppau.

24

144p

frames 493-636

various dates

Knocking Limit Curves

A set of curves and tables describe knock-rating tests performed by the Oppau method on various fuel mixtures under different conditions.

25

68p

frames 637-704

various dates

Diesel Engine Tests

Tables and curves are given relating to tests performed on Diesel engines at Oppau, for the determination of Cetane Numbers. Relations between Octane and Cetane Number are also given in standard reference graphs.

26

131p

frames 705-835

6/9/43 **-7**/1/44

Reports from the Inspection Division

Report sheets and diagrams of the inspection service of a knock-testing station.

26a

127p

frames 837-963

1934-1943

Knock-Test Curves from Luena

A series of curves describe the results of tests performed at Leuna on various motor and aviation fuels by the CFR-Motor method. The influence of such factors as the prewarming of the fuel mixture, temperature of coolant water, amount and nature of additives etc., on the Octane Number, are shown. Among the compounds investigated are the following: tetra-ethyl lead, iron carbonyl, benzene, ethyl and methyl alcohols, aniline, methyl-aniline, dimethyl-aniline and di-isopropyl ether.

12p

Lubricating Oils from Ethylene - Laboratory Communication from Dr. Von der Horst

The synthesis of lube-oil by polymerizing ethylene, as developed in Oppau, is accomplished by compressing the gas into an autoclave filled with a solvent and aluminum chloride. The ethylene can be prepared by cracking ethane or hydrogenating acetylene. The reaction sets in at 60°C. whereupon the temperature rises spontaneously to 170°C., and even to 200°C. It is brought down to 120° and kept constant until the reaction is completed. The contents of the autoclave are then expanded and the following products, solvent, aluminum-chloride sludge, light distillate, (which can be reused as a solvent), and crude lube oil, are separated. Before erecting a full scale synthetic -plant at Leuna, a series of experiments was performed to clarify certain technical and operational problems. On the basis of those experiments, it was ascertained that N6 steel as building material leads to oils of better VI values than V2A at maximum temperatures below 200°C; above this limit, no difference can be observed. The VI curve shows a maximum for a maximum temperature of 200°C., then slumps down. Heat elimination is slower in N-6 autoclaves, so that a new cooler design is necessary. The yield of lube-oil is 80% with respect to ethylene in N6 and V2A alike. Dilution of ethylene by inert gases has an unfavorable effect on yield and quality. As for aluminum chloride, the only requirement is that it be anhydrous.

Note: For fuller details of this process see T.O.M. Reel #135.

32-52 23p

frames 979-1001

Drawings of Synthetic Lubricating Oil Plant

Blueprints and flowsheets are given pertaining to the synthetic lube-oil installation described in item #27. Items #28-31, which complete this set of drawings, are included in T.O.M. Reel #86. Many drawings are blurred or illegible. The titles of these drawings can be found in the following list:

Item	Drawing No.	<u>Title</u>	Frame
32	M-2095-16	Flow sheet - Purification of cracked gases, before	\$!
٠.		Linde plant operation	979
32a	M-5104-4	Reaction Vessel for Hydro- genation of acetylene	980

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Item 33	Drawing No.	· · · · · · · · · · · · · · · · · · ·	Frame 1001
34	M-3779-16	Flow Sheet - Alkazid Plant	981
35	M-1748-16	" - Linde Plant	982
36	M-2620a-4	" " - Polymeriza- tion Plant, January, 1937	983
37	la-2424-1	" " - Polymeriza- tion & Distillation, November 1938	984
38	M-2500-1	" - Polymeriza- tion & Distillation December, 1938	985
39	M-2614a-1	Plan & Elevations, Polymer- ization Equipment, February 1939	1000
40	Iv3546-1	Flow Sheet - Polymerization & Distillation August, 1940	986)
41	M-3648-1	Plan & Elevations, Polymer- ization Equipment, September 1940	9 99
42	M-4581-1	C ₂ H ₄ - Polymerization Reactor	998
43	M-1573-8	Stuffing-Box, Polymer- ization Autoclave	988
44	M-2623-4	Flow Sheet - Equipment following reactors	989
45	M-5509-2	Layout of Scraper Centri- fuges	992
46	M-7574-2	Lube-oil treatment	993
47	M-6404a-2	Bubble-cap column, oil fractionation	997
48	M-3035*2	Flow sheet - proposed vacuum fractionation (1936)	n 996
49	M-5289-2	Water and Steam Summary - 4 reactors	995
50	M - 3034-2	Flow Sheet - Atmospheric Distillation (Proposed)	994

<u>Item</u>	Drawing No.	Title	Frame
51	M-2694a-8	Flow Sheet - Distillation equipment	99 0
52	M-3090-4	Electrical Flow Sheet	991

ems 2/17/47