



NEWS

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GERMAN DOCUMENT RETRIEVAL PROJECT

Texas A&M University's Center for Energy and Mineral Resources initiated in October, 1975, a project to assemble and investigate German World War II industrial records pertaining to fuel technology. Of special interest for this project are coal conversion processes leading to synthetic petroleum and synthetic gas, manufacture of materials with a high energy density from renewable biomass, fuel cell technology, and lubricant synthesis. The scientific data and the technology contained in these documents might help to provide partial solutions to some of the energy problems the world is facing today.

Toward the end of World War II special teams of scientists and engineers followed the Allied Armies to investigate German industry and collect relevant records and documents. These vast collections of documents were placed in storage in England and in the United States. Only a small fraction of this material has been catalogued and evaluated. It is, therefore, difficult to estimate with accuracy the total volume of pertinent records awaiting examination. Our preliminary search in the document depositories in the United States and England indicates that perhaps 500,000 to a million pages of scientific and technical records might contain energy-related material.

Until a few years ago, most nations had few incentives to pursue energy-related research such as coal conversion. Oil and natural gas were, and still are, relatively plentiful and the products derived from these commodities inexpensive. But recent energy developments have changed this situation. Although synthetic fuels from coal and other carboniferous sources are not economically competitive today, they likely will become an important energy source and petrochemical feedstock in the not-too-distant future.

The Center for Energy and Mineral Resources turned to a search of these documents for several reasons. First, German chemistry in fuel research, particularly coal conversion, was successful during the pre-war and World War II periods. Second, German wartime scientists had strong support from their government to provide enough fuel to wage war. Third, their chief source material was brown coal. Coal deposits of similar nature are abundant in the United States. Fourth, we have reason to believe that most of these documents have not been thoroughly evaluated, and the majority of the documents have not been read by anyone.

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The development of technology from bench scale to full-sized plant is time consuming and expensive. Taking coal conversion technology as an example, large scale systems must be designed to handle the various types and varying grades of coal; catalysts must be formulated and their activity determined for the production of the desired products; plant operating parameters must be maximized and the tremendous problems of scale-up overcome. What is true for any small research program holds as well for the risky and costly endeavor of developing a new plant. A few hours in the library may save months or years of research and development work in the laboratory or plant.

German documents now available in the depositories may contain information which might speed the development of coal conversion technology and make it less expensive. To make this information more easily available, selected scientific and technical data will be assembled at Texas A&M University, screened, evaluated, abstracted and stored in a computer data bank for easy access.

There are only a few publications dealing with the subject area of synthetic fuels and other energy sources in Germany during the period from 1930 to 1945. Among these few are H.H. Storch's Fischer-Tropsch and Related Syntheses (New York, 1951), the United States Strategic Bombing Survey (Washington, 1945) and perhaps Carl Zerbe's collection of selected papers on Mineralol and Verwandte (Springer Verlag, Berlin, 1952).

Among unpublished documents of major importance are the 306 reels of microfilm, comprising approximately 300,000 pages of original German documents, which were gathered by members of the Technical Oil Mission Teams. These TOM teams of experts were attached to the Allied Armies. The records of a substantial number of German industries were collected often within hours of their capture. Only a small number of these documents and reports were translated and made available to industry during the period of 1946-7, and the remainder have not yet been investigated. The original TOM material was destroyed for lack of space, and only two sets of microfilm were maintained. Of these sets, the one at the Bureau of Mines Library in Bruceton, Pa., has since become so brittle as to be declared useless. The other set has served as the master for the copy, which we now have at Texas A&M University.

Additional documents also have been located. A substantial portion of the 2,720 separate reports in English, produced by both the American and British teams, entitled the B.I.O.S. Reports, (British Intelligence Objectives Sub-Committee), its American counterpart, F.I.A.T. (Field Information Agency, Technical), and the combined Anglo-American agency effort, C.I.O.S. (Combined Intelligence Objectives Sub-Committee) have been microfilmed. These reports are final investigations of entire plants and industries, and differ from the raw data in the TOM reels in that they are subjective analyses by experts, with evaluation remarks throughout. Moreover, many are direct transcripts of interrogations of German scientists who were involved in these wartime efforts.

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Heretofore untapped German data stored at a number of archives and storage sites have also been located. Two other major sources of documents which are scheduled for investigation are the complete and original records of Albert Speer's entire Reichsministerium fur Rustung und Kriegsproduktion (Reich Ministry for Armament and War Production). The final source of material will be the massive document center in Germany, whose staff archivists have stated that the amount of material on this subject defies cataloging.

A few of the items which have already been located are cited below.

Total process flow programs of the Linde-Karawat, Koppers, Lurgi-Drawe processes, with companion drawings, production figures, capital investment and maintenance costs, and so forth.

The procedures and results of massive numbers of experiments on iron catalysts, cobalt catalysts, aromatization catalysts, thorium catalysts, thorium-magnesium polymerization catalysts, etc., as well as on such catalysts carriers as kieselguhr, "Eirichkorn," alumina.

Fuel blending experiments; cracking of synthetic oils; the enrichment of olefins; complete descriptions concerning the production of heating fuels, aromatic gasoline, DHD-gasoline and isooctane from gases; experiments on increasing the efficiency of combustion engines.

Production of lubricant oils from brown coal tar; tests on the engine behavior of synthetic Otto fuels. Separation of low temperature tar from oil shale with selective solvents.

Production of branched hydrocarbons from carbon monoxide and hydrogen using various catalysts.

Development of catalysts for the synthesis of hydrocarbons and special chemicals. Shale oil hydrogenation, oil shale distillation. Experiments to extract chemicals from coal by various solvents.

Copies of the German documents will be brought to Texas A&M University. An abstracting team will read the documents, prepare a concise and informative abstract and describe the content of each document through appropriate key words. The hard copies of the documents will be deposited in the Texas A&M University Library. The abstracts will be submitted to the project's Technical Evaluation Panel which consists of representatives of those companies interested in the project. The panel members will inform the project team about the current importance of particular experiments or processes and guide the retrieval team toward pertinent material.

The abstracts and key words with references to the call numbers of the documents will be stored in the computer data bank of the ERDA Technical Information Center at Oak Ridge. An interested party can initiate a search of the documents through the computer terminal at Texas A&M University Library or elsewhere on an interconnected computer and can then request copies of the original documents or their abstracts.

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The project team will consist of a retrieval group; an abstracting supervisor; abstractors with chemistry, chemical engineering and mechanical engineering backgrounds; and secretarial help. All professional personnel will have at least a very good reading knowledge of German.

The project which is presently funded by the Center for Energy and Mineral Resources, Diamond Shamrock, Dow Chemical and Union Carbide, is schematically presented in Figure 1.

There has never been a similar opportunity in modern history to investigate the entire industrial records of any country, much less those of a country whose scientific and industrial expertise on this subject was advanced, and to make the knowledge contained in these records available at a time when it is so urgently needed.

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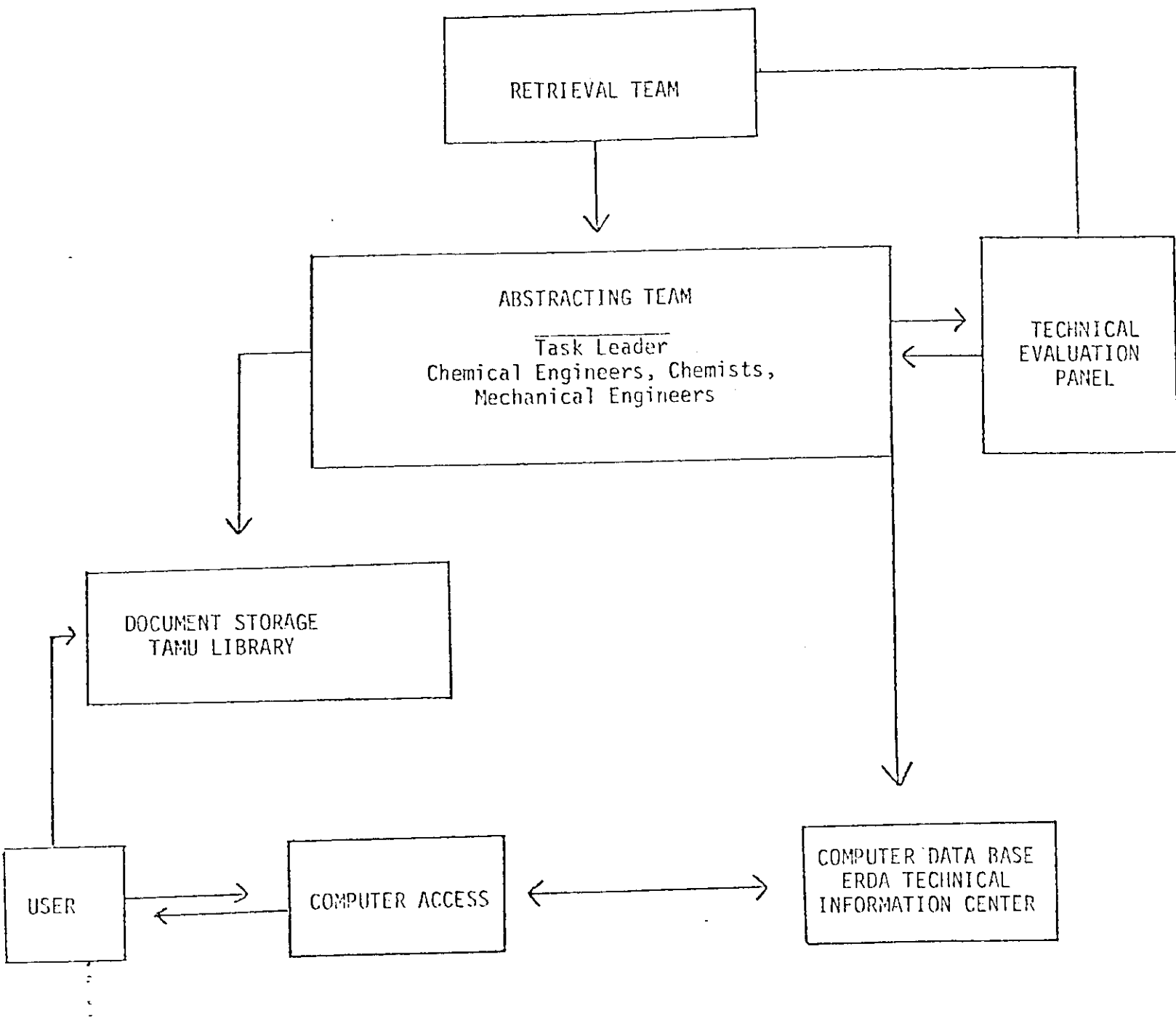


Fig. 1: GERMAN DOCUMENT RETRIEVAL PROJECT