

INACTIVE - ALL ITEMS SUPERSEDED OR OBSOLETE

Schedule Number: N1-142-92-017

All items in this schedule are inactive. Items are either obsolete or have been superseded by newer NARA approved records schedules.

Description:

Records are presumed to have been destroyed at the agency.

Date Reported: 07/28/2022

N1-142-92-017

INACTIVE - ALL ITEMS SUPERSEDED OR OBSOLETE

REQUEST FOR RECORDS DISPOSITION AUTHORITY
(See Instructions on reverse)

TO: NATIONAL ARCHIVES and RECORDS ADMINISTRATION (NIR)
 WASHINGTON, DC 20408

1. FROM (Agency or establishment)
 TENNESSEE VALLEY AUTHORITY

2. MAJOR SUBDIVISION
 RESOURCE GROUP

3. MINOR SUBDIVISION
 NATIONAL FERTILIZER AND ENVIRONMENTAL RESEARCH CENTER

4. NAME OF PERSON WITH WHOM TO CONFER
 LINDA E. BLEVINS

5. TELEPHONE
 615-751-2524

LEAVE BLANK (NARA use only)

JOB NUMBER
 N1-142-92-17

DATE RECEIVED
 4-29-92

NOTIFICATION TO AGENCY

In accordance with the provisions of 44 U.S.C. 3303a the disposition request, including amendments, is approved except for items that may be marked "disposition not approved" or "withdrawn" in column 10.

DATE
 5-5-94

ARCHIVIST OF THE UNITED STATES
Grady Luickamp Peterson

6. AGENCY CERTIFICATION

I hereby certify that I am authorized to act for this agency in matters pertaining to the disposition of its records and that the records proposed for disposal on the attached 3 page(s) are not now needed for the business of this agency or will not be needed after the retention periods specified; and that written concurrence from the General Accounting Office, under the provisions of Title 8 of the GAO Manual for Guidance of Federal Agencies,

is not required; is attached; or has been requested.

DATE 4/23/92	SIGNATURE OF AGENCY REPRESENTATIVE <i>Linda E. Blevins</i>	TITLE ASSISTANT TVA ARCHIVIST
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7. ITEM NO.	8. DESCRIPTION OF ITEM AND PROPOSED DISPOSITION	9. GRS OR SUPERSEDED JOB CITATION	10. ACTION TAKEN (NARA USE ONLY)
1	See the attached item covering engineering drawings and audio tapes for the Ammonia from Coal Project		

Copies sent to Agency, 4NS, NSR, NSX (u) 6/9/94

1. ENGINEERING DRAWINGS AND COMPUTER CASSETTE TAPES FOR THE AMMONIA FROM COAL PROJECT

In August 1975, the president of The Fertilizer Institute appealed to the TVA Board of Directors for funding to find a substitute for natural gas as a feedstock for producing ammonia. At least one-third to one-half of the food and fiber produced in this country is attributed to fertilizer, and nitrogen is the most widely used nutrient. Essentially, all nitrogen fertilizer is made from ammonia, and 95 percent of the ammonia produced in this country is made from natural gas. Therefore, if natural gas were to be lost due to high price or unavailability, one-third of the food and fiber produced in this country would be lost. In response to the president's request, the TVA Ammonia from Coal Project (ACP) was begun. At Muscle Shoals, TVA had a small, but modern, natural gas-fed ammonia plant, and this plant could be retrofitted to operate with gas produced from coal. The Texaco coal gasification process was selected because it appeared to best meet the needs of the project. Brown and Root Development, Inc., was awarded a contract as architect-engineer for a major portion of the plant.

The plant was completed at a cost of about \$43 million and was operated for the first time in October 1980. It was the first coal gasification plant to be built in the United States, in modern times, with all the necessary environmental controls, and on a semiproduction-size basis. The plant suffered some initial start-up agonies, and it was not until November 1982 that ammonia was produced. After corrections were made, the plant could be operated on a routine basis. The original objective of the project was to make sure the farmer had fertilizer, and this was accomplished. A good and viable technical alternative has been developed and demonstrated for the industry and is available. In the course of doing this, a medium-Btu synthesis gas plant was built that produces H₂ and CO from coal; this is a building block from which methanol, gasoline, medium-Btu fuel gas (and therefore, electric power), synthetic natural gas, or a host of other materials can be produced.

The economics for commercial-scale ammonia from coal were evaluated. Conceptual designs, capital costs, and operating costs for retrofitting a natural gas reforming plant and a grass-roots ammonia from coal plant were developed. Comparative costs for a new natural gas reforming plant were also developed. The capital investment, production costs, and equivalent natural gas prices for a commercial-scale ammonia from coal plant were as follows:

	<u>Retrofit</u>	<u>Grass Roots</u>
Capital investment, \$/million	257	324
Ammonia production cost, \$/ton	251	274
Equivalent natural gas price, \$/MCF	4.70	5.60

1. ENGINEERING DRAWINGS AND COMPUTER CASSETTE TAPES FOR THE AMMONIA FROM COAL PROJECT (continued)

The objectives of the ACP were to obtain technical, economic, and environmental information and pass it on to the industry. The project solved numerous new technology and other plant problems in the gasification and gas purification portions of the plant. Problems ranged from basic process chemistry, mechanical equipment, corrosion and erosion, instrumentation and controls, to environmental and occupational health and safety matters. While the facility did not meet all the contractual performance requirements, it provided excellent and comprehensive test data on process performance with different coals and under varying conditions of operation.

A wide spectrum of information from this plant has been obtained and passed on to others as follows: Online heat and material balance performance data using a state-of-the-art Texaco burner; specific gas purification data including transient studies on the COS hydrolysis and Selexol acid gas removal units; environmental data for wastewater and slag characterization; data on trace contaminants in the synthesis gas; gasifier refractory performance evaluations; water chemistry data on scale deposition in water circulation systems; erosion data on vessels, pipe, valves, and fittings; and data on solids deposition problems in gaslines. Ammonia production has been achieved for extended periods at full rates.

Contractual tests were completed. They included: A 20-day test in 1983 for Exxon on coal liquefaction bottoms material, a 20-day Utah coal run, and a 10-day Illinois No. 6 coal run, both in 1984. In 1985, in cooperation with the Electric Power Research Institute (EPRI), very successful test runs were carried out with Pittsburgh No. 8 coal and a high ash fusion temperature Maryland coal.

Design and operating information and personnel training services were provided to the following installations: Tennessee Eastman plant at Kingsport, Tennessee; Cool Water plant, Daggett, California; and Ube Industries, Ltd., Ube City, Japan. All plants had good and speedy start-ups. Assistance was provided to NASA on a project at Kennedy Space Center (KSC). In February 1985, ten fertilizer companies visited for a two-day meeting and many individual company contacts continued. An international meeting on ammonia from coal was held at Muscle Shoals on October 1, 1985. Producing ammonia from coal was proven to be technically viable, and environmental and occupational health and safety aspects of producing ammonia from coal were found to be manageable. This technology can be used and is readily available when the economics prove to be more favorable. The facility was established as a widely recognized major center for technical and economic information in coal gasification and gas purification technology.

1. ENGINEERING DRAWINGS AND COMPUTER CASSETTE TAPES FOR THE AMMONIA FROM COAL PROJECT (continued)

The everyday operating data for the plant was recorded on computer cassette tapes. The tapes contained data processing information on an as-operated basis. To reproduce or have access to the data, a Taylor 1010 Mod III system would have to be available. If available, the cassette tapes could be inserted and the actual operating parameter for each section of the process could be displayed on a CRT and then a hard copy could be obtained. All the cassette tapes contained actual operating data from the proprietary Texaco Coal Gasification Process, the Peabody Sulfur Recovery Unit, and the Air Products Air Separation Unit. Since all the material in the ACP were proprietary, the as-operated information was also proprietary; consequently, TVA would like for the computer cassette tapes to be destroyed now that operation has ended and the facility has been dismantled (1991).

INFO ON
TAPES

At the outset of the project, the cost of natural gas to U.S. ammonia producers was expected to increase to about \$6 to \$7 per MCF. Instead, natural gas prices stayed at about \$2 per MCF, and are projected to remain at this price for the foreseeable future. Therefore, it was determined that ammonia from coal plants are not economical at this time.

The ACP came to an end in 1985. At the end of 1985, TVA worked with EPRI to try and restart the ACP facility by submitting a proposal to the Department of Energy in 1986 requesting cofunding to demonstrate the Once-Through Methanol process. This effort continued until about 1988 when TVA made the decision that the plant had been shutdown for such an extended period, it would not be safe to restart. At that time, TVA extended contract bids for dismantling the ACP facility. Contracts were awarded, and the plant was dismantled in 1989-1991.

The ACP correspondence, including a copy of the final ACP Project Report, is included with the permanent Office of Agricultural and Chemical Development correspondence file (N1-142-91-5, Item No. 10). This series covers the computer cassette tapes that were used to record the day-to-day ACP operations data and TVA's copies of engineering drawings produced by Brown and Root Development, Inc. that were used during the operation of the plant. These records are no longer needed and are recommended for destruction upon approval of this schedule. All records related to the ACP project are proprietary records. The approximate volume of the computer cassette tapes is 8 cubic feet, and the approximate volume of the drawings is 19.5 cubic feet.

DISPOSITION

- A. Computer Cassette Tapes
Destroy upon approval of schedule.
- B. Engineering Drawings
Destroy upon approval of schedule.