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Water Development for Coal Pipelines: The ETSI Story

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Citation Information

Witten, Wesley M., "Water Development for Coal Pipelines: The ETSI Story" (1982). *New Sources of Water for Energy Development and Growth: Interbasin Transfers: A Short Course (Summer Conference, June 7-10)*.

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WATER DEVELOPMENT FOR COAL PIPELINES:
THE ETSI STORY

Wesley M. Witten
President, ETSI Pipeline Co.

New Sources of Water for Energy
Development and Growth: Interbasin Transfers

a short course sponsored by the
Natural Resources Law Center
University of Colorado School of Law
June 7-10, 1982

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I . Introduction

A. Pioneering History of Coal Pipelines

1. Initial patents granted in 1891.
2. First pipeline operated in 1914, London England.
3. Consolidation Coal's East Lake pipeline, Cadiz, Ohio, 1957.
4. Black Mesa pipeline, Arizona to Nevada, 1970.

B. Impetus for Coal Pipelines

1. OPEC oil embargo 1973.
2. Abundant domestic coal reserves
3. Limitations of existing transportation systems.
4. Safety and environmental compatibility.
5. System reliability and cost efficiency.

C. ETSI Pipeline Project Description

1. Integrated 1,386 miles, 40 inch diameter, pipeline to transport coal slurry from Wyoming coal mines to electrical utility and industrial customers in mid-south region.
2. Annual through put is 30 million tons, which will require approximately 20,000 acre-feet of water per year.

3. Construction is expected to commence in Spring of 1983 and initial delivery to being in 1985.
4. Construction cost is approximately \$3 billion.
5. Venture partners in ETSI are subsidiaries of:
 - ARCO
 - Bechtel
 - Kansas-Nebraska
 - Lehman Brothers Kuhn Loeb
 - Texas Eastern

D. Water Development Program

1. ETSI initially determined that as an industrial water user it would not compete with agriculture for scarce surface water supplies available within the Powder River Basin of Wyoming.
2. Initially, Madison Formation aquifer selected as primary source with Oahe Reservoir as backup supply.
3. 1974 Wyoming Legislature approved use of water from Madison Formation aquifer under permit conditions to be set by state engineer.

4. 1980 South Dakota Legislature authorized water permits for energy industry use and ETSI negotiated a contract to have water right for 50,000 acre-feet assigned to it³ by the State Conservancy District.
5. Oahe Reservoir is now the primary source of water for ETSI Project, and example of state-industry cooperation.

II. Oahe Reservoir Water Development

- A. Necessary approvals for right to divert water
 1. South Dakota Water Management Board - Water right permit.
 2. South Dakota Conservancy District - Assignment Agreement.
 3. U.S. Bureau of Reclamation - Water Service Contract.
 4. Corps of Engineers - 404 permit and real estate easement.
- B. Water Availability in Main Stem Missouri River.
 1. Average annual flow at Oahe Dam is 16,936,000 acre-feet/year.
 2. Missouri River average annual flow (at Sioux City, Iowa) 28.4 million acre-feet.

3. Average storage in Oahe Reservoir is 18 million acre-feet.
4. Six main-stem Missouri dams store annual average of 60 million acre-feet.
5. ETSI's water right to 50,000 acre-feet per year is equal to ten percent of net annual evaporation loss from Oahe. 50,000 acre-feet per year is not within the degree of accuracy for measuring discharge through Oahe turbines.

C. Earlier Energy Industry State Water Permits and Federal Service Agreements in Main-Stem Missouri River

1. Basin Electric Power Cooperative - 19,000 acre-feet/year.
2. ANG Coal Gasification Company - 17,000 acre-feet/year.

III. Conclusion

A. Allocation of Missouri River

1. As interstate stream rights of all states must be respected by sister states and federal government.
2. As individual projects show feasibility and beneficial use under state law they should go forward.

B. Benefits of ETSI Project

1. Additional mode of highly reliable transportation.
2. Delivery of water to western South Dakota communities.
3. Technical Assistance Program for water development.
4. Employment, property tax and other revenues.

C. Environmental compatibility

1. One million acre feet available for energy development from Missouri River System without interfering with other users.
Water for Energy: Missouri River Reservoirs, Final Environmental Impact Statement, FEIS77-43, U.S. Department of Interior (December 1, 1977).
2. ETSI EIS found widest range of benefits and environmental protection would be served by Oahe water source.



THE ETSI SYSTEM ROUTE

