

PROJECT FACT SHEET

CONTRACT TITLE: The Evaluation of Freeze-Thaw/Evaporation for the Treatment of Produced Waters

DATE REVIEWED: 01/28/93

DATE REVISED: 11/20/92

OBJECTIVE: To develop a waste treatment process that uses the natural processes of water freezing and melting in the winter and evaporating in the summer to treat water produced associated with oil and gas operations. Tasks include the following: 1) a literature survey of freeze-thaw and evaporation, 2) preliminary economic analyses of the process by comparison to conventional alternatives of disposal, 3) laboratory and bench-scale process evaluation, and 4) field demonstration of the process.

ID NUMBER: DE-ACXX-91MT91002

CONTRACTOR: R.T. Corporation

B & R CODE: AC1505/1510

ADDR: 2931 Soldier Springs Road

CONTRACT PERFORMANCE PERIOD:

08/06/92 to 07/31/95

PROGRAM: Lt/Hvy Oil

RESEARCH AREA: Environmental

Laramie, WY 82070

CONTRACT PROJECT MANAGER:

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PROJECT SITE:

Laramie, WY

SCHEDULED MILESTONES:

TASK 1 - Literature Survey and Preliminary Economic Analysis - ongoing.

TASK 2 - Laboratory and Bench-Scale Process Simulation - ongoing.

TASK 3 - Field Demonstration of the FTE Process.

Total Project Duration - 3 years.

FUNDING (1000'S)	DOE	OTHER	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	162	0	0	162
FISCAL YR 1993	38	0	203	241
FUTURE FUNDS	0	0	0	0
TOTAL EST'D FUNDS	200	0	203	403

PROJECT DESCRIPTION: The contractor will evaluate the natural freeze-thaw/evaporation process for the treatment of oil and gas production waters. Each successive phase is dependent upon the successful completion of the previous task. Phase I is a literature review to determine available information regarding the response of organics, heavy metals, and salts to the processes. Phase II is the laboratory simulations to investigate the process design parameters. Bench Scale process simulations will be conducted to demonstrate the viability of the process for commercial-scale use. Phase III is a field demonstration of the process.

PRESENT STATUS: The contractor is currently conducting a literature survey of freeze-thaw/evaporation research and a preliminary economic analyses to evaluate the technical feasibility and commercial viability of the process.

ACCOMPLISHMENTS: Related literature has been reviewed and the results of previous research indicates the process is applicable to the removal of the types of contaminants typically associated with produced waters. Process constraints related to saturation of contaminants in the waters treated do significantly limit the produced waters to which the process is applicable. Meteorological data for locations depicting mild, moderate, and sever conditions for application of the process in States with significantly 1,600 produced water analyses has been constructed and reduced.

BACKGROUND: Water, commonly produced with oil and gas, adds disposal costs to the cost of production. The development of cost-effective methods to treat and/or dispose of produced water has become a key concern for the future development of oil and gas from marginally economic and unconventional resources. If a process could be developed which converts produced water to water quality levels acceptable for multiple, agriculture, or industrial uses, it would be extremely beneficial to all parties involved.