

EARLOUGHER ENGINEERING  
PETROLEUM CONSULTANTS-CORE ANALYSES  
3316 EAST 21ST STREET  
TULSA, OKLAHOMA 74114

March 27, 1970

Beardmore Oil, Inc.  
Suite 700, One-Twenty Building  
Wichita, Kansas 67202

Attention - Mr. Heber Beardmore

Re - Bates Unit  
Water Analysis

Gentlemen:

Attached are results of identification tests for a produced water sample from Haines 2 secured March 9, 1970. Tests were made to help determine whether increased water production from Haines 2 has been caused by injection water channeling. An analysis of commingled produced water from the East and South Units and Belsey lease has been included for comparison purposes.

Results of tests indicate that water produced from Haines 2 is Mississippian formation water and does not contain recognizable amounts of fresh injection water.

Yours very truly

EARLOUGHER ENGINEERING



H. L. Brockey, Engineer

HLB bw  
Encl - 2 w/attach

**EARLOUGHER ENGINEERING  
TULSA, OKLA.**

**RESULTS OF WATER ANALYSES**

SAMPLE RECEIVED 3-13-70 RESULTS REPORTED 3-27-70 LABORATORY NO. 1550

COMPANY <u>Beardmore Oil, Inc.</u>		LEASE <u>Bates Unit</u>	
FIELD OR POOL <u>Bates</u>			
SECTION <u>31, 36</u>	TWP. <u>30S</u>	RGE. <u>1W</u>	COUNTY <u>Sumner</u> STATE <u>Oklahoma</u>
SOURCE OF SAMPLE AND DATE TAKEN:			
No. 1	<u>1550 - Haines No. 2</u>	<u>3- 9-70</u>	
No. 2	<u>1312 - Trekell No. 2 1/</u>	<u>9-26-66</u>	
No. 3			
No. 4			
No. 5			

**CHEMICAL AND PHYSICAL PROPERTIES**

	NO. 1	NO. 2	NO. 3	NO. 4	NO. 5
SPECIFIC GRAVITY @ 60/60° F	1.138	1.136			
pH		6.3			
TOTAL ALKALINITY AS CaCO <sub>3</sub>					
SUPERSATURATION AS CaCO <sub>3</sub>					
UNDERSATURATION AS CaCO <sub>3</sub>					
CALCIUM	12,300.	12,200.			
MAGNESIUM	2,390.	2,490.			
SODIUM		58,800.			
BARIUM	0	0			
SULFATE	710.	690.			
CHLORIDE	123,000.	119,000.			
SILICA		9.			
TOTAL IRON		17.			
ALUMINUM		.4			
TURBIDITY AS SiO <sub>2</sub>		1.6			
Ca/mg ratio	5.1	4.9			
TOTAL DISSOLVED SOLIDS		193,000.			
CARBON DIOXIDE		120.			
HYDROGEN SULFIDE		< .1			
DISSOLVED OXYGEN		0			

REMARKS: 1/ Commingled produced water from East and South Units and Belsey lease.

INJECTION RATE: B/D | PRODUCED WATER RATE: B/D  
TREATMENT:

NOTE: N. D. = NOT DETERMINED. ALL RESULTS REPORTED AS MILLIGRAMS PER LITER UNLESS OTHERWISE MARKED.

bw

By Sumner N. Hartman