

February 9, 1990

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Senior Scientist  
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Gas Research Institute  
8600 West Bryn Mawr Avenue  
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Subject: Contract No. 5089-260-1855  
Monthly Technical Report

Dear Dr. Gorody:

Enclosed are four copies of the Monthly Technical Report for the month of January 1990. Also attached is a memo from M. L. Allison reporting the amount of time he has spent on the project.

We wish to thank you and the other GRI personnel who have helped in getting this project operational.

Sincerely,

Dennis L. Nielson  
Associate Director

Enclosure

cc: M. L. Allison  
J. B. Hulen  
W. L. Forsberg  
D. A. Petty  
P. M. Wright

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DEFINITION OF STRATIGRAPHIC HETEROGENEITY USING DIPMETER LOGS

Monthly Report  
January 1, 1990 through January 31, 1990

Prepared By:

THE UNIVERSITY OF UTAH RESEARCH INSTITUTE

Jeffrey B. Hulen  
M. Lee Allison  
Dennis L. Nielson  
Wilford Forsberg

For

GAS RESEARCH INSTITUTE

Contract No. 5089-260-1855

GRI Project Manager  
A. W. Gorody

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## GRI January Monthly Report

### 2.0 Work Planned for the Month

It was anticipated that adverse Winter weather would preclude field work to gather additional data on the attitudes of various sedimentary features in the Ferron Sandstone. Accordingly, planned work centered on converting data already collected into various SCAT plots for analysis by consultant C.A. Bengston.

### 3.0 Work Completed During the Month

Sedimentary data collected at various Ferron Sandstone outcrops during November and December were entered into SCAT programs prepared by and obtained from Robert Elphick. The data are being sent to Bengston for his evaluation.

We have submitted an abstract on our dipmeter studies for presentation at the Rocky Mountain Section of AAPG, to be held during September 1990. The abstract is reproduced below.

#### Stratigraphic Heterogeneity from Dipmeter Logs, Ferron Sandstone, Central Utah

New methods for interpreting dipmeter data show great promise of revealing subtle stratigraphic heterogeneities critical in the search for and development of petroleum reservoirs. Stratigraphic statistical curvature analysis techniques (Strat-SCAT) developed by one of us (Bengston) theoretically can yield not only the facies, orientation, internal characteristics, and extent of a sedimentary body, but also the position of that body within a sedimentary sequence. Initial results of field studies of the Cretaceous Ferron Sandstone in central Utah support these contentions. For example, dip-vs-azimuth plots (one type of Strat-SCAT) for outcropping, fluvial-channel and distributary-mouth-bar sandstone sequences display different configurations, yet in rotary-drilled wells, using conventional logging technology, these rocks would be virtually indistinguishable.

These field investigations represent the initial phase of a multi-component research program sponsored jointly by the Gas Research Institute and the petroleum industry. Based on results of these studies, shallow-depth coreholes will be completed adjacent to the measured Ferron outcrops; a full suite of dipmeter and other well logs (including televiwer and microscanner as well as electrical and density logs) will be obtained for each hole. Dipmeter data then can be correlated directly with corresponding features both in core and outcrop. Basic SCAT techniques have been extremely successful for interpretation of large-scale structures. Confirmation and refinement of Strat-SCAT will furnish a powerful new tool for characterizing smaller-scale stratigraphic features in increasingly complex geologic settings.

The authors of this paper are J. B. Hulen, S. J. Lutz, M. C. Allison, C. A. Bengston, M. Chan, and D. L. Nielson.

### 4.0 Allied Investigations

None

### 5.0 Problems Encountered

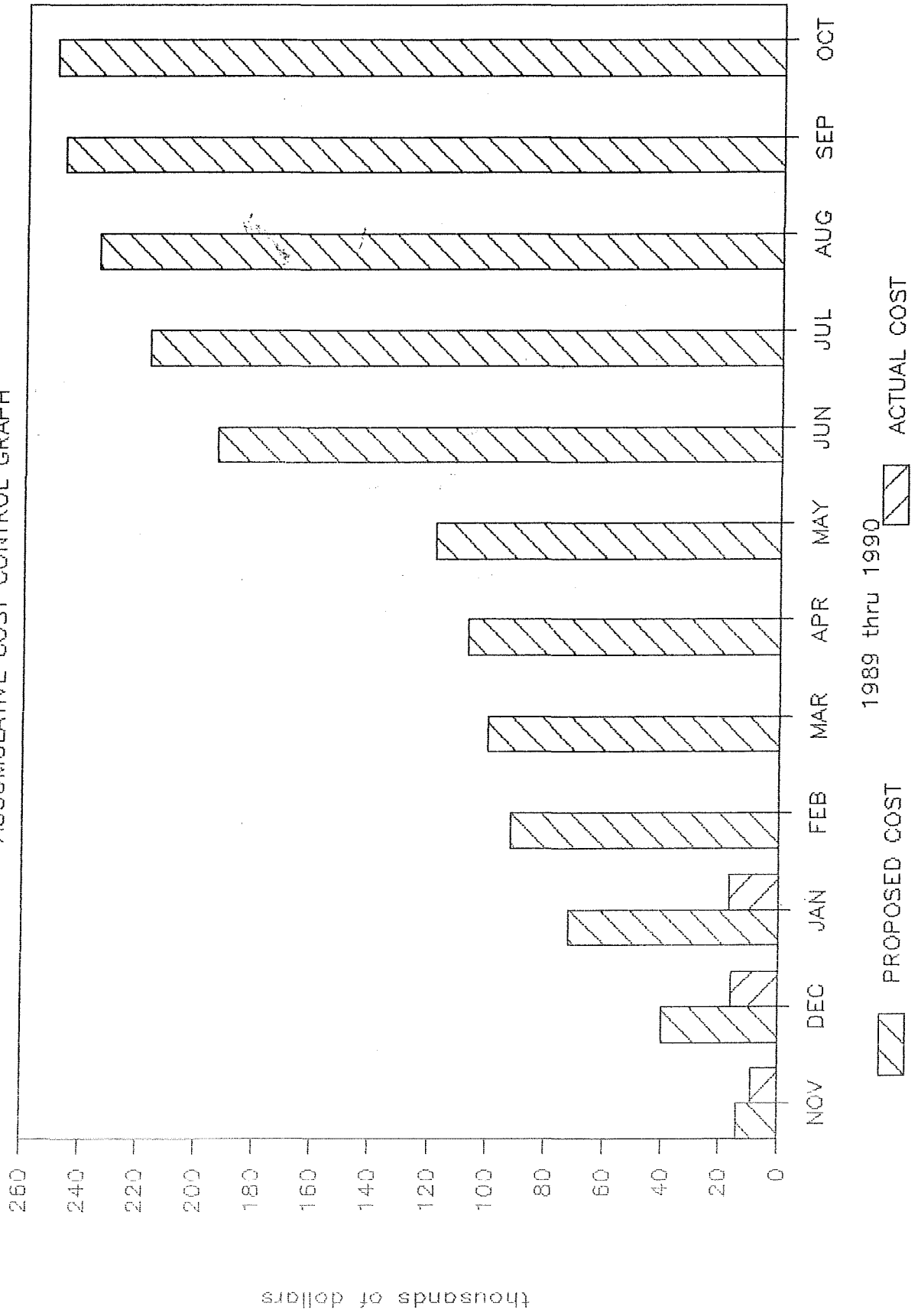
None

#### 6.0 Work Planned for Next Month

It is entirely possible that field work can resume in central Utah as early as late February. Should this be the case, we plan to continue our Ferron field measurements, at that time.

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thousands of dollars