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Valley-Fill Sandstones in the Kootenai Formation
on the Crow Indian Reservation, South-Central Montana

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Abstract

Field investigation of the Kootenai valley-fill sandstones was begun in the first quarter. About one half of the outcrop belt was inventoried for occurrences of channel sandstone before heavy snows came to the area. Five exposures of valley-fill sandstone have been located, of these two are 15 meters (50 feet) or greater in thickness and have excellent porosity and permeability. These will be measured and studied in detail during the next field season (1997). No further field work was possible during the second quarter because of snow cover.

Subsurface data is being collected, organized, and a digital database is being prepared for the project. Geographix petroleum software will probably be used to manage and manipulate the data. Regional subsurface cross sections are being constructed for correlation purposes.

All of the four 30' X 60' geologic quadrangles, the Billings, Bridger, Hardin, and Lodge Grass, have been scanned to produce a digital surface geologic data base for the Crow Reservation. These maps are currently being proofed and edited for accuracy.

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Executive Summary

Field investigation of the Kootenai valley-fill sandstones was begun in the first quarter; no field work has been possible during the second quarter because of snow cover.

Subsurface data is being collected, organized, and a digital database is being prepared for the project. Geographix petroleum software will probably be used to manage and manipulate the data.

All of the four 30' X 60' geologic quadrangles have been scanned to produce a digital surface geologic data base for the Crow Reservation. Processing and editing of this data continues in order to produce a high-quality surface geologic data base for the reservation.

Introduction

The stratigraphic study of the valley-fill sandstones in the Kootenai Formation was begun in August, 1996 with reconnaissance field work to locate the exposures of channel sandstone deposits. Subsurface aspects of the project were begun in the second quarter.

Digitization of surface geologic maps of the Crow Reservation area continues, as well as processing and editing of the data.

Results and Discussion

Subsurface data collection was begun in the second quarter of this project. A collection of most of the oil and gas well logs for the Crow Reservation area was donated to the project by a company that had initiated an exploration program on the reservation several years ago. These have been filed and inventoried to determine missing well coverage. Regional subsurface cross sections have begun to be constructed for correlation purposes and to identify facies changes that may be of importance to the project.

A digital data base of commercially available "scout card" data has been generated using Microsoft Access. Currently, the data base and software options are being evaluated, in order to decide how best to digitally manage the database that will be generated by the project. Geographix software, a comprehensive system for the storage and manipulation of petroleum information, including base map generation, is available at Montana Tech (the Montana Bureau of Mines and Geology is a department of Montana Tech). The feasibility of using this system is currently being evaluated.

The Geologic Map of the Billings 30' X 60' quadrangle was digitally scanned during the first quarter of this study for the geologic data base that will be provided to the Crow Tribe. This is the northwest quarter of the total area that will have to be produced in digital form under this contract. The Billings map has now been processed and proofed and edited twice for accuracy. The Bridger, Hardin, and Lodge Grass 30' X 60' quadrangles have all been scanned and are in various stages of processing and editing. The Lodge Grass quadrangle will require a limited amount of field checking during the next field season.

Conclusion

Subsurface data is being collected, organized, and a digital database is being prepared for the project. Geographix petroleum software will probably be used to manage and manipulate the data.

All four 30' X 60' geologic quadrangles have been scanned to produce a digital surface geologic data base for the Crow Reservation. Processing and editing of these data are on-going.