DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE U.S. DEPARTMENT OF ENERGY

OPEN-FILE REPORT

79-1437

DISCUSSION

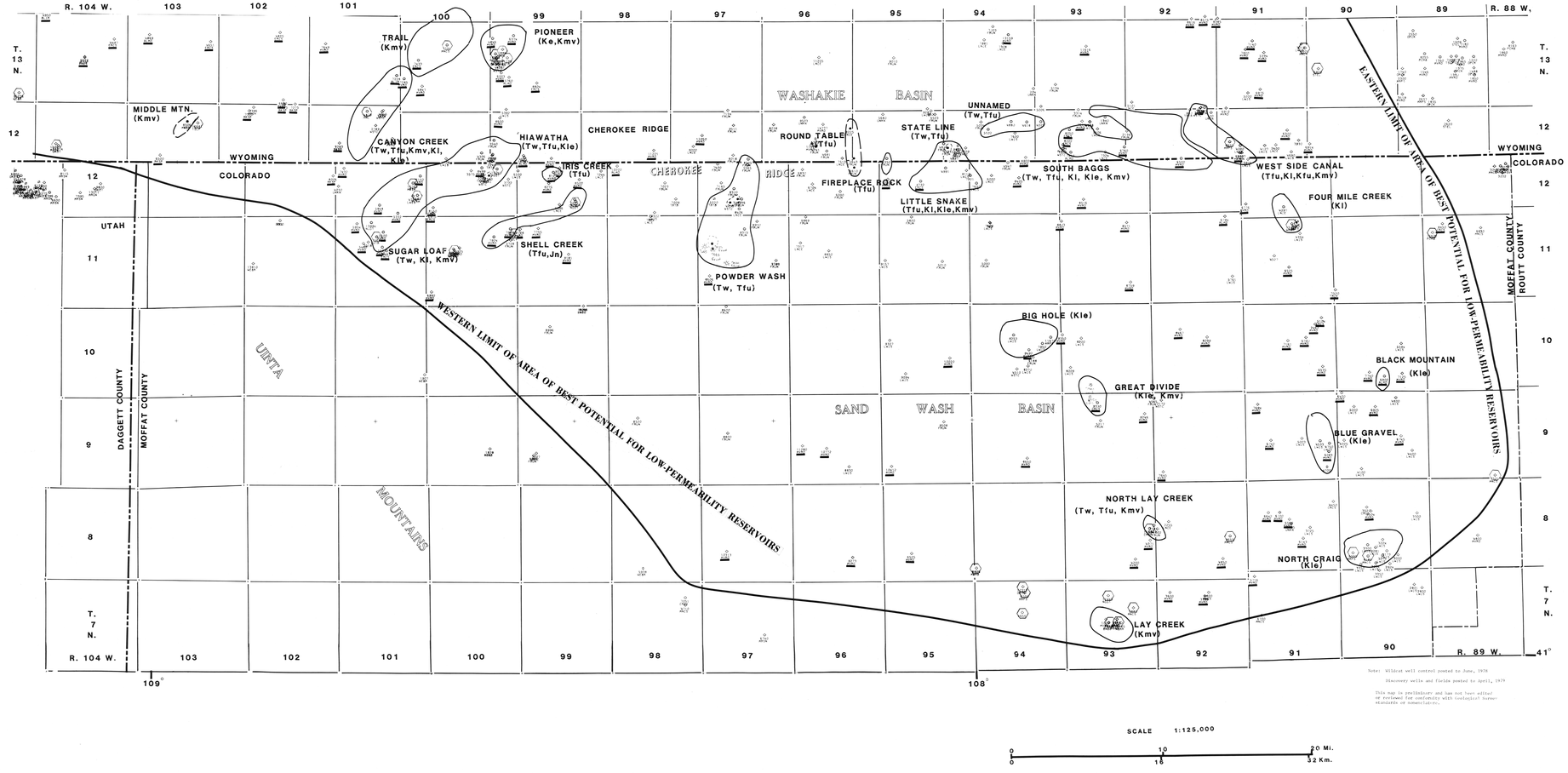
The Sand Wash Basin, Colorado has good potential for the exploitation of low-permeability, gas-bearing reservoirs. The U.S. Geological Survey in conjunction with the Department of Energy is investigating the reservoir characteristics and natural gas resources of low-permeability reservoirs within this basin and other basins in the Western United States. The location of wells shown on this map was obtained from the Petroleum Information, Inc., Well History Control System (WHCS) computer file. The formations reported at the total depth of the wells were furnished to Petroleum Information by the operators and, where necessary, corrections made by the author to correspond to correlations of borehole geophysical logs.

A low-permeability gas-bearing reservoir, for the purpose of this study is considered "tight" or presently noncommercial if reservoir permeabilities are less than 0.1 millidarcies as measured by conventional methods or less than 0.05 millidarcies at in-situ confining pressures.

In the Sand Wash Basin the best potential for gas-bearing low-permeability reservoirs is found within the Upper Cretaceous Mesaverde Group, Lewis Shale, and Lance Formation. The Tertiary Fort Union Formation probably has potential in the structurally deeper portions of the basin.

The average drilling depth to penetrate the Mesaverde Group is 4,000 to 8,000 ft (1829 to 2438 m) in this basin. There is moderate drilling density around the margins of the basin with the center of the basin less densely drilled.

Oil and gas fields are shown on the map. In general, these fields are producing from commercial to marginally commercial reservoirs. The Hiawatha gas field in the southwest portion of the Washakie Basin, Wyoming and northern portion of the Sand Wash Basin, Colorado are excellent examples of commercial Tertiary gas development. Other fields in the basin produce from reservoirs in the Upper Cretaceous Lance Formation (Kl), sandstones in the Lewis Shale (Kle), and Mesaverde Group (Kmv).



SCALE 1:125,000

0 10 20 Mi.

0 16 32 Km.

Note: Wildcat well control posted to June, 1978.

Discovery wells and fields posted to April, 1979

This map is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.

EXPLANATION

WELL SYMBOLS--Numbers indicate depth of well in ft. Letters are code name (where available) of strata reported at total depth from Petroleum Information Well History Control System (See table 1), underlining of code name, MVRD, indicates wells spud in Tertiary rocks and penetrating part of the Upper Cretaceous Mesaverde Group within the area of best potential for tight gas sandstones. Only wildcat well locations shown

- Abandoned wildcat well
- Oil discovery well
- Gas discovery well
- Oil and gas discovery well
- Shut-in or temporarily abandoned well
- Well spud in Tertiary sediments and penetrating all of the Mesaverde Group. These wells provide subsurface control for evaluation of most of the interval containing potentially gas-bearing low-permeability reservoirs.

TRAIL (Kmv) = NAME OF GAS OR OIL FIELD - Letters in parentheses indicate producing formation

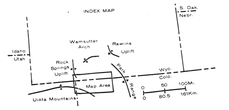
- Oil field
- Gas field

Table 1.--WHCS code names used on this map[1/]

TERTIARY		Tertiary, undivided	TVTR
		Wasatch Formation	WSTC(TW)[2/]
		Fort Union Formation	FRNT(TF)
UPPER CRETACEOUS	Mesaverde Group	Cretaceous, undivided	CRCS
		Lance Formation	LANC(KLE)
		Lewis Shale	LWIS(KLW)
		Mesaverde Group, undivided	MVRD(KMV)
		Almond Formation	ALMD(KAL)
		Ericson Sandstone	ERCSN
		Rock Springs Formation	RKSP
		Blair Sandstone-equivalent	UPCK
		Mancos Shale	MNCS
		Horagon Sandstone, Member of the Mancos Shale	HSPS
		Pierre Shale	PIRR
		Sharon Shale	RNTR
		Niobrara Shale	NIAR
		Frontier Formation	FRNR
LOWER CRETACEOUS		Dakota Sandstone	DKOT
JURASSIC		Jurassic, undivided	JRSC
		Morrison Formation	MRSN
		Nugget Sandstone	NGGT
TRIASSIC		Triassic, undivided	TRSC
PERMIAN		Permian, undivided	PYMN
PERMIAN-PENNSYLVANIAN		Weber Sandstone	WEBR
PENNSYLVANIAN		Pennsylvanian, undivided	PSLV
		Morgan Formation	MRGN
MISSISSIPPIAN		Madison Limestone	MSSN
CAMBRIAN		Cambrian, undivided	CMBR
PRECAMBRIAN		Precambrian, undivided	PCMB
		Precambrian granite	GRNT
		Igneous, intrusive	IGNS
		Rocks of unknown age or formation at total depth not reported	UNKN

[1/] Code names listed in approximate order of increasing (upward) geologic age but not intended to be a correlation chart; stratigraphic nomenclature and ages from Petroleum Information

[2/] Abbreviations of subsurface usage



WILDCAT WELL PENETRATION MAP SHOWING WELLS DRILLED INTO AND THROUGH POTENTIALLY GAS BEARING, LOW-PERMEABILITY UPPER CRETACEOUS AND TERTIARY RESERVOIRS,

SAND WASH BASIN, COLORADO

BY

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1979