oil-shale sections than other methods. Much less rock per barrel of oil is mined by the Occidental process than in other processes. The process is environmentally attractive in that surface installations are kept to a minimum because a surface retort is not required. Rock mined is readily revegetated raw oil shale.

CURTIS, GRAHAM, Gulf Minerals Resources Co., Denver, Colo.

ENVIRONMENTAL GEOLOGY AND LEGISLATION AND EFFECT ON EXPLORATION AND PRODUCTION

No abstract available.

DOLE, HOLLIS M., Colony Development Operation—Atlantic Richfield Co., Denver, Colo.

TITLE TO BE ANNOUNCED

No abstract available.

DUNN, C. E., Saskatchewan Dept. Mineral Resources, Regina, Sask.

UPPER DEVONIAN DUPEROW SEDIMENTARY ROCKS IN SOUTHEASTERN SASKATCHEWAN—WHY NO OIL YET?

Although oil shows are common in the 500 to 700 ft thick Duperow Formation (Frasnian) of southernmost Saskatchewan, no commercially viable accumulations have been found. However, a few miles south of the Canadian border producing fields are present in Montana.

The sedimentary rocks comprise more than 20 carbonate/evaporite cycles with potentially good reservoir rocks—sucrosic dolomites, oolites, and vuggy carbonates. The inhibiting factors to hydrocarbon accumulation are: (1) extensive anhydritization plugging pore spaces; (2) halite plugging vuggy carbonates in the upper Duperow; (3) many vertical fractures, now plugged by anhydrite, but good potential escape routes for fluids in the past; (4) absence of oolite developments more than 2 ft thick.

These factors explain the lack of success to date. However, the Duperow still is considered a good prospect because: (1) good porosity and oil staining are common in two zones near the middle of the Duperow section; (2) only 180 wells have penetrated the Duperow over an area of 15,000 sq mi—35% of these have terminated above the porous zones, sometimes on seismic highs where the prospect was obviously the overlying Birdbear Formation, a known producer; (3) vuggy carbonate rocks may not always be halite plugged in an area southwest of a major halite body; (4) isopach maps show that extensive solution of Middle Devonian Prairie Evaporite salts took place in Duperow deposition causing locally anomalous accumulations of Duperow sediments. Structure contour maps indicate northwest and northeast trends of the anomalies. These trends are strongly emphasized in a computer-plotted third-degree residual trend surface analysis map. A major northeast lineament lines up with the Duperow fields in north Montana. Conjugate sets of weakness in the Precambrian basement may have caused these trends, and their intersections are the most likely prospects for Duperow oil.

FUZESY, L. M., Saskatchewan Dept. Mineral Resources, Regina, Sask.

GEOLOGY AND HYDROCARBON POTENTIAL OF WINNEPEGOSIS FORMATION IN SOUTHERN SASKATCHEWAN

No abstract available.

GEORGE, GENE R., Runge, Campbell & George, Casper, Wyo.

POISON DRAW FIELD, CONVERSE COUNTY, WYOMING

Oil and gas production in Poison Draw field, discovered in 1972, is from the lower sand bed of the Teckla sand member of the Lewis Shale (Late Cretaceous). Oil production has passed the one-million-bbl mark and is expected to exceed eight million bbl of primary production.

The pool is contained in a stratigraphic trap formed in a delta-front environment where strong long-shore currents and wave action formed a northwest-southeast trending system of beaches and delta-front bars. The Poison Draw Teckla pool produces from an undersaturated, underpressured sandstone reservoir.

Development drilling on the east updip margin and in the northern part of the field is still active. The recent increases in crude oil prices have greatly enhanced the economic potential of the field.

One other Teckla sand pool already has been found and further exploration drilling may find additional Teckla sand pools in the southern Powder River basin.

GLASS, GARY B., Wyoming Geol. Survey, Laramie, Wyo.

USE OF PUBLISHED WYOMING COAL ANALYSES

Published proximate analyses, heat values, and sulfur contents of representative Wyoming coals were compared by sample types (face, tipple, and delivered) and by mining methods (underground and strip). These comparisons suggest that the quality of thick, potentially strippable Wyoming coals should not be characterized too stringently from published proximate analyses and heat values without consideration of detailed background information on each analysis. Minimally, the type of sample, date of analysis, sizes sampled, description of coal, thickness and part of coal sampled and/or discarded, type of mine, mining equipment, preparation facility, processing, and even customer identification should be known.

This precaution is deemed necessary for the following reasons.

1. Although analyses of face samples best characterize a coal bed in its natural state, most published analyses of Wyoming coals are either very old face samples from abandoned underground mines or they are tipple and delivered samples.

2. Most available face, tipple, and delivered samples of thick coals (35-118 ft thick) are only representative of one fourth to one half of the entire thickness of such beds.

3. For a given coal bed, there are not enough surface mines for which analyses are available to charac-