ALASKAN EXPLORATION

SIMONSON, RUSSELL R., Consulting Geologist, and

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The Estratos de los Colorados (redbeds with abun-
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most cases only, clay mineral component. The two
underlying formations contain an assemblage of kao-
linite, montmorillonite, and illite. It is probable that
the clay mineralogy reflects the environment in which
it developed. The Estratos de los Colorados are
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The clay mineralogy may be useful for locating
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any significant difference in the clay mineralogy of the
Estratos de Ischi-гуalasto and the Estratos de los Ras-
tros which would indicate the presence of an interfor-
national boundary.

SIEGEL, FREDERIC R., and JOHANNES H.
SCHROEDER, Department of Geology, The George
Washington University, Washington, D.C., JOSE F.
BONAPARTE, and RAFAEL HERBST, Fundación
Miguel Lillo, Tucumán, Argentina

CLAY MINERALS IN SELECTED ARGENTINE TRIASSIC
UNITS

Three Upper Triassic (Rhaetian) formations which
crop out in the Hoyada de Ischi-гуalasto, San Juan
Province, Argentina, have been analyzed partly for
clay-mineral content. These continental units are con-
formable. From oldest to youngest, they are known as
Estratos de los Rastos, Estratos de Ischi-гуalasto, and
Estratos de los Colorados. More than 80 samples
representing observable changes in lithologic charac-
teristics were taken at irregular intervals from 30 me-
ters below to 30 meters above the two interformation-
al boundaries. In the section studied, the boundary
between the two lower formations is not well defined,
either on lithologic or paleontologic characteristics,
and that between the upper two formations is transi-
tional in nature (through about 30 meters).
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SIMONSON, RUSSELL R., Consulting Geologist, and

GEORGE B. PICHEL, Union Oil Company of Cali-
ifornia, Los Angeles, Calif.

ALASKAN EXPLORATION

Oil seepages were noted in Alaska before the turn of
the century. Exploration began as early as 1902 with
the drilling of shallow wells near these seepages in the
Cold Bay area of the Alaska Peninsula. In that same
year drilling in the Yakataga area by the Chilkat Oil
Company resulted in the discovery of the Katella
field. This was Alaska's first oil field; however, it only
produced 154,000 barrels from 1902 to 1933 when the
topping plant was destroyed by fire and the field
abandoned.
Exploration was spasmodic until World War II. At
that time the government spent 45 million dollars in
exploration to develop oil in Naval Petroleum Reserve
No. 4 on the Arctic North Slope. Twenty-five five-well
wells were drilled in the period 1945-1953. These wells
resulted in the discovery of the Umiat oil field with re-
serves of approximately 70 million barrels. Several
small gas fields also were found. These discoveries,
though non-commercial in themselves, indicated to
the industry that oil and gas could be found in the
Arctic North Slope, one of the largest sedimentary ba-
sins in Alaska.
The real turning point in oil exploration in Alaska
occurred in 1957 when the Richfield Oil Corporation
discovered the Swanson River field. This field resulted
from a seismic survey over a topographic high. Swan-
son River oil field has produced more than 60 million
barrels of oil from 50 wells, and should recover more
than 100 million additional barrels through pressure
maintenance by gas injection which is presently un-
derway.
The discovery of the Swanson River oil field began
an extensive geophysical and exploratory effort on the
Kenai Peninsula which still continues. By 1959 this
effort had resulted in the discovery of the large Kenai
gas field by Union Oil Company and Marathon, and
several smaller gas fields. From 1959 until 1962 no
other significant discoveries were made. It appeared
that Swanson River oil field was a "freak" and that
no additional oil would be found in the Cook Inlet.
The industry, however, continued the search and was
adventuresome enough to explore the cold waters of the
Cook Inlet and to acquire leases there from the state of
Alaska. In 1962 Pan American Petroleum, drilling
one of these leases in the Cook Inlet, dis-
covered the Middle Ground Shoals oil field. This
field, which has more than 3,000 feet of effective pay, indi-
cated that oil fields could be found with sufficiently
large reserves to justify the costly offshore operations in
Alaska.
Industry effort since 1962 has resulted in the dis-
cover of several large oil and gas fields, and has
proved this to be one of the important oil-producing
provinces of the United States. In addition to the
Middle Ground Shoals field, major oil accumulations
have been found recently in the Macker River, Trad-
ing Bay, West Foreland, North Redoubt, Granite
Point, and Tyonek areas. Most of these discoveries
are from thick pay sections. In addition to the Lower
Kenai Hemlock conglomeratic sandstone, saturation
has been found in multiple pay zones of the Middle
Kenai Formation which have better reservoir geome-
tries than the Hemlock. All oil fields found in the Cook
Inlet basin are undersaturated. Therefore, for maxi-
mum recovery, pressure maintenance will be re-
quired.
Reserves in excess of 1 billion barrels of oil and 4
trillion cubic feet of gas have been discovered in the
Cook Inlet basin. The climatic, logistic, and tide pro-
blems make the Cook Inlet basin one of the most ex-
pressive operating areas in the world. Drilling costs are
high because of the need for expensive platforms de-
signed to withstand the forces of ice and tide plus the
tremendous amount of directional work, submarine
pipelines, docks, terminals, and other facilities nec-
ary for the production of crude oil in a remote area.
The industry, undaunted by the complexity and ex-
ense of the problems, continues to regard Alaska as an
area with good profit potential. Here the possibili-
y still exists of finding large reserves in the United
States.
The Cook Inlet basin north of the Forelands has by
now been explored relatively intensely, and the land is
tightly leased. No company is interested in giving up
any part of its acreage that is still unexplored. The
industry as a whole, especially those companies that
were not fortunate enough to acquire positions in the
upper Cook Inlet, is looking expectantly and hopeful-