Twenty major fields in the Anadarko basin contain the equivalent of over 22 billion barrels of oil in place.

Basin configuration, tectonic activity, and processes of sedimentation have been the primary influences affecting the generation and accumulation of these hydrocarbons. Understanding the important elements of these phenomena and how they interact should lead to successful exploration.

A look back over the past indicates that a general knowledge of these basic elements and the use of exploration techniques which would focus on them would have located most major accumulations.

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December 13, 1965
RICHARD HESTER, Pauley Petroleum, Inc., Los Angeles
"Petroleum Geology of the Arabian-Persian Gulf Area"

The final products of negotiations for "areas of interest" in the Persian Gulf may have left little future value of lifted oil for successful bidders.

The Gulf, a regional low between the Arabian Shield and the Zagros Mountains of Iran, lies in the oil-tectonic province of Saudi Arabia.

Structures of the gulf belong to the generally north-south lineations of Saudi Arabia as opposed to the northwest-southeast anticlines and synclines of the youthful Zagros. Structural closure and complexity increases eastward of the Arabian Shield toward the Zagros folded belt of Iran. Emergent salt is present across the southern portion of the gulf.

A tectonic fracture zone of considerable magnitude occurs along the Iranian shoreline of the gulf. Thrust-faulting of as much as 10,000 feet magnitude may be present. Also, longitudinal rupture on the order of 60 miles has moved in a left lateral motion between the Oman neck and Bandar Abbas across the Hormuz Straits.

Stratigraphic correlation across the Arabian-Persian Gulf area is difficult; sediments are predominantly limestone, dolomites, anhydrites or shales, indicating general low relief of the area during deposition. The only sands of importance were deposited down-dip from the Arabian Shield during Bargan or Zubair time (Middle and Lower Cretaceous respectively). Neither sand is in the proper sequence or distribution pattern to react favorably to the tectonic growth of the salt domes in the area to form traps similar to types of the Gulf of Mexico oil province. Porous limestone or limestone-derived reservoirs will probably contribute most of the production to be recovered in the area.

Stratigraphic, structural and tectonic studies indicate the NIOC District I of the Persian Gulf area has some potential for oil and can be separated into three general areas.

The middle third can be excluded from competitive exploration because there are no structures present and lies in an area of deficient reservoir capabilities created by the Qatar arch.

The southern third is next best because of better reservoir potentials shown by Umm Shaif, Idd El Shargi, Maydom Mazam and Sassan field (Lavan Pet. "S" structure) but with considerable potential problems posed by nearby emergent salt conditions. There are many other structures in this area but most may have been breached by salt.

The northern third is comparatively better than the above because of possible Burgan production and other potential oil reservoirs similar to those found in Arabia, Iraq and Iran.

Because the onshore Asmari-Bangestan production of Iran is unique to that particular tectonic and sedimentary province, this type of oil may not be found in the offshore gulf agreement areas. Production in the southern portion will most likely be Thamama, Arab or Uwainat (Arej). Production in the northern portion will probably be Asmari (Ghar), Burgan and Ratawi-Khami with some production possible below the Hith (Jurassic).

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January 10 and 24, 1966
PANEL OF EXPERTS
The Oil & Gas Journal, Tulsa
"The Next Ten Years in Oil"

In the ten years from 1965 through 1975, the oil industry in the free world will be on the move in a decade of unrivaled expansion, unsurpassed consumption, and unprecedented technology.

It will be an age of superlatives, not only on the international scene but also in the United States. Domestically, shock waves resulting from the reappraisal of the late 1950's have run their course and an industry that is leaner, wiser, and more sophisticated stands poised for the challenges of a new era.

For the U.S., there will be no turning

back to conditions and methods of operation in the so-called good old days of the mid-1950's. Technology has wrought too many changes. But of greater importance, the industry has adopted new ways of looking at itself, employs fresh and more efficient methods of doing business, and takes more aggressive and realistic attitudes toward its problems.

The opportunities in the next decade will be great, and so will the risks as oilmen vie for new markets, new reserves, and new and improved ways of drilling, producing, and getting petroleum to market.

Earlier this year, the Journal sensed that something out of the ordinary was brewing in the oil industry. For months, a team of Journal editors has dedicated itself to determining the reasons for this new sense of expectancy.

In this country and abroad, interviews were conducted with oilmen, bankers, government leaders, and economists — anyone who had a knowledge of current oil events and a sense of the future.

Trends and present industry performance were researched, and an exhaustive analysis made of the numerous industry and government forecasts to find a common core of agreement and to clearly define guideposts to the industry's future.

And the Journal's original impression that the industry was on the eve of a strong upsurge domestically — as well as unparalleled expansion abroad — was verified beyond a doubt.

Despite an ingrown resistance to optimism that had built up domestically, it was found that the upturn will sweep the U.S. along with much of the expansion. The improved growth rate of the domestic industry is coming just as surely, and nearly as sharply, as the setback which occurred a few years ago.

Ten years ago the proper approach to any oil and gas forecast was to start with exploration, then carry on through the steps of getting the oil produced, pipelined, processed, and sold. But a decade has switched the focus of forecasting.

With today's long supply of oil, gas, and other hydrocarbons, the customer is getting the attention of forecasters. Stress is upon how this abundance of oil, gas, or other hydrocarbons will be used, at what price and in what places. In other words, the forecast spotlights first the customer's demand, then how it will be supplied.

More than ever in the next decade, political factors will be on center stage. These include, domestically, the federal policy on import controls which did not exist 10 years ago, but which must be considered before any meaningful forecast can be made on where the nation's refiners will obtain their crude oil. Not only will producers have to live with more federal control, they'll face more regulation by the states as well.

In other parts of the free world, government policies will be even more influential. Operators will be able to make decisions in many areas only on the basis of what government will allow.

The future of the industry is linked inextricably to new and improved techniques, and the next 10 years will be an even more impressive period of technology.

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January 17, 1966

GARY E. HENRY

Consultant, Wichita Falls

"Oil Creek Truncation Traps in Cooke and Grayson Counties, Texas"

One of the most prolific reservoirs in North Texas is the Ordovician Oil Creek Sandstone.

This discussion presents one of the types of entrapment from which this horizon produces. The basic principle of oil occurrence along an unconformity is universal, applying to oil fields and future exploration the world over.

The pre-Pennsylvanian section in North Texas is composed of an erratic basal Cambrian sandstone overlain by up to 5,000 feet of Cambro-Ordovician Ellenburger carbonates, the Ordovician Joins Limestone, and the Oil Creek Formation with its basal sandstone 40-60 feet thick. This is covered by 2,000-4000 feet of Pennsylvanian (Strawn and Canyon) clastics which are highly productive. Cretaceous rocks cover the surface, thickening from the erosional edge in northwestern Cooke County to 3,600 feet in southeastern Grayson County.

During the Wichita orogeny (post-Morrow-pre-Atoka) the Muenster arch was uplifted and severely eroded, furnishing clastic deposition on both sides of the arch. The Marietta-Sherman basin subsided and the Criner Hills uplift occurred. Pre-Pennsylvanian beds were eroded progres-