Gusher State LLC

GEOLOGY OF THE NORTH DOUGLAS PROSPECT COCHISE COUNTY, ARIZONA

By

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Gusher State LLC

GEOLOGY OF THE NORTH DOUGLAS PROSPECT
COCHISE COUNTY, ARIZONA

EXECUTIVE SUMMARY

Gusher State LLC

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EXECUTIVE SUMMARY

GEOLOGY OF THE NORTH DOUGLAS PROSPECT COCHISE COUNTY, ARIZONA

Initial Drilling Location

The *North Douglas Prospect* is located in Section 22 T22S-R27E in southern Cochise County, Arizona. The initial well will be located 660' FS & W in the section, and will be drilled to an approximate depth of 4500 feet. This location was picked based on structural setting, Bouger Gravity and Residual Aeromagnetic surveys, previously published geological studies, remote detection of hydrocarbon surveys, and the stratigraphy and shows of oil in the adjoining Waddell-Duncan #1 Murrey well in Section 5 T22S-R27E. If this well is successful in finding commercial quantities of oil and/or gas, then additional drilling locations will be evaluated.

Structural Geology and Potential Reservoir Objectives

The *North Douglas Prospect* is situated on a structurally high, uplifted horst block between deeper Cenozoic grabens to the west and east that are filled with thick sections of Cenozoic rocks. It also sits directly along the NW-trending Elfrida Anticline, which is evident on cross sections and the Bouger Gravity map. Such a location generally is considerable favorable for oil entrapment by most petroleum exploration geologists. The initial drilling location of the *North Douglas Prospect* should be structurally lower than the Waddell-Duncan #1 Murrey well, which according to State of Arizona files "ran very high", and accordingly, it should have a thicker preserved section of potential reservoir rocks that are present in the Waddell-Duncan well. It is near the margin of the deep Pedregosa Basin to the immediate east, where reefs are possible in several units. From oldest to youngest, the main reservoir objectives at the *North Douglas Prospect* include: (i) the Devonian Percha Shale, possibly for horizontal-well exploitation; (ii) porous dolomites and dolomitic limestones, including possible reefs, in the lower part of the Mississippian Escabrosa Limestone; (iii) porous limestones and possible reefs in the Pennsylvanian Horquilla Formation; (iv) porous limestones, dolomites, sandstones, and possible reefs in the Permian section in some formations that were not present because of erosion in the Waddell-Duncan well; and (v) porous sandstones, limestones, and possible reefs in the Lower Cretaceous section also in some formations that were removed by erosion in the Waddell-Duncan well. Near-surface Cenozoic rocks may have some limited reservoir potential as well.

Remote detection ('sensing') of hydrocarbons seeped into surficial soils from reservoirs at depth by aerial or satellite surveys is a well-known method of exploration in

little-drilled, frontier areas. The survey around the North Douglas Prospect area suggests high potential for hydrocarbons at depth.

Respectfully submitted,

S. J. Mazzullo, PhD

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Petroleum Geological Consultant
March 7, 2014

Gusher State LLC

GEOLOGY OF THE NORTH DOUGLAS PROSPECT
COCHISE COUNTY, ARIZONA

FULL GEOLOGICAL REPORT

Gusher State LLC

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GEOLOGY OF THE NORTH DOUGLAS PROSPECT COCHISE COUNTY, ARIZONA

Regional Setting

The North Douglas Prospect is located in Cochise County in southeastern Arizona. As shown on the accompanying *Geologic Setting of the North Douglas Prospect* map, a number of different geological provinces are present in Arizona. Specifically, the eastern part of Cochise County is situated on the edge of the Pedregosa Basin, which is a Paleozoic-age feature in which thick deposits of Pennsylvanian and Permian rocks were deposited in a rapidly-subsiding, relatively deep basin. Equivalent Paleozic rocks to the west of the Pedregosa Basin, in central and western Cochise County, are thinner and were deposited on a shallow shelf. According to a number of studies, the Pedregosa Basin and adjoining area in Cochise County, Arizona are considered to be potential oil-producing provinces based on favorable geologic setting and oil/gas maturation history (Ross, 1973; Greenwood et al., 1977; Thompson et al., 1978; Wardlaw and Harris, 1984; Butler, 1989; Rauzi, 2001). The generalized stratigraphy of the Paleozoic, Mesozoic, and Cenozoic rocks in southeastern Arizona is shown on the enclosed *Stratigraphic Section in Cochise County* diagram. According to the references cited on this diagram, various rocks of Upper Devonian, Pennsylvanian, Permian, Cretaceous, and Tertiary (Cenozoic) age are potential petroleum reservoir rocks in Cochise County. Not all of these rocks are present everywhere in the county, however, depending on the extent of numerous periods of erosion during Paleozoic, Mesozoic, and Cenozoic time.

The accompanying *Geographic Setting of North Douglas Prospect* map shows the location of the prospect in southern Cochise County, about 10 miles north-northwest of the town of Douglas. The prospect is within the Sulphur Springs Valley, which is bordered by the Swisshelm and Chiricahua Mountains on the east and by the Mule Mountains on the west. The Sulphur Springs Valley is a NW-trending, intermontane basin with a flat, relatively thin surficial section of Cenozoic age comprising gravels, sands, and shales. It is the same type of valley – a fault-block valley or 'graben' – in which a number of prolific oil fields are present in the southwestern United States, most notably the Railroad Valley in Nevada where wells flow 2,000-4,000 barrels of oil per day. Many water wells drilled by ranchers and townsfolk since the late 1800s in the Sulphur Springs Valley have reported shows of oil. Likewise, several oil wells drilled in the valley in the last 50 years or so also have reported shows of oil and gas, mostly notably the Waddell-Duncan #1 Murrey well due northwest of the prospect in T22S-R27E and the Moncrief (Allen) #1 Davis well in T21S-R25E. According to the references cited above and these shows of oil and gas, the Sulphur Springs Valley and prospect area appear to be favorable for the generation, migration, and entrapment of hydrocarbons.

Structural Geology of the Prospect

The enclosed *North Douglas Prospect* map shows the initial proposed drilling location of the prospect, which is in Section 22 T22S-R27E (660' FS & W). This well will be drilled to a depth of approximately 4500 ft. If this well is successful in finding commercial quantities of oil and/or gas, then additional drilling locations will be evaluated. This initial drilling location is very near the crest of an anticline (upward-folded rocks) that I refer to as the *Elfrida Anticline*. This feature is evident on the accompanying *Lund's Map and Cross Section* diagram, which was based on an undated, early seismic and soil-survey work by P.H. Lund. The location of Lund's seismic section is just northwest of the proposed drilling location and is shown on the *North Douglas Prospect* map. The Elfrida Anticline trends in a northwest-southeast direction from T19S-R26E southward to the town of Douglas. The *North Douglas Prospect* map also shows the location of normal faults in the area that I have been able to document based on previously published studies (such as Ryder, 1983). Note that there is a structural graben bounded by normal faults a few miles to the west of the proposed drilling location, and another graben about 12 miles to the east. As indicated by reports filed with the State of Arizona from the Moncrief (Allen) #1 Davis well in Section 25 T21S-R25E, at this location the western graben contains at least 5450' of Cenozoic gravels, sands, shales and volcanics overlying Cretaceous and Paleozoic rocks, and there were shows of oil and gas in the Cenozoic deposits. As indicated by reports also filed with the State of Arizona, the Phillips A-1 Douglas State well in T23S-R29E was drilled in the eastern graben, and it encountered 7058' of Cenozoic sediments and volcanics. Hence, the initial proposed drilling location for the North Douglas Prospect and the Elfrida Anticline both lie on an up-thrown fault block (a 'horst') between these grabens. Such a location is favorable for oil entrapment.

The accompanying *Bouger Gravity Anomaly* map shows the normal faults in the prospect area, the Elfrida Anticline, and the horst between the western and eastern grabens, all superimposed on a gravity map that was published by Aiken and Sumner (1974). The Elfrida Anticline as I have mapped it very nearly coincides with a finger-like gravity high that trends in a north-northwest direction across the west half of T22S-R27E. This high likely reflects the subsurface expression of the Elfrida Anticline. The proposed initial drilling location is along this gravity high and the anticline. This finger-like high is part of a broader and higher ridge, likely held up by Precambrian granite basement rocks, that trends in a north-south direction from T21S south to T24S in R28E. This ridge is shown by a red arrow on the enclosed *Section Across The North Douglas Prospect Area* diagram, which was modified from a cross-section published by Ryder (1983). Although Ryder didn't refer to it as such, the Elfrida Anticline likewise is present on this diagram. The Waddell-Duncan #1 Murrey well to the northwest of the initial drilling location also is located on the northwest-trending finger-like high along the Elfrida Anticline, but the enclosed *Residual Aeromagnetic* map (published by Aiken and Sumner, 1974) shows that this well is on a very high feature that is held up by igneous rocks close to the surface. In fact, the Waddell-Duncan #1 Murrey well reported top of the Precambriann granite to be at 3990', which verifies this contention. The dry hole in T22S-R27E to the immediate east of the initial proposed drilling location, and the three dry holes to the south in T23S-R27E, were all shallow wells that were drilled to less than 1000 feet and bottomed in

Cenozoic strata (see the *North Douglas Prospect* map), which is too shallow to have evaluated potentially-productive, underlying Paleozoic and Mesozoic rocks.

Stratigraphy and Oil/Gas Shows in the Waddell-Duncan #1 Murrey Well

The structurally high Waddell-Duncan #1 Murrey well is the closest deep well to the North Douglas Prospect (see the *North Douglas Prospect* map), and it serves as a reference for what likely will be encountered in the initial well drilled on the prospect. The enclosed *Stratigraphy and Oil/Gas Shows in the Waddell-Duncan #1 Murrey Well* diagram shows the stratigraphic section penetrated by the Waddell-Duncan well, which reached a total depth (TD) of 4400' in Precambrian granite. The top of the granite was reported at 3990', and is overlain by the Bolsa Quartzite and the Abrigo Formation, both of Cambrian age.

The overlying Devonian is a very thin section (50') of limestones (the Martin Limestone) overlain by about 70' of the Percha Shale. These rocks are anomalously thin in the area, because of erosion during Devonian time, as panel G on the *Geology in the North Douglas Prospect Area* diagram shows the Devonian to regionally be from 300-400' thick in the prospect area. The Devonian rocks are overlain by a thick section (~1080') of limestones, dolomitic limestones, dolomites, and some sandstones in the Mississippian-age Escabrosa Formation. The overlying Pennsylvanian Horquilla Formation consists of only 540' of interbedded limestones and lesser conglomerates and shales. This section, too, is anomalously thin as panel D on the *Geology in the North Douglas Prospect Area* diagram shows that Pennsylvanian rocks regionally could be as much as 1,500' thick in the prospect area. The enclosed *Stratigraphic Section in Cochise County* diagram shows that the Horquilla Formation can be 600-1230' thick in the county.

The Pennsylvanian Horquilla Formation is overlain by a similarly anomalously thin section (only 150') of Permian-age limestone; these rocks and the underlying Horquilla Formation are included within the Naco Group. As shown in panel C on the *Geology in the North Douglas Prospect Area* diagram, the Permian section regionally should be much thicker than 150' in the prospect area. The *Stratigraphic Section in Cochise County* diagram shows that the Permian section can be considerably thicker than 150' in the county.

The overlying 1080' of sandstones, shales and limestones are within the Bisbee Group of Lower Cretaceous age, and panel A on the *Geology in the North Douglas Prospect Area* diagram also indicates that the Cretaceous could be much thicker in the prospect area but whether it attains thicknesses of as much as 15,000' in other than graben is probably unlikely). The *Stratigraphic Section in Cochise County* diagram shows that the Lower Cretaceous is from 1,000-15,000' thick in the county.

The upper 530' of section in the well are conglomerates of Cenozoic (Tertiary) age that are thin relative to the 5450'+ of Cenozoic rocks in the Moncrief (Allen) #1 Davis well (in T21S-R25E) in the western graben. They are thin because the Waddell-Duncan well is on the uplifted horst block to the east of the western graben. I contend that

the anomalously thin sections of Devonian, Pennsylvanian, Permian, and possibly Cretaceous rocks in the Waddell-Duncan well are the result of more erosion because the well was so high.

There were shows of oil and gas in the Waddell-Duncan well in the Horquilla and Escabrosa Formations, but the two drill-stem tests that were run did not recover any oil or gas. I think the reason for this is because the tests covered intervals that were too thick to adequately evaluate the shows. In the oil patch, drill-stem tests normally are run over shorter intervals to effectively test oil or gas shows in potential reservoirs.

Stratigraphy and Reservoir Objectives in the North Douglas Prospect

The *Residual Aeromagnetic* map shows that the initial proposed drilling location for the North Douglas Prospect along the Elfrida Anticline should not be as high structurally as at the Waddell-Duncan well. I believe this is a good situation because the initial well location likely was not subjected to as much erosion as the Waddell-Duncan well, and therefore, it should contain thicker sections of Devonian, Pennsylvanian, Permian, and possibly Cretaceous rocks and included potential petroleum reservoirs than that well. From oldest (deepest) to youngest (shallowest), the main reservoir objectives at the North Douglas Prospect are as follows:

(i) The Devonian Percha Shale, which is the equivalent of the Woodford Shale in New Mexico, Texas, Oklahoma, and southern Kansas, which is a locally prolific, unconventional oil/gas reservoir drilled for with horizontal wells in Oklahoma and Texas. The Percha Shale may likewise be such a reservoir at the North Douglas Prospect if it is thicker than 70’ as it is in the Waddell-Duncan well;

(ii) Porous dolomites and dolomitic limestones in the lower part of the Mississippian Escabrosa Limestone, which had shows of oil in the Waddell-Duncan well. Panel F on the *Geology in the North Douglas Prospect Area* diagram shows that the prospect area is close to the transition into the Pedregosa Basin, and such transitional areas are prime locations for reefs to have developed during deposition of the Mississippian rocks. Local biostromes (another word for reefs) in the Mississippian are postulated by other workers as shown on the *Stratigraphic Section in Cochise County* diagram;

(iii) Porous limestones in the Pennsylvanian Horquilla Formation. Panel D on the *Geology in the North Douglas Prospect Area* diagram shows the Pennsylvanian section in Cochise County thickening to the southeast into the Pedregosa Basin (see the *Geologic Setting of the North Douglas Prospect* map), which also is a prime location for reefs to have developed at this time. Local bioherms likewise are postulated by other workers as shown on the *Stratigraphic Section in Cochise County* diagram. This contention is substantiated by panel A in the enclosed *Pennsylvanian and Permian Facies in the North Douglas Prospect Area* diagram (from Ross,

1973), which shows that the area around the North Douglas Prospect and rimming the Pedregosa Basin likely includes reefs and banks in the Horquilla Formation;

(iv) Porous limestones, dolomites, and sandstones in the Permian section in the upper part of the Naco Group. The *Stratigraphic Section in Cochise County* diagram shows that the Concha Limestone, Scherer Sandstone, Epitaph Dolomite, and the Colina Limestone are all potential oil reservoirs in the county; but these formations seemingly are not present in the erosionally-thinned Permian section in the Waddell-Duncan well (where only the lowermost beds in the Permian are present). If the section is thicker in the North Douglas Prospect and these formations are present, then potential reservoirs are possible within them. Permian reefs in the prospect area and rimming the Pedregosa Basin were also postulated by Ross (1973)(see the *Pennsylvanian and Permian Facies in the North Douglas Prospect Area* diagram, panel B);

(v) The Morita Formation was recognized at the top of the Lower Cretaceous section in the Waddell-Duncan well (see the *Stratigraphy and Oil/Gas Shows in the Waddell-Duncan #1 Murrey Well* diagram), but inspection of the *Stratigraphic Section in Cochise County* diagram shows that some overlying, potentially productive Lower Cretaceous units (for example, the Mural Limestone and Cintura Formation) may be present at the North Douglas Prospect if the Cretaceous section is thicker than in the Waddell-Duncan well. As indicated on the *Stratigraphic Section in Cochise County* diagram, some of these units contain reefs; and reefs also are postulated by other workers on panel B of the *Geology in the North Douglas Prospect Area* diagram. If present, the presumed oil-saturated sandstones of Cretaceous age shown on panel B of the *Lund's Map and Cross-Section* diagram would be in Cretaceous beds overlying the Morita Formation;

(vi) Lastly, Cenozoic rocks may have some limited reservoir potential as suggested by the shows of oil and gas in these rocks in the Moncrief (Allen) #1 Davis well in T21S-R25E (see the *North Douglas Prospect* map).

Hydrocarbon Indications Surveys

Remote detection ('sensing') of hydrocarbons seeped into surficial soils from reservoirs at depth by aerial or satellite surveys is a well-known method of exploration in little-drilled, frontier areas (e.g., Tian, 2012). There are such surveys around the North Douglas Prospect area that suggest high potential for hydrocarbons at depth (see the enclosed *Remote Sensing of Hydrocarbons* map).

References Cited

Aiken, C.L.V., and J.S. Sumner, 1974, A geophysical and geological investigation of potentially favorable areas for petroleum exploration in southeastern Arizona; Arizona Geological Survey, Oil and Gas Publication OG-24, 44 p.

Butler, W.C., 1989, The geologic setting of southern Arizona and southwestern New Mexico, with a rationale for assessment of undiscovered, economically recoverable oil and gas: a summary of four potential plays; U.S. Geological Survey, Open-file Report 88-450-M, 150 p.

Greenwood, E., 1969, Oil and gas in the Pedregosa Basin; Oil and Gas Journal, Oct. 6, p. 171-173.

Greenwood, E., F.E. Kottlowski, and S. Thompson, 1977, Petroleum potential and stratigraphy of Pedregosa Basin: comparison with Permian and Orogrande basins; American Association of Petroleum Geologists Bulletin, v. 61, p. 1448-1469.

Rauzi, S.L., 2001, Summary of Arizona's oil and gas potential; Alexander's Gas and Oil Connections, 4 p.

Rauzi, S.L., 2009, Evaluation of potential shale-gas targets in Arizona; unfunded grant proposal, 7 p.

Ross, C.A., 1973, Pennsylvanian and Early Permian depositional history, southeastern Arizona; American Association of Petroleum Geologists Bulletin, v. 57, p. 887-912.

Ryder, R.T., 1983, Petroleum potential of wilderness lands; U.S. Geological Survey, Circular 902-C, 22 p.

Schumacher, D., 1978, Devonian stratigraphy and correlations in southeastern Arizona; New Mexico Geological Society Guidebook, 29th Field Conference, p.175-181.

Thompson, S., J.C. Tovar, and J.N. Conley, 1978, Oil and gas exploration wells in the Pedregosa Basin; New Mexico Geological Society Guidebook, 29th Field Conference, p. 331-342.

Tian, Q., 2012, Study on oil-gas reservoir detecting methods using hyperspectral remote sensing; International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, v. 39-B7, p. 157-162.

Wardlaw, B.R., and A.G. Harris, 1984, Conodont-based thermal maturation of Paleozoic rocks in Arizona; American Association of Petroleum Geologists Bulletin, v. 68, p. 1101-1106.

Respectfully submitted,

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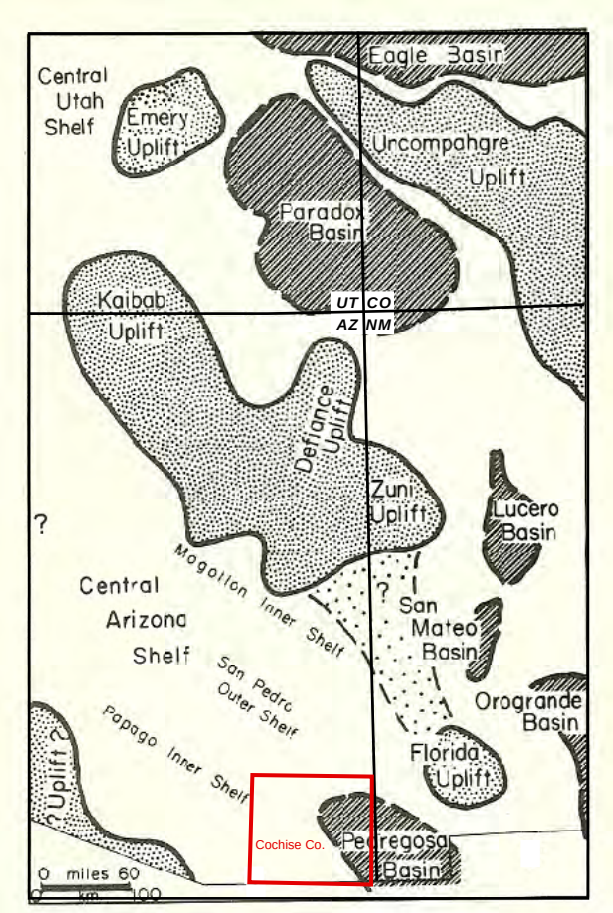
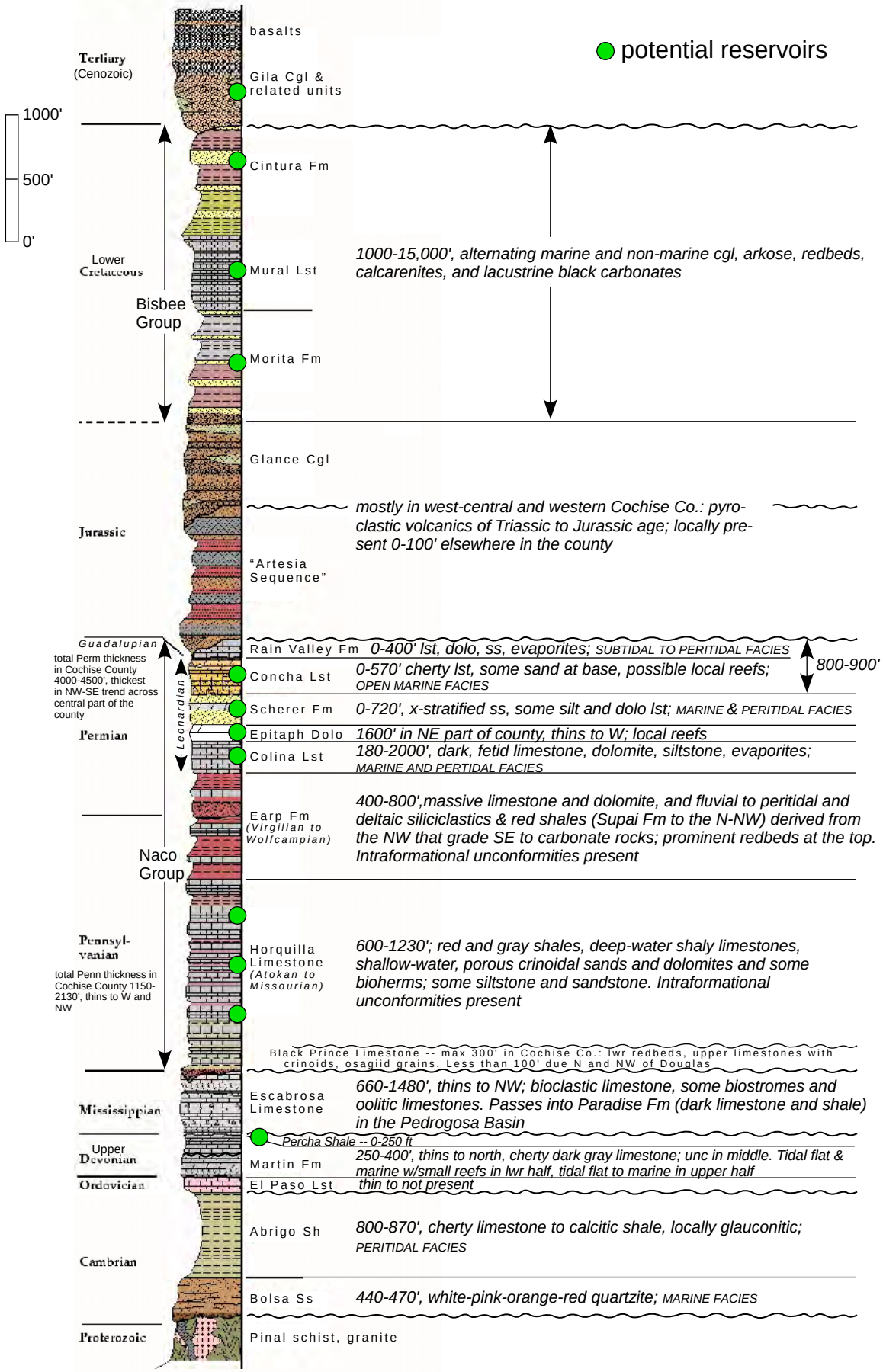
March 7, 2014

GEOLOGIC SETTING OF THE NORTH DOUGLAS PROSPECT

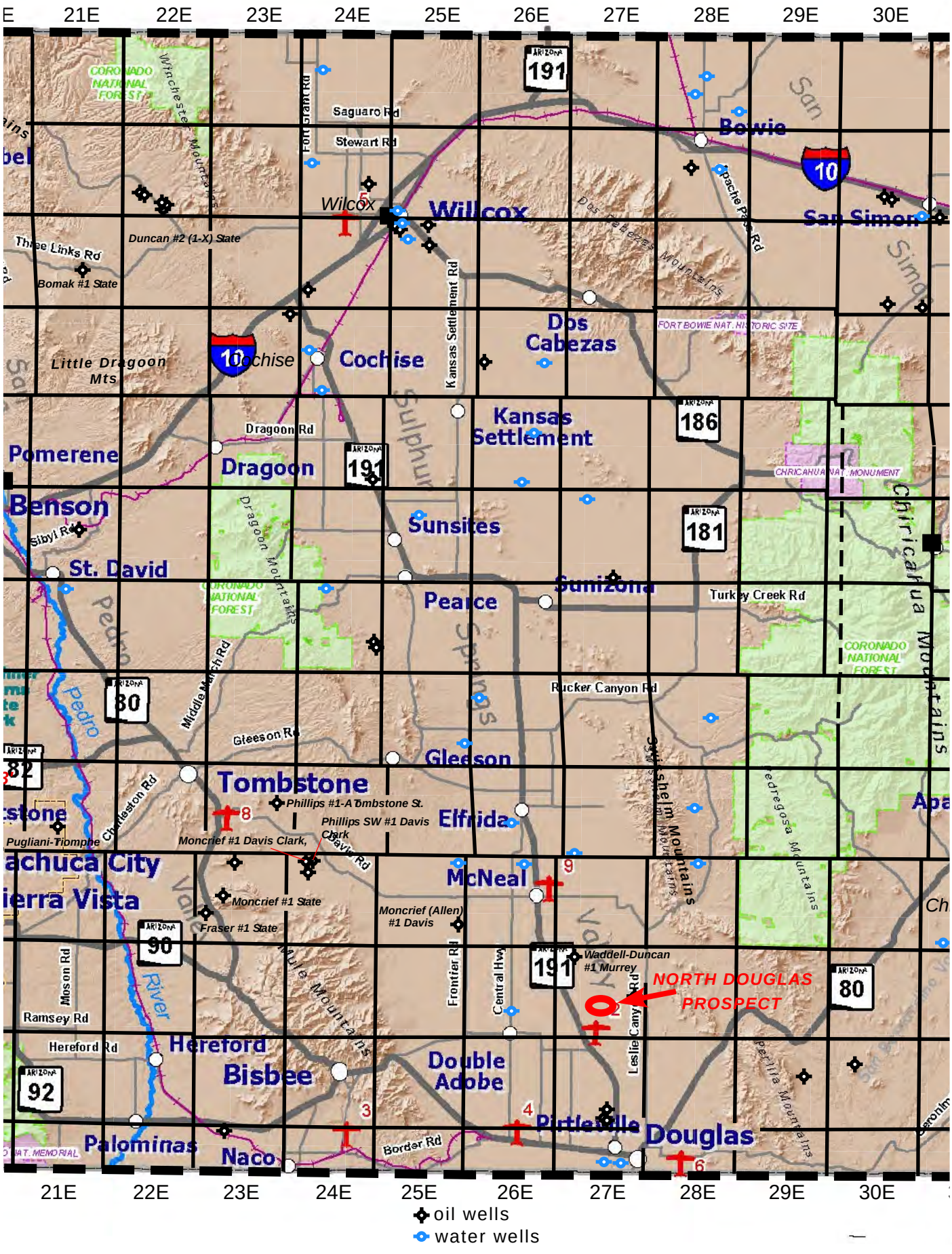


STRATIGRAPHIC SECTION IN COCHISE COUNTY

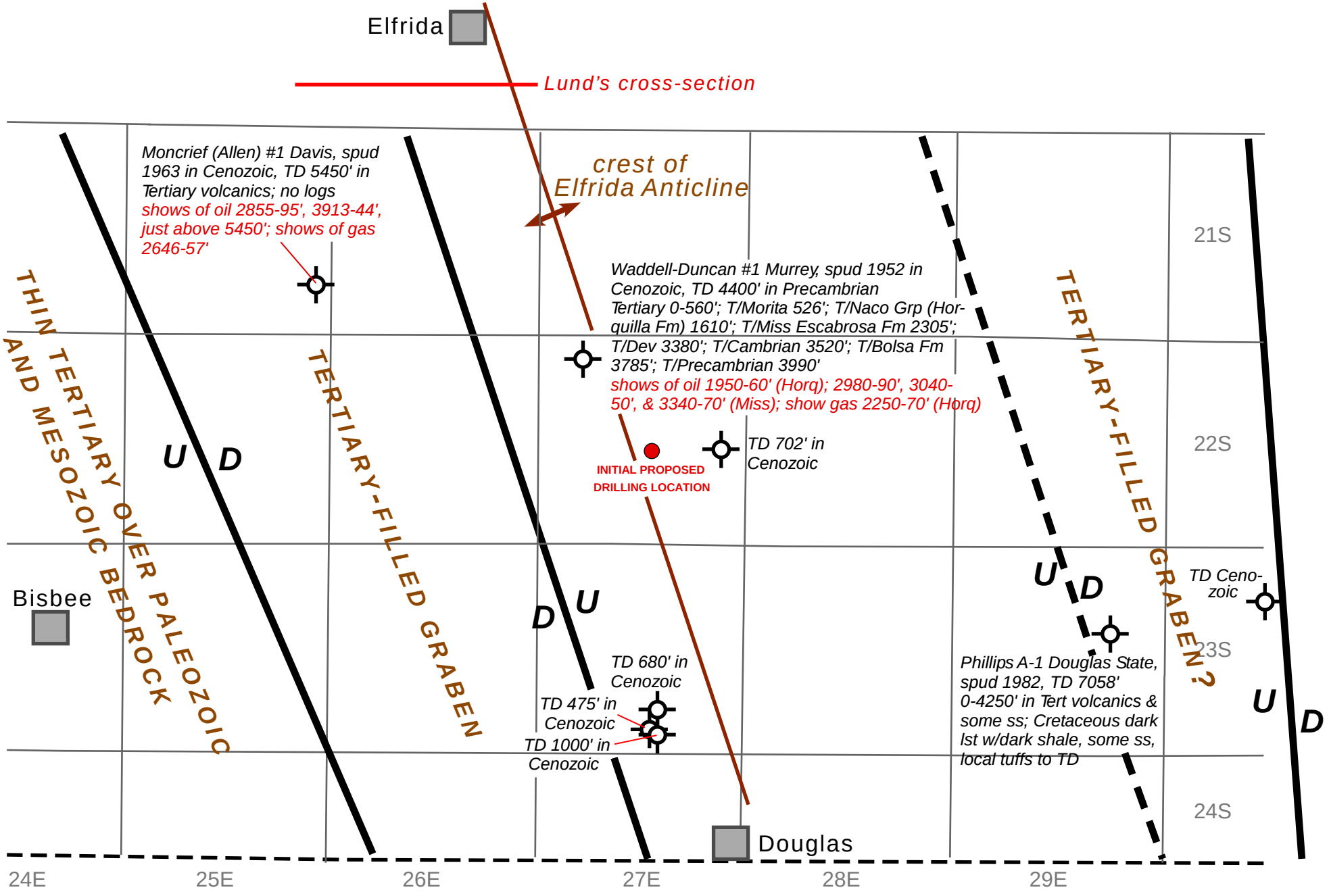


Compiled from several sources, including Ross (1973), Greenwood et al. (1977), Schumacher (1978), Thompson et al. (1978), Butler (1989), and Rauzi (2001, 2009).

GEOGRAPHIC SETTING OF NORTH DOUGLAS PROSPECT

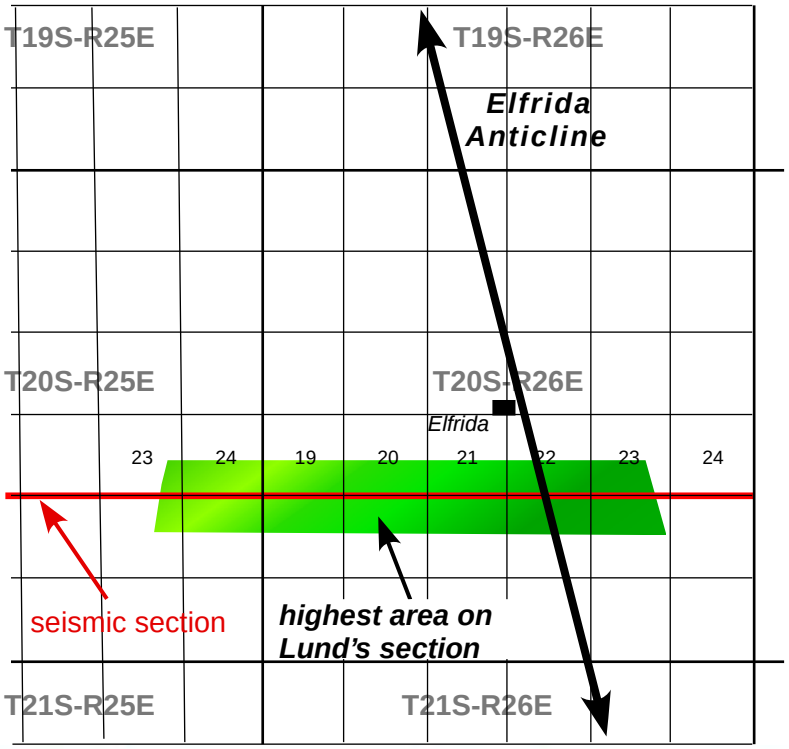


NORTH DOUGLAS PROSPECT

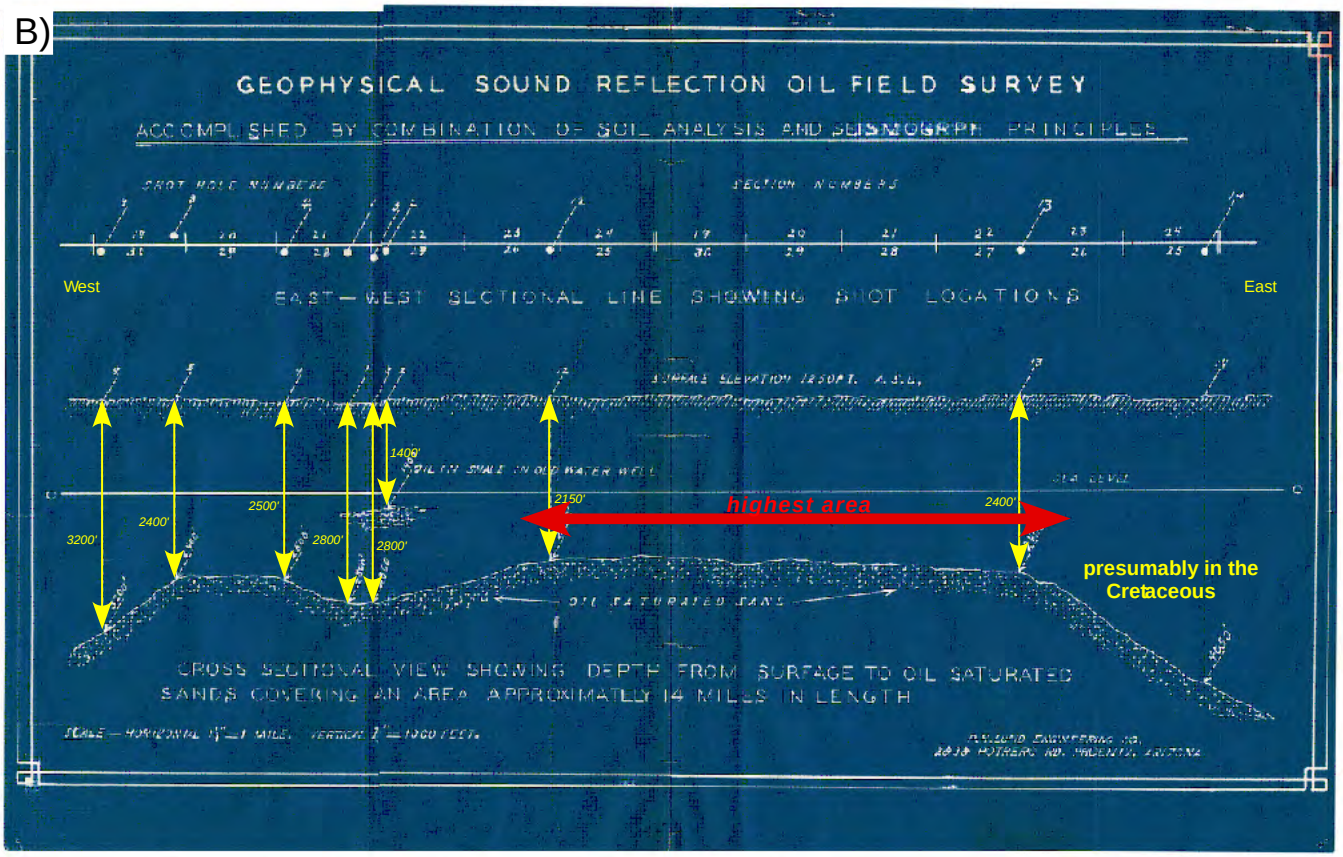


LUND'S MAP AND CROSS-SECTION

A)

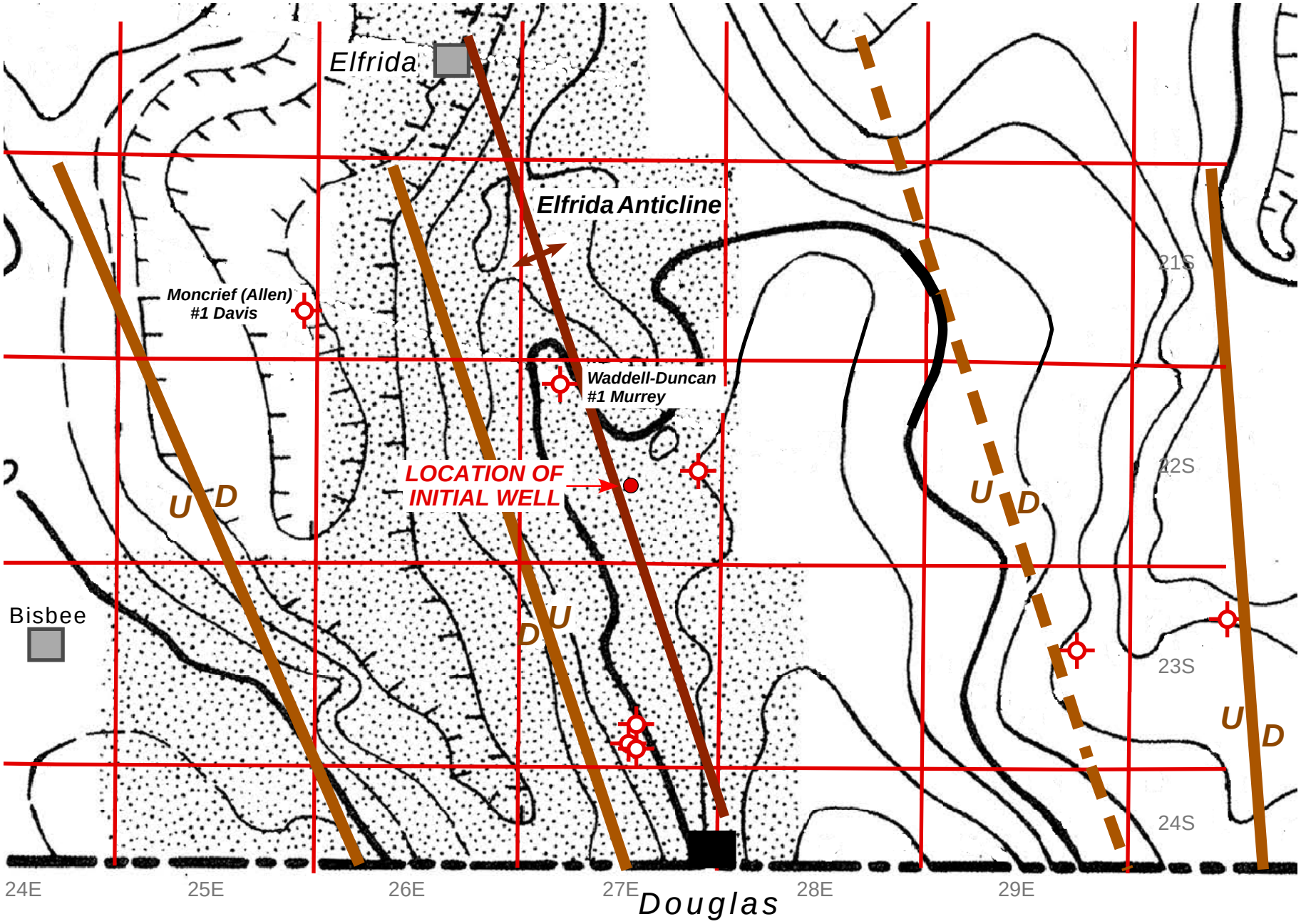


B)

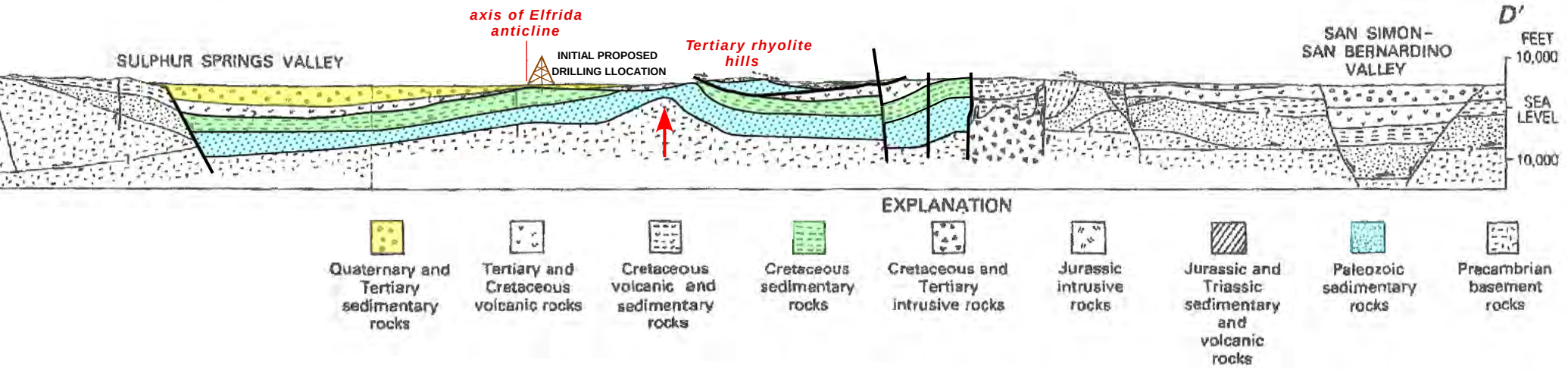


The oil sands shown in the section above appear to be in the Cretaceous Bisbee Group unconformably overlying the Permian. These sands are at subsurface depths of 2150-3200'. The highest area of the anticline along Lund's section is highlighted in green on his map to the left, and it encompasses Sec 24 T20S-R25E and Secs 19, 20, 21, 22, and W/2 23 T20S-R26E. However, his contours on the map do not coincide with the highest area on his section. My map, above, shows the possible true extent of the highest area along the anticline.

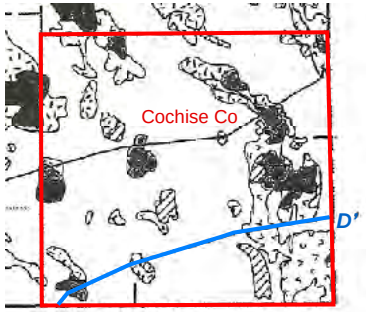
Bouger Gravity Anomaly map



SECTION ACROSS THE NORTH DOUGLAS PROSPECT AREA

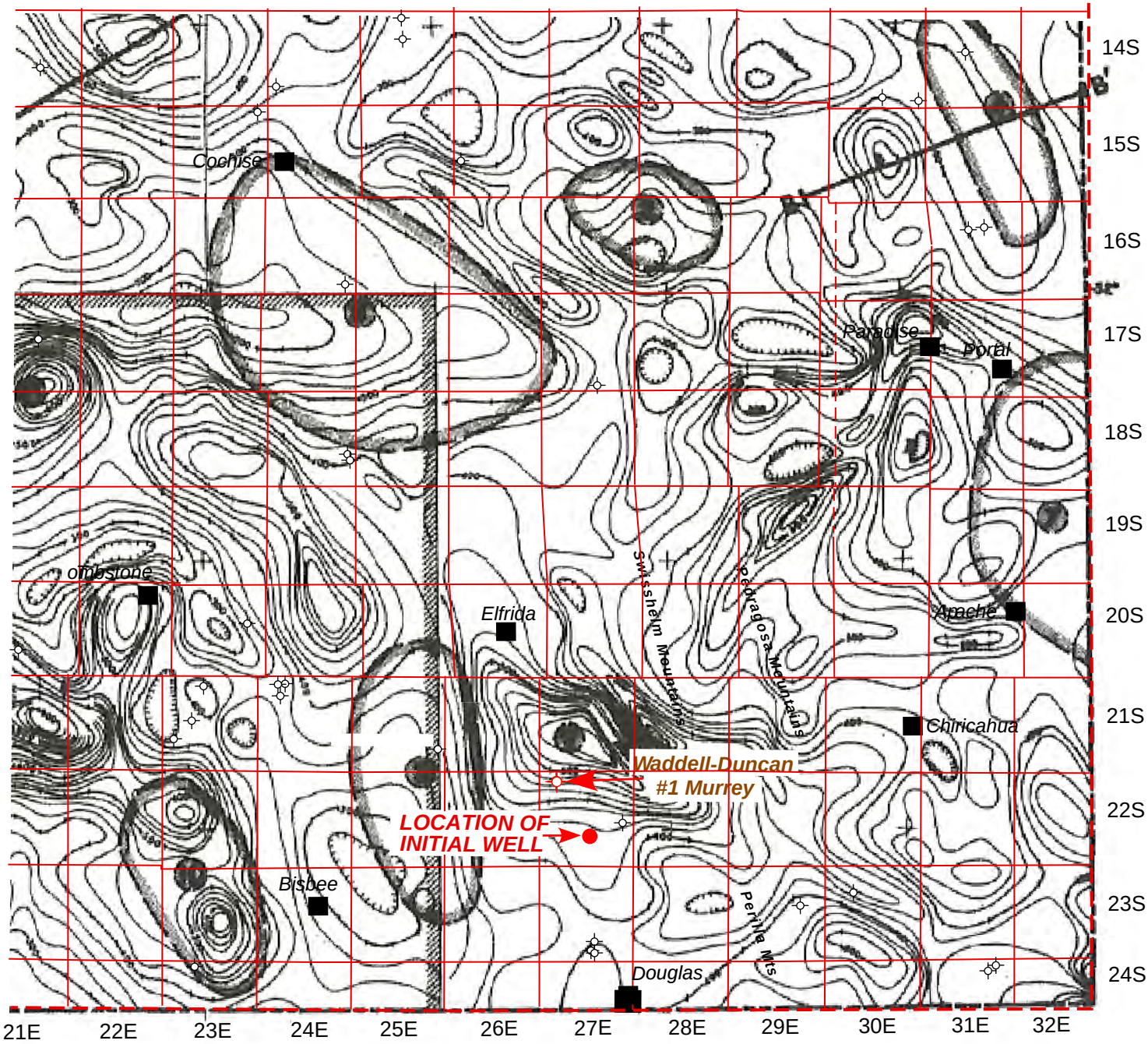


modified from Ryder (1983)



drilling location

Residual Aeromagnetic Map

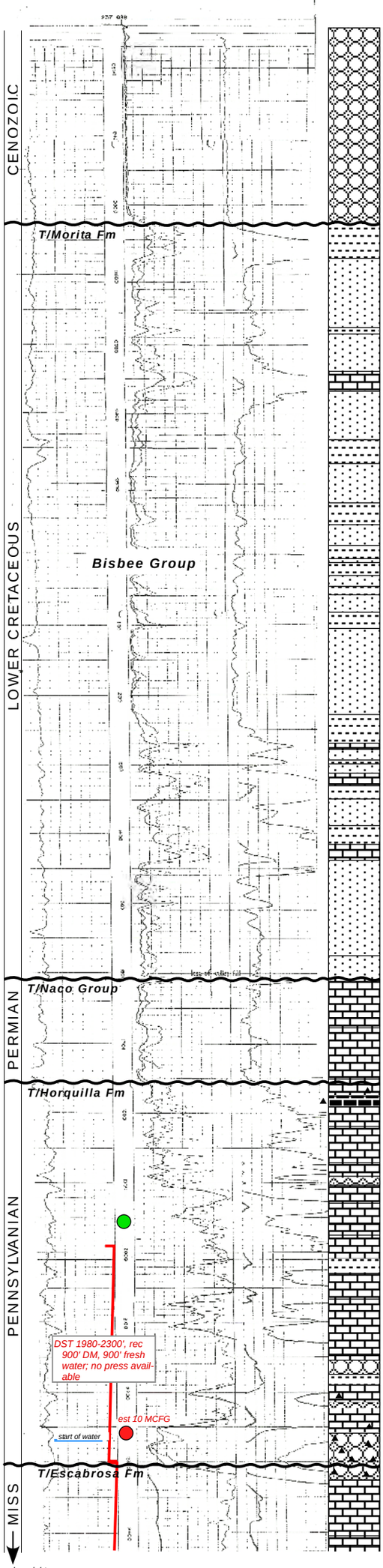


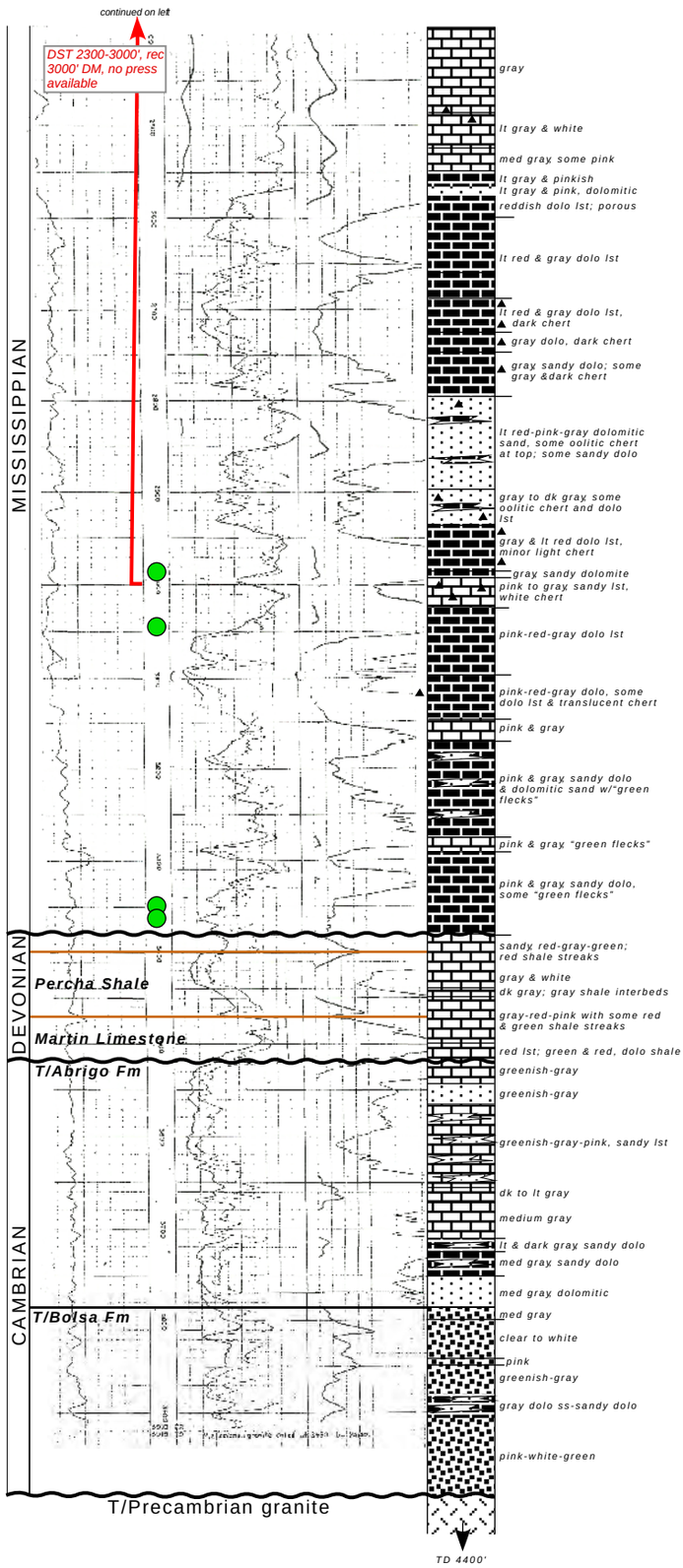
Waddell-Duncan #1 Murrey
5-22S-27E

STRATIGRAPHY AND OIL/GAS SHOWS IN THE WADDELL-DUNCAN #1 MURREY WELL

conglomerate
sandstone
quartzite
shale
limestone
dolomitic lst or dolo
chert
granite

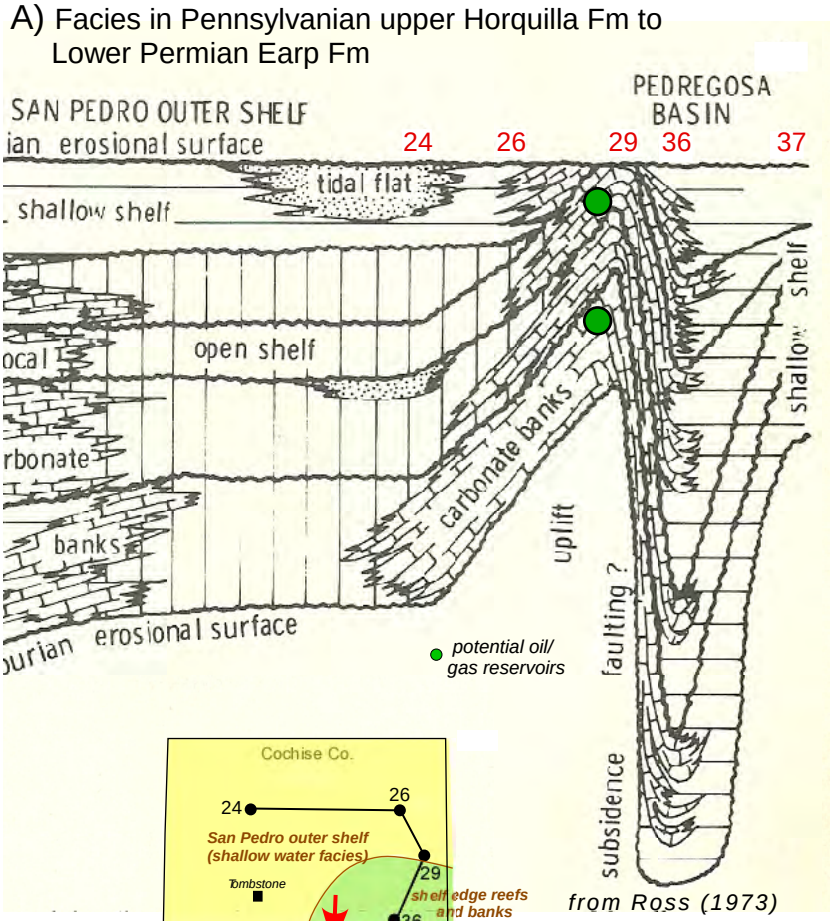
oil shows
gas shows
drill-stem tests



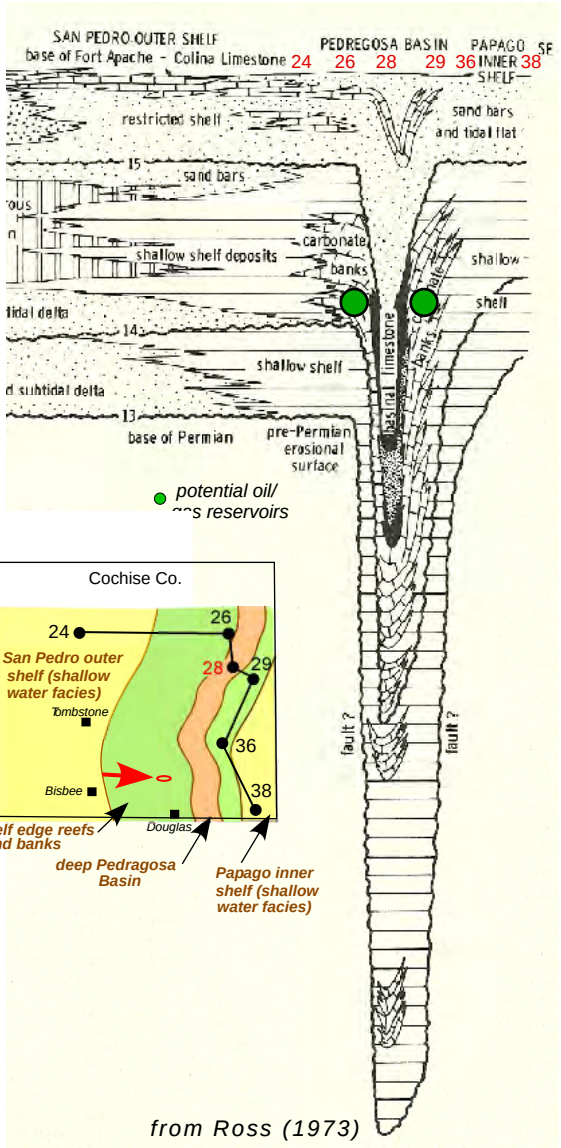


PENNSYLVANIAN AND PERMIAN FACIES
IN THE NORTH DOUGLAS PROSPECT AREA

A) Facies in Pennsylvanian upper Horquilla Fm to Lower Permian Earp Fm

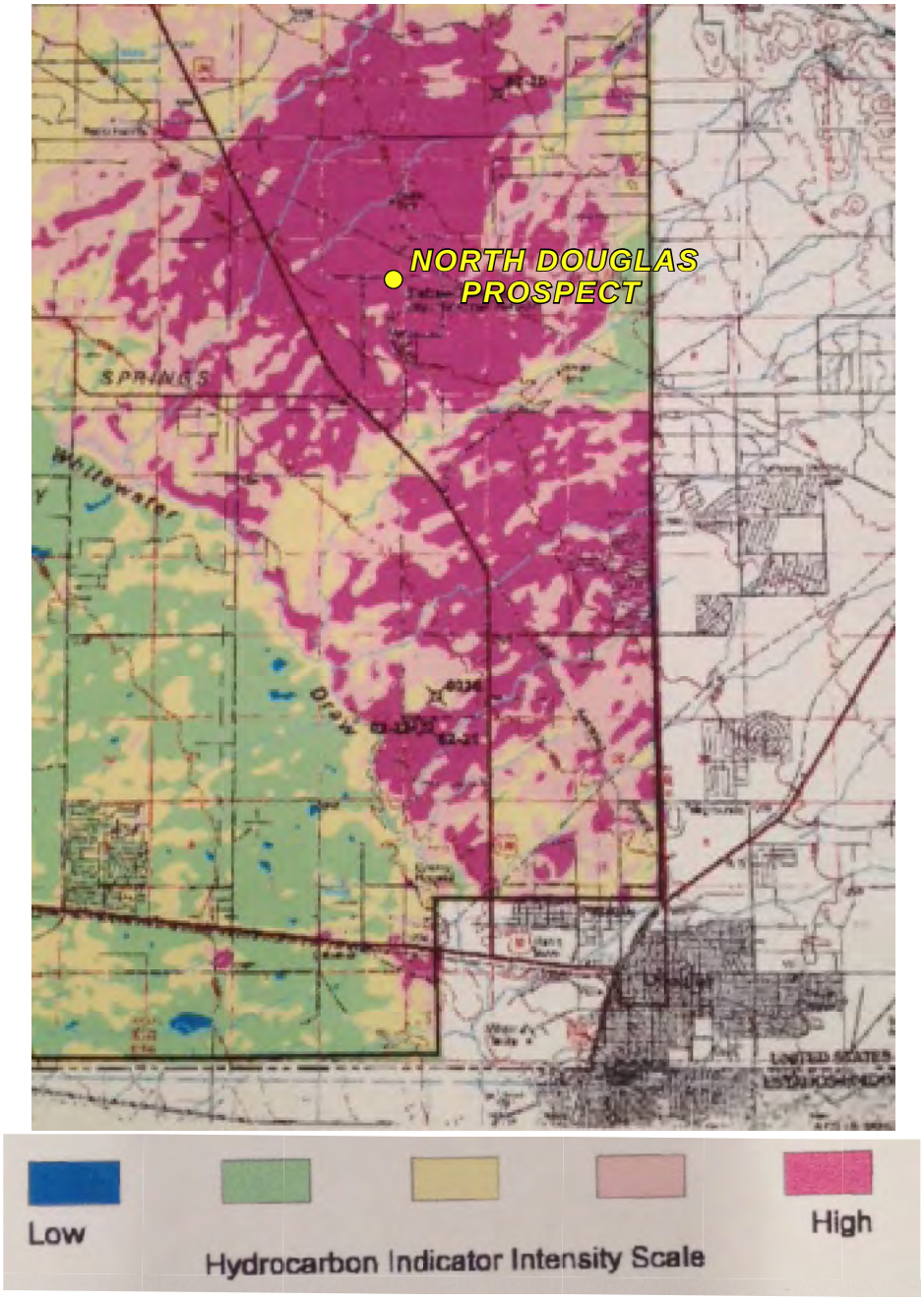


B) Facies in Pennsylvanian-Permian Earp Fm



initial drilling location in Section 22 T22S-R27E

REMOTE SENSING OF HYDROCARBONS



Gusher State LLC

GEOLOGY OF THE NORTH DOUGLAS PROSPECT
COCHISE COUNTY, ARIZONA

RESUME OF S. J. MAZZULLO PhD

Gusher State LLC

RESUME OF PETROLEUM GEOLOGY*

SALVATORE J. MAZZULLO

**Note: This resume includes only petroleum geology-related entries in my career. Company names are the original pre-merger names in existence in the time-frame to which I refer to them (e.g., Texaco then is now Chevron-Texaco, Mobil and Exxon then are now Exxon-Mobil, etc)*

PRESENT POSITION: Petroleum explorationist and consultant geologist. Formerly Professor, Department of Geology, Wichita State University, Wichita, Kansas

EDUCATION:

BS, Brooklyn College (1969), Geology; MS, Brooklyn College (1971), Geology; PhD, Rensselaer Polytechnic Institute (1974)

PROFESSIONAL PETROLEUM GEOLOGY EXPERIENCE:

- Senior Research Geologist, Texaco Research & Technical Dept., Houston, TX (1975) – *involved in characterizing the geology of giant stratigraphic-type fields around the world as models for further petroleum exploration*

- Petroleum geological consultant (1975-78) – *consulted on various petroleum exploration and production concerns for companies such as Union Texas Petroleum, American Trading and Production, Phillips Petroleum, and Gulf Oil*

- Senior Staff Stratigrapher (1978-79) and Manager of Stratigraphic Exploration, Union Texas Petroleum Corp., Midland and Houston, TX (1978-81) – *I managed a staff of 5 geologists and a support staff of 2 technicians-secretaries as the company's director of exploration for stratigraphic petroleum traps in the US*

- Consulting geologist, 1981 to present – *studies of (i) reservoirs in existing fields (depositional facies, diagenesis, clay minerals in sandstones, pore geometry utilizing thin-sections and scanning electron microscopy) based on cores and cuttings samples; (ii) definition of plays and trends based on subsurface mapping, studies of cores and/or cuttings, and relationship to seismic; and (iii) reservoir analyses on basin-wide scales, notably in the Permian Basin. I did such work for a number of domestic and international companies on exploration in the Permian Basin of west Texas-New Mexico, Anadarko Basin of Oklahoma, Kansas, and elsewhere in the world, including:* Woolsey Operating Co. (Wichita, KS), Murfin Drilling Co. (Wichita, KS), Trans-Pacific Oil (Wichita, KS), Palomino Petroleum (Newton, KS), Nat-Gas (CEP Holdings out of Kansas City, KS), Texaco, Exxon, Tenneco, Mobil Oil, Superior Oil, Anadarko Prod. Co. (Midland, TX), Burlington Resources (Midland, TX), Spectrum 7 (Midland, TX), American Trading and Production Co. (Midland, TX), John Edmonson & Associates (Midland, TX); Amerind (Lubbock, TX), Permian Exploration (Midland, TX), Nearburg Prod. Co. (Midland, TX), Paladin Exploration (Dallas, TX), Meridian Oil (Midland, TX), Chevron, Gulf Oil, Estacado Oil, Deminex (Dallas, TX), Santa Fe Energy (Midland, TX), Anschutz, Abercrombie Drilling (Midland, TX), National Oil & Gas Commission of India, Nakoma Exploration (San Antonio, TX), R.M. Hill, Inc (Graham, TX), REPSOL (Madrid, Spain)

- **Exploration geologist, 1981 to present:** *since 1981 I have generated many oil or gas prospects for a number of companies, and have had many of them drilled. I have found significant oil/gas in Texas for a number of companies, and in Kansas as well. In my exploration effort I utilize subsurface mapping, seismic when available, and analogy to other fields and modern depositional-diagenetic models in carbonate and siliciclastic deposition.*

Areas in Kansas in which I've mapped and generated prospects include:

- Ness and Hodgeman Counties (for Mississippian, Cherokee sand, and Fort Scott Limestone)
- northern Barber, southern Pratt, and easternmost Kiowa Counties (for Arbuckle, Simpson, Viola, Mississippian, Lansing-Kansas City, Douglas sands, and Indian Cave Sand)
- Cowley, eastern Sumner, and southern Butler Counties (for Arbuckle, Mississippian, Lansing-Kansas City, Douglas sands and Indian Cave Sand)
- southern Saline, McPherson, Harvey, and NE Kingman Counties (for Simpson, Viola, Hunton, Mississippian, Lansing-Kansas City, and Douglas sands)
- part of Rawlins County (for Lansing-Kansas City)
- part of Lane County (for Lansing-Kansas City)
- adjoining parts of northern Butler, NE Sedgwick, and eastern Harvey Counties for Mississippian and Cherokee sands)
- parts of Rush County (for Arbuckle)

-Related Skills: I can (I) generate and promote prospects; and obviously I can read, understand, interpret, and correlate well logs and know what the information recorded on scout cards means and how to utilize it; (ii) evaluate submitted prospects; (iii) evaluate and map plays and existing fields; (iv) direct/work with other exploration or development geologists and geophysicists; (v) sit wells as a well-site geologist (I don't do so, however); (vi) geologically supervise a drilling well; (vii) take and understand daily drilling reports; (viii) interpret drill-stem tests and know what to do with them; (ix) integrate 2-D and 3-D seismic data and subsurface data; (x) directly apply academic studies of reservoirs to actual exploration and/or production

- I have authored a fully-illustrated book on cuttings analysis in carbonates after having run hundreds of thousands of feet of cuttings samples throughout the Permian Basin, in Ellenburger (Arbuckle equivalent) through Permian strata, for clients listed above

- I have authored a reference (mainly for students) on well-log interpretation entitled "Well Log Analysis" (35 p.)

PROFESSIONAL MEMBERSHIPS:

- Fellow (1990), Geological Society of America – *the membership category "fellow" is reserved for those who have made important contributions in geology*
- Honorary Life Member (1991), Permian Basin Section SEPM (Society for Sedimentary Geology) – *this status is in recognition of those who have made significant contributions to knowledge of the petroleum geology of the Permian Basin of west Texas and New Mexico*
- International Association of Sedimentologists
- American Association of Petroleum Geologists (national, Southwest Section, and Midcontinent Section)
- SEPM (Society for Sedimentary Geology) - national
- West Texas Geological Society

- Kansas Geological Society
- Honorary Founding Member, Andrews Geological Society

PETROLEUM COURSES I'VE TAUGHT FOR PROFESSIONAL GEOLOGISTS

- a 2-day course on cuttings and core analysis in carbonates that I've taught numerous times for the Permian Basin Graduate Center (in Midland, Texas) and for a number of majors and independent companies throughout the SW US and in India.
- a 2-day course on basin analysis and stratigraphy in the Permian Basin that I've taught numerous times for the Permian Basin Graduate Center (in Midland, Texas) and for a number of majors and independent companies throughout the SW US
- a 2-day course on porosity evolution in limestones and dolomites that I've taught numerous times for the Permian Basin Graduate Center (in Midland, Texas) and for a number of majors and independent companies throughout the SW US
- a 3-hour video-taped course (for distribution by the Kansas Geological Society) on facies models and porosity evolution in limestones
- a 2-day course on dolomitization and porosity in reservoirs that I've offered several times through WSU at the Downtown Center
- a 2-day course on stratigraphic plays in Ordovician to Permian carbonates in the Permian Basin that I've taught for the Permian Basin Graduate Center and numerous oil companies
- numerous 7-day courses in Belize to examine modern analogs of carbonate petroleum reservoirs (offered this courses independently as well as through the Permian Basin Section SEPM)

GRANTS/CONTRACTS/FUNDS RECEIVED FOR PETROLEUM RESEARCH AT WSU:

- Co-investigator on Texas A&M University faculty grant for studies of Upper Permian sandstone-carbonate deposition in the Permian Basin of west Texas (1985), $11000
- From Texaco, $60,000 for research on origin of Holocene dolomite in Belize (1987-90) -- *I supported 2 graduate students and one undergraduate with this money*
- From Petroleum Research Fund-American Chemical Society, $60,000 for continuing research on Holocene dolomitization in Belize (1999-2001) – *I supported 4 graduate students with this money*
- From Conoco, Ponca City, OK, donation of an ISI Super III-A scanning electron microscope (1989), value $56000 – *for the department and its students/faculty*
- From Shell Oil Co., Houston, TX, for research on reservoir development in the northern Midland Basin (1993), $20,000 – *which supported 3 graduate students*
- From Paladin Exploration Corp., Dallas, TX, to study reservoir development in Pennsylvanian carbonates, NM (1993), $8000 – *supported 1 undergraduate student*
- From Paladin Exploration Corp., Dallas, TX, to study porosity formation in Lower Permian basinal carbonate reservoirs in the Permian Basin (1994), $1800
- From Paladin Exploration Corp., Dallas, TX, to study reservoir potential in Pennsylvanian and Permian carbonates in New Mexico (1994), $20,900 – *supported 1 undergraduate student*
- From GEOGRAPHIX Corp., state-of-the-art computer software for geoscience education, valued at $36,000 (1996) – *for the department and its students/faculty*
- From Watkins Petroleum, $650 for research on Cretaceous reservoirs, Mississippi (1996)
- From Palomino Petroleum, $5000 for research on Mississippian reservoirs in Kansas (2001) – *supported 1 undergraduate and 1 graduate student*

- From Woolsey Petroleum, Wichita, $4000 for research on Mississippian reservoirs in Rhodes Field, Barber Co., KS (2003-2004) – *supported 1 graduate student*
- From Woolsey Petroleum, Wichita, $5000 for research on Mississippian reservoirs in Oakes Field, Barber Co., KS (2005-2006) – *supported 1 undergraduate student*
- From Permian Exploration Corp., Roswell, NM, to support modern carbonate research in Belize (1987-88), $2000 – *supported several undergraduate students*
- From Amerind Oil Corp., Midland, TX, to support modern carbonate research in Belize (1987-88), $250 – *supported 1 undergraduate student*
- From Dr. A.M. Reid, Geological Consultant, Midland, TX, to support modern carbonate research in Belize (1988), $300 – *supported 1 undergraduate student*
- From Meridian Oil Corp., Midland, TX, for research on sedimentology and diagenesis of Permian reef reservoirs, Permian Basin (1988), $8000
- From Core Laboratories, Dallas, TX, to study diagenesis of basinal carbonate reservoirs in the Permian Basin (1988), $2000 for kerogen and vitrinite reflectance analyses of shale – – *supported 1 graduate student*
- From Nearburg Prod. Co., Dallas, TX, to study micrite diagenesis in Belize (1989), $900 – *supported several undergraduate students*
- From Meridian Oil Co., Houston, TX, for research on stratigraphy of Pennsylvanian, coal-bearing strata in Alabama (1989), $10,000 – *supported several undergraduate students*
- From various petroleum company sources for support of modern carbonate research in Belize: 1991-92, $750; 1992-93,$300; 1993-94, $1400; 1995, $650; 1996, $1000; 1997, $300; 1998, $300 – *supported several graduate and undergraduate students*
- Estacado Oil Co., Lubbock, TX: $300 for support of Permian Basin research (1995) – *supported 1 undergraduate student*
- $2000 worth of Landsat images from Belize and Yucatan coast of Mexico in support of research in Belize, from Chevron Oil Co. (1995)
- From Paladin Exploration, $5000 for personal computer upgrade (1995)
- From petroleum company sources for support of modern carbonate research in Belize (1995-1996), $450 – *supported 1 undergraduate student*

Grants to Students with My Sponsorship/Supervision for Petroleum-Related Research at WSU

- to Tom Wingate: $1500 in fusulinid identifications from Dr. A.M. Reid, Midland, TX, in support of MS thesis research
- to Jim Rough: $1700 from the American Association of Petroleum Geologists for MS thesis research on depositional facies in Belize as modern analogs of petroleum reservoirs (1991)
- to Ye (Mike) Qiucheng: $2000 in isotopic analyses for support of MS thesis research from Texaco (1991) on dolomite and porosity formation in some Permian Basin oil reservoirs
- to Chellie Teal: $300 from the South-Central Section of the Geological Society of America in support of undergraduate research in Belize (1992); and $1000 from the Kansas Geological Foundation in support of same (1993 and 1994); and $4000 from Paladin Exploration Corp., Dallas, Texas, in support of an undergraduate scholarship to study petroleum geology in the Permian Basin, New Mexico (1994); and $1000 from the SIPES Foundation for thesis research on the Cangrejo Shoals mudbank in Belize as modern analogs of petroleum reservoirs
- to Cynthia Burtnett: $300 from the South-Central Section of the Geological Society of America in support of undergraduate research in Belize (1994); and $500 from the Kansas Geological Foundation for same (1994) as modern analogs of petroleum reservoirs

- to David Lowe: $1000 from the Geological Society of America to support MS thesis research in Belize (1994); and $2000 from the American Association of Petroleum Geologists for same (1994); and $60 from the Delano Maggard Foundation for same (1994) as modern analogs of petroleum reservoirs
- to Cynthia Burtnett: $2000 for support of thesis research on Lower Permian stratigraphy in Kansas from the American Association of Petroleum Geologists (1997) as an outcrop analog of subsurface gas reservoirs in Kansas
- to Brian Wilhite: $1500 for support of thesis research on sedimentation and diagenesis of modern foram sand shoals in Belize from the Geological Society of America (1998); $1000 for same from Society of Independent Earth Scientists (1998); $300 from Delano Maggard program for same (1998) as modern analogs of petroleum reservoirs
- to Kimberly Dimmick: $500 for support of McNair undergraduate research on marine dolomitization in Belize from South-Central Section Geological Society of America (1998) as modern analog of petroleum reservoirs
- to Krysti Weed: $500 for support of thesis research on Pleistocene facies in Belize from Kansas Geological Society Foundation (1998); $750 for same from Sigma Xi (1999); $1000 for same from SIPES to understand porosity evolution in carbonates
- to Joseph Hall: $600 and $400 for support of thesis research on the Carlton Dolomite (Permian) in Kansas from Kansas Geological foundation (2 separate grants, 2003 and 2004) as an outcrop analog of subsurface gas reservoirs in Kansas
- to Daryl Lederhos: $500 in support of thesis research on subsurface Mississippian carbonates, SE Kansas, from Kansas Academy of Science (2005); $1000 for same from Kansas Geological Society Foundation (in 2006); and $1250 from SIPES for same (in 2006), as models for prolific Mississippian oil and gas reservoirs in Kansas
- to Loveness Mpange: $1250 for support of thesis research from AAPG student grants program to study cores of Lansing-Kansas City oil reservoirs in O'Connor Oil Field, Stafford Co., Kansas

PETROLEUM GEOLOGY-RELATED AWARDS:

- ***Four*** A.I. Levorsen Best Paper Awards – three from the Southwest Section American Association of Petroleum Geologists (1983, 1986, 1994) and one from the Midcontinent Section AAPG (2013) – *a most coveted award to speakers of best oral presentations and subjects on the petroleum geology of the southwest US*
- ***Three*** Planalp Awards from the Midcontinent Section AAPG for best poster session presentations
- Diploma of Honor from Pi Epsilon Tau (National Petroleum Engineering Honor Society (1987) – *specifically for applied scientific contributions to petroleum geology*
- Monroe Cheney Science Award from Southwest Section American Association of Petroleum Geologists (1989) – *a most prestigious award for significant, long-term, applied scientific contributions to the petroleum geology of the southwest region*
- Best Speaker Award from Permian Basin Section SEPM (Society for Sedimentary Geology)(1989) – *for the petroleum geology of the Permian Basin*
- Honorary Life Member of Permian Basin Section SEPM (Society for Sedimentary Geology)(1991) – *for significant, long-term, applied scientific contributions to the geology of the Permian Basin*
- Best Paper Award from West Texas Geological Society (1994) – *for the petroleum geology of the Permian Basin*

- Gold Medal of Honor (Kapitsa Medal) from Russian Academy of Science (1995) – *for applied scientific contributions to petroleum geology around the world. I am one of only a handful of non-Russians to receive this award*
- Distinguished Service Award from Kansas Geological Society (1996, 2004, 2005) – *for applied scientific contributions to promoting the petroleum geology of Kansas*
- Distinguished Educator Award from Southwest Section American Association of Petroleum Geologists (2002) – *for applied scientific contributions to promoting the science of application of such to petroleum geology*

PETROLEUM GEOLOGY-RELATED PUBLICATIONS

Asterisks (*) denote publications with students, whose names are italicized

Articles in Refereed Journals

Mazzullo, S.J., and J.M. Cys, 1978, *Archaeolithoporella*-boundstones and marine cementation, Capitan reef, New Mexico and Texas USA; Neues Jahrbuch fur Geologie und Palaeontologie Abh., v. 10, p. 600-611 (INVITED).

Cys, J.M., and S.J. Mazzullo, 1978, Lithofacies and sedimentation of Lower Permian carbonates of the Leonard Mountain area, Glass Mountains, western Texas: a discussion; Journal of Sedimentary Petrology, v. 48, p. 1363-1368 (reprinted in Symposium and Guidebook, Marathon-Marfa Region of West Texas: Permian Basin Section SEPM Publ. No, 81-20, p. 163-168).

Mazzullo, S.J., and J.M. Cys, 1979, Marine aragonite sea-floor growths and cements in Permian phylloid algal mounds, Sacramento Mountains, New Mexico; Journal of Sedimentary Petrology, v. 49, p. 917-936.

Mazzullo, S.J., 1980, Calcite pseudospar replacive of marine, acicular cements, and implications for aragonite diagenesis; Journal of Sedimentary Petrology, v. 50, p. 409-422.

Mazzullo, S.J., 1981, Facies and burial diagenesis of a carbonate reservoir: Chapman Deep (Atoka) field, Delaware Basin, Texas; American Association of Petroleum Geologists Bulletin, v. 65, p. 850-865 (INVITED).

Mazzullo, S.J., 1982, Stratigraphy and depositional mosaics of Lower Clear Fork and Wichita Groups (Permian), Northern Midland Basin, Texas; American Association of Petroleum Geologists Bulletin, v. 66, p. 210-226.

**Judice, P.W.*, and S.J. Mazzullo, 1982, The Gray Sandstones (Jurassic) in Terryville Field, Louisiana: basinal deposition and exploration model; Transactions Gulf Coast Association of Geological Societies, v. 32, p. 23-43 (INVITED).

Mazzullo, S.J., and A.M. Reid, 1986, Belize, Central America: geologic models for certain Paleozoic reservoirs in the Permian Basin; West Texas Geological Society Bulletin, v. 25, no. 6, p. 4-11 (INVITED).

Mazzullo, S.J., 1986, Mississippi Valley-type sulfides in Lower Permian dolomites, Delaware Basin, Texas: implications for basin evolution; American Association of Petroleum Geologists Bulletin, v. 70, p. 943-952.

Mazzullo, S.J., 1986, Stratigraphic approaches to hydrocarbon exploration and exploitation; Geological Journal, v. 21, p. 265-281 (INVITED).

Mazzullo, S.J., A.M. Reid, and L.J. Mazzullo, 1987, Basinal Lower Permian facies, Permian Basin: Part I - Stratigraphy of the Wolfcampian-Leonardian boundary; West Texas Geological Society Bulletin, v. 26, no. 7, p. 5-9 (INVITED).

Mazzullo, S.J., and A.M. Reid, 1987, Basinal Lower Permian facies, Permian Basin: Part II - Depositional setting and reservoir facies of Wolfcampian-Leonardian basinal carbonates; West Texas Geological Society Bulletin, v. 26, no. 8, p. 5-10 (INVITED).

Reid, A.M., and S.J. Mazzullo, 1988, The Pennsylvanian-Permian boundary in shelf areas of the North Platform of the Midland Basin; West Texas Geological Society Bulletin, v. 27, p. 5-8.

Reid, A.M., and S.J. Mazzullo, 1988, Paint Rock and Paint Rock Southwest fields, Concho County, Texas: Strawn analogue of modern shelf island systems; West Texas Geological Society Bulletin, v. 27, p. 5-10.

*Mazzullo, S.J., *W.E. Hipke, T.H. Weidemeier, T.P. Wingate, M.G. Gaylord,* and A.M. Reid, 1989, Dynamic stratigraphy of the Tubb and Dean Formations (Lower Permian), northern Midland Basin, Texas; West Texas Geological Society Bulletin, v. 29, no. 1, p. 5-11.

Mazzullo, S.J., and J.M. Gregg, 1989, Mississippi Valley-type sulfide mineralization and relationships to carbonate diagenesis; Carbonates and Evaporites, v. 4, no. 2, p. 131-135 (INVITED).

Mazzullo, S.J., 1990, Karst-controlled reservoir heterogeneity in Ellenburger Group carbonates in west Texas: discussion; American Association of Petroleum Geologists Bulletin, v. 74, p. 1119-1123.

Mazzullo, S.J., and P.M. Harris, 1992, Mesogenetic dissolution: its role in porosity development in carbonate reservoirs; American Association of Petroleum Geologists Bulletin, v. 76, p. 607-620.

**Ye, Q.*, and S.J. Mazzullo, 1993, Dolomitization of Lower Permian platform facies, Wichita Formation, North Platform, Midland Basin, Texas; Carbonates and Evaporites, v. 8, p. 55-70.

Mazzullo, S.J., 1994, Dolomitization of periplatform carbonates (Lower Permian, Leonardian), Midland Basin, Texas; Carbonates and Evaporites, v. 9, p. 95-112.

Mazzullo, S.J., 1994. Models of porosity evolution in Permian periplatform carbonate reservoirs (debris-flows and turbidites) in the Permian Basin; West Texas Geological Society Bulletin, v. 34, no. 1, p. 5-12.

Mazzullo, S.J., 1994. Diagenesis in a sequence stratigraphic setting: porosity evolution in periplatform carbonate reservoirs, Permian Basin, Texas and New Mexico; Journal of Petroleum Science and Engineering, v. 11, p. 311-322 (INVITED)

Mazzullo, S.J., 1994, Lithification and porosity evolution in Permian periplatform limestones, Midland Basin, Texas; Carbonates and Evaporites, v. 9, p. 151-171.

*Mazzullo, S.J., W.D. Bischoff, and *C.S. Teal* 1996, Dolomitization of shallow subtidal sediments by normal seawater in the Holocene Cangrejo shoals mudbank, Belize; Bulletin West Texas Geological Society, v. 35, no. 5, p. 5-13.

Mazzullo, S.J., 1997, Permian "Wolfcamp" limestone reservoirs: Powell Ranch field, eastern Midland Basin: Discussion; AAPG Bulletin, v. 81, p. 1750-1753.

Mazzullo, S.J., 1998, Stratigraphic architecture of Lower Permian, cyclic carbonate reservoirs (Chase Group) in the mid-continent USA, based on outcrop studies; AAPG Bulletin, v. 82, p. 464-483.

Mazzullo, S.J., 2004, Overview of porosity evolution in carbonate reservoirs; published in two parts in Kansas Geological Society Bulletin – v. 79 no. 1, p. 22-28 (part 1) and v. 79 no. 2, p. 22-27 (part 2). Reprinted 2004 as paper #40134 in AAPG's on-line journal "Search and Discovery" by invitation of editor Ted Beaumont.

Mazzullo, S.J., 2005, Classification of carbonate rocks in well cuttings and cores: a directed approach toward recognition and correlation of carbonate reservoirs based on depositional and diagenetic attributes; Kansas Geological Society Bulletin, v. 80, no. 1, p. 16-19.

Mazzullo, S.J., 2005 Subunconformity plays in Mississippian strata in Kansas; Kansas Geological Society Bulletin, v. 80, no. 3, p. 12-17.

Mazzullo, S.J., 2005, Outcrop of the Indian Cave Sandstone (Lower Permian) in Greenwood County, Kansas; Kansas Geological Society Bulletin, v. 80, no. 4, p. 12-20.

Mazzullo, S.J., 2005, Relating the sequence stratigraphy of basal Cherokee strata (based on two cores from Barber County) to the exploration for Cherokee sandstone reservoirs in Kansas; Kansas Geological Society Bulletin, v. 80, no. 5, p. 12-20.

*Wilhite, B.W., Dimmick-Wells, K. and Mazzullo, S.J., 2005, Modern carbonate depositional settings in Belize, Central America: analogs for modeling and exploring for stratigraphic traps in Lansing-Kansas City reservoirs; Kansas Geological Society Bulletin, v. 80, no. 6, p. 12-22.

Mazzullo, S.J., 2006, Late Pliocene to Holocene platform evolution in northern Belize, and comparison with coeval deposits in southern Belize and the Bahamas; Sedimentology, v. 53, p. 1015-1047.

Mazzullo, S.J., 2006, Geo-Scenes: modern river sands and ancient soils & transgressive marine surfaces; Kansas Geological Society Bulletin, v. 81 no. 6, p. 11-12.

*Mazzullo, S. J., Boardman, D., Grossman, E.L., and *Dimmick-Wells, K.*, 2007, Oxygen-carbon isotope stratigraphy of Upper Carboniferous to Lower Permian marine deposits in Midcontinent U.S.A. (Kansas and NE Oklahoma): implications for seawater chemistry and depositional cyclicity; Carbonates and Evaporites, v. 22, p. 55-72.

Mazzullo, S.J., Cao, H., and Wilhite, B.W., 2008, Chert reservoirs in the Cowley Formation (Mississippian), south-central Kansas): paragenesis, oxygen and silicon isotope geochemistry, and timing of silicification and porosity formation; Kansas Geological Society Bulletin, v. 83, no. 2, p. 14-20.

Grossman, E.L., Yancey, T.E., Jones, T.E., Bruckshein, P., Chuvashov, B., Mazzullo, S.J., and Mii, H., 2009, Glaciation, aridification, and carbon sequestration in the Permo-Carboniferous: the isotopic record of low latitudes; Palaeogeography, Palaeoclimatology, Palaeoecology, v. 268, p. 222-233.

Mazzullo, S.J., 2009, Geology of Layton sand production at School Creek North oil field, Cowley County, Kansas; Kansas Geological Society Bulletin, v. 84, no. 2, p. 12-16.

Mazzullo, S.J., B.W. Wilhite, and I.W. Woolsey, 2009, Petroleum reservoirs within a spiculite-dominated depositional sequence: Cowley Formation (Mississippian: Lower Carboniferous), south-central Kansas; AAPG Bulletin, v. 93, p. 1649-1689.

Mazzullo, S.J., B.W. Wilhite, and D.R. Boardman, 2011, Lithostratigraphic architecture of the Mississippian Reeds Spring Formation (Middle Osagean) in southwest Missouri, northwest Arkansas, and northeast Oklahoma: outcrop analog of subsurface petroleum reservoirs; Shale Shaker, v. 61, p. 254-289.

Mazzullo, S.J., D.R. Boardman, B.W. Wilhite, C. Godwin, and B. Morris, 2013, Revisions of outcrop lithostratigraphic nomenclature in the Lower to Middle Mississippian Subsystem (Kinderhookian to basal Meramecian Series) along the shelf edge in southwest Missouri, northwest Arkansas, and northeast Oklahoma; Shale Shaker, v. 63, p. 414-452.

Boardman, D.R., T.L. Thompson, C. Godwin, S.J. Mazzullo, B.W. Wilhite and B.T. Morris, 2013, High-resolution conodont zonation for Kinderhookian (Middle Tournaisian) and Osagean (Upper Tournaisian-Lower Visean) strata of the western edge of the Ozark Plateau, North America; Shale Shaker, v. 64 , p. 98-151.

Morris, B.T., S.J. Mazzullo, and B.W. Wilhite, 2013, Sedimentology, biota, and diagenesis of 'reefs' in Lower Mississippian (Kinderhookian to basal Osagean: Lower Carboniferous) strata in the St. Joe Group in the western Ozark area; Shale Shaker, v. 64, p. 194-227.

"Geoscenes" Contributions in Kansas Geological Society Bulletin

Mazzullo, S.J., 2006, Modern river sands and ancient soils and transgressive marine surfaces; KGS Bulletin, v. 81, no. 6, p. 11-12.

Mazzullo, S.J., Burrow porosity in limestones and surface structures; KGS Bulletin, v. 82, no. 1, p. 11.

Mazzullo, S.J., 2007, The great unconformity and sinkholes in sandstones; KGS Bulletin, v. 82, no. 2, p. 11.

Mazzullo, S.J., 2007, Karst features of carbonate rocks - relating the surface to the subsurface; KGS Bulletin, v. 82, no. 3, p. 10-11.

Mazzullo, S.J., and Wilhite, B.W., 2007, Mississippian rocks in Missouri; KGS Bulletin, v. 82, no. 4, p. 10-11.

Mazzullo, S.J., 2007, Transgressions and unconformities; KGS Bulletin, v. 82, no. 5, p. 10-11.

Mazzullo, S.J., 2008, Stromatactis limestone and Chaetetes-rich Middle Pennsylvanian limestone; KGS Bulletin, v. 83 no. 5, p. 14-16.

Articles and/or Chapters in Books

Mazzullo, S.J., and L.J. Mazzullo, 1982, Palo Pinto (Canyon) paleofacies, Higgins Ranch field, Coke County, Texas, in R.L. Shaw et al., eds., Permian Basin Section SEPM Core Workshop No. 1, Midland, TX, p. 69-81 (INVITED).

Mazzullo, S.J., and L.J. Mazzullo, 1983, Atoll reservoir facies in Pennsylvanian limestone, Higgins Ranch field, Coke County, Texas, in P.M. Harris, ed., Carbonate Buildups - A Core Workshop; SEPM, Tulsa, p. 223-243.

Mazzullo, S.J., 1983, Lower Strawn reservoir, Seminole SE field, Midland Basin, Texas, in R.L. Shaw and B.J. Pollan, eds., Permian Basin Section SEPM Core Workshop No. 2, Midland, TX, p. 69-93.

Mazzullo, S.J., 1983, Atoll carbonate reservoir facies, Higgins Ranch (Canyon) field, Coke County, Texas, in Exploration in a Mature Area; Southwest Section AAPG Annual Meeting, Abilene Geological Society, Abilene, TX, p. 88-116.

*Mazzullo, J., *M. Williams*, and S.J. Mazzullo, 1984, The Queen Formation of Millard field, Pecos County, Texas: its lithologic characteristics, environment of deposition, and reservoir petrophysics; Transactions of the Southwest Section AAPG, West Texas Geological Society Publication No. 84-78, p. 103-109.

Mazzullo, S.J., and C.L. Hedrick, 1985, Day 1 Road log and locality guide: lithofacies, stratigraphy and depositional models of the back-reef Guadalupian section (Queen, Seven Rivers, Yates and Tansill Formations); Permian Basin Section SEPM Annual Field Trip Guidebook, Publication No. 85-24, Midland, TX, p. 2-19 (INVITED).

Mazzullo, S.J., 1985, Pennsylvanian facies-diagenetic reservoir, Lower Strawn formation, Seminole Southeast field, Midland Basin, west Texas, in P.O. Roehl and P.W. Choquette, eds., Carbonate Reservoirs Casebook; Springer-Verlag, NY, p. 227-238 (INVITED).

Cys, J.M., and S.J. Mazzullo, 1985, Depositional and diagenetic history of a Lower Permian (Wolfcamp) phylloid-algal reservoir, Hueco Formation, Morton field, southeastern New Mexico; IBID, p.277-288 (INVITED).

Reid, A., and S.J. Mazzullo, 1987, Strawn biostratigraphy and lithofacies: what is the Caddo?; Transactions with Abstracts, Southwest Section AAPG, Dallas, TX, p. 100-105.

Mazzullo, S.J., and A.M. Reid, 1988, Stratigraphic architecture of Pennsylvanian and Lower Permian facies, northern Midland Basin, Texas, in B.K. Cunningham, ed., Permian and Pennsylvanian Stratigraphy, Midland Basin, West Texas: Studies to Aid Hydrocarbon Exploration; Permian Basin Section SEPM Publication No. 88-28, p. 1-6 (INVITED).

Mazzullo, S.J., 1988, Depositional and diagenetic fabrics in marine-cemented phylloid algal reefs, Laborcita Formation (Wolfcampian, Permian), northern Sacramento Mountains. New Mexico, in S.R. Robichaud and C.M. Gallick, eds., Basin-to-Shelf Transition of the Wolfcampian Stratigraphy of the OroGrande Basin; Permian Basin Section SEPM 1988 Annual Field Seminar

Guidebook, Publication No. 88-28, p. 107-112 (INVITED).

Mazzullo, S.J., and A.M. Reid, 1989, Lower Permian platform and basin depositional systems, Northern Midland Basin, Texas, in P.D. Crevello et al., eds., Controls on Carbonate Platform and Basin Development; SEPM Special Publication No. 44, p. 305-320 (INVITED).

Mazzullo, S.J., W.D. Bischoff, and C.L. Hedrick, 1989, Stacked island facies in Tansill outer-shelf platform, Dark Canyon, Guadalupe Mountains, New Mexico, in P.M. Harris and G.A. Grover, eds., Subsurface and Outcrop Examination of the Capitan Shelf Margin, Northern Delaware Basin; SEPM Core Workshop No. 13, p.287-293 (INVITED).

Mazzullo, S.J., 1989, Formational and zonal subdivisions of the Ellenburger Group (Lower Ordovician), southern Midland Basin, Texas, in B.K. Cunningham and D.W. Cromwell, eds., The Lower Paleozoic of West Texas and Southern New Mexico - Modern Exploration Concepts; Permian Basin Section SEPM Publication No. 89-31, p. 113-121.

Mazzullo, L.J., S.J. Mazzullo, and T.E. Durham, 1989, Geologic controls on reservoir development in Silurian and Devonian carbonates, northern Midland Basin, Texas; IBID, p. 209-218.

Mazzullo, S.J., 1989, Subtle traps in Ordovician to Permian carbonate petroleum reservoirs, Permian Basin: an overview, in J.E. Flis, R.C. Price, and J.F. Sarg, eds., Search for the Subtle Trap, *Hydrocarbon Exploration in Mature Basins*; West Texas Geological Society Publication No. 89-85, p. 155-180 (INVITED).

Mazzullo, S.J., and A.M. Reid, 1989, Depositional-sequence analysis of Lower Permian progradational systems, Midland Basin, Texas, in E. Franseen and W.L. Watney, eds., Sedimentary Modeling: Computer Simulation of Depositional Sequences; Subsurface Geology Series No. 12, Kansas Geological Survey, p. 47-50 (INVITED).

Reid, A.M., S.T. Reid, S.J. Mazzullo, and S.C. Robbins, 1989, Revised fusulinid biostratigraphic zonation of Wolfcampian and Lower Leonardian strata in the Permian Basin, in D. Lindsay, R. Ross, and B. Swartz, eds., Transactions Southwest Section AAPG, p. 83-87.

Mazzullo, S.J., and A.M. Reid, 1989, Geologic evolution of the San Simon Channel area, northern Midland Basin, Texas; IBID, p. 55-66.

**Wingate, T.P.*, S.J. Mazzullo, and A.M. Reid, 1989, Geologic setting, stratigraphy, facies, and depositional-diagenetic history of Ropes West and Y.O.C. (Pennsylvanian) fields, Hockley County, Texas; IBID, p. 147-155.

Mazzullo, S.J., and P.M. Harris, 1991, An overview of dissolution porosity development in the deep-burial environment, with examples from carbonate reservoirs in the Permian Basin, in M. Candelaria, ed., Permian Basin Plays, Tomorrow's Technology Today; West Texas Geological Society Publication No. 91-89, p. 125-138 (INVITED).

**Wingate, T.P.*, S.J. Mazzullo, and A.M. Reid, 1991, Depositional and diagenetic history of an upper Pennsylvanian (Virgilian to Missourian) fore-shelf platform, Ropes West and YOC.fields, Hockley County, Texas; IBID, p. 93-100.

Hanson, B.M., B. Powers, C. Garrett, D. McGookey, E. McGlasson, R. Horak, S.J. Mazzullo, et al., 1991, The Permian Basin, in H.J. Gluskoter et al., eds., The Geology of North America, Volume P-2, Economic Geology U.S.; Geological Society of America, Decade of North American Geology, p. 339-356.

Mazzullo, S.J., and G.V. Chilingarian, 1992, Depositional models of carbonate reservoirs (chapter 3) in Carbonate Reservoir Characterization: A Geologic-Engineering Analysis; Elsevier, Developments in Petroleum Science 44, p. 109-198.

Mazzullo, S.J., and G.V. Chilingarian, 1992, Diagenesis and origin of porosity (chapter 4): IBID, p. 199-270.

Chilingarian, G.V., J. Torabzadeh, H.H. Rieke, M. Metghalchi, and S.J. Mazzullo, 1992, Interrelationships among surface area, permeability, porosity, pore size, and residual water

saturation (chapter 7); IBID, p. 379-397.
Honarpour, M.M., G.V. Chilingarian, and S.J. Mazzullo, 1992, Permeability and relative permeability of carbonate reservoirs (chapter 8); IBID, p. 399-416.
Chilingarian, G.V., J. Torabzadeh, J.O. Robertson, H.H. Rieke, and S.J. Mazzullo, 1992, Compressibility (chapter 9); IBID, p.417-438.
Mazzullo, S.J., and L.J. Mazzullo, 1992, Paleokarst and karst-associated hydrocarbon reservoirs in the Fusselman Formation, west Texas, Permian Basin, in M.P. Candelaria and C.L. Reed, eds., Paleokarst, Karst Related Diagenesis and Reservoir Development: Examples from Ordovician-Devonian Age Strata of West Texas and the Mid-Continent; Permian Basin Section SEPM Publication No. 92-33, p. 110-120.
Mazzullo, S.J., 1993, Outcrop and subsurface evidence for karsted reservoirs in the Fusselman Formation (Silurian), Permian Basin, Texas, in K.S. Johnson, ed., Hunton Group Core Workshop and Field Trip; Oklahoma Geological Survey, Special Publication No. 93-4, p. 53-59 (INVITED).
Mazzullo, S.J., 1994, Porosity in carbonate slope and basin facies (Permian): can it be predicted?, in J.F. Gibbs, ed., Synergy Equals Energy - Teams, Tools, and Techniques; West Texas Geological Society Symposium, Publication 94-94, p. 133-145 (INVITED).
*Mazzullo, S.J., and *C.S. Teal*, 1994, Road log and locality guide for Day 1: A new look at old rocks: stratigraphy, sedimentology, and structure of the Chase Group (Permian, Wolfcampian), south-central Kansas; The Chase Group Facies of Southern Kansas and Northern Oklahoma, Kansas Geological Society 1994 Field Trip Guidebook, p. 1-60 (INVITED).
Mazzullo, S.J., 1995, Permian stratigraphy and facies, Permian Basin (Texas-New Mexico) and adjoining areas in the Midcontinent United States, in P.A. Scholle, T.M. Peryt, and D.S. Ulmer-Scholle, eds., The Permian of Northern Pangea; Springer-Verlag, Berlin, p. 41-60 (INVITED).
Mazzullo, S.J., 1995, Oil and gas resources in Permian rocks of North America, in P.A. Scholle, T.M. Peryt, and D.S. Ulmer-Scholle, eds., The Permian of Northern Pangea; Springer-Verlag, Berlin, p. 259-272 (INVITED).
*Mazzullo, S.J., *C.S. Teal*, and *C.A. Burtnett*, 1995, Wolfcampian cyclothems and sequences in Kansas: an analysis of some Permian Basin correlatives, in P.H. Pause and M.P. Candelaria, eds., Carbonate Facies and Sequence Stratigraphy: Practical Applications of Carbonate Models; Permian Basin Section SEPM Publ. No. 95-36 & Permian Basin Graduate Center Publ. No. 5-95, p. 217-244.
*Mazzullo, S.J., *C.S. Teal* and *C.A. Burtnett*, 1995, Facies and stratigraphic analysis of cyclothemic strata in the Chase Group (Permian, Wolfcampian), south-central Kansas, in N.J. Hyne, ed., Sequence Stratigraphy of the Midcontinent: Tulsa Geological Society, Special Publication 4, p. 217-248
Chilingarian, G.V., H.H. Rieke, and S.J. Mazzullo, 1996, Introduction, chapter 1 in G.V. Chilingarian, S.J. Mazzullo, and H.H. Rieke, eds., Carbonate Reservoir Characterization: A Geologic-Engineering Analysis, part II; Elsevier Publ. Co., p. 1-57.
Rieke, H.H., G.V. Chilingarian, and S.J. Mazzullo, 1996, Performance and classification of carbonate reservoirs, chapter 5 in IBID, p. 231-548.
Mazzullo, S.J., and G.V. Chilingarian, 1996, Hydrocarbon reservoirs in karsted carbonate rocks, chapter 9 in IBID, p. 797-865.
Mazzullo, S.J., and G.V. Chilingarian, 1996, Glossary of selected geologic terms, Appendix A in IBID, p. 905- 919.
Robertson, J.O., G.V. Chilingarian, and S.J. Mazzullo, 1996, Petroleum engineering glossary, Appendix B in IBID, p. 921-937.
Chilingarian, G.V., J.O. Robertson, G.L. Langnes, and S.J. Mazzullo, S.J., 1996, Fundamentals of surface and capillary forces, Appendix C in IBID, p. 939-949.
Chilingarian, G.V., J.O. Robertson, and S.J. Mazzullo, 1996, Sample questions and problems, Appendix

D in IBID, p. 951-957.

Mazzullo, S.J., 1997, Stratigraphic exploration plays in Ordovician to Lower Permian strata in the Midland Basin and on the Eastern Shelf, in W.D. DeMis, ed., Permian Basin Oil and Gas Fields: Turning Ideas into Production; West Texas Geological Society, Publ. 97-102, p. 1-37 (INVITED).

*Mazzullo, S.J., *Teal, C.S.*, and Bischoff, W.D., 1997, Subtidal dolomitization model as a possible analog for the formation of some Siluro-Devonian dolomite reservoirs in the Permian Basin, in B. Swartz, ed., Transactions SWS-AAPG, p. 99-110 (INVITED).

Mazzullo, S.J., 1998, Depositional-diagenetic facies in a Laborcita bioherm ("Scorpion mound"), northern Sacramento Mountains, in D.M. Cox, ed., Upper Pennsylvanian and Wolfcampian Mixed Carbonate-Siliciclastic Systems, Sacramento Mountains, New Mexico; West Texas Geological Society Publication No. 98-104, p. 47-54 (INVITED).

Mazzullo, S.J., 1998, Lithology, depositional facies, and diagenesis of a Lower Leonardian periplatform limestone: Indian Wells #17-4 Schlinke, Irion County, Texas, in K. Winfree, ed., Cored Reservoir Examples from Upper Pennsylvanian & Lower Permian Carbonate Margins, Slopes and Basinal Sandstones; West Texas Geological Society Publication No. 98-103, p. 40-60 (INVITED).

Mazzullo, S.J., 1998, Styles of dolomitization along a Lower Permian platform-to-basin profile, Midland Basin, Texas, in W.D. DeMis and M.K. Nelis, eds., The Search Continues into the 21st Century; West Texas Geological Society Publication 98-105, p. 41-57 (INVITED).

*Mazzullo, S.J., Teal, C.S., *Wilhite, B.W.*, and Bischoff, W.D., 1999, Holocene subtidal dolomitization in Belize: a new paradigm for dolomites and syndepositional dolomitization in some Permian Basin hydrocarbon reservoirs, in D.T. Grace and G.D. Hinterlong, eds., The Permian Basin: Providing Energy for America; West Texas Geological Society Publ. No. 99-106, p. 63-69 (INVITED).

Mazzullo, S.J., 1999, Paleoenvironments, cyclicity, and diagenesis in the outer shelf Tansill Formation in the Carlsbad Embayment (Dark Canyon), northern Guadalupe Mountains, New Mexico, in A.H. Saller, P.M. Harris, B. Kirkland, and S.J. Mazzullo, eds., Geologic Framework of the Capitan Reef; SEPM Special Publication 65, p. 107-128 (INVITED).

Saller, A.H., Harris, P.M., Kirkland, B., and S.J. Mazzullo, 1999, Geologic framework of the Capitan depositional system - previous studies, controversies and contents of this special publication; IBID, p. 1-13.

Mazzullo, S.J., 1999, Eustatic and tectonic controls on cyclic deposition in Lower Permian ramp facies (Chase Group and basal Wellington Formation) in the U.S. Midcontinent, in P.M. Harris, A.H. Saller, and J.A. Simo, eds., Advances in Carbonate Sequence Stratigraphy: Application to Reservoirs, Outcrops, and Models; SEPM Special Publication No. 63, p. 151-168 (INVITED).

**Wilhite, B.W.*, and S.J. Mazzullo, 2000, Facies architecture and diagenesis of Holocene carbonate sands in an inner-platform environment: analog of some ancient carbonate reservoirs, in S.T. Reid, ed., Transaction SWS-AAPG, Publ. SWS 2000-107, p. 67-79.

Mazzullo, S.J., 2000, Models of porosity evolution in Pennsylvanian lowstand carbonates (now in slope-to-basinal settings) and in Lower Permian highstand-resedimented basinal carbonates, in S.T. Reid, ed., Transaction SWS-AAPG, Publ. SWS 2000-107, p. 130-138.

Books

Hileman, M.E., and S.J. Mazzullo, eds., 1977, Upper Guadalupian Facies, Permian Reef Complex, Guadalupe Mountains, New Mexico and West Texas; Permian Basin Section SEPM Publication No. 77-16, 508 p.

Mazzullo, S.J., ed., 1978, Tectonics and Paleozoic Facies of the Marathon Geosyncline; Permian Basin Section SEPM Publication No. 78-17, 271 p.

Cys, J.M., and S.J. Mazzullo, eds., 1979, Depositional Processes in Ancient Carbonates; SEPM Reprint Series No. 7, 235 p.

Mazzullo, S.J., ed., 1980, Stratigraphic Traps in Carbonate Rocks; AAPG Reprint Series No. 23, 217 p.

Zenger, D.H., and S.J. Mazzullo, eds., 1982, Dolomitization; Benchmark Papers in Geology, v. 65, Hutchinson & Ross Publishers, 426 p.

Chilingar, G.V., S.J. Mazzullo, and H.H. Rieke, eds., 1992, Carbonate Reservoir Characterization: A Geologic-Engineering Analysis, Part I; Elsevier Publishing Co., 639 p.

Chilingar, G.V., S.J. Mazzullo, and H.H. Rieke, eds., 1996, Carbonate Reservoir Characterization: A Geologic-Engineering Analysis, Part II; Elsevier Publishing Co., 994 p.

*Mazzullo, S.J., *C.S. Teal*, and *C.A. Burtnett*, 1996, Chase Group Strata in North-Central Kansas and Nebraska: Outcrop Analogs of Stratigraphic-Trap Reservoirs; Field Trip Guidebook, Kansas Geological Society, 91 p.

Mazzullo, S.J., 1997, Essential Elements of Stratigraphic Exploration Plays in Ordovician to Lower Permian Carbonates in the Midland Basin and on the Eastern Shelf; SAC Press, Wichita, 66 p.

*Mazzullo, S.J., *C.S. Teal*, and *C.A. Burtnett*, 1997, Outcrop Stratigraphy and Depositional Facies of the Chase Group (Permian, Wolfcampian) in Kansas and Nebraska; Kansas Geological Survey, Technical Series 6, 210 p.

Mazzullo, S.J., 1999, Road log and locality guide: The Chase Group in Southern Kansas - Lithostratigraphy, facies, and sequence stratigraphic architecture; SIPES (Society Independent Earth Scientists) Foundation, Wichita, 38 p (INVITED).

Saller, A.H., P.M. Harris, B.L. Kirkland, and S.J. Mazzullo, eds., 1999, Geologic Framework of the Capitan Reef; SEPM Special Publication No. 65, 224 p.

Articles in Non-Refereed Journals

Mazzullo, S.J., 1982, Types and controls of Permo-Pennsylvanian carbonate stratigraphic traps of shallow-marine origin in Permian Basin: exploration models; Oil & Gas Journal, Oct. 4, p. 124-141 (INVITED).

**Judice, P.W.*, and S.J. Mazzullo, 1983, Gray Sandstones (Jurassic) in Terryville field - basinal deposition and exploration model; Oil & Gas Journal, p. 191-206 (INVITED).

*Mazzullo, S.J., W.D. Bischoff, and *C.S. Teal*, 1995, Holocene subtidal dolomitization in Belize: a new piece in the dolomite puzzle; published in two separate parts of the Kansas Geological Society Bulletin, v. 71, no. 3, p. 15-18 (part 1) and v. 71 no. 4, p. 12-15 (part 2).

**Lowe, D.B.*, and S.J. Mazzullo, 1996, Holocene mixed carbonate-siliciclastic facies, northern Belize: exploration analog to some Pennsylvanian hydrocarbon reservoirs, parts 1 and 2; Kansas Geological Society Bulletin, v. 71, no. 8, p. 12-15 and 24 (part 1), and v. 71, no. 9, p. 12-15 (part 2)..

***Abstracts - Refereed* (ALL WERE ORAL PRESENTATIONS)**

AAPG = American Association of Petroleum Geologists

SEPM = Society of Economic Paleontologists and Mineralogists (nowknown as the Society for Sedimentary Geology)

GSA = Geological Society of America

Mazzullo, S.J., 1977, Diagenesis of the Skinner Ranch Formation (Permian), Glass Mts; Abstracts with

Program, GSA South-central Section Annual Meeting, p. 63.

Mazzullo, S.J., and J.M. Cys, 1977, Submarine cements in Permian boundstones and reef-associated rocks, Guadalupe Mountains, West Texas and southeastern New Mexico; Abstracts with Program, Symposium on the Ochoan and Guadalupian Rocks of Southeastern New Mexico and West Texas, published by New Mexico Geological Society, Permian Basin Section SEPM, and New Mexico Bureau Mines and Mineral Resources, p. 17.

Mazzullo, S.J., and J.M. Cys, 1978, Submarine cements and fabric-retentive diagenesis, Capitan Reef (Permian), Guadalupe Mountains, New Mexico; AAPG Bulletin, v. 62, p. 541 (and in Abstracts with Program, AAPG-SEPM Annual Meeting, p. 92).

Mazzullo, S.J., and J.M. Cys, 1978, In-situ formation of botryoidal aragonite on Permian sea floor; Abstracts with Program, AAPG-SEPM Annual Meeting, p. 129 (and in AAPG Bulletin, v. 63, p. 493).

Mazzullo, S.J., and R.P. Karpovich, 1980, Jurassic geology and hydrocarbon potential of southwestern Alabama; AAPG Bulletin, v. 64, p. 1561 (and in Transactions of the Gulf Coast Association of Geological Societies, v. 30, p. 143).

Mazzullo, S.J., 1981, A comparison of eogenetic and mesogenetic porosity-diagenetic trends in a deeply-buried limestone reservoir in west Texas; AAPG Bulletin, v. 65, p. 955.

Mazzullo, S.J., 1981, Facies-stratigraphic framework of Lower Clear Fork and Wichita Group, northern Midland Basin; Abstracts, Southwest Section AAPG and Permian Basin Section SEPM Annual Meeting, p. 23-24.

**Hedrick, C.L., M.W. Gray*, and S.J. Mazzullo, 1981, Sedimentology and stratigraphy of the Lower Wolfcamp, northern Midland Basin; IBID, p. 18.

Mazzullo, S.J., 1982, Types and controls of facies-stratigraphic traps in Permo-Pennsylvanian carbonates in the Permian Basin: exploration models; AAPG Bulletin, v. 66, p. 246 (INVITED).

Mazzullo, S.J., and J.M. Cys, 1982, Extensive coniatolite-pelagosite sedimentation in marine limestones, Tansill Formation (Permian), New Mexico; AAPG Bulletin, v. 66, p. 602.

Mazzullo, S.J., 1983, Atoll reservoir facies, Higgins Ranch field (Canyon), Coke County, Texas; Abstracts with Program, Southwest Section AAPG Annual Meeting, p. 17 **(PRESENTED THE 1983 A.I. LEVORSEN BEST PAPER AWARD)**.

Mazzullo, S.J., 1984, Foreshelf carbonate facies mosaics, Permian, Midland Basin, Texas; Abstracts, v. I, SEPM First Annual Midyear Meeting, p. 52 (INVITED).

Mazzullo, S.J., J. Mazzullo, and P.M. Harris, 1985, Significance of eolian quartzose sheet sands on emergent carbonate shelves: Permian of west Texas-New Mexico; AAPG Bulletin, v. 69, p. 284.

Mazzullo, S.J., J. Mazzullo, and P.M. Harris, 1985, Eolian origin of sheet sands in Permian shelf facies, Guadalupe Mountains; Abstracts, Permian Basin Section SEPM Symposium, Midland, TX, p. 3.

Mazzullo, S.J., and C.L. Hedrick, 1985, Autocycles, events and systems: the dynamic stratigraphy of the Permian shelf complex, New Mexico-Texas; Abstracts, SEPM Second Annual Midyear Meeting, v. II, p. 61.

Mazzullo, S.J., 1986, Mississippi Valley-type sulfide mineralization, Sheffield Channel, and implications for Delaware Basin evolution; AAPG Bulletin, v. 70, p. 346 (INVITED).

Mazzullo, S.J., A.M. Reid, and S.T. Reid, 1986, Evolution of Permian carbonate shelf and foreshelf detrital systems, Midland Basin, Texas; AAPG Bulletin, v. 70, p. 347 **(PRESENTED THE A.I. LEVORSEN BEST PAPER AWARD FOR 1986)**.

Schaefer, W., and S.J. Mazzullo, 1986, Lower Pennsylvanian reef facies development, northern Delaware Basin; AAPG Bulletin, v. 70, p. 348.

Mazzullo, S.J., 1986, MVT sulfide mineralization, carbonate diagenesis, and possible relations to hydrodynamic evolution of Delaware Basin, Texas; AAPG Bulletin, v. 70, p. 617-618.

Mazzullo, S.J., J. Mazzullo, and P.M. Harris, 1986, Depositional history and stratigraphic significance of

sheet sandstones of the Permian Basin; Abstracts with Program, GSA Annual Meeting, p. 686.
Mazzullo, S.J., J. Mazzullo, and P.M. Harris, 1986, Sedimentology, stratigraphy, and reservoir characteristics of Guadalupian shelf sandstones on the Central Basin Platform and the Northwestern Shelf of the Permian Basin; Abstracts with Program, Gulf Coast Section SEPM 7th Annual Research Conference, p. 19.
Reid, A.M., and S.J. Mazzullo, 1987, Paint Rock and Southwest Paint Rock fields, Concho County, Texas: Strawn analogs of modern island carbonate facies of Ambergris Cay, Belize; AAPG Bulletin, v. 71, p. 242-243 (and in Transactions with Abstracts for Southwest Section AAPG, p. 21)(INVITED).
Reid, A.M., and S.J. Mazzullo, 1987, Strawn biostratigraphy and facies mosaics: What is the Caddo?; Transactions with Abstracts, Southwest Section AAPG Annual Meeting, p. 20 (INVITED).
Mazzullo, S.J., and A.M. Reid, 1987, Contrasting evolutionary patterns of Lower Permian shelf and basinal facies, Midland Basin, Texas; AAPG Bulletin, v. 71, p. 590-591.
Mazzullo, S.J., and J.M. Gregg, 1987, MVT sulfide genesis and its relation to carbonate paragenesis and basin hydrologic systems: introductory remarks; IBID, p. 53 (INVITED).
Reid, A.M., S.T. Reid, S.J. Mazzullo, and S.C. Robbins, 1988, Revised fusulinid biostratigraphic zonation and depositional sequence correlation, subsurface Permian Basin; AAPG Bulletin, v. 72, p. 102.
Mazzullo, S.J., and A.M. Reid, 1988, Seismic-stratigraphic resolution of depositional systems and reservoir facies occurrence, Permian Basin; AAPG Bulletin, v. 72, p. 102.
**Malicse, A.*, J. Mazzullo, *C. Holley*, and S.J. Mazzullo, 1988, Sedimentation of shelf sandstones in Queen Formation, McFarland and Means fields, Central Basin Platform of the Permian Basin; AAPG Bulletin, v. 72, p. 101.
**Siegel, J., Malicse, A.*, J. Mazzullo, and S.J. Mazzullo, 1988, Shattuck Member of the Queen Formation (Permian), Northwest Shelf, Permian Basin: eolian sandstone deposited during a low stand of sea level; AAPG Bulletin, v. 72, p. 103.
**Malicse, A., J. Siegel*, J. Mazzullo, and S.J. Mazzullo, 1988, Provenance, diagenesis, and reservoir characteristics of Shattuck Member of the Queen Formation (Permian), Northwest Shelf, Permian Basin; AAPG Bulletin, v. 72, p. 101.
*Mazzullo, J.M., *A. Malicse, J. Siegel, C. Holley, S. Bilir*, and S.J. Mazzullo, 1988, Eolian and fluvial facies in the sandstones of the Queen Formation, Permian Basin, Texas; AAPG Bulletin, v. 72, p. 219.
Mazzullo, S.J., and A.M. Reid, 1989, Evolution of the San Simon Channel, Gaines County, Northern Midland Basin; AAPG Bulletin, v. 73, p. 256 (INVITED).
Mazzullo, L.J., and Mazzullo, S.J., 1989, Lithologic and geologic characteristics of the Silurian-Devonian and Woodford Formations of the northern Midland Basin, Texas; AAPG Bulletin, v. 73, p. 255-256 (reprinted in Transactions 1989 southwest Section AAPG, p. 159)(INVITED).
Mazzullo, L.J., and S.J. Mazzullo, 1989, Southern shelf of Belize: an analog to the Morrow and Atoka Formations of the Permian Basin; AAPG Bulletin, v. 73, p. 256 (reprinted in IBID, p. 159).
Reid, A.M., S.T. Reid, S.J. Mazzullo, and S.C. Robbins, 1989, Refined fusulinid biostratigraphic zonations of Wolfcampian and lower Leonardian strata in the Permian Basin; AAPG Bulletin, v. 73, p. 256-257.
**Wingate, T.*, and S.J. Mazzullo, 1989, Depositional facies and diagenesis of Upper Pennsylvanian carbonate reef reservoirs, Ropes West field, Hockley County; AAPG Bulletin, v.73, p. 258.
Lomando, A.J., and S.J. Mazzullo, 1989, Giddings Edwards (Cretaceous) field, South Texas: carbonate channel or elongate buildup?; AAPG Bulletin, v. 73, p. 382 (INVITED).
Mazzullo, S.J., and P.M. Harris, 1989, Porosity formation in the deep-burial environment: an overview, with examples from the Permian Basin; AAPG Bulletin, v. 73, p. 388.

Mazzullo, S.J., 1990, Recognition and contribution of deep-burial diagenesis to porosity evolution in carbonate reservoir rocks; AAPG Bulletin, v. 74, p. 219-220 (INVITED).

Mazzullo, S.J., A.M. Reid, and S.T. Reid, 1990, Carbonate reservoirs deposited during sea level lowstands, Permian Basin: occurrence, geometry, facies, and origin of porosity of in-situ buildups; AAPG Bulletin, v. 74, p. 219.

Reid, A.M., S.T. Reid, and S.J. Mazzullo, 1990, Lowstand carbonate reservoirs: Upper Pennsylvanian sea level changes and reservoir development adjoining Horseshoe Atoll; AAPG Bulletin, v. 74, p. 221.

**Wiedemeier, T.H.*, W.E. Full, and S.J. Mazzullo, 1990, Holocene facies relationships in a mixed siliciclastic- carbonate barrier complex, Placentia, Belize, Central America; AAPG Bulletin, v.74, p. 790.

Mazzullo, S.J., and P.M. Harris, 1990, Porosity evolution in deeply-buried carbonate rocks: processes, timing, and products; Abstracts with Program, GSA Annual Meeting, v. 22, no. 7, p. 90.

*Mazzullo, S.J., and *W.E. Hipke*, 1991, Evolution of a mixed carbonate-siliciclastic platform: Lower Permian, northern Midland Basin, Texas; AAPG Bulletin, v. 75, p. 201.

*Mazzullo, S.J., and *Q. Ye*, 1991, Dolomitization of coeval shelf and foreshelf carbonates, Lower Permian, Midland Basin, Texas; AAPG Bulletin, v. 75, p. 631-632.

Gregg, J.M., S.A. Howard, and S.J. Mazzullo, 1991, Early diagenetic recrystallization of Recent, peritidal dolomites, Ambergris Cay, Belize; Abstracts, Dolomieu Conference on Carbonate Platforms and Dolomitization (edited by A. Bosellini, R. Brandner, E. Flugel, B. Purser, W. Schlager, M. Tucker, and D. Zenger), Ortisei, Italy, p. 97 (INVITED).

Mazzullo, S.J., 1994, Can regional porosity occurrence in carbonate slope and basin facies systems be predicted?; AAPG Bulletin, v. 78, p. 496-497 (and in Bulletin 150 of New Mexico Bureau of Mines and Mineral Resources, p. 133)(**PRESENTED THE A.I. LEVORSEN BEST PAPER AWARD FOR 1994**).

Mazzullo, S.J., 1995, Diagenetic response of coeval platform and slope carbonates to sea-level changes: Lower Permian, Midland Basin, Texas; Abstracts, AAPG-SEPM Annual Meeting, v. 4, p. 62A (INVITED).

Mazzullo, S.J., 1995, Lithification and mesogenetic porosity evolution in Lower Permian periplatform limestones, Midland Basin, Texas; Abstracts, AAPG-SEPM Annual Meeting, v. 4, p. 62A (INVITED).

*Mazzullo, S.J., *C.S. Teal*, and *C.A. Burtnett*, 1995, Cycles, cyclothems, and sequences in Chase Group strata (Permian, Wolfcampian), south-central Kansas; Abstracts with Programs, GSA North-Central/South-Central Annual Meeting, v. 27, no. 3, p. 72-73.

*Mazzullo, S.J., C.S. Teal, and C.A. Burtnett, 1995, Sequence stratigraphy and depositional facies in the Chase Group (Permian, Wolfcampian, south-central Kansas; AAPG Bull., v. 79, p. 1404.

**Lowe, D.B.*, and S.J. Mazzullo, 1995, Holocene siliciclastic-carbonate facies mosaics, northern Belize: exploration analog to some Midcontinent Pennsylvanian (Morrowan) reservoirs; AAPG Bull., v. 79, p. 1404.

*Mazzullo, S.J., *C.S. Teal*, and *C.A. Burtnett*, 1996, Sequence stratigraphic analysis of Permian (Wolfcampian), cyclic ramp strata (Chase Group) in the Midcontinent USA, and comparison to classic Pennsylvanian cyclothems; AAPG-SEPM Annual Meeting, Abstracts, v. 5, p. A94 (INVITED).

Mazzullo, S.J., 1997, Sequence stratigraphic, paleobathymetric, and tectonic controls on reservoir architecture in Lower Permian (Chase Group), cyclic carbonates in the midcontinent USA; AAPG Annual Convention Abstracts, v. 6, p. A78-A79 (INVITED).

Mazzullo, S.J., 1997, Essential elements of significant stratigraphic exploration plays in Ordovician to Lower Permian carbonates in the Midland Basin; AAPG Bulletin, v. 81, p. 868 (INVITED).

*Mazzullo, S.J., *C.S. Teal*, and W.D. Bischoff, 1997, Syndepositional, subtidal dolomitization model for the formation of some Paleozoic reservoirs in the Permian Basin; AAPG Bulletin, v. 81, p. 868 (INVITED).

Mazzullo, S.J., 1997, Characterization of Lower Permian, cyclic carbonate reservoirs (Chase Group) in the midcontinent based on outcrop model-analogs; AAPG Bulletin, v. 81, p. 1352.

**Montgomery, M.W.*, and S. J. Mazzullo, 1997, Analysis of paleosols in Chase Group strata (Lower Permian), south-central Kansas; AAPG Bulletin, v. 81, p. 1353.

Mazzullo, S.J., 2000, Porosity evolution in Permian deep-water carbonates, Permian Basin, Texas & New Mexico; AAPG Annual Convention Abstracts, v. 9, p. A94 (INVITED).

**Wilhite, B.W.*, and Mazzullo, S.J., 2000, Foraminiferal sand shoals in Chetumal Bay, Belize: modern analog of some Paleozoic hydrocarbon reservoirs deposited in wind-dominated, microtidal, sheltered environments; AAPG Annual Convention Abstracts, v. 9, p. A157 (INVITED).

*Mazzullo, S.J., Teal, C.S., *Dimmick-Wells, K*, Wilhite, B., and Bischoff, W.D., 2002, Platform-wide dolomitization in northern Belize: modern analog of widespread, early platform dolomitization; Program with Abstracts, v. 11, 2002 AAPG-SEPM Convention, p. A115.

Cao, H. and Mazzullo, S.J., 2007, Mississippian chert reservoirs in Kansas, 2: Silicon isotope geochemistry and mechanism of silicification; Abstracts (not paginated; saved on CD) AAPG Annual Convention.

Mpanje, L., and S. J. Mazzullo, 2007, Depositional facies and diagenesis of the Lansing-Kansas City section, O'Connor Field, Stafford Co., KS; abstract, 2007 Mid-Continental AAPG meeting, Wichita, p. 45.

Mazzullo, S.J., Cao, H., and Wilhite, B.W., 2007, Mississippian chert reservoirs in Kansas: oxygen and silicon isotope geochemistry and timing of silicification and porosity formation; abstract, 2007 Mid-Continental AAPG meeting, Wichita, p. 23.

Wilhite, B.W., Mazzullo, S.J., et al., 2007, Paleo-oceanography and depositional framework of the Cowley facies in south-central Kansas: solution to the "Cowley Problem"; abstract, 2007 Mid-Continental AAPG meeting, Wichita, p. 46-47.

Wilhite, B.W., Mazzullo, S.J., and Woolsey, I.W., 2008, Setting, stratigraphic architecture, and diagenesis of spiculite platform-to-basin systems: Mississippian, south-central Kansas; abstract, AAPG-SEPM annual convention, abstracts volume 17, p. 215.

Abstracts - Not Refereed (all invited oral presentations)

Mazzullo, S.J., and A.M. Reid, 1987, Seismic-stratigraphic resolution of depositional systems and reservoir facies occurrence; West Texas Geological Society Bulletin, v. 27, p. 21.

Mazzullo, S.J., and A.M. Reid, 1988, Petrology of Holocene peritidal dolomites from Belize: are they analogs of some ancient subtidal facies?; West Texas Geological Society Bulletin, v. 27, p. 20.

*Mazzullo, J.M., *A. Malicse, J. Siegel, C. Holley, S. Bilir*, and S.J. Mazzullo, 1988, Depositional environments and reservoir characteristics of sandstones in the Queen Formation of the Northwest Shelf and Central Basin Platform; Permian Basin Section SEPM Newsletter, v. 2, no. 7, p. 4-5.

Mazzullo, S.J., and A.M. Reid, 1989, Evolution of San Simon Channel, Gaines County, Texas, northern Midland Basin; Permian Basin Section SEPM Newsletter, v. 3, no. 9, p. 4-5.

Reviews of Petroleum Geology-Related Books

_____, 1987, Review: The English Zechstein and Related Topics, by G.M. Harwood and D.B. Smith; Carbonates and Evaporites, v. 2, p. 84-85.
_____, 1987, Review: Atlas of Selected Oil and Gas Reservoir Rocks from North America, by E.W. Biederman; Carbonates and Evaporites, v. 2, p. 182-183.
_____, 1987, Review: Reservoir Sedimentology, by R.W. Tillman and K.J. Weber; Carbonates and Evaporites, v. 2, p. 181-182.
_____, 1988, Review: Reservoir Sedimentology, by R.W. Tillman and K.J. Weber; Journal of Petroleum Science and Engineering, v. 1, p. 259 (INVITED).
_____, 1988, Review: Roles of Organic Matter in Sediment Diagenesis, by D.L. Gautier; Carbonates and Evaporites, v. 3, p. 105-106.
_____, 1988, Review: Fluid Flow in Sedimentary Basins and Aquifers, by J.C. Goff and B.P.J. Williams; Carbonates and Evaporites, v. 3, p. 218-220.
_____, 1988, Review: Thermal Modeling in Sedimentary Basins, by J. Burrus; Carbonates and Evaporites, v. 3, p. 217.
_____, 1989, Review: Diagenesis of Sedimentary Sequences, by J.D. Marshall; Carbonates and Evaporites, v. 4, p. 126-127.
_____, 1989, Review: Evaporites and Hydrocarbons, by B.C. Schreiber; Carbonates and Evaporites, v. 4, p. 123-124.
_____, 1989, Review: Carbonate Rock Depositional Models, A Microfacies Approach, by A.V. Carozzi; Carbonates and Evaporites, v. 4, p. 248-249.
_____, 1989, Review: Carbonate Diagenesis and Porosity, by C.H. Moore; Carbonates and Evaporites, v. 4, p. 251-252.
_____, 1991, Review: Short Course Handbook in Burial Diagenesis, by I. Hutcheon; Geotimes, v. 36, no. 2, p. 63 (INVITED).
_____, 1991, Review: Short Course Handbook in Burial Diagenesis, by I. Hutcheon; Carbonates and Evaporites, v. 6, p. 114-115.
_____, 1991, Review: Giant Oil and Gas Fields, A Core Workshop, by A.J. Lomando and P.M. Harris; Carbonates and Evaporites, v. 6, p. 111-112.
_____, 1991, Review: Mixed Carbonate-Siliciclastic Sequences, by A.J. Lomando and P.M. Harris; Carbonates and Evaporites, v. 6, p. 242-243.
_____, 1991, Review: Applied Subsurface Geological Mapping, by D.J. Tearpock and R.E. Bischke; Carbonates and Evaporites, v. 6, p. 240-242.
_____, 1991, Review: Reefs, Canada and Adjacent Areas, by H.H.J. Geldsetzer, N.P. James, and G.E. Tebbutt; Carbonates and Evaporites, v. 6, p. 239-240.
_____, 1991, Review: The Trenton Group (Upper Ordovician series) of Eastern North America - Deposition, Diagenesis, and Petroleum, by B.D. Keith; Northeastern Geology, v. 13, p. 158-159.
_____, 1992, Review: Holocene Sea-Level Changes, by P.A. Pirazzoli; Carbonates and Evaporites, v. 7, p. 82.
_____, 1992, Review: Sedimentary Basin Modeling, by C.L. Angevine, P.L. Heller, and C. Paola; Carbonates and Evaporites, v. 7, p. 83-84.
_____, 1992, Review: Basin Analysis, by K.L. Kleinspehn and C. Paola; Carbonates and Evaporites, v. 7, p. 84.
_____, 1992, Review: Petroleum Geology Handbook, by N.A. Eremenko; American Association of Petroleum Geologists Bulletin, v. 76, p. 1939.
_____, 1992, Review: Evaporites, Petroleum and Mineral Resources, by J.L. Melvin; Carbonates and Evaporites, v. 7, p. 166.
_____, 1994, Review: Petroleum Geology Handbook, by N.A.Eremenko; Journal of Petroleum Science and Engineering, v. 10, p. 271 (INVITED).

_____, 1994, Review: Diagenesis and Basin Development, by A.D. Horbury and A.G. Robinson; Carbonates and Evaporites, v. 9, p. 115-116.

_____, 1994, Review: Dolomite Reservoirs, Geochemical Techniques for Evaluating Origin and Distribution, by J.R. Allan and W.D. Wiggins; Carbonates and Evaporites, v. 9, p. 233-234.

_____, 1994, Review: Carbonate Sequence Stratigraphy, Recent Developments and Applications, by R.G. Loucks and J.F. Sarg; Carbonates and Evaporites, v. 9, p. 234-235.

_____, 1995, Review: Facies Models - Response to Sea-Level Change, by R.G. Walker and N.P. James, eds.; Carbonates and Evaporites, v. 10, p. 126.

_____ and G.V. Chilingarian, 1996, Review: Dolomite Reservoirs: Geochemical Techniques for Evaluating Origin and Distribution, by J.R. Allen and W.D. Wiggins; Journal of Petroleum Science and Engineering, v. 14, p. 262-263 (INVITED).

_____, 1996, Review: Principles of Petroleum Development Geology, by R.C. Laudon; Carbonates and Evaporites, v. 11, p. 241-242.

Miscellaneous Petroleum Geology-Related Publications

Mazzullo, S.J., 1983, Fusselman collapse breccias: ancient cave and/or caliche deposits?; Permian Basin Section SEPM One Day Field Trip Notes, Oct. 8, 5 p.

Mazzullo, S.J., 1989, Future shock; American Association of Petroleum Geologists *Explorer*, v. 10, no. 6, p. 40.

Mazzullo, S.J., 1989, Growing Dependence; IBID, v. 10, no. 9, p. 36.

Mazzullo, S.J., 1996, Perspective - the comparative sedimentological approach to dry hole drilling; Kansas Geological Society Bulletin, v. 72, no. 7, p. 14-15.

Mazzullo, S.J., 1997, The comparative sedimentological approach to dry hole drilling; West Texas Geological Society Bulletin, v. 38, no. 8, p. 5-6.