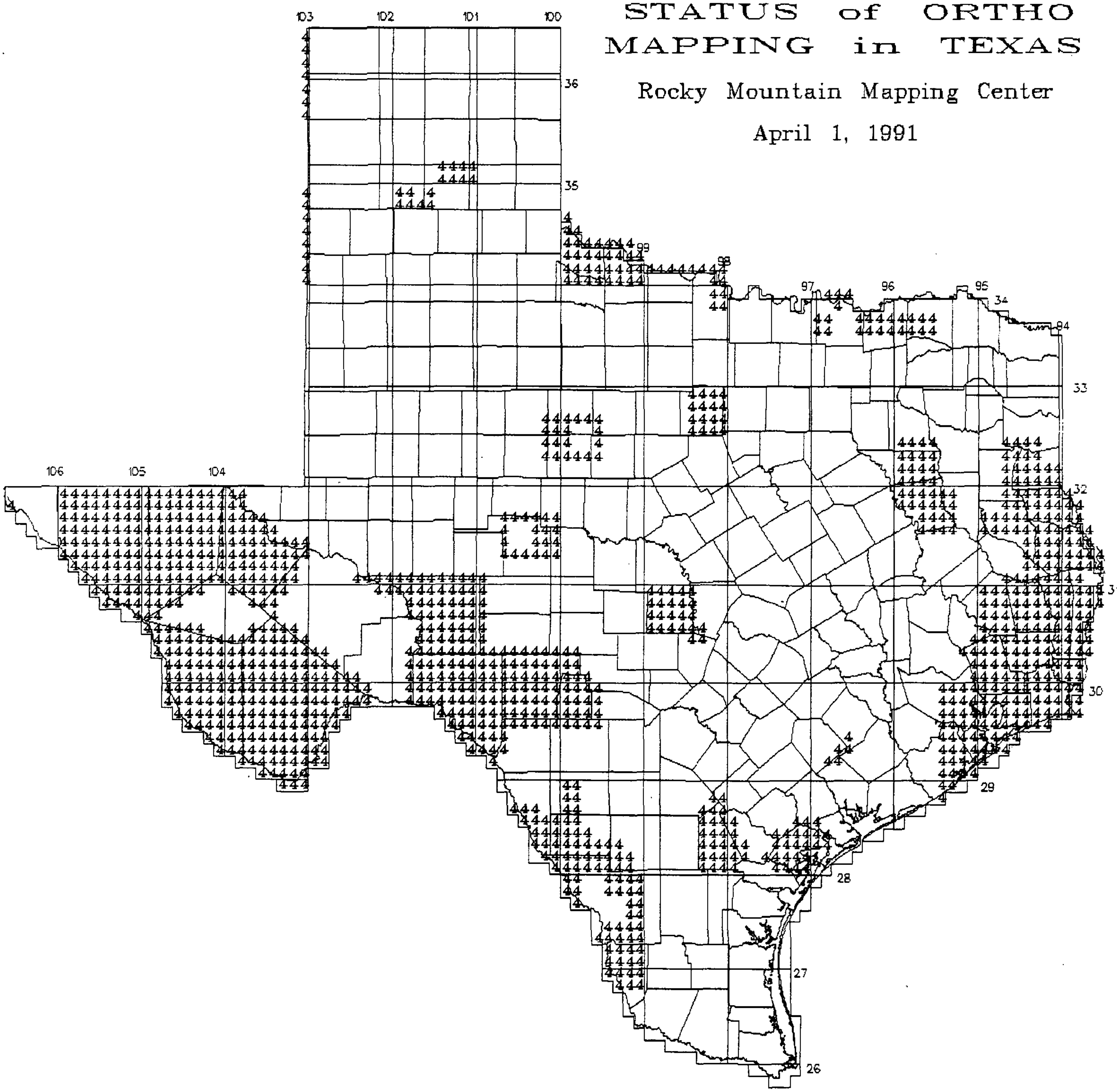
GL01565

STATUS of ORTHO MAPPING in TEXAS

Rocky Mountain Mapping Center

April 1, 1991



Prepared in Branch of Program Management - RMMC

U.S. GEOLOGICAL SURVEY
NATIONAL MAPPING DIVISION
EARTH SCIENCE INFORMATION CENTER - LAKEWOOD
ROCKY MOUNTAIN MAPPING CENTER
DENVER, COLORADO
(303) 236-5829
FTS 776-5829

ADVANCE MATERIAL INDEX

The accompanying pages show the status of Topographic Mapping and Orthophotoquad Mapping, and the availability of advance materials. These indexes are produced on a quarterly basis and are furnished to requestors free of charge. Following is an explanation of symbolization and ordering information.

TOPOGRAPHIC MAPPING

2 Aerial photography completed. For ordering address, see note (a).

3 Basic horizontal and vertical control surveys completed. Monumented control may or may not have been established in this quadrangle. Descriptions and unadjusted coordinates and/or elevations are published in 15-minute quadrangle lists. Advance maps are not available at this stage. Price is $1.25 per list (horizontal or vertical). For ordering address, see note (a).

4 Prints of manuscripts (without feature classification, names, boundaries or land net) compiled from aerial photographs are available for $2.50 each. See note (a) and (b).

5 Field mapping and checking completed. One-color unedited advance prints (without names) are available for $2.50 each. See notes (a) and (b).

6 Final drafting completed. Partially-edited one-color advance prints (with names) are available for $2.50 each. See notes (a) and (b).

P Maps published since the latest edition of the State Sales index to published maps. See note (c).

\ Maps published at 1:62,500-scale in 15-minute quadrangles. However, 1:24,000-scale one-color prints in 7 1/2-minute format, with appropriate accuracy and contour intervals are available at $2.50 each. See notes (a) and (b).

Screened areas represent projects in progress at Mid-Continent Mapping Center. Indicated advance materials are available through ESIC-M, USGS Building, 1400 Independence Road, Rolla, Missouri 65401. (314) 341-0851 or FTS 277-0851.

Screened areas represent projects in progress at Western Mapping Center. Indicated advance materials are available through ESIC-W, 345 Middlefield Road, Mail Stop 532, Menlo Park, California 94025. (415) 329-4309 or FTS 459-4309.

ORTHOPHOTOQUAD MAPPING

2 Aerial photography completed, generally quad-centered at 1:80,000-scale. See notes (a) and (b).

4 Advance copy available. See notes (a) and (b). Price per copy for screened image on diazo paper is $3.00; for halftone print on waterproof diazo or single weight positive paper is $15.00; for continuous tone image on photographic paper is $20.00; for screened image on mylar or continuous tone image on opaque scale stable film is $36.00.

4̸ Same materials available as 4, however, land net (General Land Office) is shown.

0 Second generation advance copy available. Refer to 4, above, for ordering information and prices.

0̸ Same materials available as 0, however, land net (General Land Office) is shown.

D Third generation advance copy available. Refer to 4, above, for ordering information and prices.

D̸ Same materials available as D, however, land net (General Land Office) is shown.

NOTES

(a) Requests for aerial photography, control lists or advance prints should be sent to the U.S. Geological Survey, Earth Science Information Center-Lakewood, Federal Center, Box 25046, Stop 504, Denver, Colorado 80225. Payment in the exact amount must accompany order. Check or money order should be made payable to the Department of the Interior, USGS. Please do not send stamps or two party checks. Purchase orders from commercial sources must include Federal tax identification. Discount agreements are not honored. Postage and handling charges are $1.00 on all map orders of less than $10.00.

(b) In ordering material or requesting information, mark your area of interest on the accompanying index and forward it with your order. A new copy of the index will be returned to you for future use.

(c) Requests for State sales indexes (free of charge) and for published maps and charts should be sent to the Branch of Distribution, Central Region, U.S. Geological Survey, Federal Center, Box 25286, Denver, Colorado 80225. (303) 236-7477. Remittance must be made payable to Department of Interior, USGS.

(d) This explanation sheet refers to the Advance Materials Indexes for the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Texas, Utah, Washington and Wyoming. Questions about the mapping program for the remainder of the United States should be directed to ESIC-M, USGS Building, 1400 Independence Road, Rolla, Missouri 65401. (314) 341-0851, FTS 277-0851.

Earth Science Information Center office hours are from 8 a.m. to 4 p.m. Monday through Friday.

PET. INFO. — TEXAS

WELLS WITH BHT'S BY COUNTY

COUNTY	No WELLS WITH BHT'S
CULBRSON	3
GAINES	3
LOVING	12
PECOS	9
REEVES	36
WARD	115
WINKLER	60
YOAKUM	5
TOTAL FOR STATE	243

TEXAS

PAGE	(1) CULBR SON	(2) GAINES	(3) LOVING	(4) PECOS	(5) REEVES	(6) WARD
1	III	I				
2		II	I			
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6			I	II		
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36						III
37						III
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TEXAS

PAGE	⑥ WARD	⑦ WINKLER
39	IIII	
40	IIII	
41	III	
42	III	
43	III	
44	III	
45	III	
46	IIII	
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PAGE	⑥ WARD	⑦ WINKLER	⑧ YOAKUM
77			III
78			II
			5✓

STATUS OF DOCUMENTATION OF LOWER ORDOVICIAN REFERENCE SECTION IN WESTERN UTAH

HINTZE, Lehi F., Department of Geology, Brigham Young University, Provo, Utah 84602

Within the past decade many papers describing aspects of Lower Ordovician strata of western Utah have been published. Stratigraphic units have been redescribed and geologic maps published by L. F. Hintze. Various faunal groups have been documented: trilobites by E. J. Demeter, M. E. Taylor, F. M. Terrell, G. E. Young; brachiopods by R. G. Jensen; graptolites by L. F. Braithwaite; bryozoa by R. W. Hinds; crinoids by N. G. Lane; cystoids by C. R. C. Paul; pelecypods by John Pojeta; some of the cephalopods by R. H. Flower; some of the ostracodes by J. M. Berdan; and some of the conodonts by J. F. Miller. Sponge-algal patch reefs have been described by S. B. Church and H. H. Roberts. Some faunal element are in course of study and will be published as completed. These include conodonts by R. L. Ethington, sponges by J. K. Rigby, additional cephalopods by R. H. Flower, additional ostracod by J. M. Berdan, as well as the gastropods, corals, and additional echinoderms. A summary paper will be prepared when study of the major group is completed.

The Utah Lower Ordovician section is unique in its faunal diversity and preservation. Complete documentation of its faunal elements will enhance its use as a reference standard for the Cambro-Ordovician boundary and for Lower and lower Middle Ordovician biostratigraphy.

GEOTHERMAL EXPLORATION PROGRAM, TRANS-PECOS TEXAS

HOFFER, Jerry M., Department of Geological Sciences, The Universit of Texas at El Paso, El Paso, Texas 79968

The Department of Geological Science, U. T. El Paso, has recently initiated a program to evaluate the geothermal potential of a six count area in West Texas. The region of study includes approximately 22,0 square miles in El Paso, Culberson, Hudspeth, Jeff Davis, Presidio a Brewster counties. The first year program includes geological and ge chemical studies in an attempt to locate and define the occurrence o natural hot waters.

To date over 700 water samples have been collected. Forty-five sprir or well samples show surface temperatures ranging from 30 to 72^{o} C. These warm to hot water occurrences are found in twelve different ar of the region. These areas include: El Paso County, two (Canutillo and west of the Hueco Mountains); Culberson County, one (near Van Ho Hudspeth County, two (Indian Hot Springs and Hot Wells); Jeff Davis County, one (west of Fort Davis); Presidio County, two (Candelaria a south of Marfa, and Brewster County, four (Terlinqua, near Alpine, southeast of Marathon, and the southern end of Big Bend National Par Based on the silica geothermometer approximately 250 springs and wel have reservoir temperatures of at least 100^{o} C. In addition to sili each water sample has been analysed for sodium, potassium, calcium, lithium, fluoride, choride, magnesium plus numerous metals.

Geological studies include detailed surface mapping in the immediate area of selected hot water localities plus the construction of a regional geologic map showing the locations of major structures and igneous rock occurrences.

QUARTZ GRAIN SURFACE TEXTURES, RELATIVE AGE, AND DEPOSITIONAL ENVIRONMENTS FOR UNITS OF THE WEST MEXICAN COASTAL PLAIN

HOFFMAN, Stephen A., Department of Geology, Michigan State

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satisfactory and an additional seven observation wells were installed. The well was pumped continuously for seven days, observing drawdown in wells and water samples were collected for chemical analyses during the test.

Preliminary results indicate adequate water is available to meet the needs of the Reservation but quality is highly variable. Original analyses made in fall 1974 and winter 1975 are considerably different than quality during the seven-day test. River water in November 1974 had hardness of 270 mg/l, iron-.2 and manganese 0.0 to 0.15 mg/l. During the test in April-May, 1975, hardness was 250 mg/l, iron .3 to .45, and manganese .00 to .22 mg/l. Hardness of well-water ranged from 350 to 480 mg/l, iron-.1 to .4 and manganese .3 to .5 mg/l. These variations in water quality might be attributed to the leaching of iron and manganese oxides from alluvium below the dam.

Data acquired in the aquifer test were analyzed by analog and digital models for the best location of a new well field.

EVIDENCE FOR EARLY TERTIARY RIO GRANDE DRAINAGE

BELCHER, Robert C., Department of Geological Sciences, University of Texas at Austin, Austin, Texas 78712; GALLOWAY, William E., Bureau of Economic Geology, University of Texas at Austin, Austin, Texas 78712

The Baca Formation (Eocene) of central New Mexico and northeastern Arizona was deposited by an Early Tertiary fluvial system that discharged into the Rio Grande embayment of South Texas. Remnants of this system may also occur in the sedimentary portion of the Datil Group (Oligocene) of New Mexico.

Sedimentary features and characteristic quartzite lithologies of Baca outcrops suggest deposition by a large eastward flowing fluvial system. Fluvial input into the Rio Grande embayment began to increase during Middle Eocene time and reached a maximum during Vicksburg and Catahoula deposition (Oligocene). Reconstruction of the well-preserved Catahoula fluvial system favors a single large river discharging into the embayment. Late Tertiary tectonism disrupted extant drainage patterns, and the Pliocene Goliad Formation of South Texas contains quartzite clasts that were locally reworked from older Tertiary coastal plain fluvial deposits.

Subsequent tectonism destroyed evidence for direct correlation, but coincidence of Baca deposition and increasing sediment influx into the Rio Grande embayment, and presence in the embayment of quartzite clasts suggest that northeastern Arizona and most of New Mexico were drained by an early proto-Rio Grande fluvial system.

EASTERN BOUNDARY OF LATE QUATERNARY FAULTING IN TRANS-PECOS TEXAS

BELCHER, Robert C., Department of Geological Sciences, The University of Texas at Austin, Austin, Texas 78712; GOETZ, Lisa K., Department of Geological Sciences, The University of Texas at Austin, Austin, Texas 78712.

Fault scarps cutting alluvial deposits define the present-day eastern boundary of Basin and Range faulting in Trans-Pecos Texas. These faults accentuate the Salt Basin graben north of Van Horn and its southerly extensions along Lobo and Means Valleys and Valentine flats.

Discontinuous fault scarps are found along the west side of Salt

Basin at the base of Sierra Diablo, and along the east side of the graben near Bitter Well Mountain and Apache Mountains. Continuous scarps extend south for 24 kilometers along the eastern fronts of Beach and Carrizo Mountains, and for 50 kilometers south to Vieja Pass along the eastern fronts of the Van Horn Mountains and Sierra Vieja.

The fault scarps vary in height from 1 to 3 meters except north of Vieja Pass. Here, a series of older surfaces preserves a history of successive vertical displacements totaling 7 meters, with individual slips on the order of a meter.

Playa lakes and the majority of fault scarps are concentrated along the western border of the graben, suggesting westward tilting of basins. Presently the branch east of the Wylie Mountains appear to be dormant.

CANADIAN AND EARLY CHAMPLAINIAN BIOSTRATIGRAPHY IN THE MARATHON AREA, WEST TEXAS

BERGSTROM, S. M., Department of Geology and Mineralogy, The Ohio State University, 125 S. Oval Mall, Columbus, Ohio 43210

Most of the remarkable graptolite fauna succession in the shelf-slope Ordovician sequence in the Marathon area is in calcareous rocks containing readily isolated conodonts which makes it possible to calibrate directly standard graptolite and conodont zones. Few conodonts are known from the lower Marathon Limestone but the Monument Spring Member, representing Berry's Zone 3, contains species of the *P. proteus* - *P. elegans* Zones, suggesting correlation with the Baltoscandic Hunnebergian. The base of the *Oe. evae* Zone is apparently in the lower part of Berry's Zone 5, in the lower portion of the upper member of the Marathon, and excellent *Oe. evae* faunas occur in Zone 6 and through the major part of Zone 7 to near the top of the Marathon. These conodont faunas are similar to those of the Deepkill of New York, Cow Head Beds 11 and 12 of Newfoundland, the Ninemile of Nevada, and the Balto-Scandic Billingenian. Collections from the uppermost Marathon through the lowermost Fort Peña, which contain *Oepikodus communis*, *Histiodella altifrons*, and *Multioistodus* spp., represent Conodont Faunas E through 2 and suggest correlation with the West Spring Creek and lowermost Joins of Oklahoma and strata round the Whiterockian stadial boundary in Utah and Nevada. The middle and upper part of the Fort Pena, as well as the lowermost Woods Hollow at some localities, have yielded abundant *Histiodella sinuosa* and other species of Fauna 3 suggesting correlation with the middle to upper Joins. The significance of gravity-flow transport and redeposition of conodonts and other fossils especially in the Champlainian part of the Marathon sequence is still unclear but such transport may explain the apparently stratigraphically anomalous presence of some faunas in the basal Woods Hollow.

DEVELOPMENT OF THE RILEY MAAR CRATER, SOUTH-CENTRAL DONA ANA COUNTY, NEW MEXICO

BERSCH, Michael, Department of Geological Sciences, The University of Texas at El Paso 79968

The Riley maar is a near circular crater feature approximately 1 km in diameter. The maar crater is located within the basalt field of the West Potrillo Mountains.

Maar deposits consist of crudely stratified conglomeritic layers and lenses which average about 0.6 m in thickness. Clasts within the deposits are subrounded to angular and up to 1 m in diameter, with the larger clasts being the most rounded. The clasts are composed dominately of dense basalt, and lie with long axis parallel to the dip of

presented to distinguish local structures in each of these areas. Late Tertiary faulting, the eastern perimeter of the Tertiary Dona Ana Cauldron, and a small intrarift horst-graben feature have been identified from the mapped gravity anomalies. One of these faults appears to control fluid circulation in the Las Alturas area.

THERMAL CRACKING OF C_{21} HYDROCARBON DURING BURIAL

DECKER, Edward R., Department of Geology, University of Wyoming, Laramie, Wyoming 82071; and SAHAI, Surinder K., Department of Geology, University of Iowa, Iowa City, Iowa 52240

First order kinetic theory is used to analytically study thermal cracking of C_{21} alkane after instantaneous deposition, and during sedimentation at a uniform rate. The results establish numerical evidence for maximum C_{21} alkane cracking at temperatures in the range of 80 to 115° C. The model of instantaneous deposition predicts that significant C_{21} cracking can occur in late Pliocene or Pleistocene sediments, although the depths of maximum cracking are always greater than those implied by previously published models based on steady heat conduction. The effect of increasing surface or burial temperature of the sediments is to increase the amount of C_{21} cracking after very rapid deposition. When the equilibrium gradient in a sedimentary layer is increased, the point of maximum cracking moves to shallower depths. If burial times are increased, maximum cracking occurs at shallower depths and lower temperatures. Thus the transient thermal response of a sediment greatly influences the depth, magnitude, and temperature of alkane cracking during deposition. The modeling also implies that late Cenozoic sedimentary basins in zones of high terrestrial heat flow, or high geothermal gradients could contain mature hydrocarbons at relatively shallow depths, given the appropriate source materials.

REVIEW OF THE SIGNIFICANCE OF GEOTHERMAL AND GRAVITY STUDIES IN THE SOUTHERN RIO GRANDE RIFT

DECKER, Edward R., and SMITHSON, Scott B., Department of Geology, University of Wyoming, Laramie, Wyoming 82071

Recent studies suggest that the Rio Grande rift in southern New Mexico is a zone of very high reduced flux ($\geq$1.8HFU), which contrasts strongly with lower values (1.2-1.5HFU) in adjacent portions of the Basin and Range high heat flow province. A +30 mgal Bouguer gravity anomaly also occurs in this portion of the rift, and the Bouguer gravity relief to the east and west is small. The gravity high can be explained by an upwarping of high temperature and low density upper mantle and/or shallow sills and dikes of mafic rocks in the crust in the rift. Interpreted in terms of steady heat sources, the reduced heat flow anomaly implies massive amounts of melting in the lower crust. Transient heat flow interpretations imply less crustal anatexis than do steady-state models of the thermal anomaly. The transient models also refine interpretations from gravity by requiring that the combined heat flow and gravity highs be explained by high temperature and low density masses in the upper mantle. Related discussion focuses on the relations between geophysical interpretations and the late Cenozoic volcanism and regional geology in the rift.

OVERVIEW OF UTAH COAL DEPOSITS

DOELLING, Hellmut H., Utah Geological and Mineral Survey, 606 Black Hawk Way, Salt Lake City, Utah 84108

Coal has been reported from each geologic period commencing

rbon contents (118 ppm and 278 ppm, mean 198 ppm). The majority of the ne A samples have woody and/or coaly type kerogen predominating with ondary amounts of amorphous-sapropel type kerogen being present.

e varied lithologies of Zone B have a mature, very poor oil and associated source character. The extremely poor C_2-C_4 "wet" gas contents, C_5-C_7 soline-range hydrocarbon contents and total organic carbon contents did not rrant any further investigation of these Zone B sediments. They are de-ned as non source.

URCE ROCK AND PALYNOSTRATIGRAPHIC POTENTIAL FOR THE PALEOZOIC SHELF DIMENTS OF WEST TEXAS — SOUTHERN NEW MEXICO

CHAIFFETZ, M.S., Department of Geological Sciences, The University of Texas at El Paso, El Paso, Texas 79968

lynological preparations of surface samples of selected Paleozoic for-tions from the Franklin Mountains, West Texas were made. Study of ese preparations indicates that the rocks of the W. Texas-S. New xico Paleozoic shelf have a rather poor overall potential as petroleum urces. Most of the section has a palynologic record generally unsuit-le for biostratigraphic work.

leo-oceanographic, paleoclimatologic, and paleoecologic factors pro-bly contributed to a relatively low primary productivity, little sedi-ntation and poor preservation of the organic matter, which was pro-ced in the shallow marine waters or carried in from nearby landmasses. condary destruction of organic matter resulted from oxidative weather-g reactions, and relatively high pH groundwaters, which must have per-isted for long intervals in the Mesozoic and Cenozoic eras. Such con-itions have recently been shown to be particularly destructive to oropollenin-type compounds.

terial examined all appeared to be within the mature stage of thermal turation.

RRAY STUDY OF SOME WEST TEXAS EARTHQUAKES

CHAN, K. N., DORMAN, J., and LATHAM, G.V., Geophysics Laboratory, Marine Science Institute, University of Texas, 700 The Strand, Galveston, Texas 77550.

rom August to November, 1975, we monitored seismic activity near ort Davis, Texas, with a network of five seismograph stations. ood quality multi-station data were obtained from regional earth-uakes representing ray paths in two provinces, the Basin and Range rovince and the Great Plains. We analyzed arrival time data by n iterative procedure where the epicenter parameters and model arameters are adjusted alternately by minimizing the mean squared rrival time residual. We obtained epicentral locations and two two-layer crustal velocity structures in this way. Several of he epicenters may correlate with Basin and Range faulting while thers originated in the vicinity of Kermit in the Great Plains. Our structural results are obtained in terms of revisions of a model based on data from the 1961 Gnome explosion, with particular ttention to structural contrasts between these two provinces which meet in the vicinity of the network.

ETALLIZATION EPOCH IN RELATION TO CENOZOIC IGNEOUS ACTIVITY, SINALOA, MEXICO

SANTA YNEZ RANGE NEAR SANTA BARBARA, CALIFORNIA

Thomas W. Dibblee, Jr.
1403 Cuernavaca Place, Claremont, Calif.

The eastward-trending Santa Ynez Range in the vicinity of Santa Barbara and the adjacent coastal area exposes a continuously deposited sedimentary series totalling about 21,000 feet. This series consists of 3000 feet of upper Cretaceous, 10,000 feet of Eocene, 3000 feet of Oligocene, 2000 feet of lower Miocene clastic sediments (all marine except the Oligocene, which is terrestrial), and 3000 feet of middle and upper Miocene marine siliceous shales. Unconformably overlying this series on the coastal area is 0–3000 feet of Plio-Pleistocene littoral and terrestrial sediments.

The Santa Ynez Range is essentially a southward-tilted block elevated obliquely on the Santa Ynez fault at its northern base. The sedimentary series exposed in this block dip regionally south. Several northwestward-trending folds in the western part of the mountains are attributed to left-lateral drag movement on the Santa Ynez fault. In the western part of the area this fault is composed of two branches, one a southward-dipping reverse fault, the other a high-angle fault with possible left-lateral (?) displacement. Farther east it becomes a single steep fault with probable oblique-slip movement, and along a 4-mile segment Franciscan rocks have been squeezed up as a plastic mass, and the adjacent strata in this part of the range are overturned southward.

In the area north of the Santa Ynez fault the Cretaceous and Eocene formations are overlapped northward by Miocene formations, and all are strongly compressed into folds with axes trending north of west.

DEPOSITION OF MERCURIC SULFIDE AT AMEDEE HOT SPRINGS, CALIFORNIA

F. W. Dickson, G. Tunell, E. F. Lawrence, and R. Horton
University of California, Riverside, Calif.; University of California, Los Angeles, Calif.; Nevada Bureau of Mines, Reno, Nev.; Nevada Bureau of Mines, Reno, Nev.

Preliminary studies at Amedee Hot Springs, on the eastern shore of Honey Lake, California, indicate that mercuric sulfide is being precipitated from alkaline waters in and around the orifices of hot springs.

Hand specimens collected 20 feet from spring outlets show a thin layer of metacinnabar (about 1 mm) overlying a layer of cinnabar of variable thickness. Cinnabar occurs in thicker layers in specimens collected closer to the outlets; on rocks in the orifices of the hottest springs only cinnabar is present. The spring waters have the following characteristics: pH of 8.8; temperature at or slightly above the boiling point; high Na_2SO_4 (367 ppm); moderate NaCl (261 ppm); moderate SiO_2 (46 ppm); low $CO_3^{=}$ (48 ppm). The spring water possesses essentially the same composition now as in 1909. Water analyses by commercial firms revealed no mercury. Analyses designed to test for mercury have not yet been made. The presence of sulfur in the water in a form other than SO_4 ion was proved by the formation of sulfide on the surface of copper and silver strips immersed in the springs for several days.

The mercuric sulfide is being precipitated in response to changes in temperature, pressure, and compositional factors which are still under investigation.

LATE CENOZOIC VERTEBRATES FROM THE IMPERIAL VALLEY REGION, CALIFORNIA

Theodore Downs
Los Angeles County Museum, Los Angeles, Calif.

A new terrestrial vertebrate assemblage from the western Imperial Valley region was recovered from the Canebrake conglomerate (Dibblee, 1954) north of Vallecito Creek in the Anza Desert State Park, San Diego County, California.

Mammals so far recorded from the southwesterly dipping sediments bearing the fauna include Vespertilionidae; Soricidae, small and large shrew; cf. *Scapanus*; Edentata; cf. *Sylvilagus*; cf. *Geomys*, an extremely large plains-type pocket gopher; Perognathinae; Dipodomyinae; Cricitinae; *Sigmodon*

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15,000 test (n/1n-46e-1-4),
248 ac lse, N F Chambers Sur; 1455 fn'ly EL & 1350 fw'ly swl lse; 1455 fn'ly 2300 fw'ly NL Sur. Spud 1/1/80. 13 3/8 @ 3353, 9 5/8 @ 10,031, 5½ @ 13,933. 13,940 TD. Perf 11,278-11,313, 11,645-11,665, 12,799-12,811, 12,827-12,837, 12856-12,869, 13,382-13,400, 13,674-13,689. Perf 11,650-11,730. F 5000 BWPD, 28-44 CF methane/bbl. Well flowed oil. Geothermal data not valid. Comp 10/13/80. D&A. To be converted to oil well.

TX1-103180

Petroleum Information. CORPORATION

 Form No. 611

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DON ROSS; W E POPE

1 Bevly
API 42-355-06508

WILDCAT GWR

13,200. (19s-21e-3-19),
320 ac lse, El Rincon De Corpus Christi Grt; 560 fnl 1980 fwl lse & sec 10, Laureles Farm Tracts, 5940 fnl 33,660 fwl Grt. OWWO. Old info: Formerly Getty Oil 1 Bevly. OTD 13,200. 10 3/4 @ 1266, 7 5/8 @ 11,406. Comp 11/18/67. D&A. New Info: Re-entered 8/13/80. CO to 2000. Csg parted. Comp 8/17/80. J&A.

TX2-103180

Petroleum Information. CORPORATION

 Form No. 611

GRAND JUNCTION OFFICE, DOE, OPEN FILES GEOPHYSICAL

WELL LOGS OF NURE NATIONAL LOGGING PROGRAM

The Grand Junction, Colorado, Office, U.S. Department of Energy (DOE), has placed on open file 118 well logs obtained from the National Logging Program, which is part of the National Uranium Resource Evaluation (NURE). They are available for perusal only at the Technical Library, Grand Junction Office, DOE.

The logs obtained between January 1 and March 31, 1980, include the following types: Electric - SP, single point resistance, resistivity; natural gross gamma ray; neutron/neutron; gamma/gamma density; temperature; caliper; and KUT (potassium, uranium, and thorium) [Mariposa well only]. Not all log types have been run in every well.

Logs will be placed on open file periodically as they are acquired.

Objective of the National Logging Program is to acquire subsurface data by conducting downhole geophysical logging of existing and future holes drilled for purposes other than uranium exploration. NURE is a program of DOE's Grand Junction Office to acquire and compile geological and other information with which to assess the magnitude and distribution of uranium resources and to determine areas favorable for the occurrence of uranium in the United States.

Logs from the current open filing (see attached lists) are from south Texas, Wyoming, Denver-Julesburg Basin, Williston Basin, eastern Nevada, and the San Joaquin Valley. The logs may be purchased from:

PETROLEUM INFORMATION
P. O. Box 2612
Denver, CO 80201
Tel: 303/825-2181

PETROLEUM INFORMATION
P. O. Box 3150
Midland, TX 79701
Tel: 915/682-0591

GULF COAST WELL LOG SERVICE
4150 Westheimer
Houston, TX 77027
Tel: 713/871-1974

Resistance RS, Resistivity-R, Gamma Ray-GR, Neutron N, Density Den, Temperature-T, Caliper-Cal, Spectral Gamma - KUT, Self Potential-SP

AUSTIN QUAD

PI REF. #	WELL NAME	COMPANY/OPERATOR NAME	TYPES OF LOGS RUN	COUNTY	LOCATION LATITUDE/LONGITUDE T R SEC	TOTAL DEPTH LOGGED (FT)
G7199A	#2 Tillie Juergen				...0 03.75'	5000
G7199D	2 H.J. Mosser				...56'/97°57.50'	5334
G7199C	#2 Smith				...1'/98° 23.20'	5010
G7199E	#1 Patillo Higgins Jr				...16.70'/98°02'	2660
G7199B	#3 Robin B. Unit				...5.25'/97°07.85'	5000

Texas

TEXAS
FALLS
T-H-S MEMORIAL
HOSPITAL

1 T-H-S Memorial Hospital
API 42-145-30297

WILDCAT

GWD

3400 test (n/11n-25e-4-24) 4.16 ac lse, T J Chamers
Sur 12; 20 fsl & 140 fel of lse; 5310 fnel & 12,020 fsel of sur;
Contr: Lane Texas. Spud 4-13-79. 8 5/8 @ 3420; 5½ (slotted liner) @ 3615-3885;
Log Top: Trinity 3420. DST @ 3604, rec wtr (138°F).
3885 TD. Comp 8/15/79. IPP 307 GWPM. Prod Zone: Trinity 3615-3885. Max temp 153°F.

TX1-022980

Petroleum Information.
CORPORATION

 Form No. 611

TEXAS
NAVARRO
NAVARRO COLLEGE | 1 Navarro College | WILDCAT
ENERGY DEVELOPMENT | API 42-349-30775 | GWD

3000 test (n/17n-28e-2-12) 127.12 ac lse, A Hicks
Sur 335; 600 FNEL & 1430 FSL of lse; 887 fnel & 660 fnwl of sur;
Elev: 437 GRD. Contr: Stoner.
Spud 8/30/78; 10 3/4 @ 238 w/135, 7 @ 2628 w/725. 2628 TD (Woodbine). Perf Woodbine 2454-2560. Comp 8-20-79. Hydrothermal water source well. IP not available.

TX2-022980

Petroleum Information.
CORPORATION

TO ACCOMPANY MAP—DALLAS SHEET—
GEOLOGIC ATLAS OF TEXAS

THE UNIVERSITY OF TEXAS AT AUSTIN
BUREAU OF ECONOMIC GEOLOGY

GEOLOGIC ATLAS OF TEXAS, DALLAS SHEET

GAYLE SCOTT MEMORIAL EDITION

VIRGIL E. BARNES, Project Director

1972

Upper Cretaceous

CRETACEOUS

Kkc

Kemp Clay and Corsicana Marl undivided

Mostly clay, calcareous, locally silty, compact, thinly laminated, subconchoidal fracture, medium dark gray; weathers light gray and fissile; some interbeds of fine-grained sandstone near base; marine megafossils; thickness 300–400 feet

Kn

Nacatoch Sand

Quartz sand, fine-grained, poorly sorted, friable, silty, glauconitic, local lenses of silty clay, compact, light gray to greenish gray; thin calcareous sandstone beds in upper and lower parts; marine megafossils; thickness 250± feet

Knm	Kne
	Kmb

Neylandville Formation and Marlbrook Marl

Neylandville Formation and Marlbrook Marl undivided, Knm, *south of Rockwall County; where subdivided includes from top down* Neylandville Formation, Kne, *and* Marlbrook Marl, Kmb

Neylandville Formation, Kne, *clay, calcareous, silty, sandy, sand content increases upward, medium gray; weathers light gray, forms irregular topography; thickness 125± feet.*

Marlbrook Marl ("upper Taylor marl"), Kmb, *clay, calcareous, variable amount of silt and glauconite, silt content increases upward, disseminated pyrite, locally phosphate nodules and phosphatized marine megafossils, blocky, conchoidal fracture, light to dark gray; weathers light gray with poor fissility; marine megafossils; thickness 350± feet*

Kpg

Pecan Gap Chalk (?)

Marl and clay, very sandy and silty, medium gray; thickness up to 40 feet, feathers out southward northeast of Rockwall

Kwc

Wolfe City Formation

Marl, sand, sandstone, and mudstone. In Navarro County, marl, sandy and silty, interbedded with thin sandstone beds and massive sandstone; medium gray. Grades northward into an upper fine-grained sand and silt unit, calcareous, medium yellowish gray; and a lower mudstone unit, calcareous, dark gray, weathers medium gray. Marine megafossils. Thickness 75–300 feet, thins northward

EXPLANATION

QUATERNARY

Recent

Qal

Alluvium

Flood-plain deposits including indistinct low terrace deposits; gravel, sand, silt, silty clay, and organic matter

Pleistocene

Qt

Fluviatile terrace deposits

Gravel, sand, silt, and clay; contiguous terraces of different ages separated by solid line

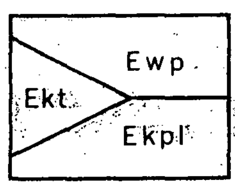
TERTIARY

Eocene

Ewi

Wilcox Group undivided

Mostly mudstone with various amounts of sandstone, lignite, ironstone concretions, locally glauconitic in uppermost and lowermost parts. Mudstone, massive to thin bedded, interbedded with laminae of silt and very fine sand, pale brown to yellowish brown in upper part, medium to dark gray in lower part, weathers yellowish brown. Sandstone, medium to fine grained, moderately well sorted, cross-bedded, lenticular in upper part, units a few inches to 30 feet thick in lower part, light gray to pale yellowish brown and yellowish brown to moderate brown. Lignite mostly near middle of formation, seams 1 to 20 feet thick, brownish black. Abundant plant fossils, a few marine megafossils. Thickness 1,000 to 1,500 feet



Midway Group

Includes Wills Point Formation, Ewp, *Tehuacana Member of Kincaid Formation,* Ekt, *and Pisgah and Littig Members of Kincaid Formation undivided,* Ekpl

Wills Point Formation, Ewp, *clay, silty, sandy, silt and sand more abundant upward, slightly glauconitic near base, 10-inch rosette limestone bed below middle, massive, poorly bedded, grades upward to mudstone and sand of Wilcox Group, light gray to dark gray; weathers medium gray to yellowish gray, topographically featureless; thickness 550± feet*

Tehuacana Member of Kincaid Formation, Ekt, *limestone, silty, slightly glauconitic, hard, white to light gray, interbedded with light gray marl, thickness up to 30 feet, outcrop discontinuous, absent south of Trinity River*

Pisgah and Littig Members of Kincaid Formation undivided, Ekpl, *sand and clay. Sand, glauconitic, argillaceous, poorly sorted, medium gray to greenish gray, some hard sandstone beds near top; clay, sandy, silty, phosphatic pebbles and nodules present in lower part, medium gray to dark gray; weathers to yellow and yellowish brown soil. Thickness 150± feet*

CRETACEOUS

Upper Cretaceous

Ko

Ozan Formation ("lower Taylor marl")

Clay, calcareous, silt and sand content increases upward, montmorillonitic, blocky, conchoidal fracture, medium gray; some glauconite, phosphate pellets, hematite nodules, and pyrite nodules; some very thin limestone lenses locally in lower part; weathers light brownish gray with poor fissility, grades upward to Wolfe City Formation; marine megafossils; thickness 500± feet

Kau

Austin Chalk

Upper and lower parts, chalk, mostly microgranular calcite, massive, some interbeds and partings of calcareous clay, thin bentonitic beds locally in lower part, lower part forms westward-facing scarp; light gray. Middle part, mostly thin-bedded marl with interbeds of massive chalk, locally burrowed, marcasite-pyrite nodules common, light gray. Weathers white, marine megafossils scarce, thickness 300–500 feet, thins southward

Kef

Eagle Ford Group undivided

North of Hill County, shale, sandstone, and limestone; shale, bituminous, selenitic, with calcareous concretions and large septaria; sandstone and sandy limestone in upper and middle parts, platy, burrowed, medium to dark gray; in lower part bentonitic; hard limestone bed marks base in Ellis and Johnson counties; locally forms low cuesta; thickness 200–300 feet

Kwb

Woodbine Formation

Sandstone, some clay and shale. Upper part, mostly sandstone, fine grained, well sorted, in part tuffaceous, ripple marked, large scale cross-bedding, reddish brown; near top some sandstone with large discoid concretions, medium to coarse grained, friable; some shale, jarositic, gray, fissile; some marine megafossils, oyster reefs locally. Middle part, mostly sandstone, fine grained, cross-bedded; some interbeds of clay, carbonaceous, in part sandy, gray to brown. Lower part, interbedded sandstone and clay; sandstone, fine grained, very thinly bedded to massive, some beds of ironstone and ironstone conglomerate, white, red, brown; clay, sandy, gray to brown; channeled locally. Thickness 175–250 feet, thickens northward

Lower Cretaceous

Kgy

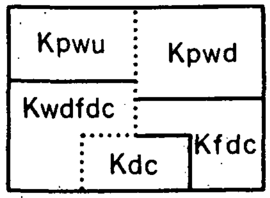
Grayson Marl and Main Street Limestone undivided

Mostly Grayson Marl, *mostly calcareous clay and marl, blocky, yellowish gray and medium gray; some 0.25–1.0-foot limestone beds in upper one-third, very fine grained, fossiliferous; weathers yellowish brown, forms gentle slope; thickness 60–100 feet, thins northward*

Main Street Limestone, *medium grained, chalky, some 6–8-foot units of calcareous shale, thin bedded to massive, distinctly bedded to wavy bedded and nodular, yellowish gray; weathers light gray to white; thickness 20–35 feet, thins northward*

Lower Cretaceous

CRETACEOUS



Pawpaw Formation, Weno Limestone, Denton Clay, Fort Worth Limestone, and Duck Creek Formation

Pawpaw Formation and upper limestone unit of Weno Limestone undivided, Kpwu, *south of Fort Worth area*; Pawpaw Formation, Weno Limestone, and Denton Clay undivided, Kpwd, *in Fort Worth area and northward*; middle shale and lower limestone units of Weno Limestone, Denton Clay, Fort Worth Limestone, and Duck Creek Formation undivided, Kwdfdc, *south of Fort Worth area*; Fort Worth Limestone and Duck Creek Formation undivided, Kfdc, *in Fort Worth area and northward; and* Duck Creek Formation, Kdc, *mapped separately in Parker County and western Tarrant County*

Pawpaw Formation, *claystone, mudstone, and sandstone. Claystone and mudstone, massive, slightly selenitic. Sandstone, fine to very fine grained, platy, ripple cross-laminations, light olive gray to medium gray. Forms grass-covered slopes. Marine megafossils. Thickness 10–25 feet, thins southward*

Weno Limestone, *consists of upper limestone, middle alternating clay and limestone, and lower limestone units. Upper limestone, aphanitic, in part bioclastic, soft and chalky to hard and compact, massive, light gray and yellowish gray; weathers gray and yellowish brown, forms a topographic bench; marine megafossils; thickness 2–20 feet, thins northward. Middle unit: In Tarrant County—mostly calcareous clay, massive, some lenses of sand-size shell debris, olive brown to olive gray; marine megafossils are oysters and molds of small pelecypods. In southwestern Johnson County—alternating limestone and clay; limestone, aphanitic, bioclastic, in part burrowed, some sparry bioclastic limestone, beds pinch and swell, 0.1–1.0 foot thick, medium gray, weathers yellowish brown; clay, calcareous, medium to dark gray, weathers yellowish gray and yellowish brown, fossils include pelecypods, ammonites, echinoids, vertebrate bones, and lignitized wood; thickness 15–45 feet, thins southward. Lower limestone, aphanitic, in part sandy, fossiliferous, burrowed to south, massive, progressively more resistant southward, forming scarp, light gray, medium gray where sandy, weathers yellowish brown, thickness 1–5 feet, thins northward. Thickness from about 60 feet in Tarrant County to about 25 feet in northern Hill County*

Denton Clay, *alternating clay, marl, and limestone, total limestone in unit remains about constant as amount of clay and marl varies. Clay, calcareous, considerable shell debris, locally burrowed, a few irregular calcareous concretions, units 1–3 feet thick, marine megafossils are* Anomia, Gryphaea, *and pelecypod molds. Marl, ranges from calcareous clay to aphanitic argillaceous limestone, soft, yellowish brown, weathers dusky brown. Limestone aphanitic,* Gryphaea-*bearing beds 0.1–0.6 foot thick, locally pinch and swell, dark gray, weathers dusky brown; marine megafossils are* Gryphaea, Pecten, *and* Anomia. *Thickness 6–25 feet, thins southward*

Fort Worth Limestone, *limestone and clay. Limestone, aphanitic to biosparite, burrowed, beds 0.2–2 feet becoming thicker and more massive southward, light to medium gray; weathers yellowish brown; marine megafossils are* Pecten, *oysters, echinoids, and ammonites. Clay, calcareous, in units 0.1–5 feet thick, medium gray to yellowish brown; weathers yellowish brown, forms low rolling hills. Thickness 25–35 feet*

Duck Creek Formation, Kdc, *limestone, aphanitic, in part bioclastic, locally burrowed, pyrite nodules up to 0.2 foot, beds 0.2–2 feet thick, pinch and swell, medium gray to yellowish gray; weathers dark gray with yellowish-brown patches, locally forms topographic benches; marine megafossils are* Gryphaea *and ammonites; thickness 30–100 feet, thins southward*

Kiamichi Formation

Clay and limestone in alternating units 0.1–5 feet thick; some sandstone. Clay, calcareous, olive brown, weathers yellowish brown, constitutes about two-thirds of formation. Limestone mostly aphanitic and bioclastic, locally burrowed, medium gray to yellowish gray; weathers yellowish brown. Sandstone, fine grained, moderately well sorted, calcareous, burrowed, beds 0.1–0.2 foot thick, medium gray; weathers yellowish brown. Marine megafossils are Gryphaea; *some* Pecten *in sandstone. Thickness 20–50 feet, thins southward*

CRETACEOUS

Lower Cretaceous

Ked | Kc | Kgl

Edwards Limestone, Comanche Peak Limestone, and Goodland Limestone

Edwards Limestone, Ked, *in thicker sections consists of an upper scarp-forming rudistid facies, a middle aphanitic to biosparite fossiliferous limestone, and a lower bioclast-packed aphanitic to sparry limestone with individual corals, light gray to yellowish gray; weathers various shades of gray with moderate brown patches; thickness up to 40 feet, gradually merges with Comanche Peak Limestone or Goodland Limestone in the vicinity of the northern Hood County line*

Comanche Peak Limestone, Kc, *limestone and some clay. Limestone mostly aphanitic, bioclastic to fossiliferous, soft, a few harder* Gryphaea-*bearing beds about 25 feet above base form benches, light to medium gray; weathers various shades of gray, locally mottled yellowish brown; marine megafossils are gastropods, ammonites, echinoids,* Pecten, Lima, Gryphaea, *and* Exogyra texana. *Clay, calcareous, intergradational with nodular limestone, beds 1–5 feet thick, medium to dark gray, weathers yellowish brown, fossiliferous. Thickness 90± feet*

Goodland Limestone, Kgl, *intergradational laterally with Comanche Peak Limestone and differs from it chiefly in that the Goodland is more coarsely nodular, contains fewer and thinner clay beds, and massive resistant limestone beds are more numerous; upper 5 feet, massive, bioclast-packed aphanitic limestone and limestone composed of oolites in sparry calcite; thickness 90± feet*

Kwa

Walnut Clay

Clay and limestone about equally abundant. Limestone, aphanitic; in part bioclastic, Gryphaea-*bearing, beds 0.1–1 foot thick; in part nodular, grades laterally into either resistant, bench-forming,* Gryphaea-*bearing limestone or calcareous clay; medium to dark gray, weathers yellowish brown. Clay, fossiliferous, calcareous, olive brown, weathers yellowish brown. Thickness 30± feet*

Kpa

Paluxy Formation

Sandstone, mudstone, and limestone. Sandstone, fine to very fine grained, friable to calcite cemented, cross-beds common, in part massive, locally burrowed, light gray to greenish gray; weathers yellowish brown to dusky brown. Mudstone, sandy, massive, locally burrowed, greenish gray, olive green, and medium gray; weathers yellowish brown and red brown. Limestone locally in upper 40–50 feet, sandy, fossiliferous, beds 0.5–2 feet thick, yellowish gray; weathers mottled dark gray and yellowish brown. Thickness 95–105 feet

Kgr

Glen Rose Formation

Limestone, alternating with units composed of variable amounts of clay, marl, and sand. Limestone, distinctly bedded, in part with variable amounts of clay, silt, and sand, soft to hard, various shades of brownish yellow and gray. Gradational to Paluxy Formation above and Twin Mountains Formation below, bench-forming beds included in the Glen Rose Formation. Thickness 40–200 feet, thins northward

CRETACEOUS

Lower Cretaceous

Ktm

Twin Mountains Formation

Upper part claystone, middle part sandstone above claystone, lower part mostly sandstone, some claystone and conglomerate. Sandstone, fine to medium grained in middle part, medium to coarse grained in lower part, sorting best in middle part, friable, locally large scale cross-bedding, mostly light gray, some light brown near middle. Claystone, silty, mostly gray, locally in upper part green, yellow, red. Conglomerate, pebbles of chert and quartz, argillaceous, sandy, gray, brown. Thickness about 150 feet

PENNSYLVANIAN

Missouri Series

?

Des Moines Series

Strawn Group

ss2
ℙmw
ℙlp
ℙvb
ℙmw
ss1
ℙhm

Mineral Wells Formation

Mineral Wells Formation, ℙmw, *shale, sandstone, conglomerate, and limestone;* sandstone, ss2, Lake Pinto Sandstone, ℙlp, Village Bend Limestone, ℙvb, sandstone, ss1, *and* Hog Mountain Sandstone, ℙhm, *mapped separately. Shale, calcareous, locally contains sandstone and a few thin limestone beds, gray to black, a few plant fossils*

Sandstone, ss2, *fine to coarse grained, thin bedded to massive, brown, thickness 10 feet, feathers out southwestward on Abilene Sheet*

Lake Pinto Sandstone, ℙlp, *medium to fine grained, locally conglomeratic, thick bedded, brown, thickness 20–40 feet*

Village Bend Limestone, ℙvb, *fine grained, locally sandy, thick bedded, yellow gray, weathers to small blocks, marine megafossils, forms laterally discontinuous lentils; thickness up to 3 feet*

Sandstone, ss1, *locally conglomeratic, thickness about 30–40 feet, feathers out southwestward near Mineral Wells on Abilene Sheet*

Hog Mountain Sandstone, ℙhm, *fine to medium grained, thick bedded to flaggy, brown, thickness about 25 feet. Thickness of exposed part of Mineral Wells Formation 400–500 feet, overlapping Cretaceous rocks cover upper third and other portions of formation including Turkey Creek Sandstone and Dog Bend Limestone which are exposed on the Abilene Sheet immediately to the west*

ℙbr

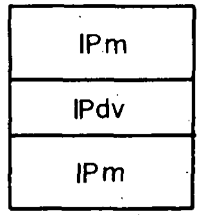
Brazos River Formation

Sandstone, conglomerate, and mudstone; sandstone, coarse grained, ferruginous, cross-bedded, thick bedded to massive, reddish brown; mudstone, silty, gray, local lenses; conglomerate, angular pebbles of chert up to 1.5 inches in size, some clay ironstone, variegated, ferruginous cement common; thickness 100 feet

Des Moines Series

Strawn Group

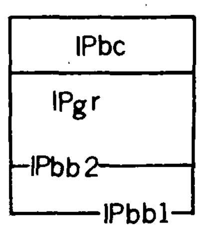
PENNSYLVANIAN



Mingus Formation

Mingus Formation, ℙm, *shale and sandstone;* Dobbs Valley Sandstone, ℙdv, *mapped separately. Shale, sandy, poorly bedded, gray to buff*

Dobbs Valley Sandstone, ℙdv, *medium grained, locally calcareous, commonly massive, reddish-brown, some interbedded sandy shale, thickness about 45 feet. Thickness of exposed part of* Mingus Formation *about 200 feet; overlapping Cretaceous rocks cover lower part of formation including Santo Limestone; the Goen Limestone feathers out above the Dobbs Valley Sandstone a few miles to the west before reaching the Dallas Sheet*

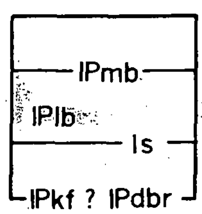


Grindstone Creek Formation

Grindstone Creek Formation, ℙgr, *shale, sandstone, and limestone;* Buck Creek Sandstone, ℙbc, *and* Brannon Bridge Limestones, ℙbb2 *and* ℙbbl, *mapped separately. Shale, in part sandy, locally contains thin coal beds and sandstone lentils, gray*

Buck Creek Sandstone, ℙbc, *coarse grained, massive, reddish brown, forms prominent scarp, thickness about 30 feet*

Brannon Bridge Limestones, ℙbb2 *and* ℙbb1, *fine grained, some interbedded shale, dark chert lenses in ℙbb2, bedding uneven, indistinct to medium, gray, units up to about 15 feet thick, form distinct scarps and broad dip slopes; about 10 feet of shale separates the two limestone units. Thickness of exposed part of* Grindstone Creek Formation *about 225 feet; overlapping Cretaceous rocks cover upper part of formation; a third and higher Brannon Bridge Limestone feathers out a few miles to the west within the Abilene Sheet*



Lazy Bend Formation

Lazy Bend Formation, ℙlb, *shale, sandstone, and limestone;* Meek Bend Limestone, ℙmb, unnamed limestone, ls, Dennis Bridge Limestone, ℙdbr, *and* Kickapoo Falls Limestone, ℙkf, *mapped separately. Shale, in part sandy, in part silty, local coal beds, and unmapped limestone lentils*

Meek Bend Limestone, ℙmb, *fine grained, bedding thin flaggy to massive, gray, marine megafossils; thickness about 12 feet, exposed only in small creek west of Brazos River, well exposed on Abilene Sheet to the west*

Limestone, ls, *fine grained, locally grades into sandstone, medium to thin bedded, gray to brown, marine megafossils; thickness up to 6 feet, outcrop discontinuous and poorly exposed*

Dennis Bridge Limestone, ℙdbr, *fine grained, massive at base to thin bedded at top, gray to light brown, marine megafossils; thickness 10 feet, exposed at south end of Dennis Bridge over Brazos River and vicinity, approximately equivalent to Kickapoo Falls Limestone*

Kickapoo Falls Limestone, ℙkf, *fine grained, thick to medium bedded, upper part nodular, light gray, mottled dark gray, marine megafossils and algae; thickness up to 12 feet, approximately equivalent to Dennis Bridge Limestone, outcrop confined to Kickapoo Creek inlier. Thickness of* Lazy Bend Formation *275 feet*

Des Moines Series

Strawn Group

IPu

Unnamed Pennsylvanian rocks

Shale, limestone, and sandstone. Shale, locally sandy and silty, some thin sandstone beds and impure limestone lentils, gray to deep dull red; thickness exposed beneath Cretaceous overlap about 75 feet, comprises rocks cropping out beneath Dennis Bridge and Kickapoo Falls Limestones, best exposed along Kickapoo Creek, downstream from Kickapoo Falls crossing

PENNSYLVANIAN

Geologic mapping by Shell Oil Company, Humble Oil & Refining Company, Dallas Geological Society, Fort Worth Geological Society, Shell Development Company, J. H. McGowen, C. V. Proctor, Jr., W. T. Haenggi, D. F. Reaser, and sources shown on the Index of Geologic Mapping. Paleozoic mapping by L. F. Brown, Jr., and J. L. Goodson. J. H. McGowen, C. V. Proctor, Jr., W. T. Haenggi, and D. F. Reaser compiled the geologic mapping on high altitude aerial photographs, compiled unmapped areas photogeologically, and field checked all mapping. V. E. Barnes remapped, but did not field check, Quaternary deposits of Dallas and Tarrant counties using U.S. Geological Survey 7.5-minute quadrangles. Geologic mapping reviewed by Geologic Atlas Project Committees of the Dallas Geological Society, R. J. Cordell (Sun Oil Company), Chairman, E. G. Wermund (Mobil Research and Development Corporation), and R. L. Laury (Southern Methodist University); and the Fort Worth Geological Society, W. J. Nolte (Independent Geologist), Chairman, Leo Hendricks (Texas Christian University), and Edward Heuer. Geology scribed by J. W. Macon and Barbara Hartmann.

INDEX OF GEOLOGIC MAPPING

Numbers in outlined areas refer to items in bibliography in "Index to Areal Geologic Maps in Texas, 1891-1961," by T. E. Brown (1963), Bureau of Economic Geology, The University of Texas at Austin. For area A, see O. D. Weaver, J. A. Rogers, W. F. Buckthal, A. E. Kurie, E. R. Leggat, Dan McGill, and Ray Rall, Geologic map of central Tarrant County, Fort Worth Geological Society; for area B, see C. F. Dodge, Geologic map of the eastern half of Tarrant County, Texas (manuscript map, 1966); for area C, see G. H. Norton (1965), Geologic map of Dallas County, Dallas Geological Society.