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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

GENERALIZED STRATIGRAPHIC SECTION FOR THE
TATUM DOME AREA, LAMAR COUNTY, MISSISSIPPI

By

D. Hoyer Eargle

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Federal Center, Denver 25, Colorado

Technical Letter
Dribble-4
August 1, 1961

Mr. W. W. Allaire
Office of Test Operations
Albuquerque Operations Office
U. S. Atomic Energy Commission
P. O. Box 5400
Albuquerque, New Mexico

Dear Mr. Allaire:

Transmitted are two copies of

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GENERALIZED STRATIGRAPHIC SECTION FOR THE
TATUM DOME AREA, LAMAR COUNTY, MISSISSIPPI

By

D. Hoye Eargle

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Sincerely yours,

for *P. A. Black*

W. S. Twenhofel

Program Leader

Special Projects Branch

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Federal Center, Denver 25, Colorado

GENERALIZED STRATIGRAPHIC SECTION FOR THE
TATUM DOME AREA, LAMAR COUNTY, MISSISSIPPI

By

D. Hoye Eargle

The Tatum salt dome, Lamar County, Mississippi, is the proposed site for a series of experiments, code name Dribble, in the Vela Uniform program for improving the detection of underground explosions. To assist organizations concerned with project Dribble in planning for the proposed experiments, a generalized stratigraphic section (table 1) has been prepared.

The surficial material in the Tatum dome area is chiefly the Citronelle formation, of questionable Pliocene age. The Citronelle formation consists of gravel and sand in its lower part and of red to orange and yellow silty clay and sand, that may be in part of brackish-water origin, in its upper part. The Citronelle is believed by many geologists to be of Pleistocene age, and is correlated with a high-level terrace deposit that in Louisiana is called the Williana formation. It is presumed to be a maximum of 150 feet thick in the area. The gravel is composed chiefly of rounded chert pebbles about one-half to one inch in diameter.

The lower parts of the stream valleys are in the Hattiesburg and Pascagoula formation which are composed on their outcrop of stiff, grayish-green, silty clay. These formations, of Miocene age, have not been satisfactorily divided on the surface throughout Mississippi, and for purposes of this report are considered as a single unit. The outcrop of the unit is covered generally with alluvium in the stream valleys and is masked by sandy colluvium of the Citronelle formation.

Topographically the dome appears to have no surface expression. The outcropping Miocene beds are believed to be slightly arched over the dome, but not enough study of their outcrops has been made to date to determine the structural and lithologic effects of the doming on the beds. The overlying Citronelle formation apparently also has been slightly affected by the doming; the formation appears to contain much more gravel in areas surrounding the dome than it does over the dome. All the surficial formations appear to be thinner over the crest of the dome than in the surrounding areas.

Geological Survey							August 1, 1961
Era	System	Series	Group	Formation	Approximate thickness in feet	Lithologic character	
SECTION OVER THE DOME							
Cenozoic	Quaternary	Pleistocene to Recent		Stream alluvium	20	Silt, sand, gravel.	
				Stream terrace	30	Do.	
				High terrace (previously mapped as Citronelle Formation)	150	Gray to mottled red and orange silty clay, sand, and gravel.	
	Tertiary	Miocene + Oligocene		Pascagoula and Hattiesburg Clays, undifferentiated	550-750	Greenish-gray silty clay, sand, and gravelly sand.	
			Catahoula Sandstone and Chickasawhay Limestone.	100-200	Gray to olive sand, silt, silty clay, fossiliferous, silty clay and marl locally.		
Age unknown		Caprock		Limestone	70-130	Hard, cavernous limestone and limestone breccia.	
				Gypsum	few inches to 80	Soft, white to gray gypsum.	
				Anhydrite	60-480	Gray, hard, crystalline anhydrite.	
				Salt	20,000+	Clear to gray, coarsely crystalline halite with anhydrite as impurity.	
SECTION AROUND THE DOME							
Cenozoic	Quaternary	Pleistocene to Recent		Stream alluvium	30	Silt, sand, gravel.	
				Stream terrace	30	Do.	
				High terrace (previously mapped as Citronelle Formation)	150	Gray to mottled, red + orange silty clay, sand, gravel.	
	Tertiary	Miocene		Pascagoula and Hattiesburg, undifferentiated.	1,000-1,100	Greenish-gray silty clay, sand, and gravelly sand.	
				Catahoula Sandstone, including "Heterostegina limestone."	about 250	Gray to olive sand, silt, and silty clay; soft to firm limestone.	
		Oligocene		Chickasawhay Limestone	200-250	Gray to white, sandy limestone and fossiliferous limestone and clay.	
			Vicksburg	Bucaturra Clay Member of Byram Formation at top.	30-40	Calcareous clay.	
				Glendon Limestone Member of Byram Formation and Marianna Limestone, undifferentiated, below.	190-200	Sandy, white to gray limestone.	
					Red Bluff Clay	about 30	Gray, fine sand + clay, interbedded, and soft, fossiliferous limestone.
		Eocene	Jackson	Yazoo Clay	190-200	Olive to gray calcareous clay.	
				Moodys Branch	40-55	White, sandy limestone.	
			Claiborne	Cockfield	70-100	Lignitic clay and fine sand.	
				Cook Mountain "Camerina limestone"	160-200	Hard to soft, white calcarenite (lime sand) + glauconitic, bentonitic clay.	
				Cane River, Sparta Sand, Zilpha Clay, Winona Sand at base, undifferentiated.	390-480	Gray shale and thin sandstones, interbedded; one or more thicker sands.	
				Tallahatta	105-140	Hard, gray siltstone.	
			Wilcox	undivided, except for Salt Mountain Limestone near base.	2,450-2,930	Gray fine-grained sandstone + green to gray shale, interbedded. Chalky white, fossiliferous limestone.	
		Paleocene	Midway	Porters Creek Clay	610-770	Gray shale.	
				Clayton	25	Limestone.	
Mesozoic	Cretaceous	Upper Cretaceous (Gulf)	Selma	(undivided)	1,000	White chalk to gray marl.	
			Eutaw		200	Gray shale, glauconitic sand.	
			Tuscaloosa	Gordo (Upper Tuscaloosa of oil geologists)	580	Sandstone and gray shale.	
				Coker (includes Marine Tuscaloosa and Lower Tuscaloosa of oil geologists, with Massive Sand at base.)	990	Shale and some sandstone, mostly marine. Mostly sand, few shale lenses.	
		Lower Cretaceous (Comanche)	Rocks of Washita + Fredericksburg age, undifferentiated	"Dantzler formation" included at top.	2,200	Red to gray mottled shale, buff, red + green sandstone + siltstone; includes oolitic limestone.	
				Paluxy	1,100	Sandstone and shale; buff, pink, white, micaceous.	
			Trinity	Mooringsport	500	Limestone, sandstone, shale.	
				Ferry Lake Anhydrite	160		
				Rodessa (includes James Limestone at base)	750	Limestone, shale, sandstone, anhydrite. (Hard, calcareous sandstone, gray to red, limey, micaceous shale, oolitic to finely crystalline limestone.)	
					Pine Island Shale		
		(Coahuila of Mexico equiv.)	Nuevo León + Durango of Mexico	Sligo equivalent	1,200-1,600	Sandstone, shale, mudstone, reddish to greenish gray.	
				Hosston			
	Jurassic	Upper Jurassic	Cotton Valley	Schuler and Bossier, undifferentiated	6,000+	Sandstone, shale, mudstone, red to purple, and green.	
			"Louark"	Haynesville	2,000+	Sandstone, shale, limestone, and anhydrite. Salt in Buckner Formation.	
				Buckner			
				Smackover			
		"Norphlet"		"Norphlet formation" is sand + shale in Mississippi + Alabama.			
	?		Rocks of Pre-Upper Jurassic age.	"Louann"	2,000+	White, coarsely crystalline halite.	
Paleozoic?	Permian?		Eagle Mills	5,000+	Red beds.		
Paleozoic and older				unknown	unknown		

Table 1. Generalized stratigraphic section for the Tatum Dome area, Lamar County, Mississippi