

**EXPLANATION**

**SEDIMENTARY ROCKS**

**QUATERNARY ROCKS AND SEDIMENTS**  
 Q, Quaternary rocks, undivided  
 Qats, Quaternary alluvium, terrace deposits, and dune sand  
 Qp, Pleistocene glacial drift  
 Qs, Seymour Formation

**QUATERNARY AND TERTIARY ROCKS UNDIVIDED**  
 Gravel, sand, and clay

**TERTIARY ROCKS**  
 T, Undivided  
 To, Ogallala Formation

**CRETACEOUS ROCKS**  
 K, Undivided  
 Kb, Bixbee Group  
 Kc, Rocks of Comanche age  
 Kd, Dakota Sandstone  
 Ke, Glance Conglomerate  
 Kf, Kiowa Shale  
 Kg, Lower Cretaceous rocks  
 Kh, Sarsen Sandstone  
 Ki, Upper Cretaceous rocks

**ROCKS OF JURASSIC INTERVAL D**  
 Jd, Cotton Valley Group  
 Jm, Morrison Formation  
 Jma, Malone Formation

**ROCKS OF JURASSIC INTERVAL C**  
 Jc, Haynesville Formation  
 Jn, Norphlet Formation  
 Jra, Balcones Creek Formation  
 Jsm, Smackover Formation  
 Jsu, Sundance Formation (upper part)  
 Jsw, Swift Formation

**ROCKS OF JURASSIC INTERVAL B**  
 Jb, Entrada Sandstone  
 Jsa, Sawtooth Formation  
 Jsd, Sny Leche Formation  
 Jsl, Sundance Formation (lower part)

**ROCKS OF TRIASSIC INTERVAL C**  
 Tc, Undivided  
 Tch, Chinle Formation  
 Tcd, Dockum Group  
 Tdo, Dolores Formation

**ROCKS OF TRIASSIC INTERVAL A**  
 Ta, Undivided  
 Tcg, Chugwater Formation (part)  
 Tdi, Dinwoody Formation  
 Tge, Goose Egg Formation (upper part)  
 Tli, Lykins Formation (upper part)  
 Tm, Moenkopi Formation  
 Tn, Spearfish Formation (upper part)  
 Tw, Woodside Formation

**IGNEOUS ROCKS**  
 Iv, Tertiary volcanic rocks

**TRIASSIC ROCKS, UNDIVIDED**

**JURASSIC ROCKS**  
 Jw, Werner Formation

**Other symbols:**  
 ▲, Outcrop or well where Permian rocks are present  
 △, Outcrop or well where Permian rocks are absent  
 ◆, Composite section constructed from two or more outcrop or well sections  
 ◇, Generalized section constructed from scattered incomplete sections in the surrounding area  
 ---, Boundary line of Permian System  
 - - - - -, Dashed where control is poor; queried where doubtful  
 ---, Contact between stratigraphic units  
 - - - - -, Dashed where control is poor  
 ---, Thrust fault  
 ---, Sawtooth on upper plate

**Area in vicinity of Permian rocks where older rocks are exposed**  
 Not used in West Coast Region

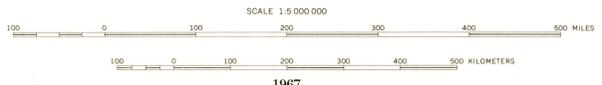
**Area in vicinity of Permian rocks where younger rocks present have not been penetrated by drill**  
 Not used in West Coast Region

**Area where Permian rocks are exposed**  
 Not used in West Coast Region

**NOTE**  
 All stratigraphic names except those that are italicized are in current usage by the U.S. Geological Survey



GEOLOGIC MAP OF UNITS DIRECTLY ABOVE PERMIAN SYSTEM



1967

United States Paleotectonic Permian v.s. 1967

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