

Appendices

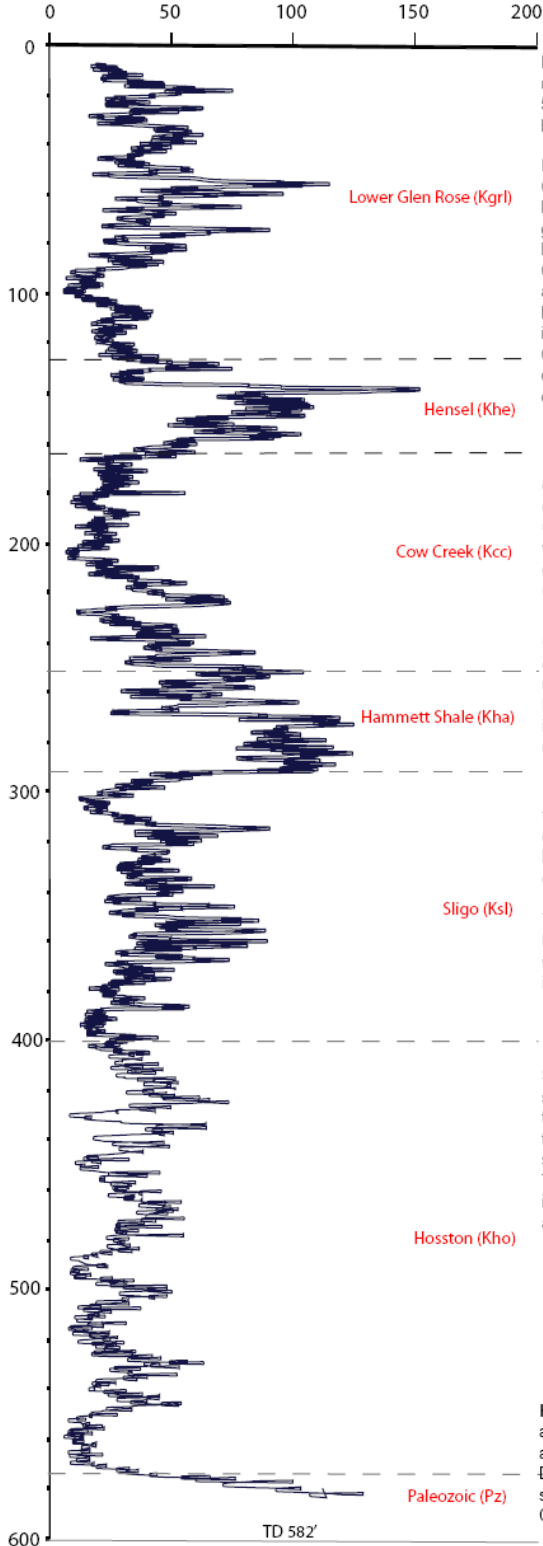
Appendix 1

Type Geophysical Logs

Willis Well No. 1
 37 Timberline Road, Hays County, Texas, N 30 03' 16.7", W 98 10' 39.8", Elevation 1087'

The Willis Well is located on a bluff overlooking Dry Cypress Creek. It is an excellent type well for the basin as it spudded in the Lower Glen Rose and bottomed in the Paleozoic.

Natural Gamma (API Cs) and Interpreted Stratigraphy



Exposed at the surface is a monoplurid-skeletal biostrome located near the base of the upper "reef/mound". The "flood" zone is represented by the sharp, shale spikes at 50'-55'. The basal "mound/reef" lithofacies unit is equivalent to the "Narrows" biostrome.

Lower Glen Rose – Hensel contact: 124' (963' amsl). The basal, Lower Glen Rose section is transitional with the underlying Hensel and it is not always a clear log pick. Cuttings samples at the contact are helpful and often contain a flood of glauconite, scattered quartz grains and some pebble fragments. On the geophysical log, the contact is sharp at the Willis well, occurring at 124', with an abrupt increase in CPS. This change is interpreted as Hensel shale. The Hensel is 37' thick in this well and consists of shale, silty dolomite and siltstone. An outcrop above the bank of the Blanco River in Hays County is orange-brown, finely laminated siltstone. The Hensel is predominantly arkosic, coarse clastic and red mudstone to the west in Blanco County. It thins and changes facies to the east-southeast, where the upper Hensel clastics interfinger with Lower Glen Rose carbonate. The Hensel appears to be a confining unit for the Cow Creek when the lithofacies is a fine-grained shale/claystone.

Hensel – Cow Creek contact: 161' (926' amsl). This is a sharp, well defined contact on the gamma log. It is a sequence boundary representing sea-level change and sub-areal to near surface exposure over much of the report area. The Cow Creek is 84' thick at Willis. The upper unit is normally a grain-skeletal limestone, with chert and scattered coarse quartz grains. The rocks are often fractured and dolomitized. Underlying dolomite is f-m crystalline, sucrosic, porous, gray-brown ("brown sands") and water bearing.

Cow Creek – Hammett contact: 245' (842' amsl). The basal Cow Creek can be seen on the log and in samples in a gradual transition to the underlying Hammett. Drilling contractors often mistake shales/claystones in the lower Cow Creek for Hammett. The actual contact is a sharp break on the Gamma log with an abrupt increase of CPS. A gummy, gray-green claystone is the typical lithology marker of the upper Hammett.

Hammett - Sligo contact: 288' (799' amsl). The Hammett formation is 43' thick at this location and contains siltstone, thin dolomites, and claystone. It is the confining unit or aquitard to the Lower Trinity aquifer. The basal contact shows a sharp break in the Gamma log with Hammett claystone overlying Sligo limestone. Cuttings often show reworked limestone clasts in the calcareous basal claystone.

The upper Sligo has a very distinctive signature on the Gamma log that can be correlated throughout the District. The Sligo is 112' thick at this locations but thins to the west. The upper section is an oolitic-skeletal limestone with a micritic matrix. Underlying the tile limestone is a porous dolomite that is water bearing in several local wells.

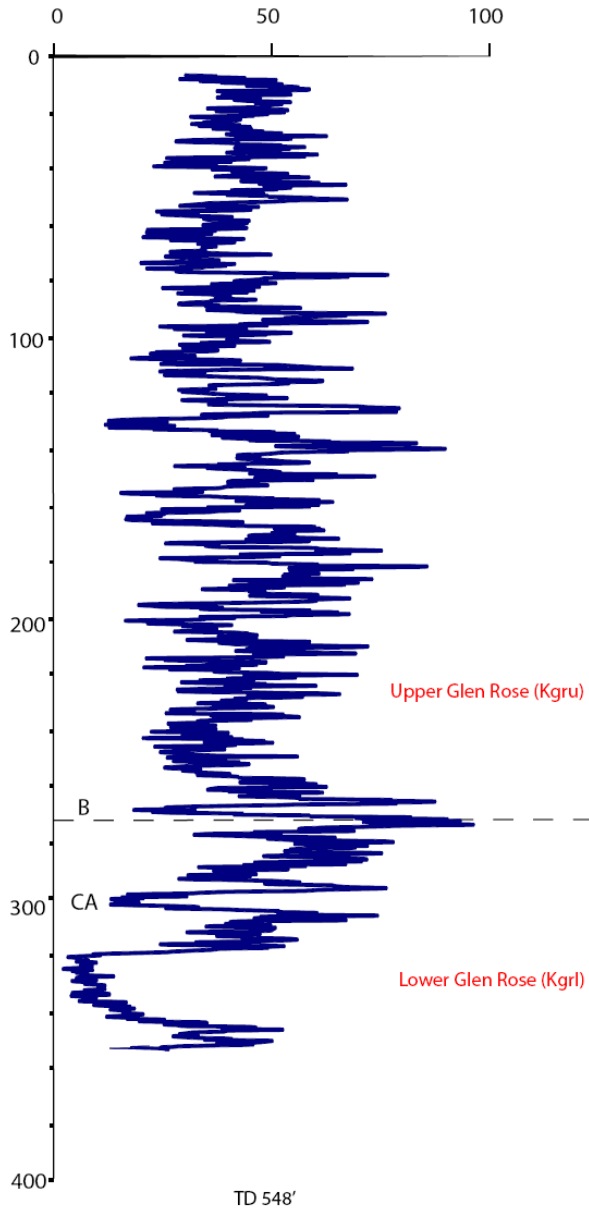
Sligo - Hosston contact: 400' (687' amsl). The carbonate, siltstone, and shale Sligo overlies the clastic Hosston at 400'. There is a break in the Gamma log at this level but it is not a distinctive signature at this location. The best pick here is with the corroboration of samples. The cuttings indicate the onset of lagoon-fluvial sandstones and siltstone in the Hosston vs. the more marine overlying Sligo Formation. The environment of deposition call is speculative. Hosston channel sands can be inferred from the Gamma signature however, and several are water bearing in the area. The Willis Well encountered water at 560', probably in a basal conglomerate.

Hosston - Paleozoic contact: 570' (517' amsl). The Hosston is 170' thick at this location. The contact with the underlying Paleozoic is sharp on the Gamma log at 570'. The basal Hosston conglomerates contain clasts of Paleozoic rocks in other District wells. In the Willis well the Paleozoic section appears to be undurated shale similar to samples seen in Blanco County wells. This is the only well in the Cypress Creek project area that encountered confirmed Paleozoic rocks.

Pump Station Well - TH 1
 2950 Pump Station Road, Hays County, Texas, N 30 06' 3.5", W 98 11' 54.6"; Elevation 1413'

The Pump Station Well was drilled in 2005 as part of a Water Availability Study. Upper Glen Rose limestone outcrops at the surface and the well TD is 560' in the Cow Creek dolomite.

Natural Gamma (API Cs) and Interpreted Stratigraphy



Upper Glen Rose – Lower Glen Rose contact: 270' (1143'amsl).
 The accepted stratigraphic contact between the Upper Glen Rose and the Lower Glen Rose is placed at the base of the "Corbula bed" in outcrop. This exposed contact can be mapped at the surface and with air photos. It is difficult however, to find the marker bed in the subsurface with cuttings or on geophysical logs.

The subsurface "contact" indicated at 270' can be correlated in geophysical logs throughout the District and has been observed in wells in Travis and Blanco counties. When the Corbula is actually noted in cuttings it is usually found within 5'-10' of the marker. It is suggested that this log marker be used as the mappable subsurface contact between the Kgru and Kgri in Hays County.

Marker bed "B", noted on the log, is a sharp, ("anhydrite") negative Gamma kick that may be a single or a double spike. The contact is placed just below the spike. This spacing is taken from observed surface sections that show the upward sequence: Salinia Texana zone, Corbula Bed, solution zone "anhydrite" and "box-work features". The District wide signature is a 10'-20' "fining upward" sequence broken by the contact and the "anhydrite" spike, and a 5-15' "coarsening upward" sequence as shown on the Pump Station geophysical log. The contact may be interpreted as a type II sequence boundary as indicated by this change in depositional architecture.

The marker bed "CA" is normally found in the subsurface some 30' below the Kgru-Kgri contact. Although identified as a carbonate in this well, the marker correlates with a Lower Glen Rose anhydrite bed in Blanco County and in north-west Hays County.

The Lower Glen Rose upper mound/reef (Rudistid) unit is clearly indicated on the log from 315'-343'. The rock unit thickens to the east and is 70' thick and water bearing in the Crainshaw well, located along the Wimberley bypass. The upper "reef" unit is correlated to the Pipecreek reef in Bandera County (Perkins, 1974).