FIELD TRIP GUIDE

POINT RADIX

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Sunday 23rd. May 2004

THE GEOLOGICAL SOCIETY OF TRINIDAD AND TOBAGO

FIELD TRIP TO THE NORTH SIDE OF RADIX POINT

This trip will look at exposures of the Trinity Hill Sandstone Member of the Moruga Formation and faults associated with the Point Radix System

The Central Trinidad Fault Zone (CTFZ) of de Verteuil et al, Radix fault zone of Eggertson, Wood, Pindell & Kennan, is the major structural feature in the area. It has been interpreted as a right lateral strike slip fault with both transpressional and transtensional components. As much as 120km of slip had been attributed to this fault..

The section exposed can be sub-divided into three packages, a sandy interval at the top and bottom of the section bounding a middle claystone unit.

The sands are generally fine, grey-brown, angular – subangular, moderately sorted and consolidated, 80% quartz, 60% iron stained with moderate to abundant glauconite and mica with trace amounts of pyrite.

The lower sand unit is commonly parallel to sub-parallel bedded and is separated by thin claystone/siltstones with sharp contacts, paleo indicates a littoral setting. The middle section is dominated by claystone/siltstone 1068' thick. Forams indicate an inner neritic environment. The bottom of this section is 100% claystone between stops 6 and 7, above stop 6 sand content gradually increases to stop 4 then a thinning upward sequence dominates. The base of the upper sand body appears to be erosional in places.

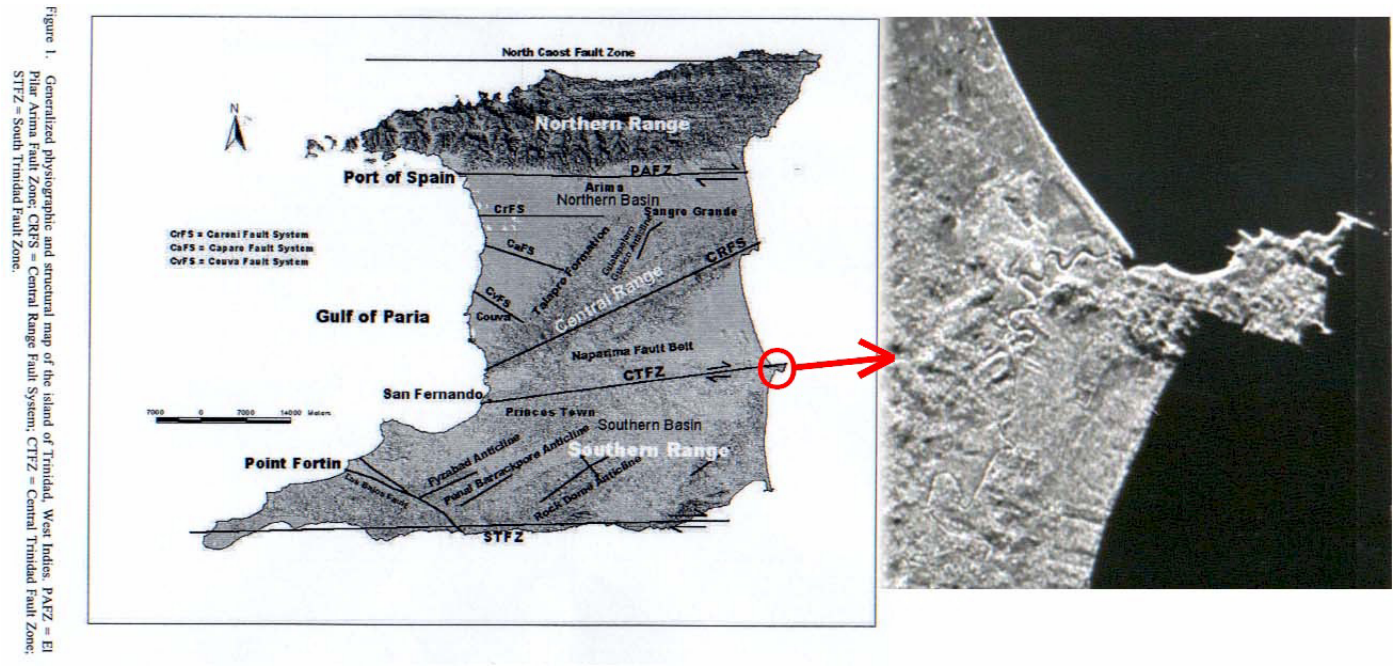
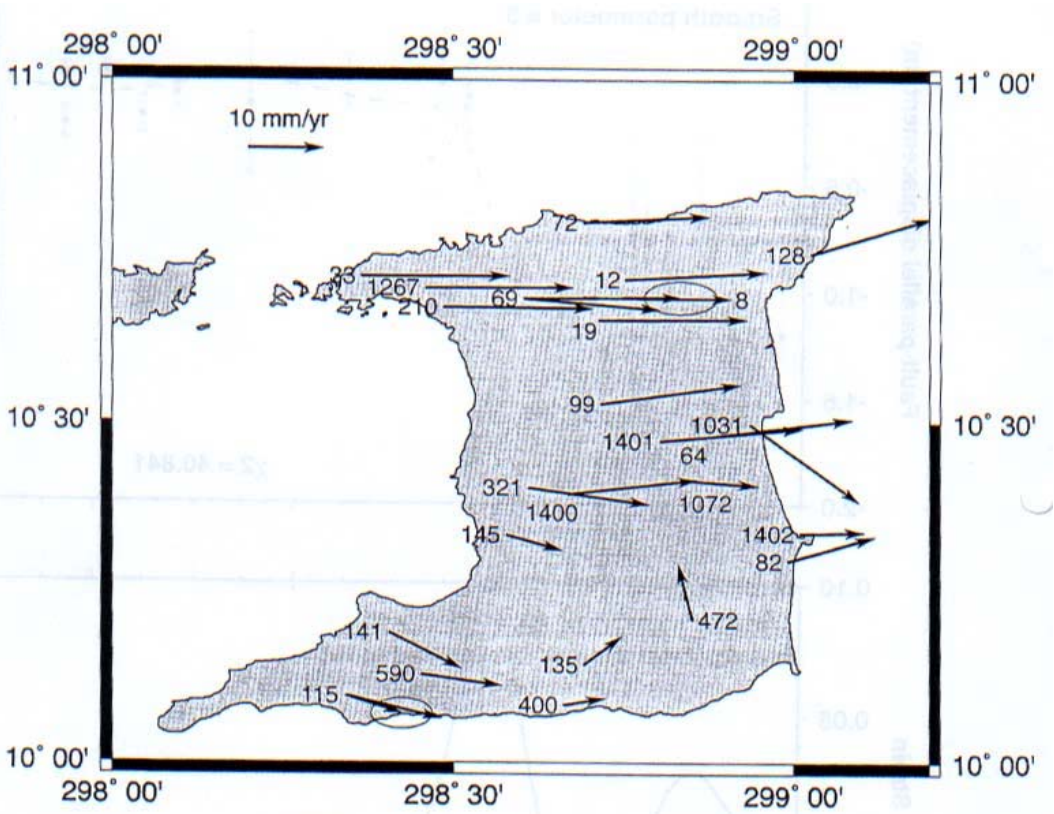


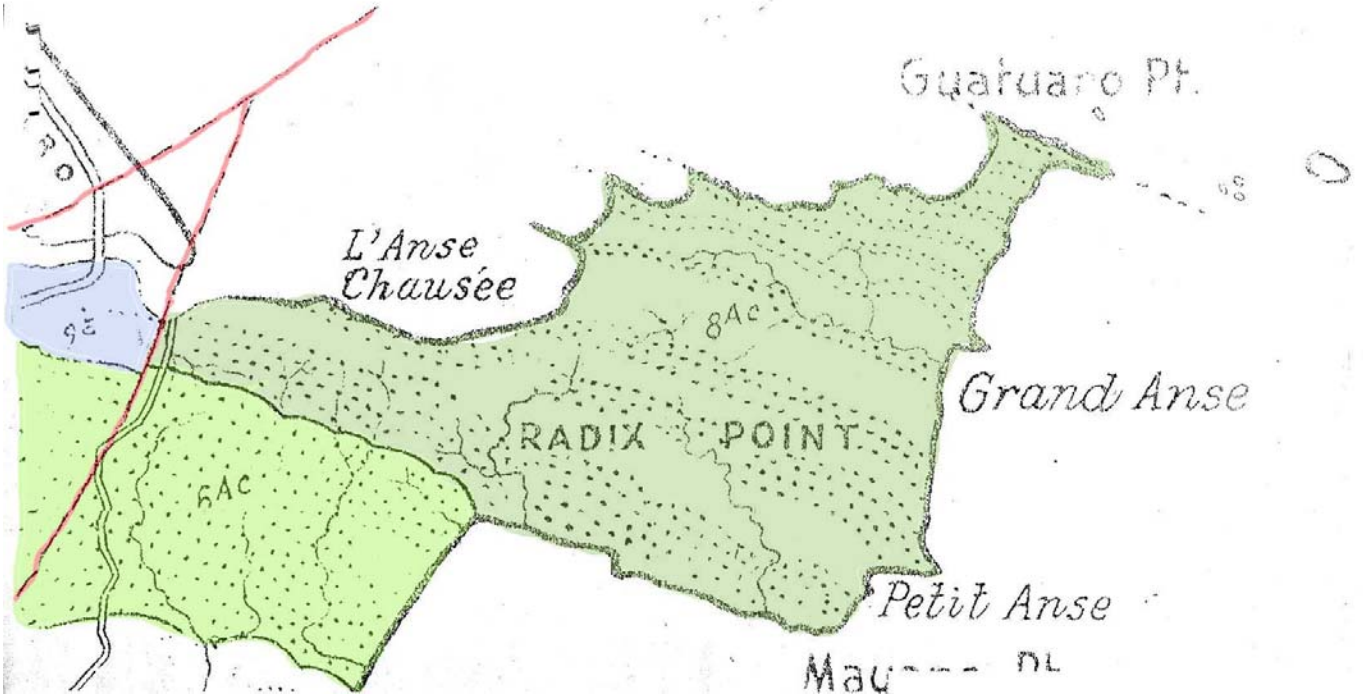
Figure 1. Generalized physiographic and structural map of the island of Trinidad, West Indies. PAFZ = El Pilar Arima Fault Zone; CRFS = Central Range Fault System; CTFZ = Central Trinidad Fault Zone; STFZ = South Trinidad Fault Zone.

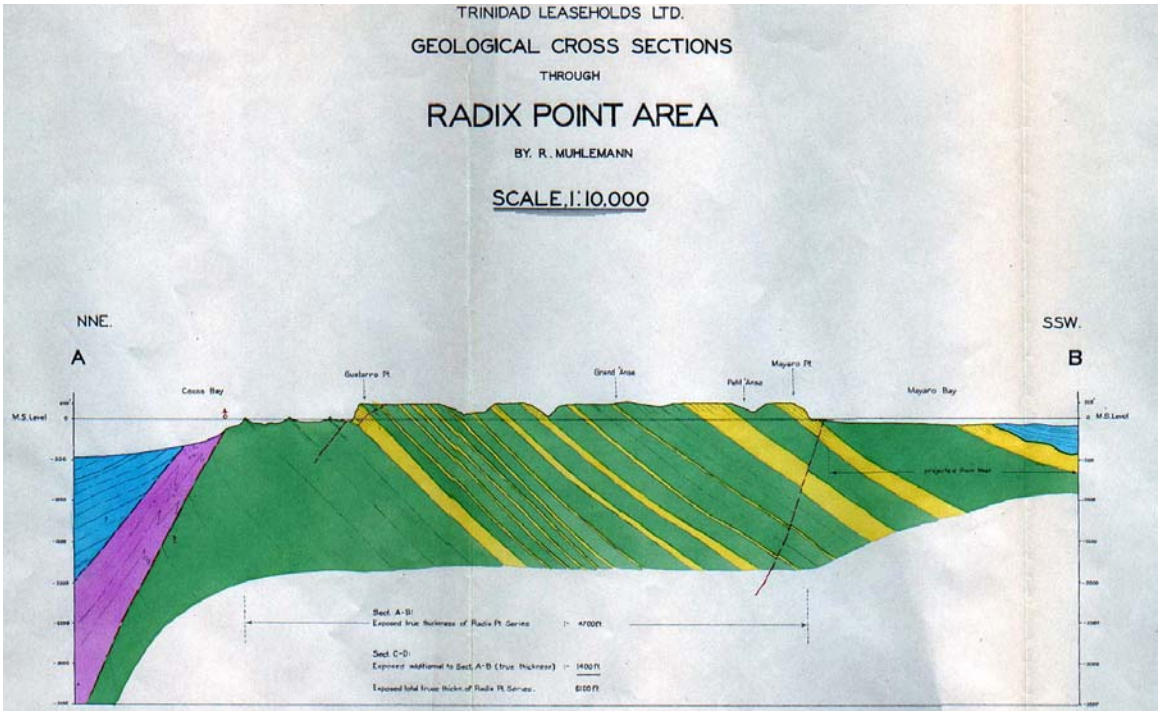
(after de Verteuil et al 2001)

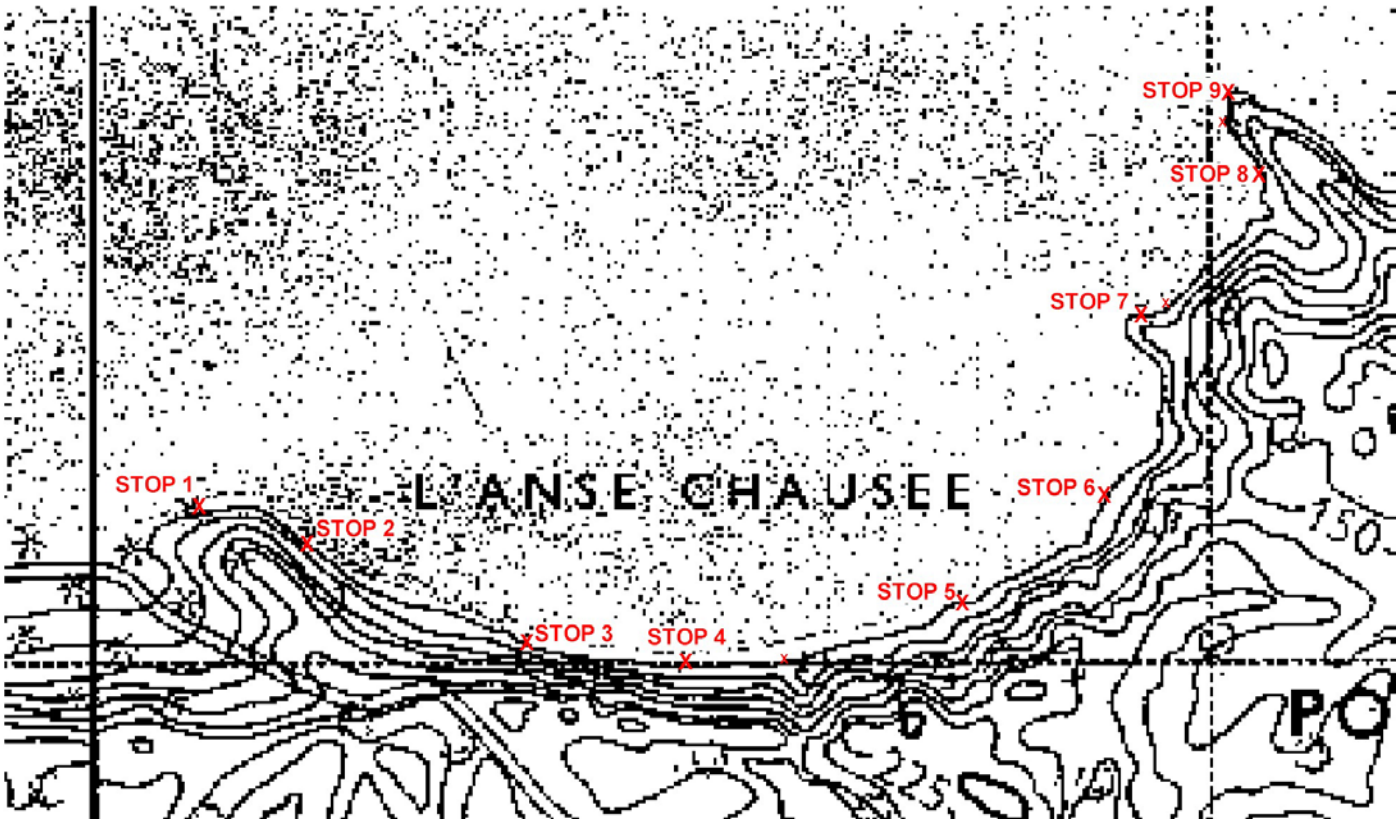


Saleh et al. Fig. 5

This diagram shows that relative motion at Point Radix is as high as that along the Central Range, but is not discussed by Saleh et. al.



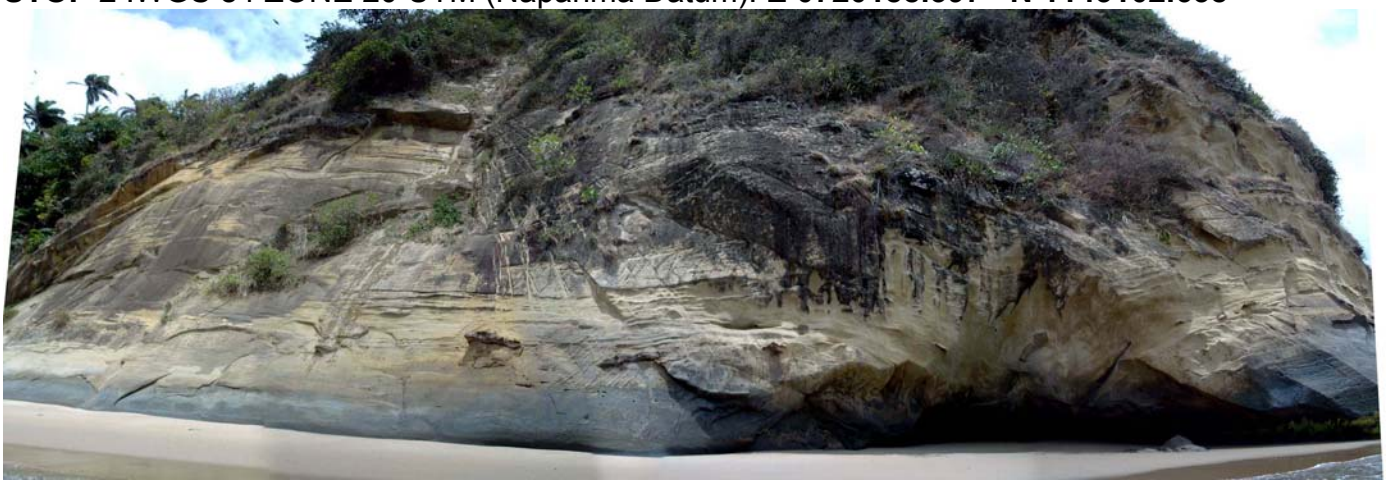

TRINIDAD LEASEHOLDS LTD.
GEOLOGICAL CROSS SECTIONS
THROUGH
RADIX POINT AREA
BY. R. MUHLEMANN
SCALE, 1: 10,000
NNE.
A
SSW.
B
Cocoa Bay
Guatarro Pt.
Grand Anse
Mayaro Pt.
Mayaro Bay
M.S. Level


STOP 1
STOP 2
STOP 3
STOP 4
STOP 5
STOP 6
STOP 7
STOP 8
STOP 9
L'ANSE CHAUSEE
150
PO

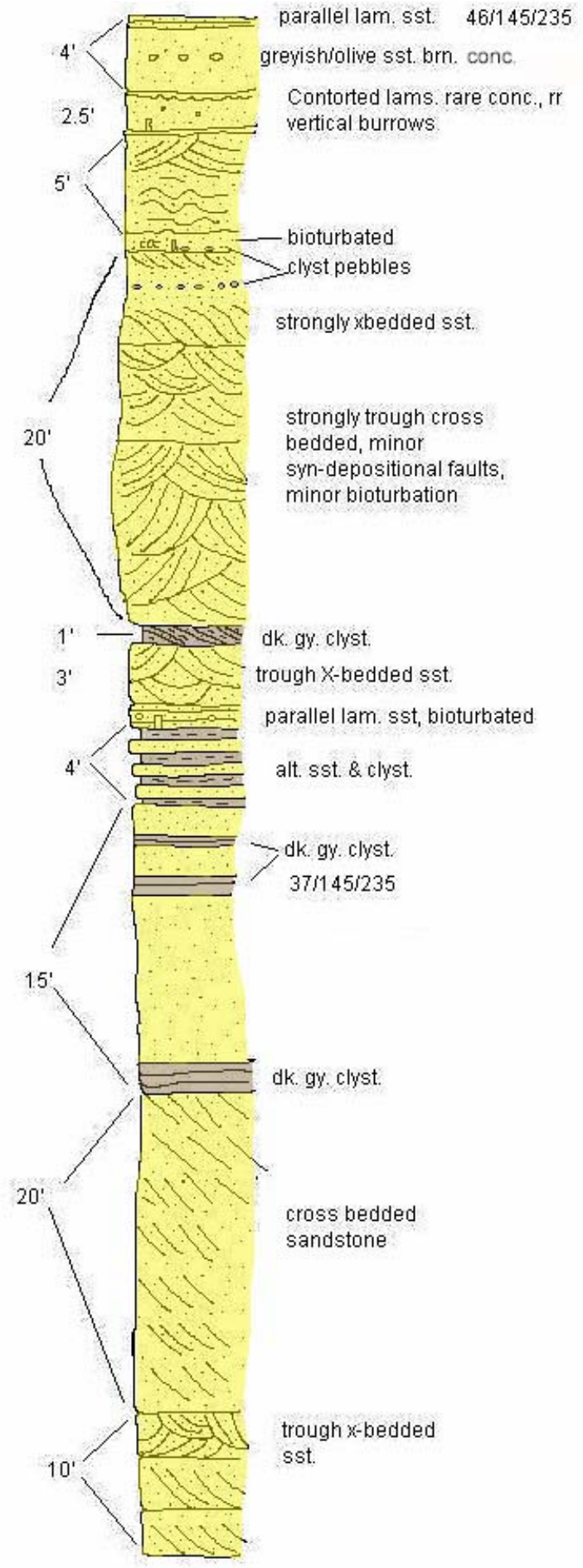
STOP 1 :WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720092.250 N 1143147.943**
View of part of outcrop and wave cut platform
Dip is 46^0 , strike 145^0 - 325^0 , direction of dip 235^0. Sandstones separated by 1-2" thick claystones.

Exposed in this area one can see that the beds in some places are extensively bioturbated, load casting, sand starved ripples, small syn-depositional faults ,cross bedding and cut and fill features are visible.

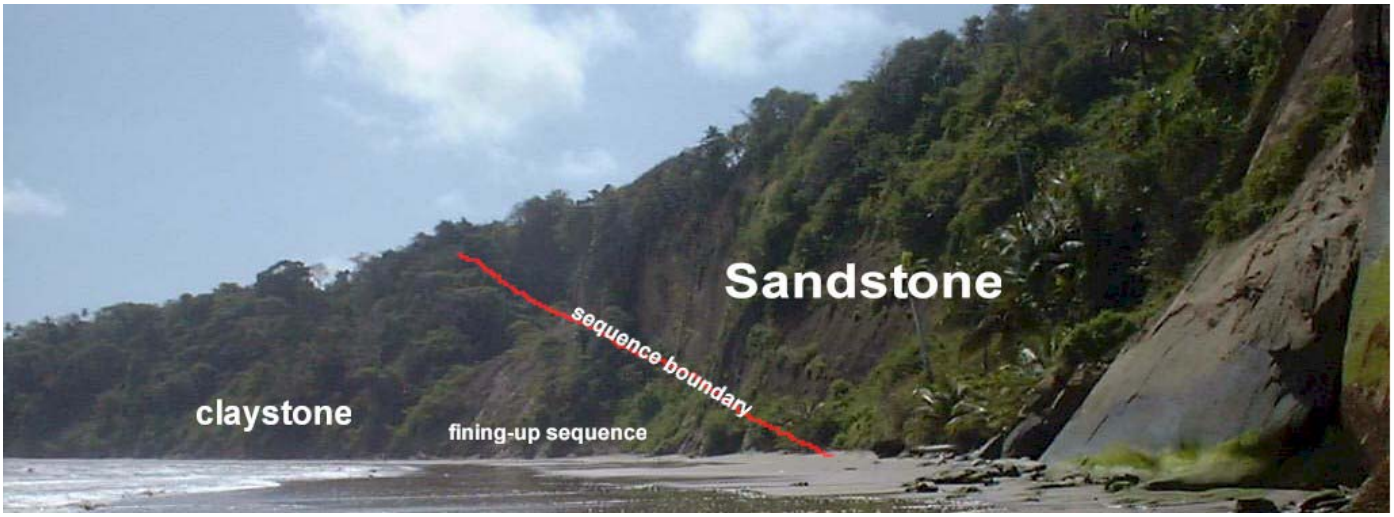
STOP 2 :WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720188.397 N 1143102.638**



Cliff showing well bedded and trough cross-bedded sandstone that is traversed by a normal fault zone. Each of the faults have a gouge zone about 3" thick, vertical displacement is minor. Two orientations of faults are present some with what appear to be reverse displacement, a number of vertical fractures (no displacement) are also present. Some large concretions are present, as are robust *Ophiomorpha*.



This stratigraphic section is not drawn to scale, but is meant to illustrate the main stratigraphic features in the upper part of the outcrop. A combination of cliff and wave cut platform exposures were used.
When corrected for dip the section measured totals 76’ in thickness.



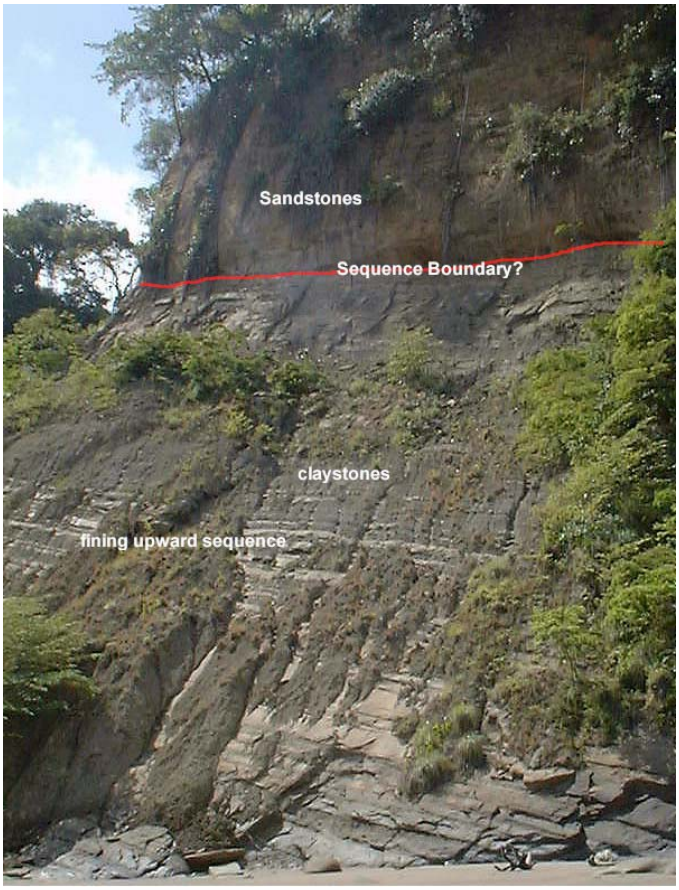
View looking east, the sandstones are underlain by thinly bedded claystones with minor sandstones. Possible Sequence Boundary. Illustrated here is a fining and thinning up sequence of sandstones and claystones, that is capped by claystone, then two thin sandstone packages. The sandstones exposed at the western end of the section abruptly overlie the sequence.

STOP 3 :WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720392 N 1143001**

Small fault in a sand shale sequence. Vertical separations are apparently 2', down to the NW. Closer examination of the slickenslides show, however, that lateral motion dominates. The fault plane has a dip of 75^0 , strike 227^0 , direction of dip 317^0, the slickenslides have an azimuth of 227^0.

Stop 4 WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720519 N 1142999 .**

small channel,



Possible Sequence Boundary. Illustrated here is a fining and thinning up sequence of sandstones and claystones, that is capped by claystone, then two thin sandstone packages. The massive crossbedded sand at the top section have a sharp contact with the underlying beds.

Stop 5 - WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720780 N 1143053**

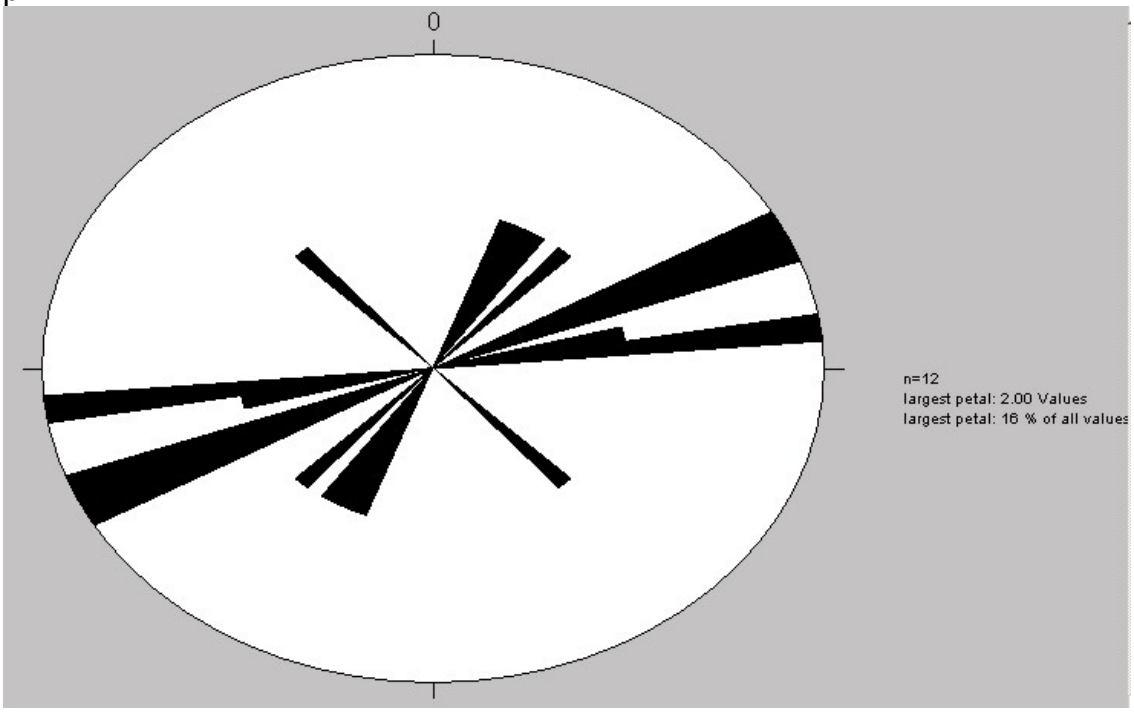
Slumped and bioturbated claystones and sands.

Stop 6 - WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720900 N 1143153**

The sands and claystones are intensely bioturbated, here we see an example of *Thalassanoides*.

Stop 7 WGS 84 ZONE 20 UTM (Naparima Datum): **E 0720904 N 1143305**

View of one of the resistant sandstone beds looking south. Fractures perpendicular to the beds are visible as are large rounded concretions. The contact with overlying claystones-siltstones is very sharp.



Rose diagram showing orientation of fractures developed in wave cut platform to the right of the sandstone in the previous photo,

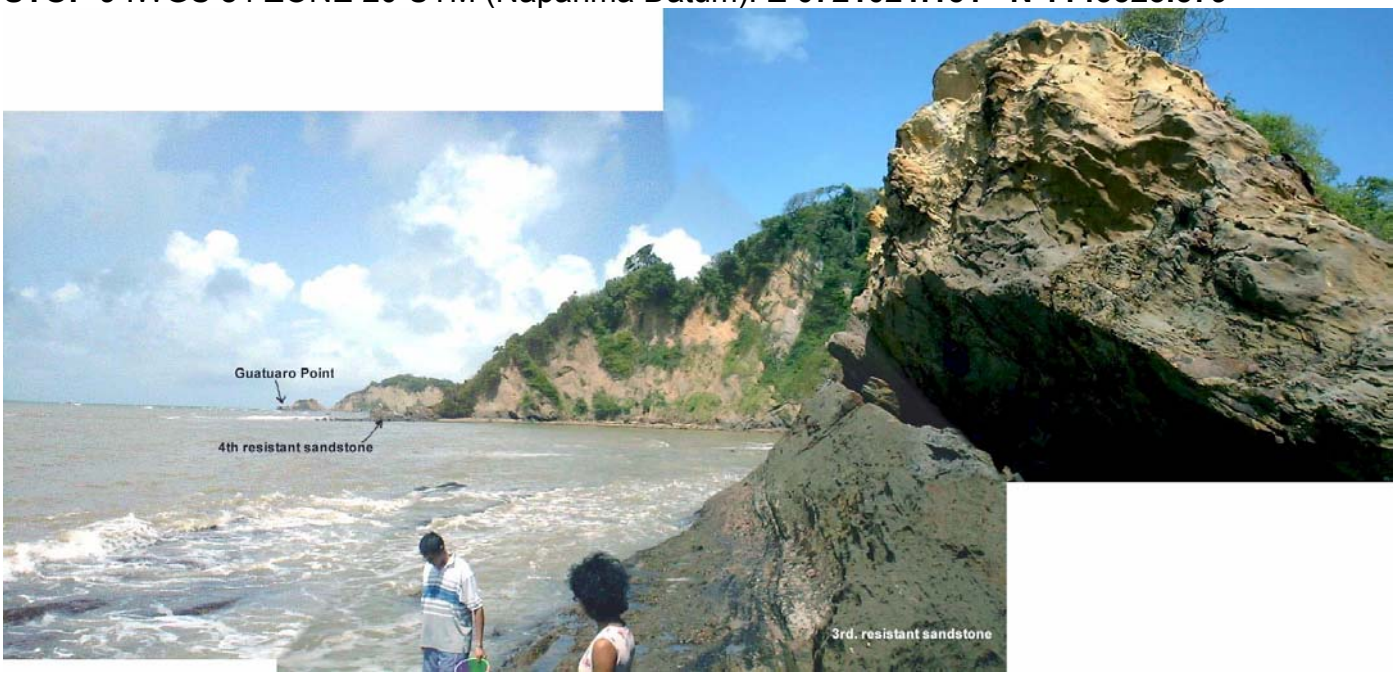
Stop 8 Location UTM (Naparima Datum): **E 0721036.610 N 114348.910**

Photo illustrating the sharp contact between the bioturbated sandstones and thin bedded claystone sequence. Dip is 46^0 , strike 140^0 - 330^0 , direction of dip 220^0.

Heavily bioturbated sandstone beds dipping west. This outcrop forms part of the second resistant sandstone projecting into the sea.

claystones above and below the sand are very heavily bioturbated, *Thalassoniodes, Rhizocorallium* are common.

STOP 9 :WGS 84 ZONE 20 UTM (Naparima Datum): **E 0721021.151 N 1143523.579**



View looking east. In the foreground are sandstones . the basal unit is made up of thinly parallel bedded sands. The upper unit is also sand, but trough cross bedded, slumped in places and heavily bioturbaded with abundant robust *Ophiomorpha* and *Thalassinoides* that are parallel to bedding. Fractures trending 80^0 traverse the outcrop.

REFERENCES

de Verteuil, L. , Stawicki, A.W., Hoag, R.B., Bisson, R.A., Ingari,J.C., Maharaj, U.S. & Mulchansingh, K., 2001, Sedimentary megawatersheds delineation; the role of genetic sequence stratigraphy and complex fault systems analysis in ground water resource in Trinidad, CWWA 10th annual conference and exhibition.

Eggerston, E.B., 1995, The Rio Claro Boulder Bed - evidence for an ancestral wrench fault zone across central Trinidad, West Indies, Transactions 3rd GSTT Conference and 14th Caribbean Geological Conference and 14th Caribbean Geological conference, Trinidad, p. 755

Farrelly, J.J. , 1987, Deposiitional setting and evolution of the Pliocene – basal Pleistocene section of southeast Trinidad, West Indies. Unpublished MSc. Thesis, University of Texas at Austin.

Muhlemann, R. 1938, Geological report on the Mayaro area. Unpublished Petrotrin report.

Saleh,J., Weber,J.C., Balkaransingh,S., Dixon,T., Ambeh,W., Leong,T., Charles,F., Wdowinski,S. & Webb,F., 2002, Neotectonics and seismic risk in Trinidad, West Indies, from historic triangulation (1901-1903) and GPS (1994-1999) geodesy, Journal of geophysical research.

EPOCHA/BioStrat Neogene outcrop study.

EPOCA

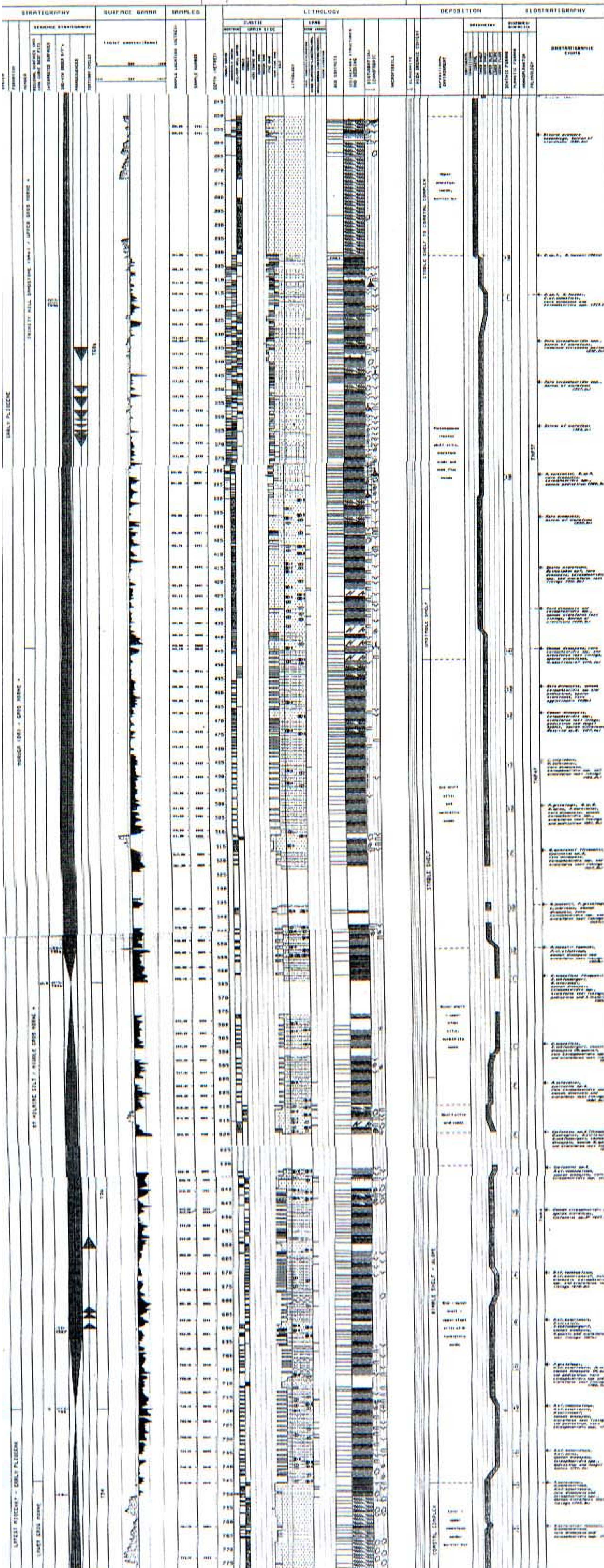
THE LATE NEOGENE SECTIONS OF TRINIDAD
LOCATION T29 [redacted]
RADIX POINT

BioSTRAT

OUTCROP :RADIX POINT
LOCATION :T29
REGION :SOUTHERN BASIN

OUTCROP SUMMARY LOG
INCLOSURE [illegible]
MARCH 1997

ANALYSTS :JAH, [illegible], JFF, [illegible], [illegible], [illegible], JF
SCALE :1:500
INTERVAL :[illegible]m - 78[illegible]m



Stratigraphic summary log generated by EPOCA using [illegible] geologist software.

THE LITHOSTRATIGRAPHIC NOMENCLATURE IS AFTER H.G.KUGLER, 1959.
* Mapped as Morugo Formation Kugler 1959, herein partly redefined.

[illegible] The interval [illegible] - [illegible]m consists of [illegible] sands and silts as for the underlying section. [illegible] high gamma readings for some sands are due to radioactive mineral concentrations. [illegible] according to extremely small scale [illegible] for interval [illegible]m - [illegible]m.