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**WESTERN CANADA SEDIMENTARY BASIN BOREHOLE
IMAGERY ANALYSIS PROJECT: A SUMMARY OF
TOTAL DIABER C-65-D/94-B-16**

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Although every effort has been made to ensure accuracy, this Open File Report has not been edited for conformity with Geological Survey of Canada standards.

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Western Canada Sedimentary Basin Borehole Imagery Analysis
Project: A Summary of TOTAL Diaber c-65-D/94-B-16

Well Name: TOTAL Diaber c-65-D/94-B-16

Operator: Total Petroleum Canada Ltd.

Location: latitude 56° 48' 15.54" N (56.804)
longitude 122° 25' 57.36" W (121.433)
(see figure 1)

Rig Release Date: October 11, 1992

Imagery Log/Interval Logged: FMI 2261.0 - 2598.7 m

Well Trajectory: Semi-vertical, deviated

Drill Bit Size: 8.0 inches over the interval logged

Formations Logged:	Permian Belloy	2190.0 m
	Mississippian Debolt	2263.0 m
	Mississippian Shunda	2577.0 m

Lithologies: The section logged consists of Permian-Mississippian carbonates.

Core Intervals: 2330.0 - 2352.0 m

Structural Setting: Western edge of the Western Interior Plains

Regional Stress trajectories: The nearest well with stress orientation data is Shenandoah et al INGA d-53-B/94-A-13 located 47.6 kms east with a $S_{H\min}$ direction of 125.8° N (Bell et al, in press).

Description of Images:

Drilling Induced Fractures:

Vertical Fractures: Two vertical induced fractures were observed in the interval logged and are shown in figure 6. The fractures are characterized by thin, continuous, dark (conductive) traces appearing 180° apart on the FMI microresistivity image. Unless noted otherwise, vertical scales are 1:10 and horizontal scales are 1:5. The interpretive software program FLIP converts digital microresistivity contrasts into brown-yellow tones (dark colors indicate high conductivity whereas light colors indicate low conductivity, Bourke et al 1989) and applies a sinusoidal curve to arrive at a true dip angle and dip azimuth.

Chatter Fractures: Short, discontinuous, dark (conductive) traces on the FMI log that trend obliquely to borehole trajectory and occur in groups in an en echelon, steplike fashion are interpreted as drilling induced chatter fractures. These appear on opposite sides of the borehole wall 180° to each other, and are aligned parallel to the regional direction of the maximum principal stress, $S_{H\max}$. Figures 7 to 9 are examples of chatter fractures observed in Diaber c-65-D/94-B-16.

Population 2 Chatter Fractures: A second population of chatter fractures has been observed, exhibiting a similar en echelon, steplike character. However, population 2 fractures are oriented 90° to the orientation of the chatter fractures described above. Figures 16 and 17 are examples.

Natural Fractures: Figures 12 and 13 illustrate examples of naturally occurring fractures in Diaber c-65-D/94-B-16. Natural fractures are characterized by dark, continuous traces whose orientations, unlike induced fractures, need not reflect borehole trajectory and present principal stress directions.

Syneresis Fractures: Syneresis fractures or "chicken-wire" fractures are caused by carbonate dewatering and are often found at lithological boundaries. They have a characteristic braided appearance and cannot be oriented. Figures 10 and 11 are examples of syneresis fractures.

Borehole Breakouts:

Borehole breakouts are measured by the four oriented arms of the FMI calipers to determine the profile of the wellbore (Plumb and Hickman, 1985). In the presence of anisotropic horizontal stresses borehole collapse may occur on opposite sides of the wellbore at the azimuths of the minimum horizontal stress directions ($S_{H\min}$). The calipers will indicate a corresponding long axis where spalling has occurred and a perpendicular short axis near bit size. When the FMI tool is raised through a breakout zone, tool rotation will cease if the pads become entrenched within the zone. Frequently the pads themselves will be unable to make firm contact with the borehole wall in the spalled zone and a diffuse, unfocussed image will result.

Two stages in the development of borehole breakouts have been observed in Diaber c-65-D/94-B-16. *Incipient breakout* is illustrated in figure 14. The dark, linear fracture traces observed on the microresistivity images are interpreted as shear fractures that intersect the borehole wall in response to the anisotropic stresses acting upon it. Generally there is only minimal lateral borehole elongation.

Intermediate breakout is depicted in figure 15. Shear fracture development is more extensive and results in partially blurred and unfocussed FMI images at the azimuths of borehole collapse. The calipers may be parted due to differential elongation of the borehole.

A stage of *mature breakout* development is always marked by differential extension of the calipers in response to significant lateral elongation of the borehole. Microresistivity images are characterized by blurred, unfocussed regions at the azimuths of maximum elongation. This stage is not clearly seen in Diaber c-65/94-B-16.

Bedding Planes: Over eighty measurements of bedding planes were made at regular intervals to supplement the data set. Figures 8, 9, and 11 to 16 illustrate examples.

Results:

Drilling Induced Fractures:

Vertical Fractures: Vertical induced fractures are not common throughout the interval logged by the FMI tool. On the FMI microresistivity images for Diaber c-65-D/94-B-16 they are characterized by thin, continuous, dark (conductive), linear traces that parallel borehole trajectory, cross-cut bedding, and are open and mud-filled. They occur 180° apart on the images and range in length from 1.0 m to 3.0 m. Strike azimuths are summarized in figure 19a. The mean strike azimuth from two samples is 012.0° N with a standard deviation +/- 3.8° (Mardia, 1972).

It is believed that these fractures form as hydraulic fractures in response to pressure exerted on the undrilled rock by the weight of the drillstem during drilling. Alternatively, fracture generation may be the result of the drillpipe acting as a loose fitting piston when it is run into the hole too quickly. This action will cause bottomhole pressures to exceed the parting pressure of the rocks (Dickey, 1986). Thirdly, these fractures may be tensile fractures resulting from formation cooling caused by cooling of drilling muds (M.D. Zoback, studies in progress).

Hydraulic fractures propagate within the plane formed by the largest and intermediate principal stresses (S_v and $S_{H\max}$) and are extensional. S_v is assumed vertical and thus induced fractures can be used to detect the direction of the maximum horizontal principal stress ($S_{H\max}$). As figure 19a illustrates, this would give an $S_{H\max}$ azimuth of 012.0° N at Diaber c-65-D/94-B-16.

Chatter Fractures: Figure 19b summarizes the orientations of over ninety chatter fractures observed in Diaber c-65-D/94-B-16. Mean strike azimuth for the fracture set is computed as 024.7° N, standard deviation +/- 16.6° (Mardia, 1972). Chatter fractures often appear on opposite sides of the borehole wall and may be stratabound. They are believed to be "drilling enhanced" natural fractures (Heliot et al, 1990) formed when a preexisting natural fracture is opened preferentially in the plane of $S_{H\max}$ and S_v in response to pressure exerted on the rock formation during drilling. This gives rise to the characteristic en echelon, steplike fashion of chatter fractures. Chatter fractures are an excellent indicator of the direction of the maximum horizontal stress, in this instance 024.7° N.

Population 2 Chatter Fractures: Figure 21b summarizes the orientations of twelve measured population 2 chatter fractures. Mean strike azimuth for the set is computed as 129.4° N (standard deviation = +/- 12.9°, Mardia 1972). Population 2 chatter fractures are identical to population 1 chatter fractures except for a 90° shift in strike orientation (compare figures 19b and 21b). In addition, the population 1 set initiates at 2420 m., 10 m. below the population 2 set (2400 to 2410 m.) Figure 2 summarizes the downhole locations of both sets of fractures and gives the orientation of individual fractures. The population 2 set is oriented parallel to the regional $S_{H\min}$ stress direction, and may indicate compressive shear failure at the borehole wall and therefore incipient borehole breakout.

More likely, they may orient in response to a locally rotated stress regime where the

principal stresses may not be horizontal and vertical. The assumption of a vertical/horizontal stress field, while valid at shallow depths near the surface, can easily be otherwise at deeper levels. Local geologic factors may cause almost any orientation of the principal stress field (Aadnoy, 1990). While fractures typically initiate along the axis of the borehole due to the stress concentration effect during drilling, they may deviate significantly due to these local effects.

Figure 17 illustrates the bulk density log for Diaber c-65-D/94-B-16. The low density interval between 2355 m and 2396 m suggests the presence of a fault that could be removing the influence of the larger principal stress ($S_{H\max}$), thus leaving $S_{H\min}$ as the larger influence on stress orientation (the well operators interpret this interval as a fault zone (Rigel Energy, pers. comm., 1994). This would permit a strike orientation parallel to the regional $S_{H\min}$ direction in the underlying population 2 chatter fractures.

Natural Fractures: Figure 20a summarizes the orientations of the 31 naturally occurring fractures observed in Diaber c-65-D/94-B-16. A mean strike azimuth for the fracture set is computed as 001.9° N, standard deviation +/- 32.6° (Mardia, 1972). Natural fractures may be distinguished from drilling induced ones primarily upon their geometric relationship with respect to the stress regime. Induced fractures generally align themselves in the plane of S_v and $S_{H\max}$, whereas natural ones need not.

Borehole Breakouts: A stress regime characterized by anisotropic horizontal stresses acting on the borehole will often result in borehole collapse on opposite sides of the well. Borehole breakouts form when shear fractures develop subparallel to the borehole wall and extend the well in a direction parallel to $S_{H\min}$. As these fractures propagate, portions of the borehole wall spall off creating an "ovalized" borehole. These features are excellent indicators of the direction of the minimum horizontal stress orientation $S_{H\min}$, although cable torque on the tool may bias results slightly (Parker and Heffernan, 1992). Figures 20b and 21a summarize the orientations of observed borehole breakouts which are as follows (Mardia, 1972):

incipient breakouts	mean azimuth of long axis 127.0° N
intermediate breakouts	mean azimuth of long axis 118.9 N (+/- 66.0°)

This indicates a mean $S_{H\min}$ direction of 123.0° N for Diaber c-65-D/94-B-16.

Bedding Planes: Measured bedding plane orientations are summarized in figure 22.

Figures 23a and 23b summarize the orientations of all 229 features measured in Diaber c-65-D/94-B-16.

Conclusions

In Diaber c-65-D/94-B-16 the chatter fractures point to a mean $S_{H\max}$ direction of 024.7° N and $S_{H\min}$ of 114.7° N. This orientation is in agreement with regional trends of $S_{H\max}$ as summarized in figure 1. Breakout data are broadly compatible. The mean long axis, parallel to $S_{H\min}$, is 123.0° N. This differs only marginally from the $S_{H\min}$ direction derived from oriented caliper logs from the nearby well Shenandoah et al Inga d-53-B/94-A-13, with a value of 125.8° N.

Fig. 1 Location of Diaber c-65-D/94-B-16 with respect to the stress regime of the Western Canada Sedimentary Basin.

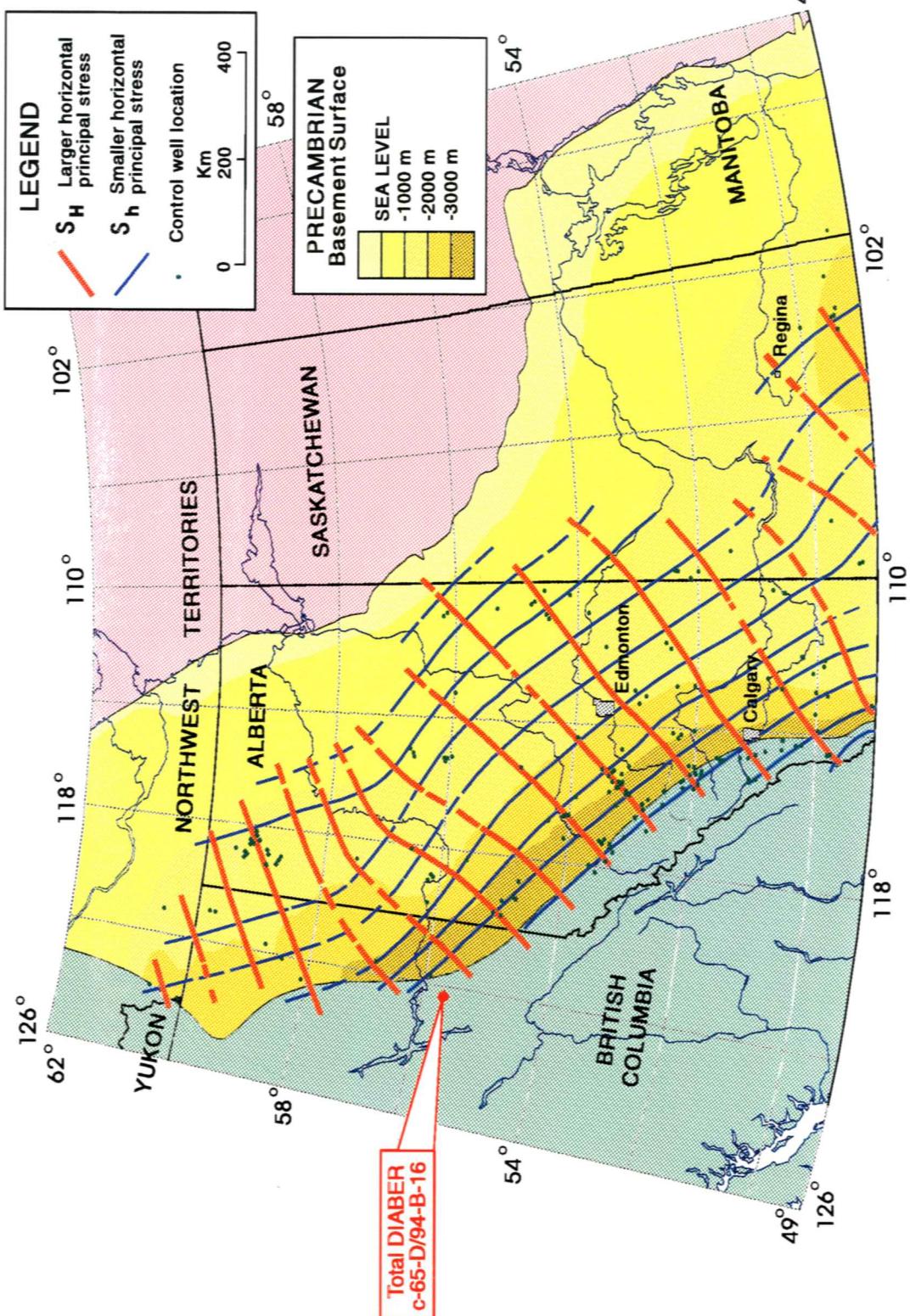


Fig. 1. Location map of Total DIABER c-65-D/94-B-16.

Figure 2. A well overview diagram of the entire Diaber c-65-D/94-B-16 well summarizing strike and dip orientations of the various features observed.

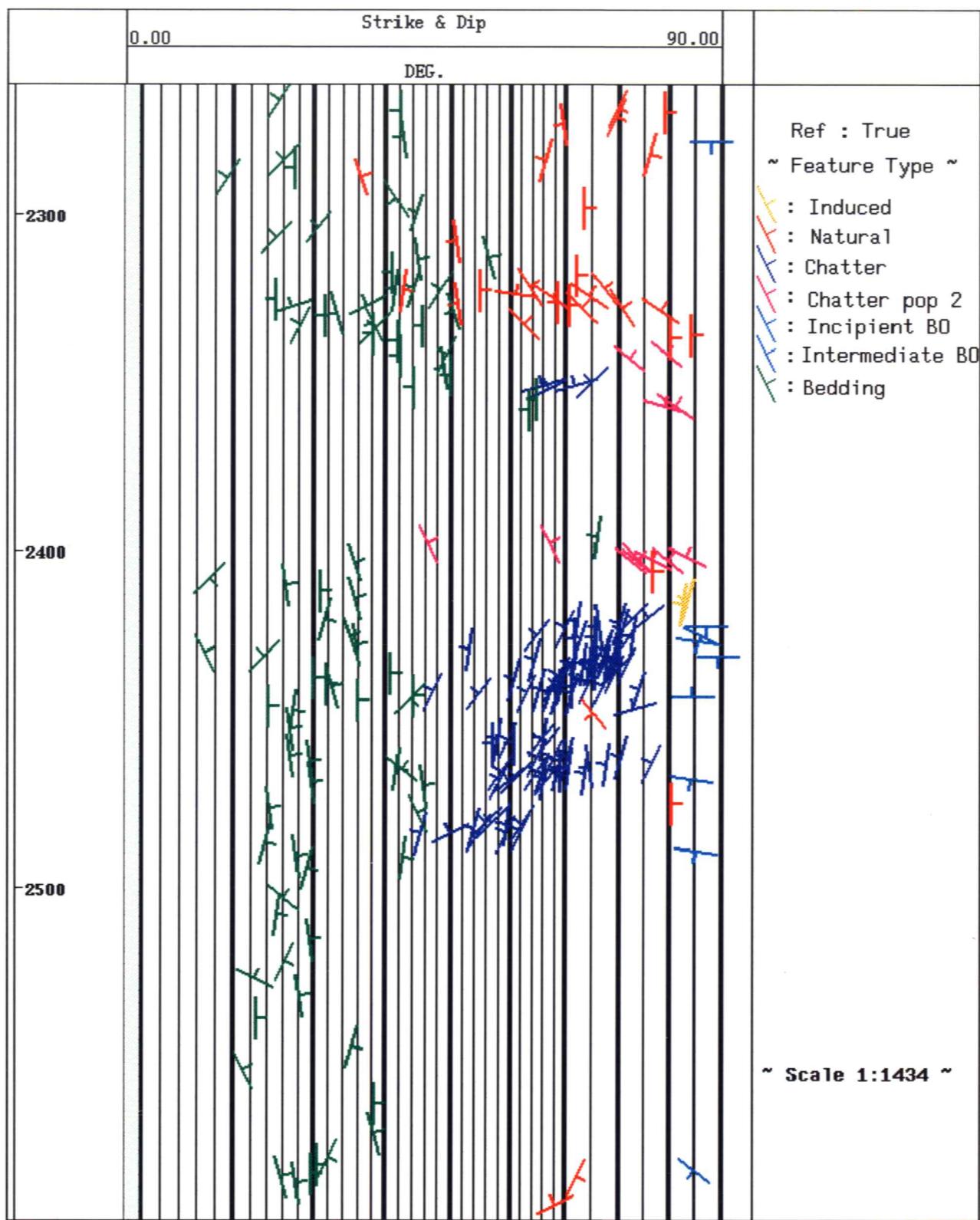


Figure 3. A well overview diagram at a reduced scale summarizing strike and dip orientations over the 2261.0 m to 2355.0 m interval.

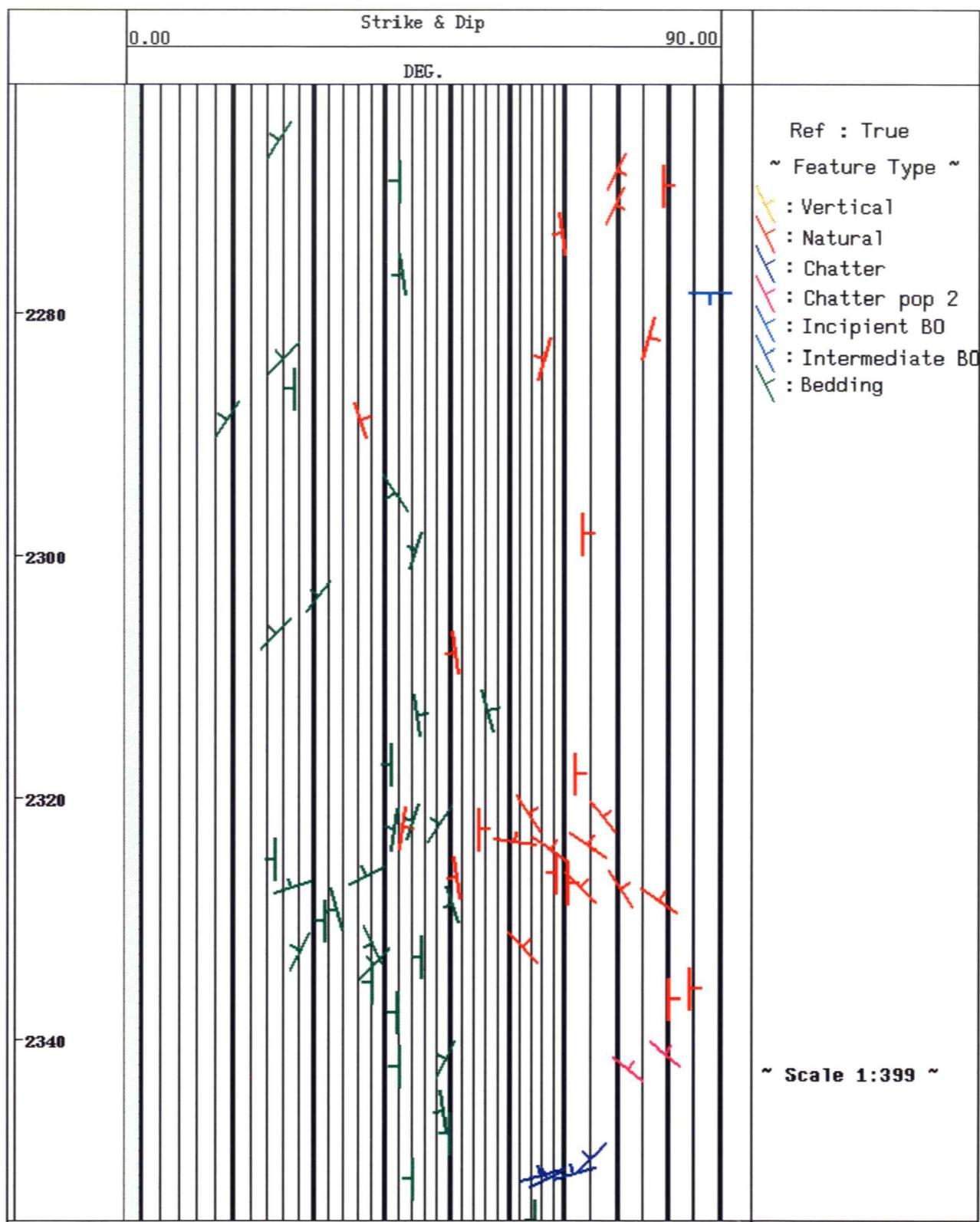


Figure 4.

A strike and dip summary over the 2345.0 m to 2455.0 m interval.

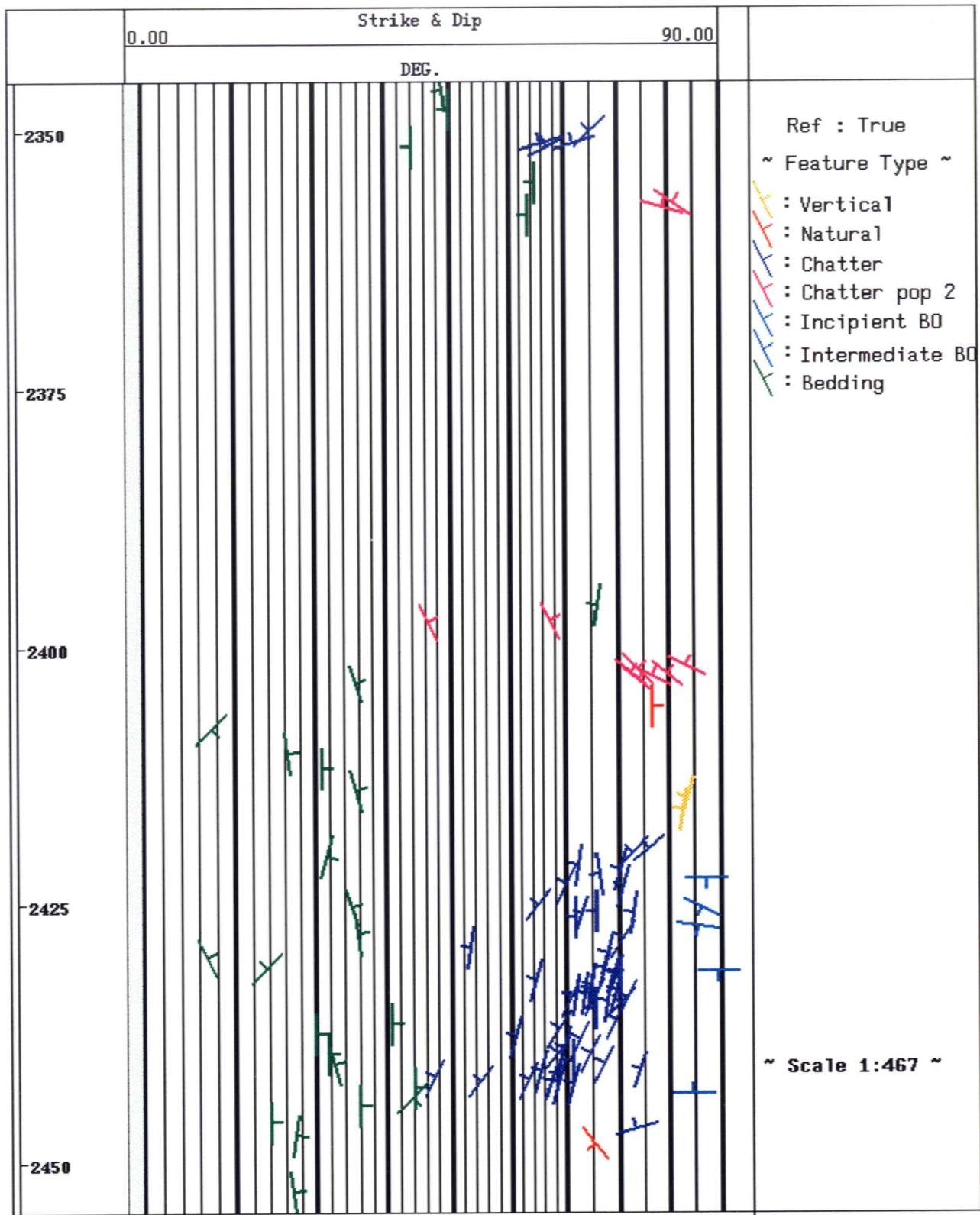


Figure 5. A strike and dip summary over the 2445.0 m to 2600.0 m interval.

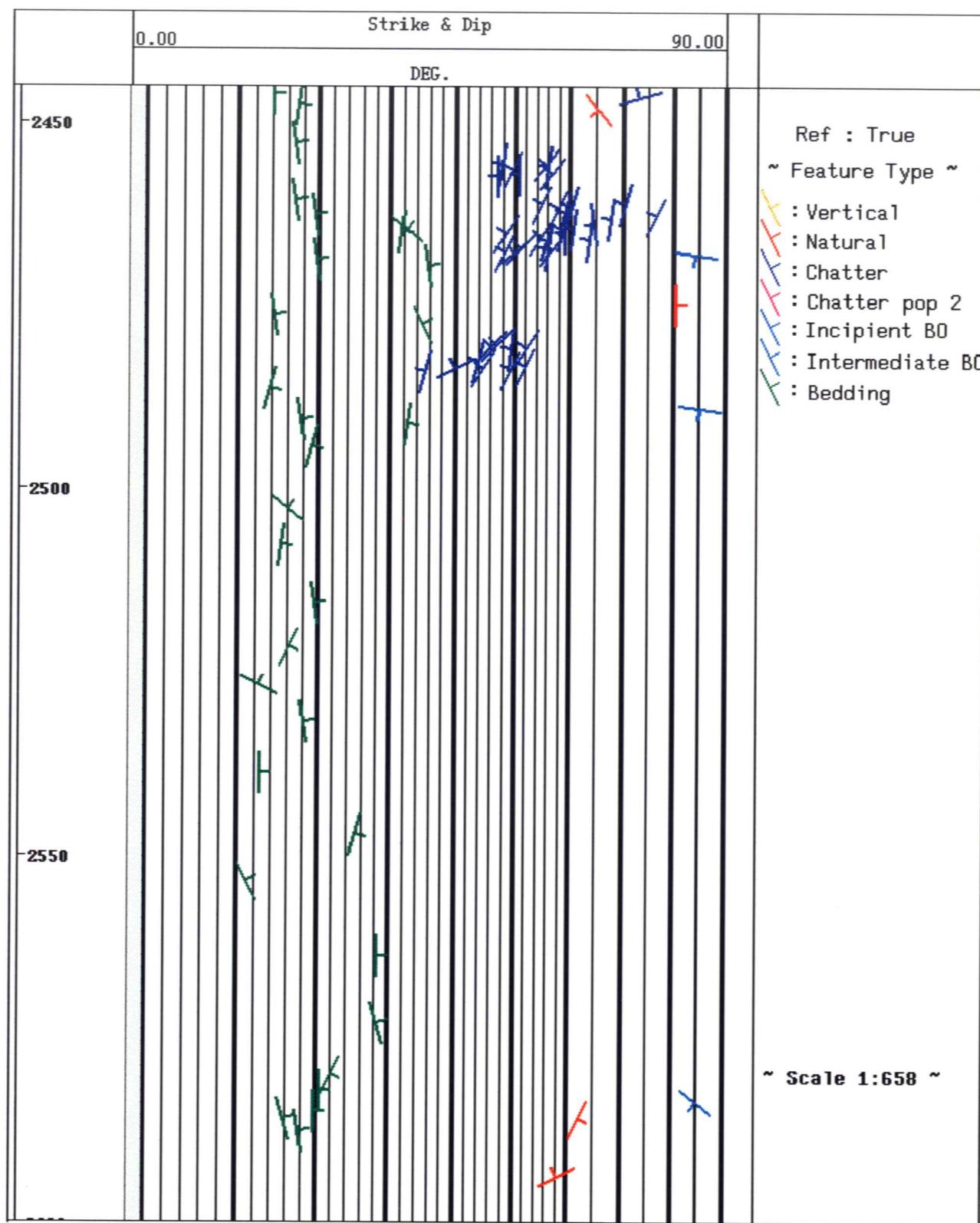


Figure 6. Induced fractures at the 2414.0 to 2416.5 m mark within Mississippian Debolt carbonates. The upper fracture dips at 84° with a dip azimuth of 286° (strike 016° N). The lower dips 83° with a dip azimuth of 278° N (strike 008° N). These are the only two semi-vertical induced fractures observed in Diaber c-65-D/94-B-16.

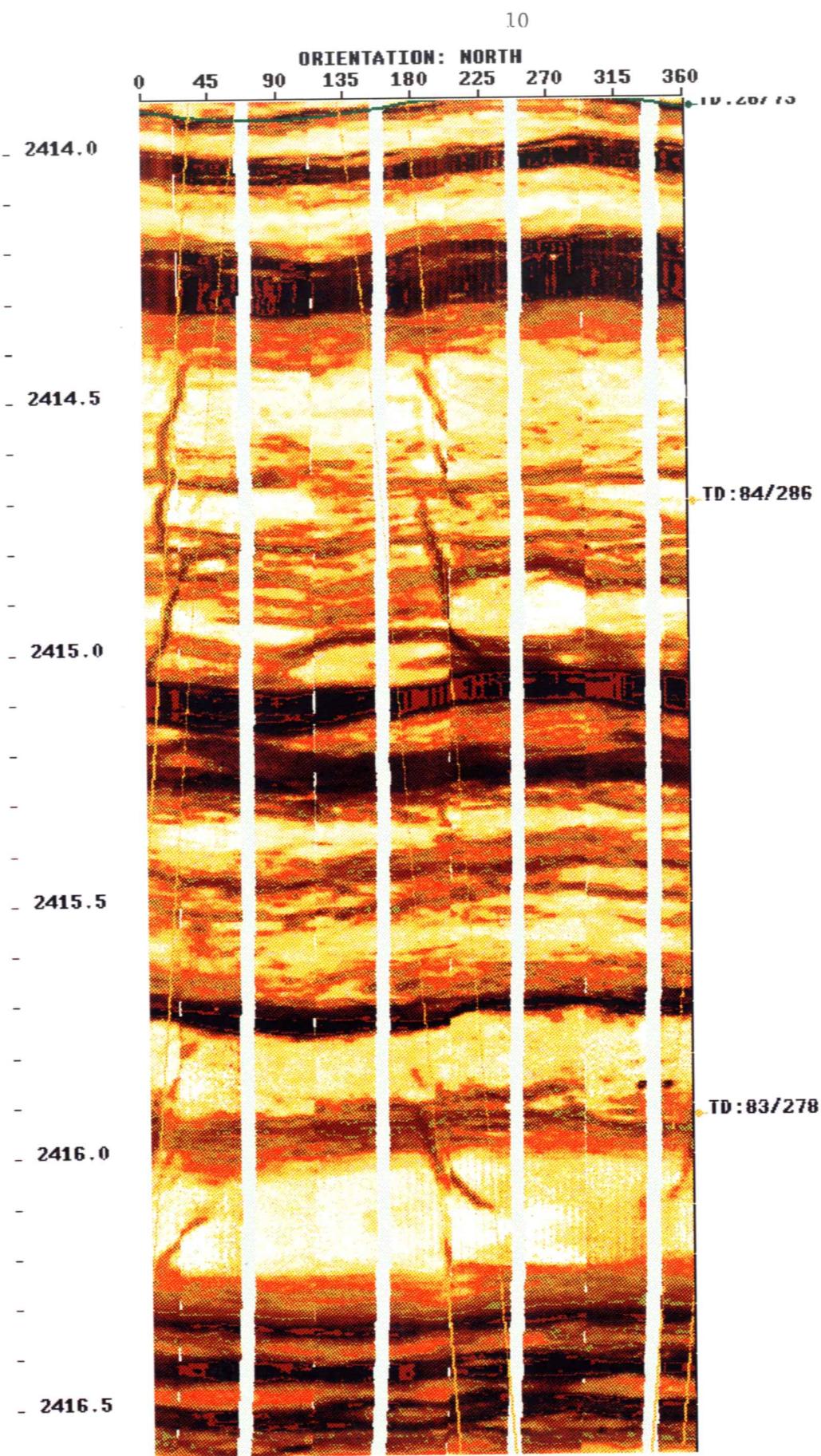


Figure 7. Chatter fractures with their orientation traces plotted in blue within Mississippian Debolt carbonates. Dip magnitude and azimuth of each fracture appear to the right of the image. The fractures overlap each other in a slanted, en echelon, steplike fashion and appear on opposite sides of the borehole 180° apart.

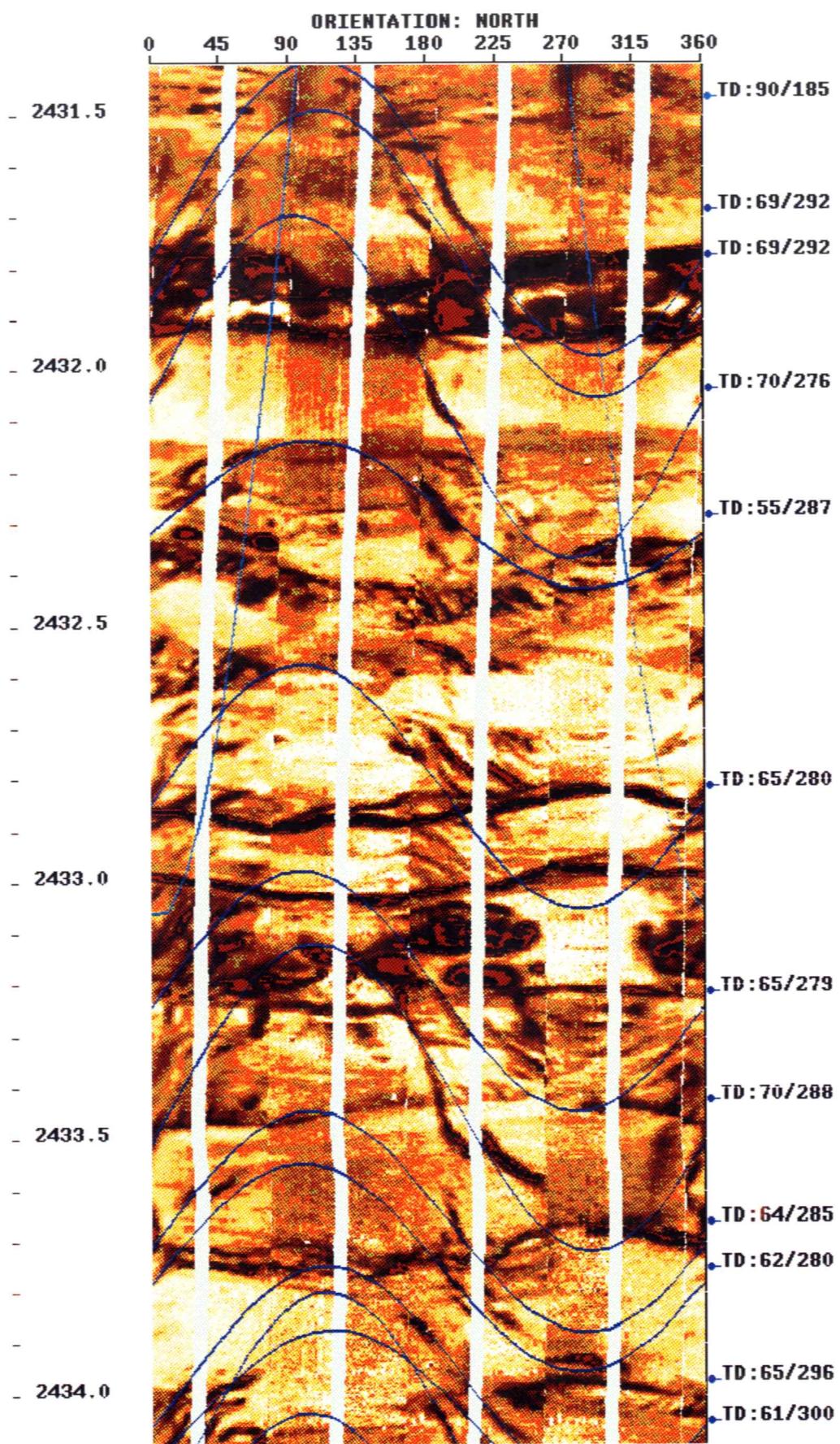


Figure 8. Chatter fractures with their orientation traces plotted in blue within Mississippian Debolt carbonates. Dip magnitude and azimuth of each fracture appear to the right of the image. The fractures overlap each other in a slanted, en echelon, steplike fashion and appear on opposite sides of the borehole 180° apart. A bedding plane is measured at 2439.4 m.

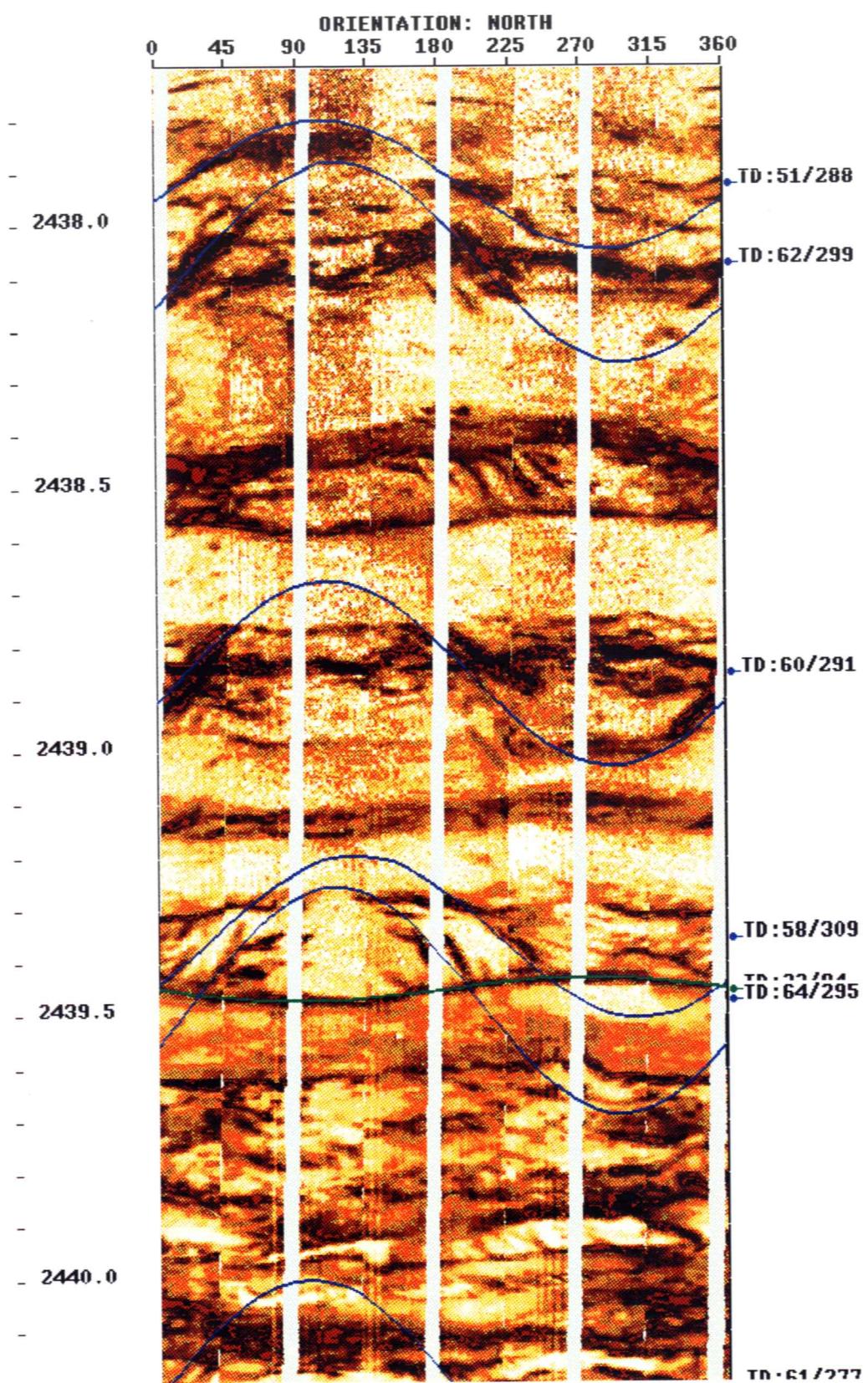


Figure 9. Chatter fractures with their orientation traces plotted in blue within Mississippian Debolt carbonates. Dip magnitude and azimuth of each fracture appear to the right of the image. The fractures overlap each other in a slanted, en echelon, steplike fashion and appear on opposite sides of the borehole 180° apart. Bedding planes are measured at 2464.5 m. and 2464.8 m.

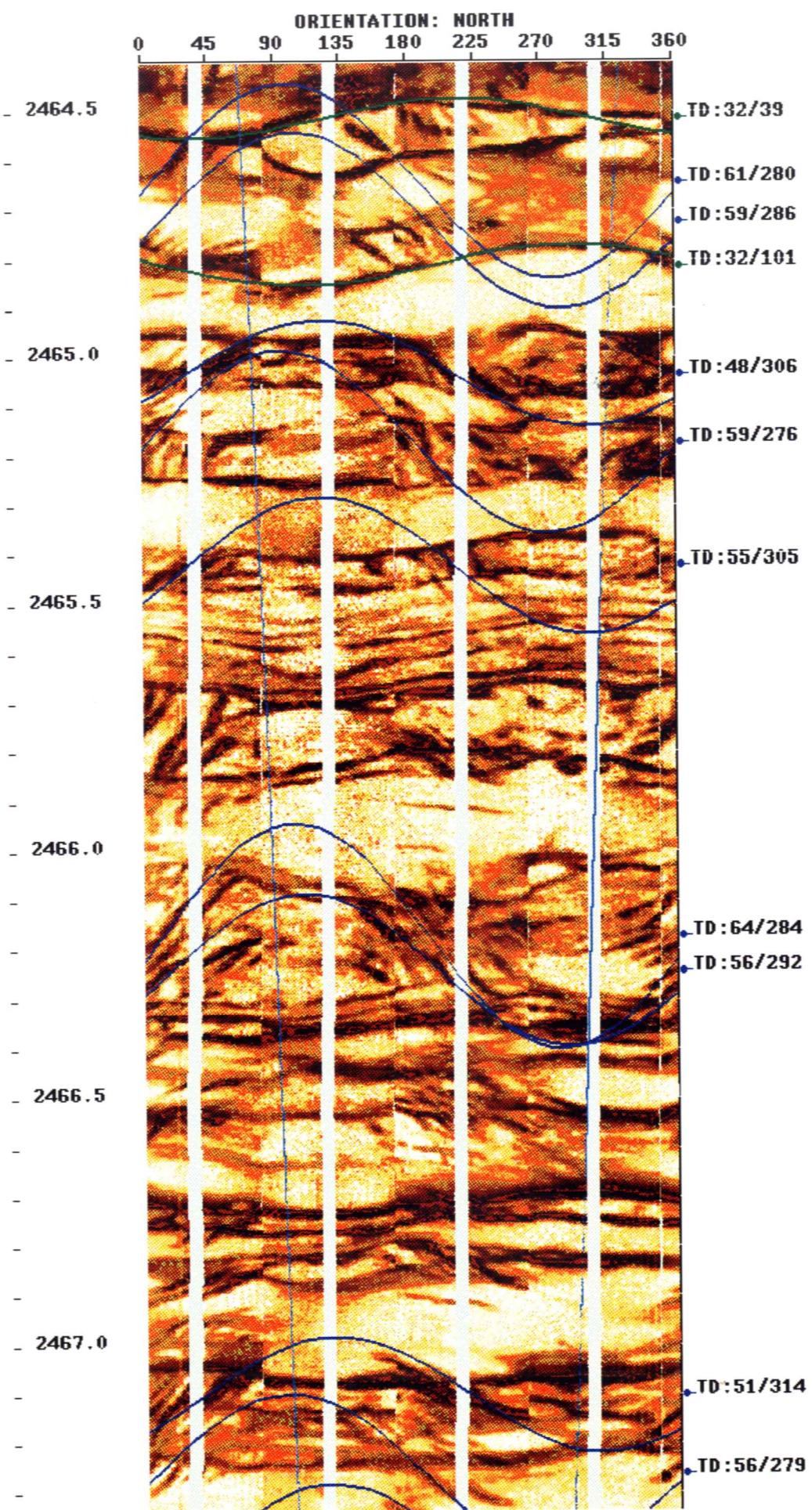


Figure 10. An example of syneresis fracturing in Mississippian Debolt carbonates. Dewatering of this carbonate results in the braided, "chicken-wire" appearance at 2315.5 m at the 45° azimuth. These fractures normally cannot be oriented.

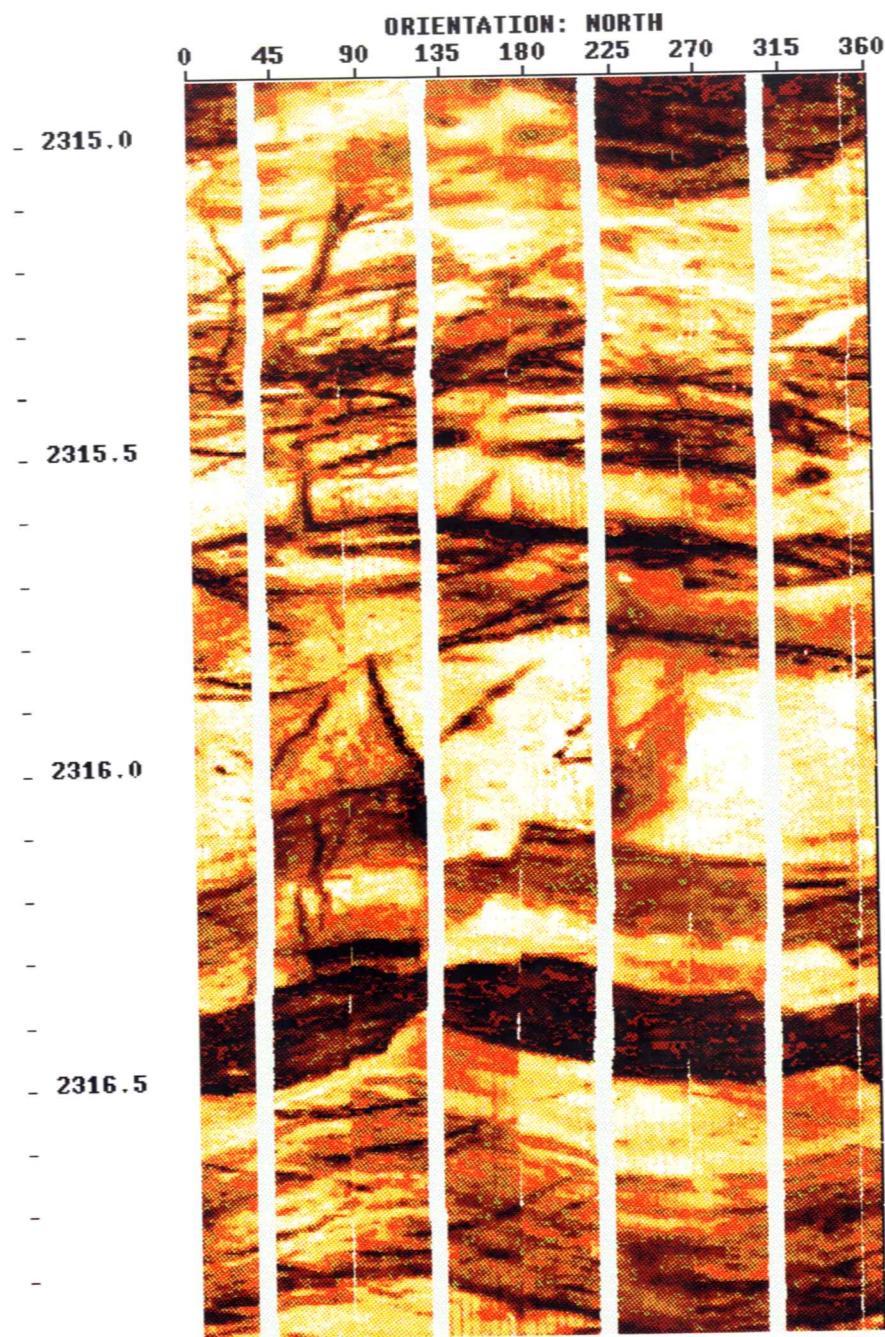


Figure 11. An example of syneresis fracturing in Mississippian Debolt carbonates. Dewatering of the carbonate results in the braided, "chicken-wire" appearance. These fractures normally cannot be oriented. A population 2 chatter fracture is measured at 2341.1 m, a bedding plane at 2341.6 m.

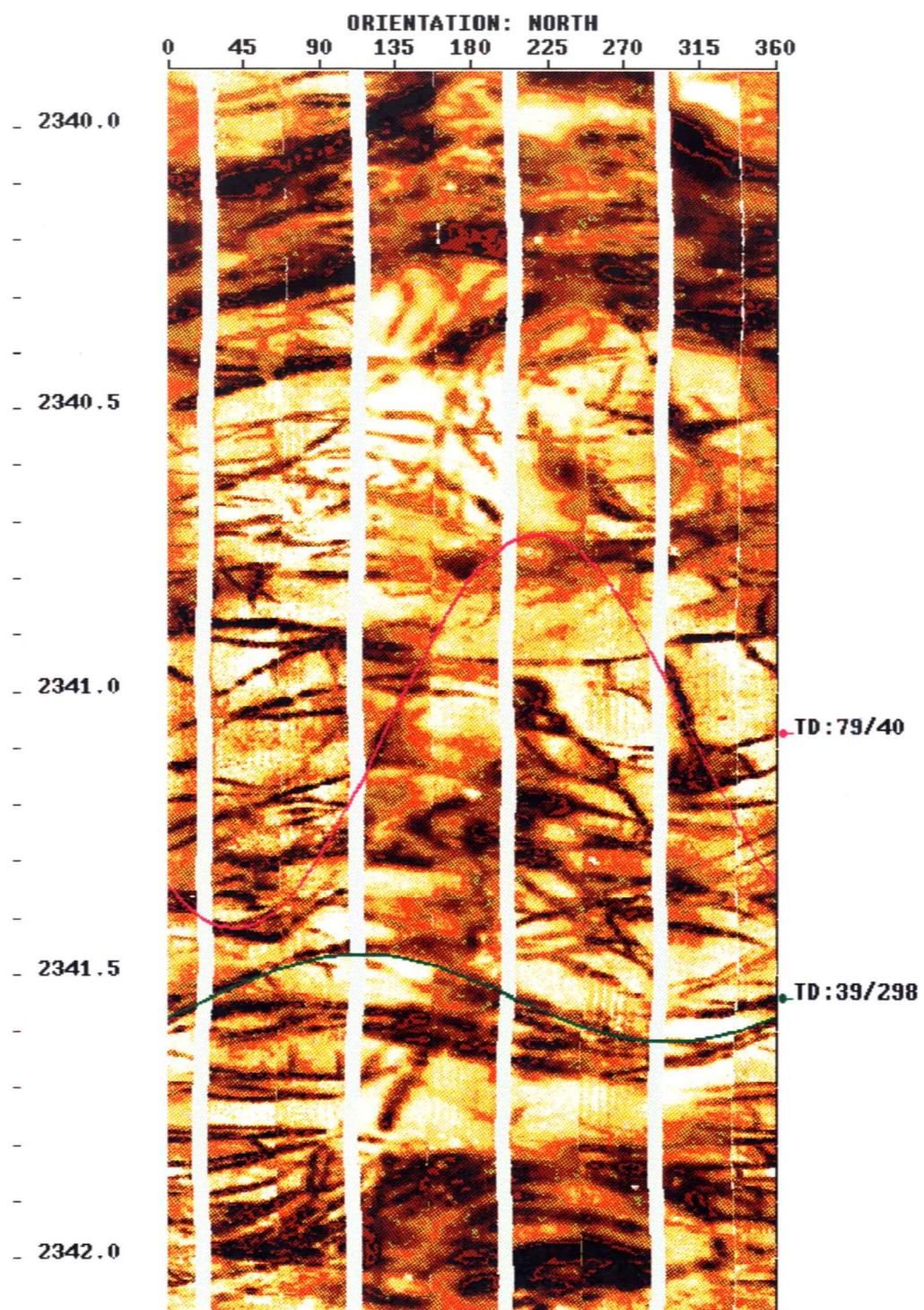


Figure 12. Natural fractures within Mississippian Debolt carbonates. These low angle, open fractures can be seen right across the borehole. Bedding planes are measured at 2325.1 m. and 2326.4 m.

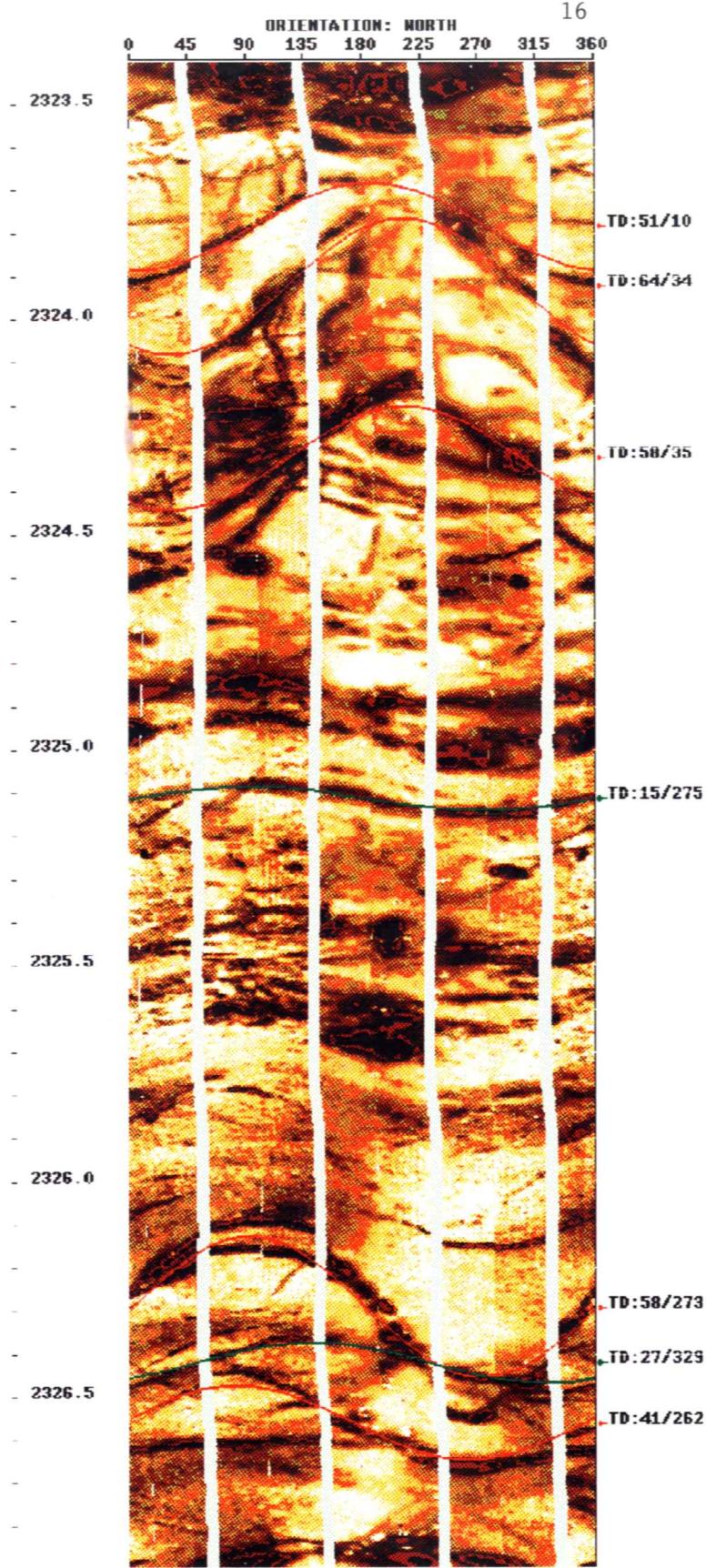


Figure 13. Natural fractures within Mississippian Debolt carbonates. These low angle, open fractures can be seen right across the borehole and crosscut bedding. Bedding planes are highlighted in green.

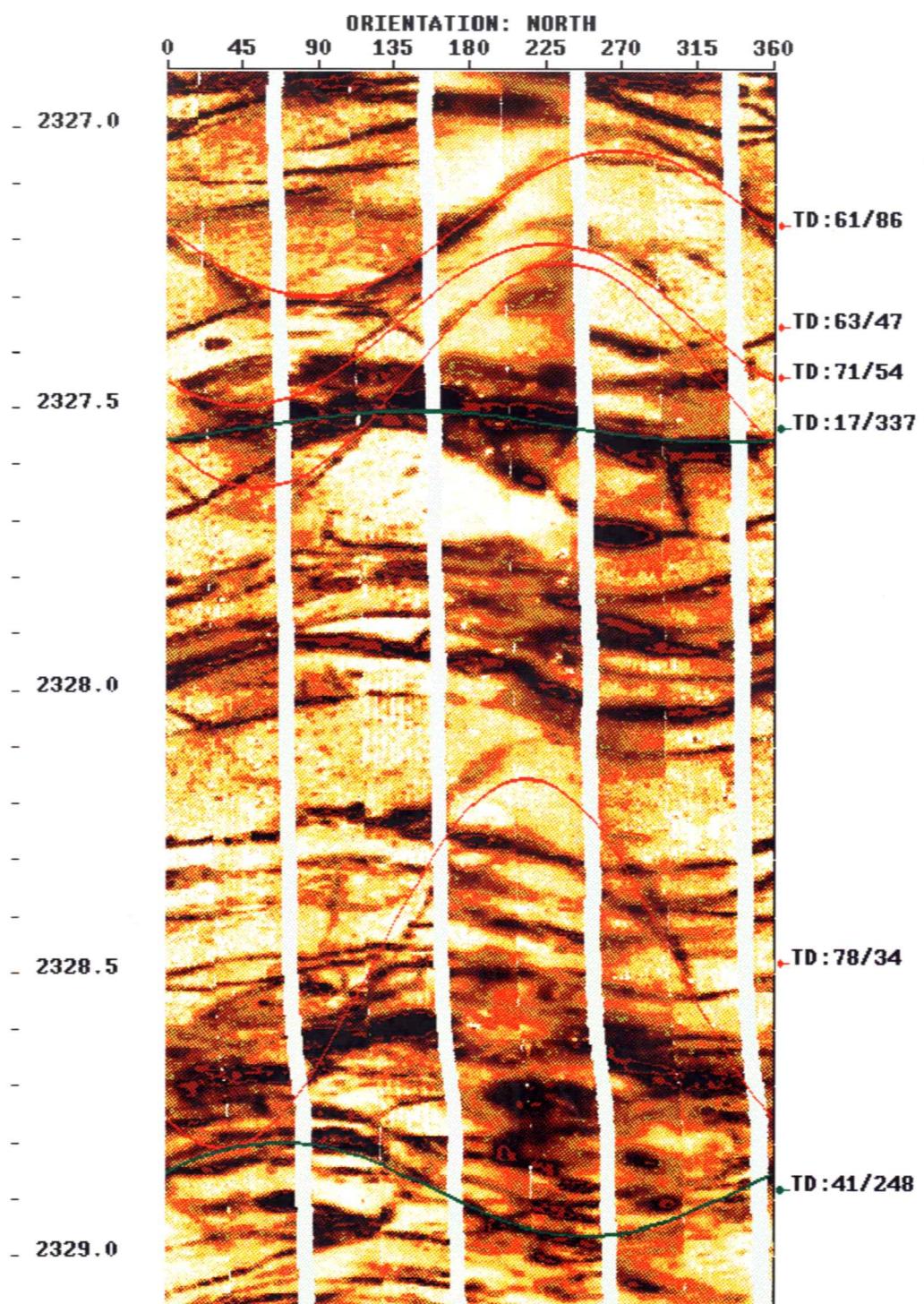


Figure 14. An example of a linear feature within Mississippian Shunda carbonates interpreted as an incipient breakout. The feature strikes 127° N. which aligns with $S_{H\min}$ directions from adjacent wells. This fracture resembles an open non-mineralized induced fracture which, on the basis of its geometric relationship with respect to the regional stress regime and the lack of differential elongation of the calipers, is interpreted as an incipient breakout.

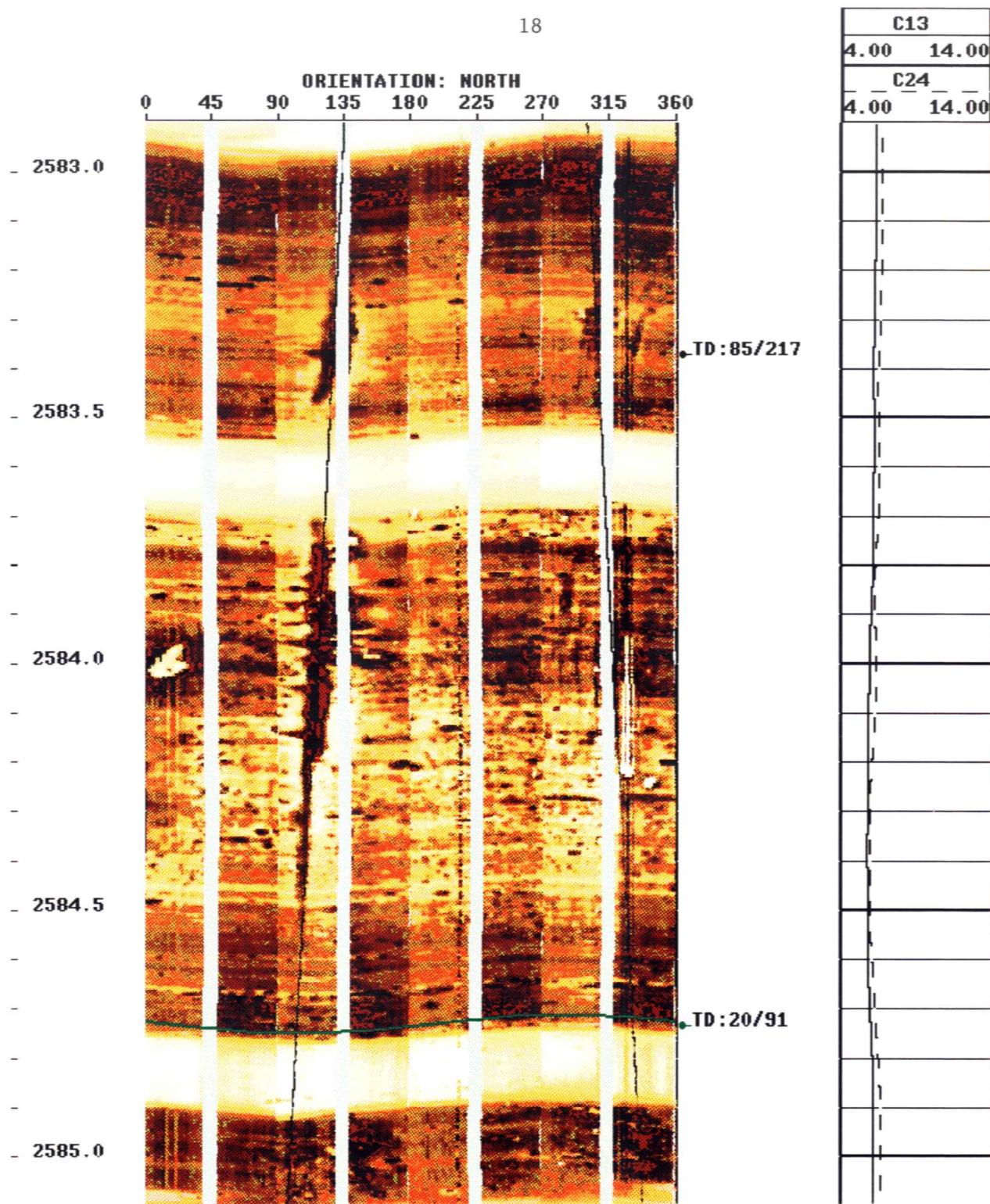


Figure 15. Intermediate stage breakouts within Mississippian Debolt carbonates. The inability of the tool pads to make firm contact with the walls of the spalled borehole results in diffuse, unfocussed zones on the microresistivity image and is seen at azimuths 45° - 135° and 225° - 315° . These zones are indicated by the cyan traces of the image examiner workstation, and strike 114° N. as shown by the measurement at 2425.7 m. (86/204 refers to the dip angle azimuth of the cyan trace). Differential extension of the calipers further indicates horizontal elongation of the borehole. Chatter fractures are traced in blue, bedding planes in green.

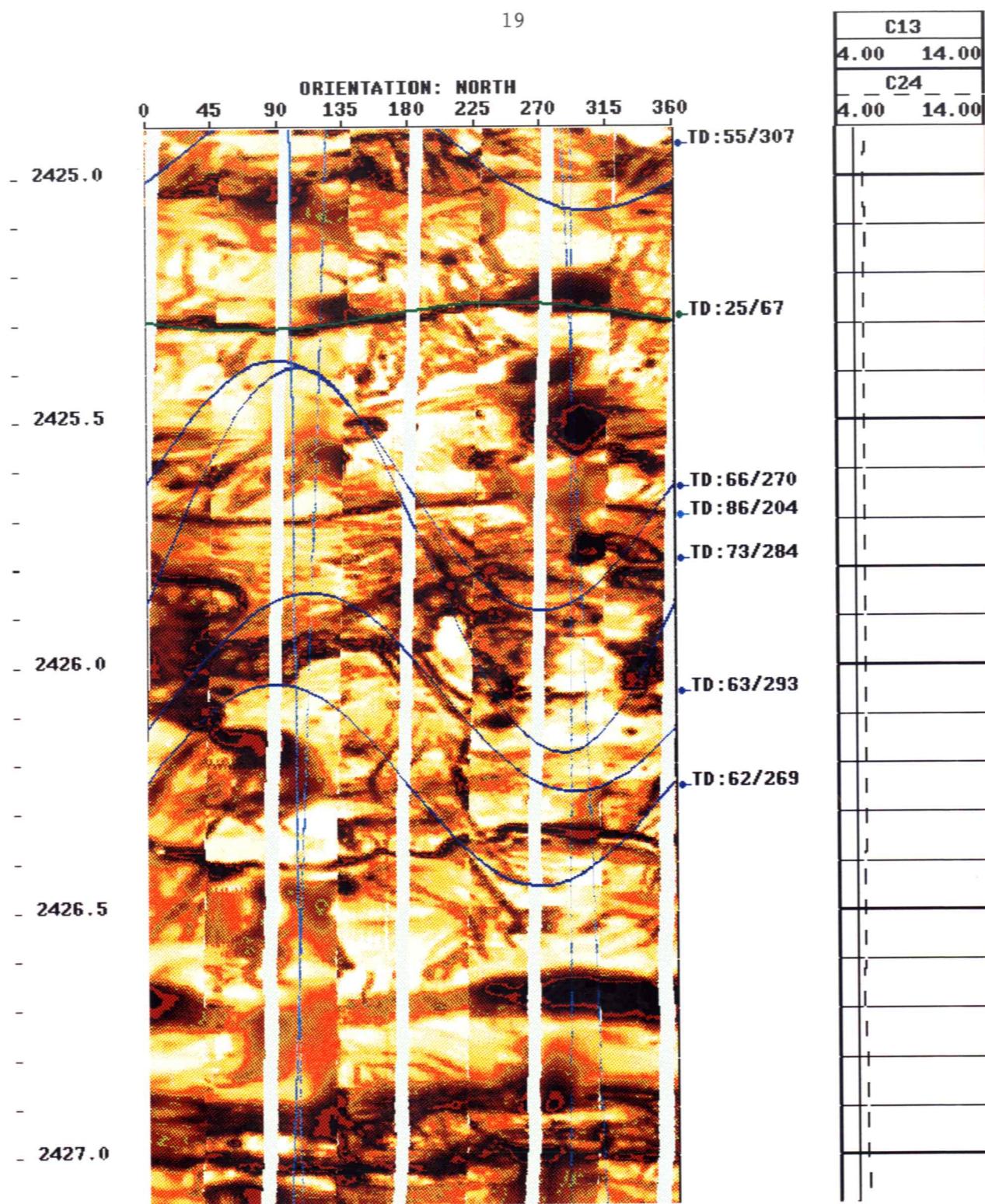


Figure 16. A second population of chatter fractures is highlighted in magenta and is shown here within carbonates of the Mississippian Debolt Formation. These fractures strike 90° to the chatter fracture population discussed above. In this instance they are grouped within the more conductive shaley layers and are not seen within the more resistive carbonate bands, and are confined to narrow azimuths at 85°-140° and 260°-320°.

The orientation of these fractures, which is parallel to the regional $S_{H\min}$ stress direction, may suggest they are indicators of localized compressive shear failure resulting in borehole breakout. Alternatively, these fractures may have oriented in response to a locally rotated stress regime where the principal stresses may not be horizontal and vertical. While fractures typically initiate along the axis of the borehole due to the stress concentration effect during drilling, they may deviate significantly due to local geologic effects. Local geologic processes may be causing alternate orientations of the principal stress field (Aadnoy, 1990). The presence of a fault zone immediately above this zone of population 2 fractures (Rigel Energy, pers. comm., 1994, see fig 17) may have altered the local stress regime sufficiently to realign these fractures.

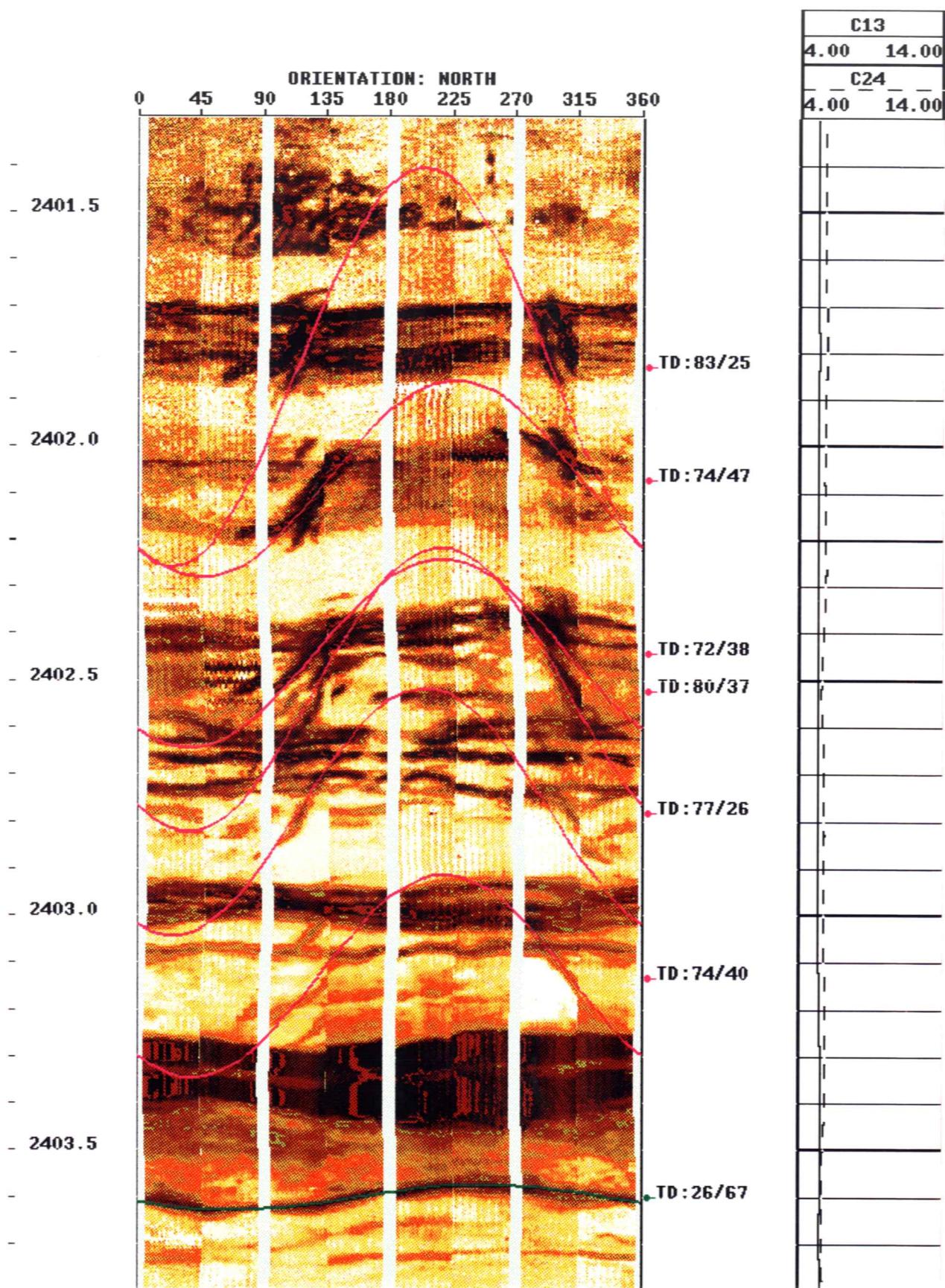
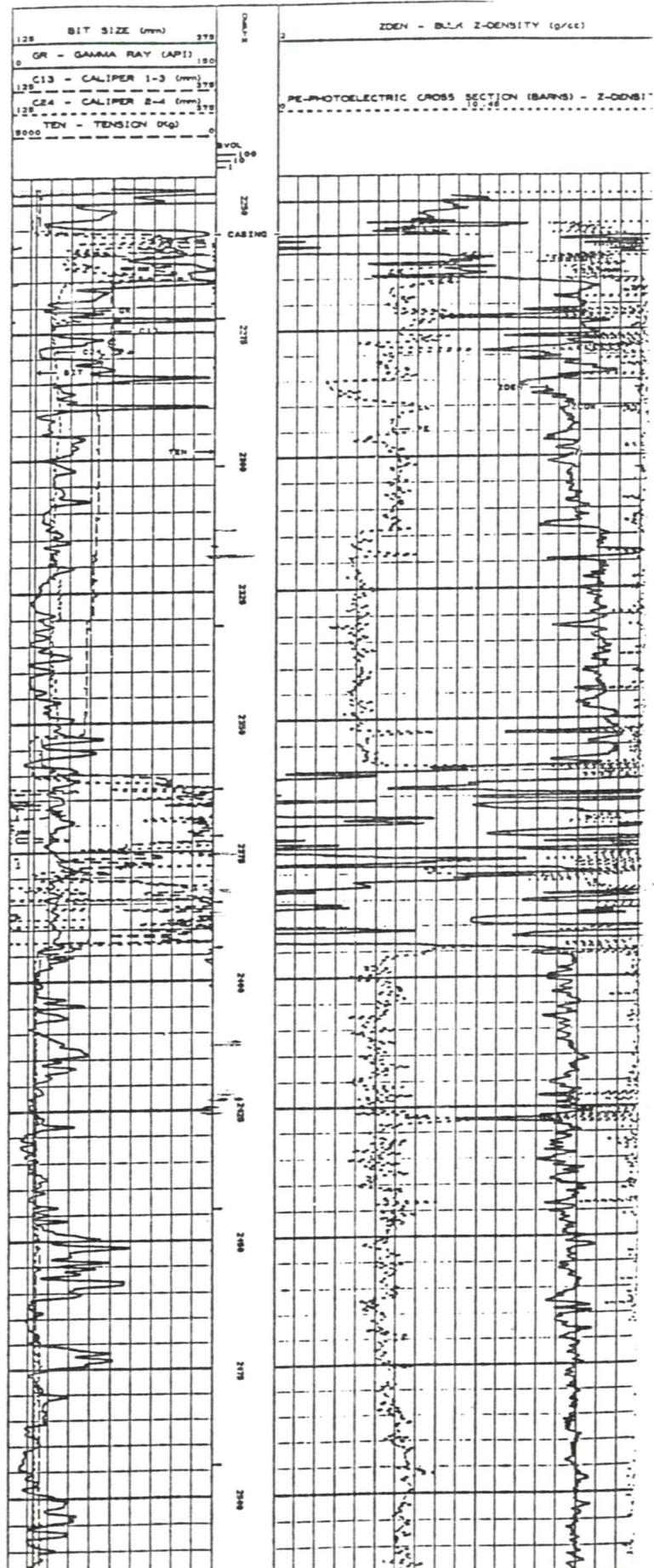


Figure 17 Bulk density and gamma logs for Diaber c-65-D/94-P-16. The low density, high porosity interval between 2355 m and 2396 m suggests a fault zone that may be removing the influence of the larger principal stress locally. The well operators interpret this interval as a fault (Rigel Energy, pers. comm., 1994). Population 2 chatter fractures, occurring from 2401.0 to 2410.0 m may be responding to this altered stress state and therefore would orient parallel to the regional S_{Hmin} direction.

Diaber c-65-D/94-B-16**Fault Zone**

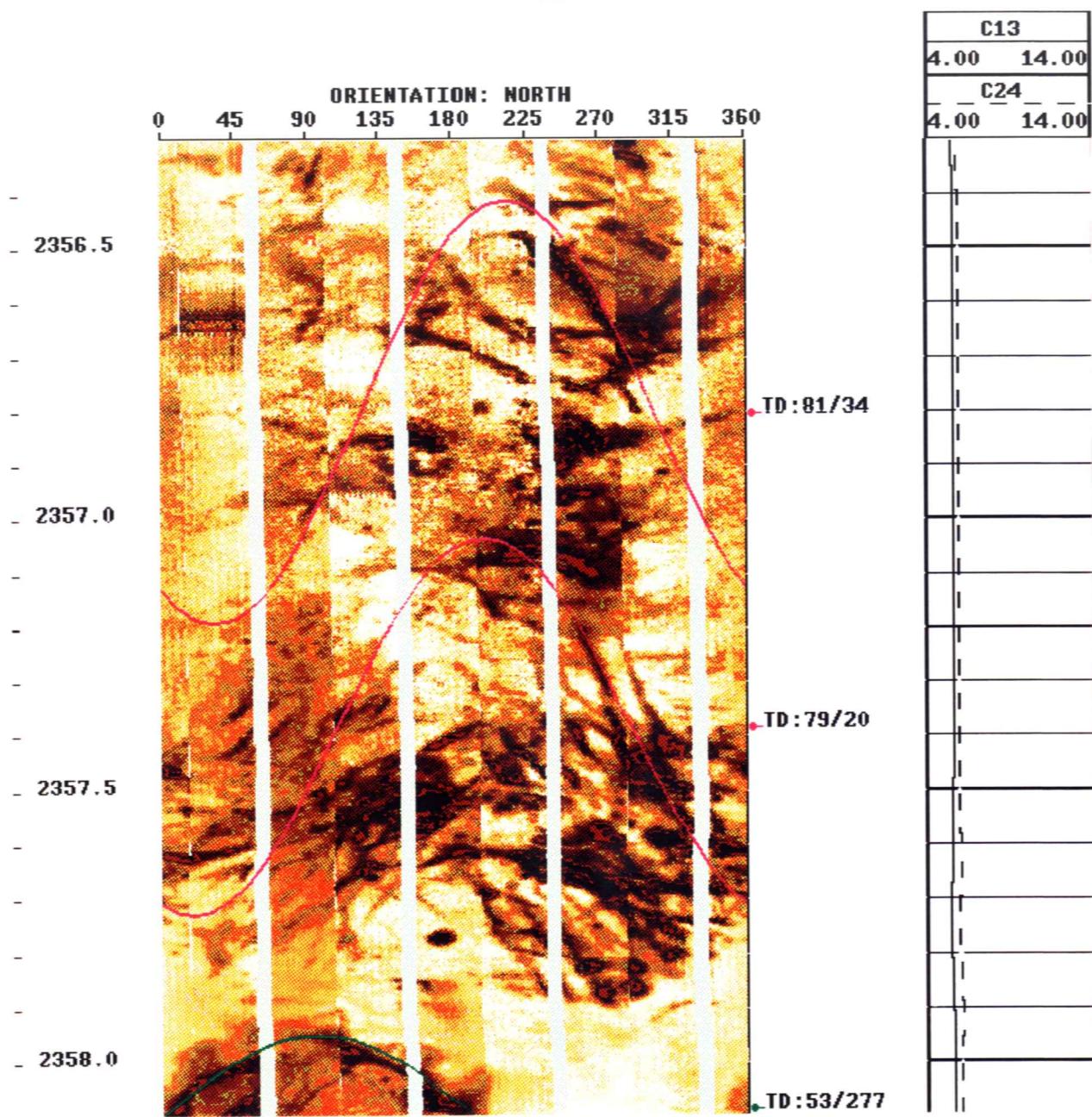


Figure 18 Population 2 chatter fractures highlighted in magenta within Mississippian Debolt carbonates. These fractures are confined to narrow azimuths at $220^\circ - 310^\circ$ and the fracture traces appear to be seen on only one side of the borehole. Population 2 chatter fractures may indicate incipient borehole collapse resulting from shear fracture development at the borehole wall, or may reflect a rotation of the stress field due to local geologic effects, in this instance the fault zone shown in figure 17.

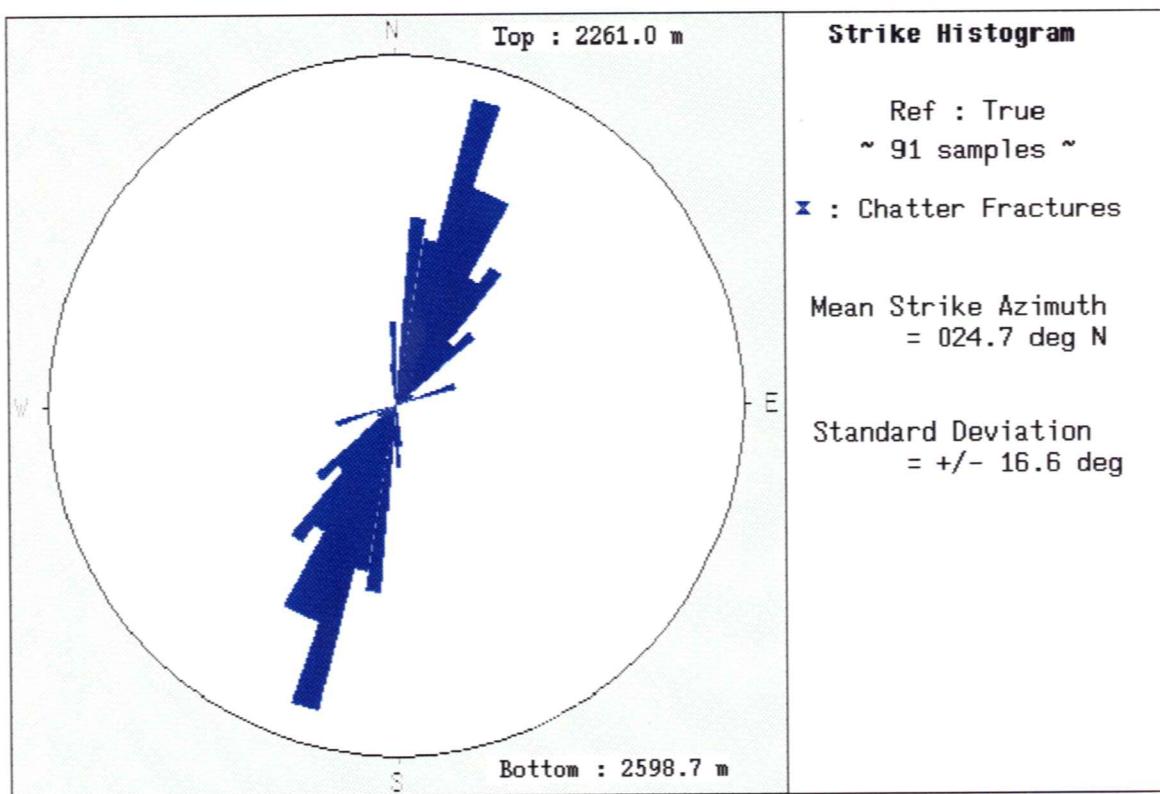
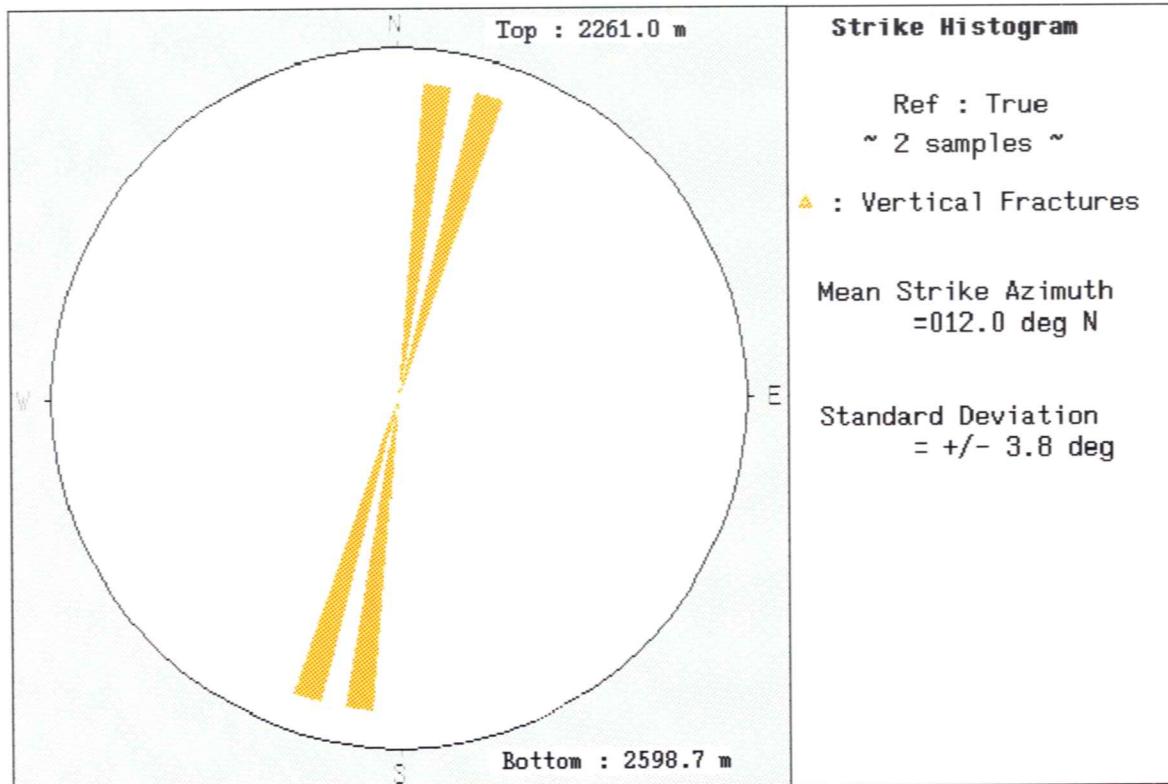


Figure 19a. Strike azimuth plot of semi-vertical fractures in Diaber c-65-D/94-B-16. Mean strike azimuth from 2 samples is computed as 012.0° N (standard deviation = $\pm 3.8^\circ$, Mardia 1972)

Figure 19b. Strike azimuth plot of chatter fractures in Diaber c-65-D/94-B-16. Mean strike azimuth for 91 samples is computed as 024.7° N (standard deviation = $\pm 16.6^\circ$, Mardia 1972)

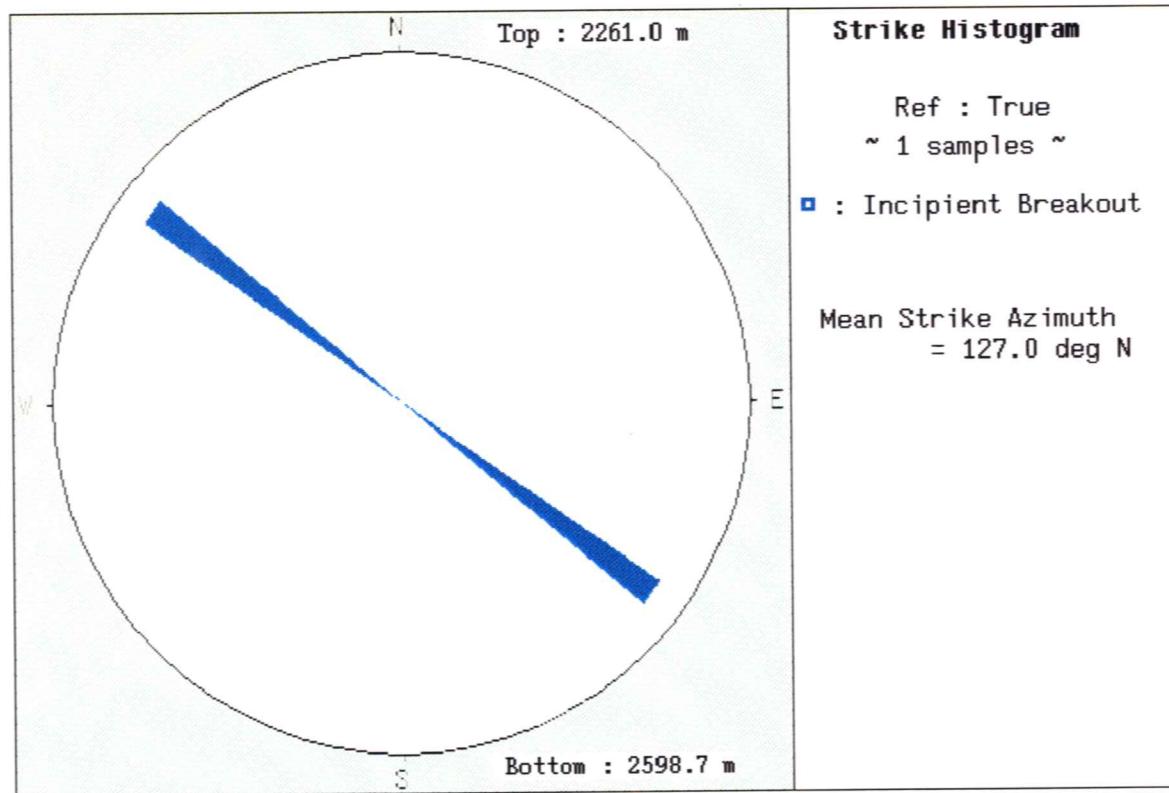
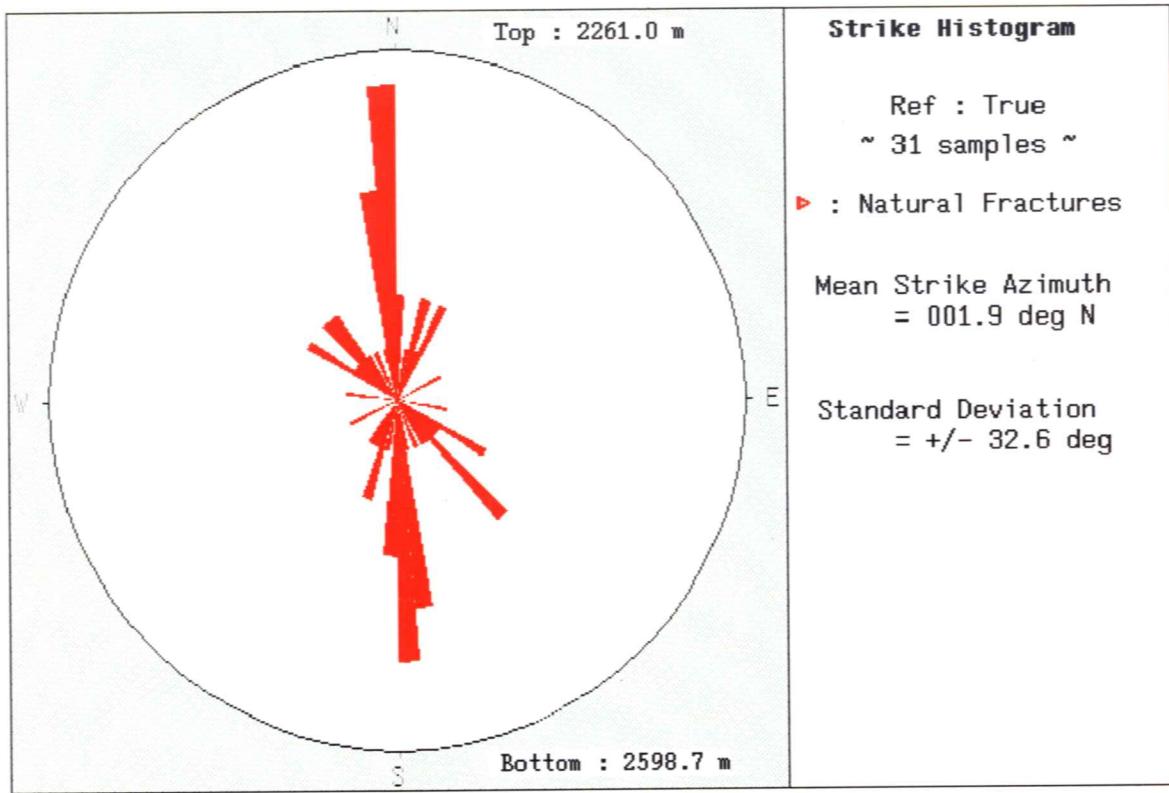


Figure 20a. Strike azimuth plot of natural fractures in Diaber c-65-D/94-B-16. Mean strike azimuth for 31 samples is computed as 001.9° N (standard deviation = $\pm 32.6^\circ$, Mardia 1972)

Figure 20b. Strike azimuth plot of incipient breakouts in Diaber c-65-D/94-B-16. The strike azimuth for the one sample is 127.0° N.

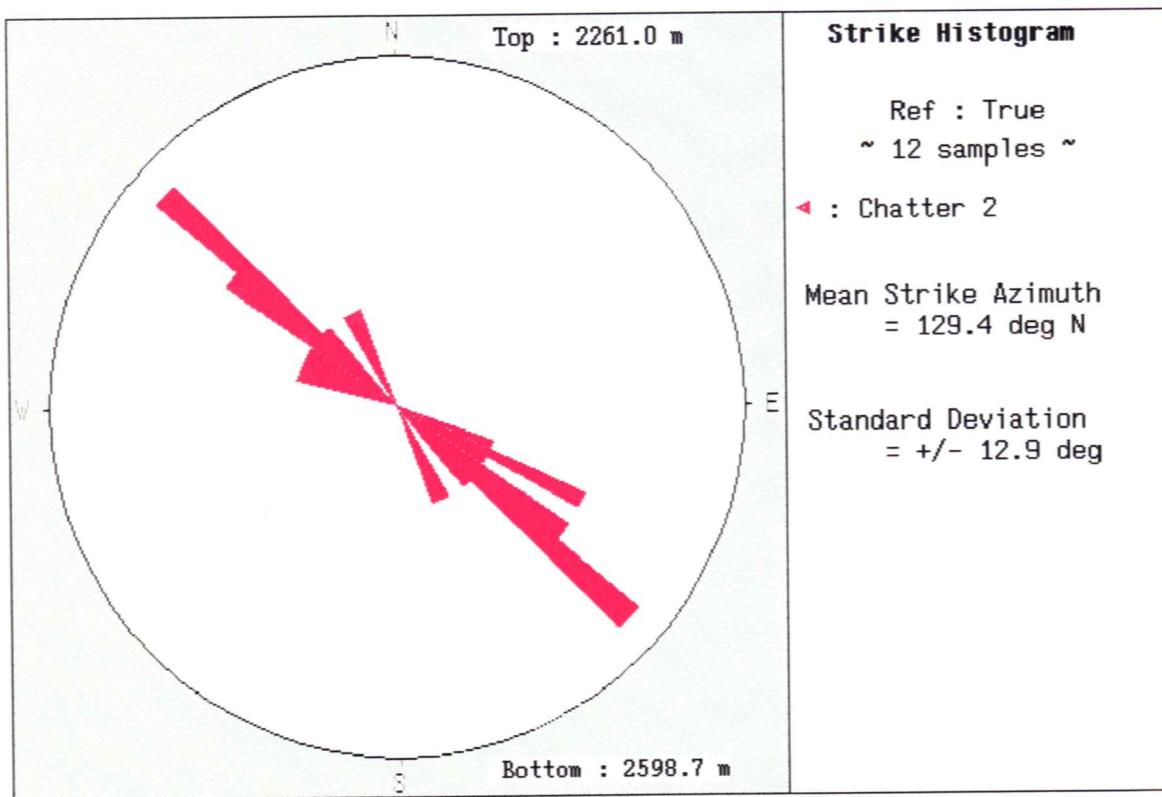
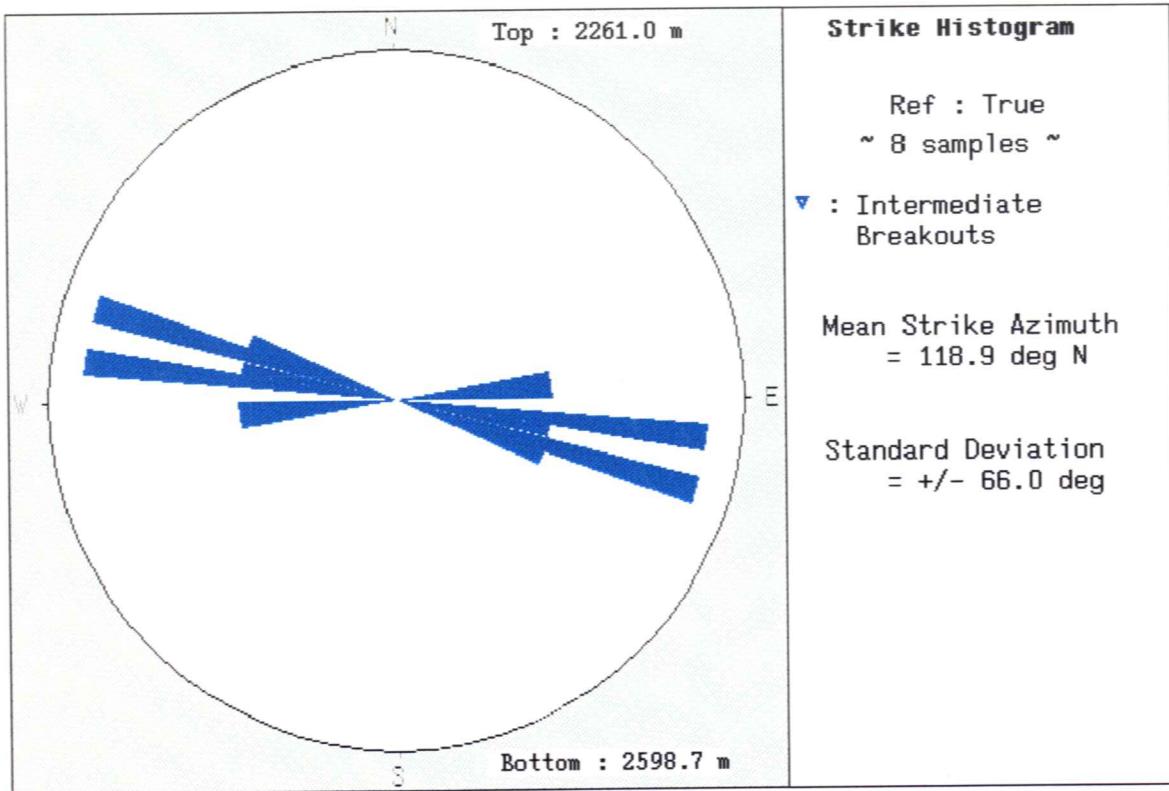


Figure 21a. Strike azimuth plot of intermediate breakouts in Diaber c-65-D/94-B-16. Mean strike azimuth for 8 samples is computed as 118.9° N (standard deviation = $\pm 66.0^\circ$, Mardia 1972)

Figure 21b. Strike azimuth plot of chatter fracture population 2 in Diaber c-65-D/94-B-16. Mean strike azimuth for 12 samples is computed as 129.4° N (standard deviation = $\pm 12.9^\circ$, Mardia 1972)

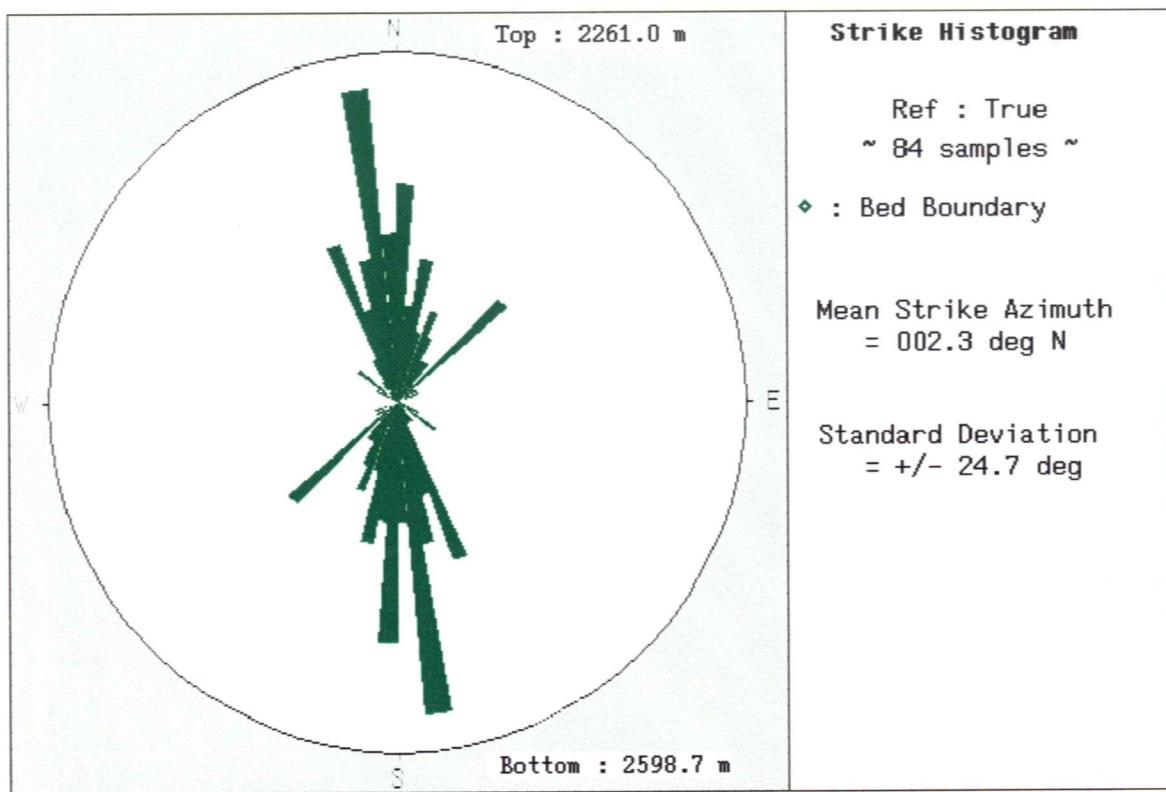


Figure 22. Strike azimuth plot of bedding planes in Diaber c-65-D/94-B-16. Mean strike azimuth for the 84 measured samples is computed as 002.3° N (standard deviation = $+/- 24.7^\circ$, Mardia 1972)

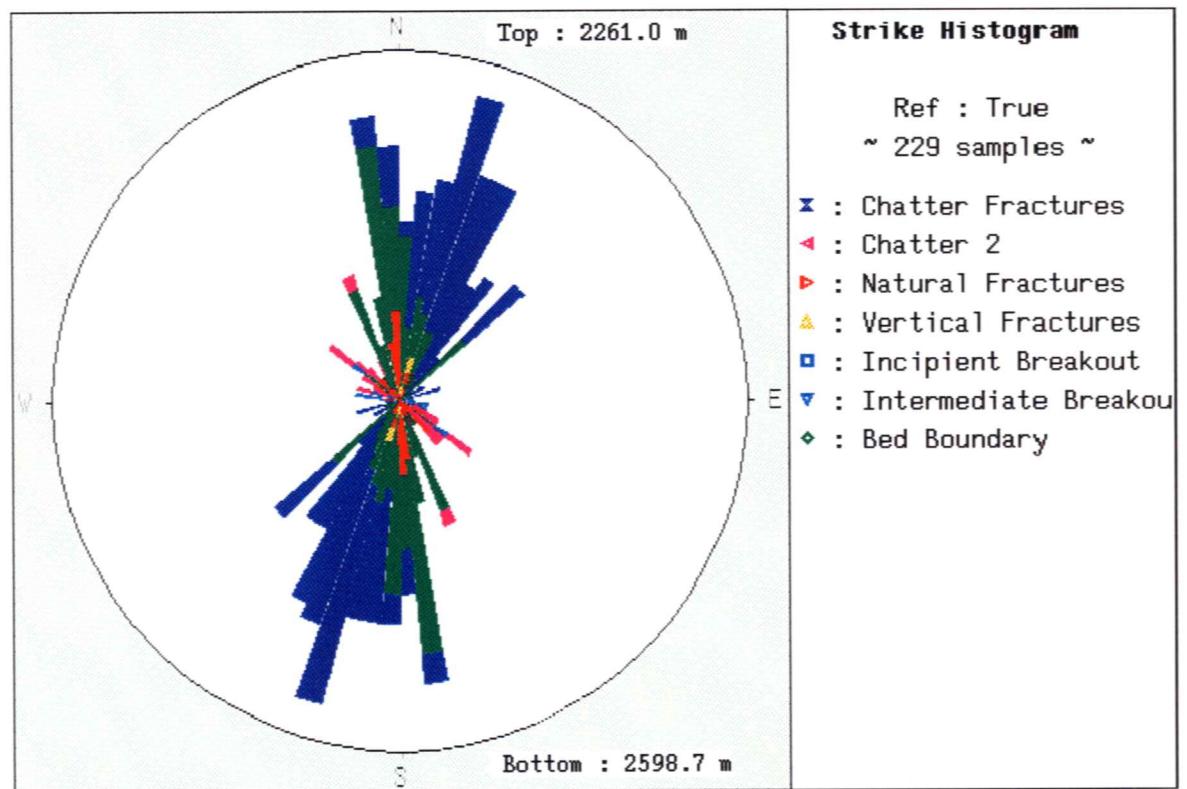
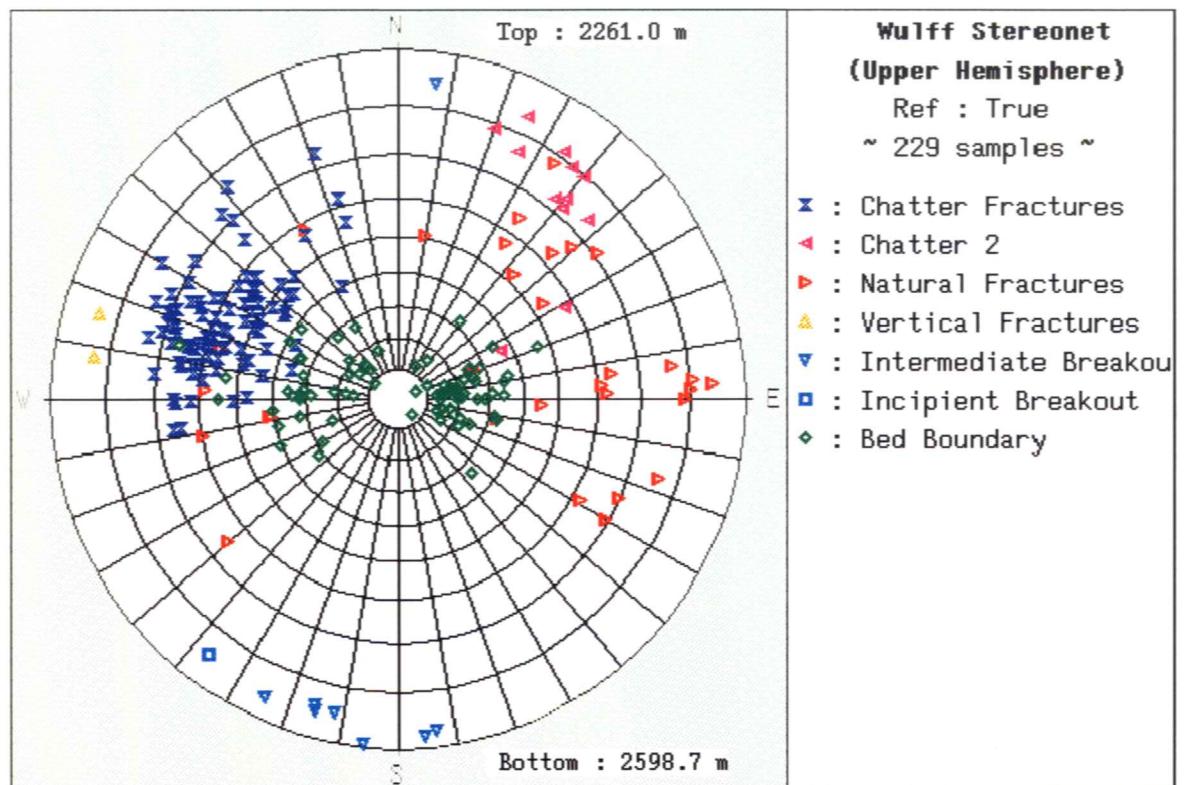


Figure 23a. Strike azimuth summary plot of all the features measured in Diaber c-65-D/94-B-16.

Figure 23b. Wulf stereonet summary diagram of all features measured in Diaber c-65-D/94-B-16.

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Well Name: TOTAL DIABER c-65-D/94-B-16 Vertical Fracture Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	0	0.000	0.000	1.000	0.000	0.000	0
2268.3	0	0.000	0.000	1.000	0.000	0.000	0
2269.1	0	0.000	0.000	1.000	0.000	0.000	0
2269.5	0	0.000	0.000	1.000	0.000	0.000	0
2271.1	0	0.000	0.000	1.000	0.000	0.000	0
2273.4	0	0.000	0.000	1.000	0.000	0.000	0
2276.8	0	0.000	0.000	1.000	0.000	0.000	0
2278.3	0	0.000	0.000	1.000	0.000	0.000	0
2282.0	0	0.000	0.000	1.000	0.000	0.000	0
2283.7	0	0.000	0.000	1.000	0.000	0.000	0
2283.8	0	0.000	0.000	1.000	0.000	0.000	0
2286.2	0	0.000	0.000	1.000	0.000	0.000	0
2288.8	0	0.000	0.000	1.000	0.000	0.000	0
2289.0	0	0.000	0.000	1.000	0.000	0.000	0
2294.8	0	0.000	0.000	1.000	0.000	0.000	0
2298.3	0	0.000	0.000	1.000	0.000	0.000	0
2299.6	0	0.000	0.000	1.000	0.000	0.000	0
2303.4	0	0.000	0.000	1.000	0.000	0.000	0
2306.5	0	0.000	0.000	1.000	0.000	0.000	0
2308.1	0	0.000	0.000	1.000	0.000	0.000	0
2312.9	0	0.000	0.000	1.000	0.000	0.000	0
2313.3	0	0.000	0.000	1.000	0.000	0.000	0
2317.4	0	0.000	0.000	1.000	0.000	0.000	0
2318.1	0	0.000	0.000	1.000	0.000	0.000	0
2321.3	0	0.000	0.000	1.000	0.000	0.000	0
2321.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.1	0	0.000	0.000	1.000	0.000	0.000	0
2322.2	0	0.000	0.000	1.000	0.000	0.000	0
2322.5	0	0.000	0.000	1.000	0.000	0.000	0
2322.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.8	0	0.000	0.000	1.000	0.000	0.000	0
2324.3	0	0.000	0.000	1.000	0.000	0.000	0
2325.1	0	0.000	0.000	1.000	0.000	0.000	0
2326.2	0	0.000	0.000	1.000	0.000	0.000	0
2326.4	0	0.000	0.000	1.000	0.000	0.000	0
2326.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.1	0	0.000	0.000	1.000	0.000	0.000	0
2327.4	0	0.000	0.000	1.000	0.000	0.000	0
2327.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.6	0	0.000	0.000	1.000	0.000	0.000	0
2328.5	0	0.000	0.000	1.000	0.000	0.000	0
2328.8	0	0.000	0.000	1.000	0.000	0.000	0
2329.2	0	0.000	0.000	1.000	0.000	0.000	0
2330.2	0	0.000	0.000	1.000	0.000	0.000	0
2332.0	0	0.000	0.000	1.000	0.000	0.000	0
2332.3	0	0.000	0.000	1.000	0.000	0.000	0
2332.6	0	0.000	0.000	1.000	0.000	0.000	0
2333.1	0	0.000	0.000	1.000	0.000	0.000	0
2333.6	0	0.000	0.000	1.000	0.000	0.000	0
2335.3	0	0.000	0.000	1.000	0.000	0.000	0
2335.8	0	0.000	0.000	1.000	0.000	0.000	0

2336.7	0	0.000	0.000	1.000	0.000	0.000	0
2337.8	0	0.000	0.000	1.000	0.000	0.000	0
2341.2	0	0.000	0.000	1.000	0.000	0.000	0
2341.5	0	0.000	0.000	1.000	0.000	0.000	0
2342.2	0	0.000	0.000	1.000	0.000	0.000	0
2342.4	0	0.000	0.000	1.000	0.000	0.000	0
2345.8	0	0.000	0.000	1.000	0.000	0.000	0
2347.7	0	0.000	0.000	1.000	0.000	0.000	0
2349.7	0	0.000	0.000	1.000	0.000	0.000	0
2351.1	0	0.000	0.000	1.000	0.000	0.000	0
2351.2	0	0.000	0.000	1.000	0.000	0.000	0
2351.3	0	0.000	0.000	1.000	0.000	0.000	0
2351.5	0	0.000	0.000	1.000	0.000	0.000	0
2355.0	0	0.000	0.000	1.000	0.000	0.000	0
2356.8	0	0.000	0.000	1.000	0.000	0.000	0
2357.4	0	0.000	0.000	1.000	0.000	0.000	0
2358.0	0	0.000	0.000	1.000	0.000	0.000	0
2395.8	0	0.000	0.000	1.000	0.000	0.000	0
2397.5	0	0.000	0.000	1.000	0.000	0.000	0
2397.6	0	0.000	0.000	1.000	0.000	0.000	0
2401.8	0	0.000	0.000	1.000	0.000	0.000	0
2402.0	0	0.000	0.000	1.000	0.000	0.000	0
2402.3	0	0.000	0.000	1.000	0.000	0.000	0
2402.5	0	0.000	0.000	1.000	0.000	0.000	0
2402.8	0	0.000	0.000	1.000	0.000	0.000	0
2403.1	0	0.000	0.000	1.000	0.000	0.000	0
2403.6	0	0.000	0.000	1.000	0.000	0.000	0
2405.8	0	0.000	0.000	1.000	0.000	0.000	0
2407.8	0	0.000	0.000	1.000	0.000	0.000	0
2410.3	0	0.000	0.000	1.000	0.000	0.000	0
2411.8	0	0.000	0.000	1.000	0.000	0.000	0
2413.9	0	0.000	0.000	1.000	0.000	0.000	0
2414.7	196	-0.276	-0.276	-0.961	-0.961	-0.961	1
2415.9	188	-0.139	-0.415	-0.990	-0.990	-1.952	1
2419.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2419.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2420.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2421.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2421.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2422.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2422.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2423.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2423.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2424.9	0	0.000	-0.415	1.000	0.000	-1.952	0
2425.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2425.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2425.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2425.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2426.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2426.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2427.9	0	0.000	-0.415	1.000	0.000	-1.952	0
2428.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2428.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2429.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2429.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2430.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2431.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2431.2	0	0.000	-0.415	1.000	0.000	-1.952	0

2431.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2431.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2431.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2432.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2432.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2432.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2433.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2433.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2433.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2433.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2434.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2434.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2434.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2434.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2434.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2435.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2436.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2436.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2437.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2437.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2437.9	0	0.000	-0.415	1.000	0.000	-1.952	0
2438.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2438.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2439.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2439.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2439.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2440.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2440.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2440.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2441.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2441.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2441.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2441.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2442.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2442.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2442.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2442.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2442.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2442.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2443.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2443.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2444.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2446.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2446.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2447.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2448.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2453.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2455.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2455.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2456.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2456.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2456.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2457.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2457.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2460.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2461.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2461.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2461.6	0	0.000	-0.415	1.000	0.000	-1.952	0

2461.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2462.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2462.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2462.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2463.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2464.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2464.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2464.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2464.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2464.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2465.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2465.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2465.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2466.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2466.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2467.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2467.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2467.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2467.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2467.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2467.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2468.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2469.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2475.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2476.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2477.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2480.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2480.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2480.9	0	0.000	-0.415	1.000	0.000	-1.952	0
2481.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2482.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2483.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2483.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2483.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2483.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2484.1	0	0.000	-0.415	1.000	0.000	-1.952	0
2486.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2489.0	0	0.000	-0.415	1.000	0.000	-1.952	0
2490.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2491.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2494.3	0	0.000	-0.415	1.000	0.000	-1.952	0
2502.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2507.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2515.6	0	0.000	-0.415	1.000	0.000	-1.952	0
2521.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2526.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2531.9	0	0.000	-0.415	1.000	0.000	-1.952	0
2538.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2547.2	0	0.000	-0.415	1.000	0.000	-1.952	0
2553.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2563.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2572.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2579.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2581.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2583.4	0	0.000	-0.415	1.000	0.000	-1.952	0
2584.7	0	0.000	-0.415	1.000	0.000	-1.952	0
2585.8	0	0.000	-0.415	1.000	0.000	-1.952	0
2585.9	0	0.000	-0.415	1.000	0.000	-1.952	0

2587.5	0	0.000	-0.415	1.000	0.000	-1.952	0
2593.6	0	0.000	-0.415	1.000	0.000	-1.952	0

Arithmetic mean of strike values (col 2)= 192.0 Total measurements taken = 2

Feature Orientation measurements Well: TOTAL DIABER c-65-D/94-B-16 Vertical Fractures
 Reference Mardia 1972 for statistics of directional data

Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/Col C	C ColB/ColC	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
-0.415	-1.952	2	-0.2075	-0.9760	0.9956	0.9978	-0.2080	-0.9781	192.0	192.0	3.8

Well Name: TOTAL DIABER c-65-D/94-B-16 Chatter Fracture Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	0	0.000	0.000	1.000	0.000	0.000	0
2268.3	0	0.000	0.000	1.000	0.000	0.000	0
2269.1	0	0.000	0.000	1.000	0.000	0.000	0
2269.5	0	0.000	0.000	1.000	0.000	0.000	0
2271.1	0	0.000	0.000	1.000	0.000	0.000	0
2273.4	0	0.000	0.000	1.000	0.000	0.000	0
2276.8	0	0.000	0.000	1.000	0.000	0.000	0
2278.3	0	0.000	0.000	1.000	0.000	0.000	0
2282.0	0	0.000	0.000	1.000	0.000	0.000	0
2283.7	0	0.000	0.000	1.000	0.000	0.000	0
2283.8	0	0.000	0.000	1.000	0.000	0.000	0
2286.2	0	0.000	0.000	1.000	0.000	0.000	0
2288.8	0	0.000	0.000	1.000	0.000	0.000	0
2289.0	0	0.000	0.000	1.000	0.000	0.000	0
2294.8	0	0.000	0.000	1.000	0.000	0.000	0
2298.3	0	0.000	0.000	1.000	0.000	0.000	0
2299.6	0	0.000	0.000	1.000	0.000	0.000	0
2303.4	0	0.000	0.000	1.000	0.000	0.000	0
2306.5	0	0.000	0.000	1.000	0.000	0.000	0
2308.1	0	0.000	0.000	1.000	0.000	0.000	0
2312.9	0	0.000	0.000	1.000	0.000	0.000	0
2313.3	0	0.000	0.000	1.000	0.000	0.000	0
2317.4	0	0.000	0.000	1.000	0.000	0.000	0
2318.1	0	0.000	0.000	1.000	0.000	0.000	0
2321.3	0	0.000	0.000	1.000	0.000	0.000	0
2321.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.1	0	0.000	0.000	1.000	0.000	0.000	0
2322.2	0	0.000	0.000	1.000	0.000	0.000	0
2322.5	0	0.000	0.000	1.000	0.000	0.000	0
2322.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.8	0	0.000	0.000	1.000	0.000	0.000	0
2324.3	0	0.000	0.000	1.000	0.000	0.000	0
2325.1	0	0.000	0.000	1.000	0.000	0.000	0
2326.2	0	0.000	0.000	1.000	0.000	0.000	0
2326.4	0	0.000	0.000	1.000	0.000	0.000	0
2326.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.1	0	0.000	0.000	1.000	0.000	0.000	0
2327.4	0	0.000	0.000	1.000	0.000	0.000	0
2327.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.6	0	0.000	0.000	1.000	0.000	0.000	0
2328.5	0	0.000	0.000	1.000	0.000	0.000	0
2328.8	0	0.000	0.000	1.000	0.000	0.000	0
2329.2	0	0.000	0.000	1.000	0.000	0.000	0
2330.2	0	0.000	0.000	1.000	0.000	0.000	0
2332.0	0	0.000	0.000	1.000	0.000	0.000	0
2332.3	0	0.000	0.000	1.000	0.000	0.000	0
2332.6	0	0.000	0.000	1.000	0.000	0.000	0
2333.1	0	0.000	0.000	1.000	0.000	0.000	0
2333.6	0	0.000	0.000	1.000	0.000	0.000	0
2335.3	0	0.000	0.000	1.000	0.000	0.000	0
2335.8	0	0.000	0.000	1.000	0.000	0.000	0

2336.7	0	0.000	0.000	1.000	0.000	0.000	0
2337.8	0	0.000	0.000	1.000	0.000	0.000	0
2341.2	0	0.000	0.000	1.000	0.000	0.000	0
2341.5	0	0.000	0.000	1.000	0.000	0.000	0
2342.2	0	0.000	0.000	1.000	0.000	0.000	0
2342.4	0	0.000	0.000	1.000	0.000	0.000	0
2345.8	0	0.000	0.000	1.000	0.000	0.000	0
2347.7	0	0.000	0.000	1.000	0.000	0.000	0
2349.7	226	-0.719	-0.719	-0.695	-0.695	-0.695	1
2351.1	253	-0.956	-1.676	-0.292	-0.292	-0.987	1
2351.2	253	-0.956	-2.632	-0.292	-0.292	-1.279	1
2351.3	240	-0.866	-3.498	-0.500	-0.500	-1.779	1
2351.5	0	0.000	-3.498	1.000	0.000	-1.779	0
2355.0	0	0.000	-3.498	1.000	0.000	-1.779	0
2356.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2357.4	0	0.000	-3.498	1.000	0.000	-1.779	0
2358.0	0	0.000	-3.498	1.000	0.000	-1.779	0
2395.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2397.5	0	0.000	-3.498	1.000	0.000	-1.779	0
2397.6	0	0.000	-3.498	1.000	0.000	-1.779	0
2401.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2402.0	0	0.000	-3.498	1.000	0.000	-1.779	0
2402.3	0	0.000	-3.498	1.000	0.000	-1.779	0
2402.5	0	0.000	-3.498	1.000	0.000	-1.779	0
2402.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2403.1	0	0.000	-3.498	1.000	0.000	-1.779	0
2403.6	0	0.000	-3.498	1.000	0.000	-1.779	0
2405.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2407.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2410.3	0	0.000	-3.498	1.000	0.000	-1.779	0
2411.8	0	0.000	-3.498	1.000	0.000	-1.779	0
2413.9	0	0.000	-3.498	1.000	0.000	-1.779	0
2414.7	0	0.000	-3.498	1.000	0.000	-1.779	0
2415.9	0	0.000	-3.498	1.000	0.000	-1.779	0
2419.5	231	-0.777	-4.275	-0.629	-0.629	-2.409	1
2419.8	226	-0.719	-4.994	-0.695	-0.695	-3.103	1
2420.2	0	0.000	-4.994	1.000	0.000	-3.103	0
2421.2	194	-0.242	-5.236	-0.970	-0.970	-4.074	1
2421.5	201	-0.358	-5.595	-0.934	-0.934	-5.007	1
2422.0	0	0.000	-5.595	1.000	0.000	-5.007	0
2422.1	172	0.139	-5.456	-0.990	-0.990	-5.998	1
2423.0	204	-0.407	-5.862	-0.914	-0.914	-6.911	1
2423.2	201	-0.358	-6.221	-0.934	-0.934	-7.845	1
2424.9	217	-0.602	-6.822	-0.799	-0.799	-8.643	1
2425.3	0	0.000	-6.822	1.000	0.000	-8.643	0
2425.6	180	0.000	-6.822	-1.000	-1.000	-9.643	1
2425.7	0	0.000	-6.822	1.000	0.000	-9.643	0
2425.8	194	-0.242	-7.064	-0.970	-0.970	-10.614	1
2426.0	203	-0.391	-7.455	-0.921	-0.921	-11.534	1
2426.3	179	0.017	-7.438	-1.000	-1.000	-12.534	1
2427.9	0	0.000	-7.438	1.000	0.000	-12.534	0
2428.0	0	0.000	-7.438	1.000	0.000	-12.534	0
2428.3	214	-0.559	-7.997	-0.829	-0.829	-13.363	1
2429.2	190	-0.174	-8.171	-0.985	-0.985	-14.348	1
2429.7	198	-0.309	-8.480	-0.951	-0.951	-15.299	1
2430.0	0	0.000	-8.480	1.000	0.000	-15.299	0
2431.0	0	0.000	-8.480	1.000	0.000	-15.299	0
2431.2	197	-0.292	-8.772	-0.956	-0.956	-16.255	1

2431.5	0	0.000	-8.772	1.000	0.000	-16.255	0
2431.7	202	-0.375	-9.147	-0.927	-0.927	-17.182	1
2431.8	202	-0.375	-9.521	-0.927	-0.927	-18.110	1
2432.0	186	-0.105	-9.626	-0.995	-0.995	-19.104	1
2432.3	197	-0.292	-9.918	-0.956	-0.956	-20.060	1
2432.8	190	-0.174	-10.092	-0.985	-0.985	-21.045	1
2433.1	189	-0.156	-10.248	-0.988	-0.988	-22.033	1
2433.4	198	-0.309	-10.557	-0.951	-0.951	-22.984	1
2433.6	195	-0.259	-10.816	-0.966	-0.966	-23.950	1
2433.7	190	-0.174	-10.990	-0.985	-0.985	-24.935	1
2434.0	206	-0.438	-11.428	-0.899	-0.899	-25.833	1
2434.1	210	-0.500	-11.928	-0.866	-0.866	-26.699	1
2434.2	205	-0.423	-12.351	-0.906	-0.906	-27.606	1
2434.3	194	-0.242	-12.593	-0.970	-0.970	-28.576	1
2434.6	227	-0.731	-13.324	-0.682	-0.682	-29.258	1
2435.1	179	0.017	-13.306	-1.000	-1.000	-30.258	1
2436.3	209	-0.485	-13.791	-0.875	-0.875	-31.133	1
2436.5	0	0.000	-13.791	1.000	0.000	-31.133	0
2437.0	215	-0.574	-14.365	-0.819	-0.819	-31.952	1
2437.6	0	0.000	-14.365	1.000	0.000	-31.952	0
2437.9	198	-0.309	-14.674	-0.951	-0.951	-32.903	1
2438.1	209	-0.485	-15.159	-0.875	-0.875	-33.777	1
2438.8	201	-0.358	-15.517	-0.934	-0.934	-34.711	1
2439.3	219	-0.629	-16.146	-0.777	-0.777	-35.488	1
2439.5	0	0.000	-16.146	1.000	0.000	-35.488	0
2439.6	205	-0.423	-16.569	-0.906	-0.906	-36.394	1
2440.2	187	-0.122	-16.691	-0.993	-0.993	-37.387	1
2440.4	205	-0.423	-17.113	-0.906	-0.906	-38.293	1
2440.5	0	0.000	-17.113	1.000	0.000	-38.293	0
2441.0	202	-0.375	-17.488	-0.927	-0.927	-39.220	1
2441.3	196	-0.276	-17.764	-0.961	-0.961	-40.182	1
2441.4	193	-0.225	-17.989	-0.974	-0.974	-41.156	1
2441.7	208	-0.469	-18.458	-0.883	-0.883	-42.039	1
2442.0	218	-0.616	-19.074	-0.788	-0.788	-42.827	1
2442.1	207	-0.454	-19.528	-0.891	-0.891	-43.718	1
2442.3	202	-0.375	-19.902	-0.927	-0.927	-44.645	1
2442.4	199	-0.326	-20.228	-0.946	-0.946	-45.591	1
2442.5	196	-0.276	-20.504	-0.961	-0.961	-46.552	1
2442.8	0	0.000	-20.504	1.000	0.000	-46.552	0
2443.3	0	0.000	-20.504	1.000	0.000	-46.552	0
2443.6	0	0.000	-20.504	1.000	0.000	-46.552	0
2444.5	0	0.000	-20.504	1.000	0.000	-46.552	0
2446.0	0	0.000	-20.504	1.000	0.000	-46.552	0
2446.7	251	-0.946	-21.449	-0.326	-0.326	-46.878	1
2447.5	0	0.000	-21.449	1.000	0.000	-46.878	0
2448.0	0	0.000	-21.449	1.000	0.000	-46.878	0
2453.0	0	0.000	-21.449	1.000	0.000	-46.878	0
2455.6	195	-0.259	-21.708	-0.966	-0.966	-47.843	1
2455.7	218	-0.616	-22.324	-0.788	-0.788	-48.631	1
2456.1	193	-0.225	-22.549	-0.974	-0.974	-49.606	1
2456.4	207	-0.454	-23.002	-0.891	-0.891	-50.497	1
2456.8	221	-0.656	-23.659	-0.755	-0.755	-51.252	1
2457.2	179	0.017	-23.641	-1.000	-1.000	-52.251	1
2457.3	181	-0.017	-23.659	-1.000	-1.000	-53.251	1
2460.7	0	0.000	-23.659	1.000	0.000	-53.251	0
2461.2	196	-0.276	-23.934	-0.961	-0.961	-54.213	1
2461.3	212	-0.530	-24.464	-0.848	-0.848	-55.061	1
2461.6	198	-0.309	-24.773	-0.951	-0.951	-56.012	1

2461.8	208	-0.469	-25.243	-0.883	-0.883	-56.895	1
2462.4	198	-0.309	-25.552	-0.951	-0.951	-57.846	1
2462.7	0	0.000	-25.552	1.000	0.000	-57.846	0
2462.8	210	-0.500	-26.052	-0.866	-0.866	-58.712	1
2463.3	194	-0.242	-26.294	-0.970	-0.970	-59.682	1
2464.0	172	0.139	-26.154	-0.990	-0.990	-60.672	1
2464.5	0	0.000	-26.154	1.000	0.000	-60.672	0
2464.6	190	-0.174	-26.328	-0.985	-0.985	-61.657	1
2464.7	196	-0.276	-26.604	-0.961	-0.961	-62.618	1
2464.8	0	0.000	-26.604	1.000	0.000	-62.618	0
2465.0	216	-0.588	-27.191	-0.809	-0.809	-63.427	1
2465.1	186	-0.105	-27.296	-0.995	-0.995	-64.422	1
2465.4	215	-0.574	-27.870	-0.819	-0.819	-65.241	1
2466.1	194	-0.242	-28.111	-0.970	-0.970	-66.211	1
2466.2	202	-0.375	-28.486	-0.927	-0.927	-67.138	1
2467.1	224	-0.695	-29.181	-0.719	-0.719	-67.858	1
2467.3	189	-0.156	-29.337	-0.988	-0.988	-68.845	1
2467.4	220	-0.643	-29.980	-0.766	-0.766	-69.612	1
2467.6	0	0.000	-29.980	1.000	0.000	-69.612	0
2467.7	229	-0.755	-30.735	-0.656	-0.656	-70.268	1
2467.8	206	-0.438	-31.173	-0.899	-0.899	-71.166	1
2468.7	0	0.000	-31.173	1.000	0.000	-71.166	0
2469.5	0	0.000	-31.173	1.000	0.000	-71.166	0
2475.0	0	0.000	-31.173	1.000	0.000	-71.166	0
2476.3	0	0.000	-31.173	1.000	0.000	-71.166	0
2477.5	0	0.000	-31.173	1.000	0.000	-71.166	0
2480.3	223	-0.682	-31.855	-0.731	-0.731	-71.898	1
2480.5	225	-0.707	-32.562	-0.707	-0.707	-72.605	1
2480.9	214	-0.559	-33.121	-0.829	-0.829	-73.434	1
2481.0	193	-0.225	-33.346	-0.974	-0.974	-74.408	1
2482.6	201	-0.358	-33.705	-0.934	-0.934	-75.342	1
2483.3	211	-0.515	-34.220	-0.857	-0.857	-76.199	1
2483.4	243	-0.891	-35.111	-0.454	-0.454	-76.653	1
2483.5	216	-0.588	-35.698	-0.809	-0.809	-77.462	1
2483.8	210	-0.500	-36.198	-0.866	-0.866	-78.328	1
2484.1	196	-0.276	-36.474	-0.961	-0.961	-79.289	1
2486.3	0	0.000	-36.474	1.000	0.000	-79.289	0
2489.0	0	0.000	-36.474	1.000	0.000	-79.289	0
2490.5	0	0.000	-36.474	1.000	0.000	-79.289	0
2491.2	0	0.000	-36.474	1.000	0.000	-79.289	0
2494.3	0	0.000	-36.474	1.000	0.000	-79.289	0
2502.6	0	0.000	-36.474	1.000	0.000	-79.289	0
2507.7	0	0.000	-36.474	1.000	0.000	-79.289	0
2515.6	0	0.000	-36.474	1.000	0.000	-79.289	0
2521.5	0	0.000	-36.474	1.000	0.000	-79.289	0
2526.7	0	0.000	-36.474	1.000	0.000	-79.289	0
2531.9	0	0.000	-36.474	1.000	0.000	-79.289	0
2538.7	0	0.000	-36.474	1.000	0.000	-79.289	0
2547.2	0	0.000	-36.474	1.000	0.000	-79.289	0
2553.4	0	0.000	-36.474	1.000	0.000	-79.289	0
2563.7	0	0.000	-36.474	1.000	0.000	-79.289	0
2572.8	0	0.000	-36.474	1.000	0.000	-79.289	0
2579.7	0	0.000	-36.474	1.000	0.000	-79.289	0
2581.8	0	0.000	-36.474	1.000	0.000	-79.289	0
2583.4	0	0.000	-36.474	1.000	0.000	-79.289	0
2584.7	0	0.000	-36.474	1.000	0.000	-79.289	0
2585.8	0	0.000	-36.474	1.000	0.000	-79.289	0
2585.9	0	0.000	-36.474	1.000	0.000	-79.289	0

2587.5	0	0.000	-36.474	1.000	0.000	-79.289	0
2593.6	0	0.000	-36.474	1.000	0.000	-79.289	0

Arithmetic mean of strike values (col 2)= 204.9 Total measurements taken = 91

Feature Orientation measurements Well: **TOTAL DIABER c-65-D/94-B-16** Chatter Fractures

Reference Mardia 1972 for statistics of directional data

Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/Col C	C ColB/ColC	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
-36.474	-79.289	91	-0.4008	-0.8713	0.9198	0.9591	-0.4179	-0.9085	204.7	204.7	16.6

Well Name: DIABER c-65-D/94-B-16 Natural Fracture Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	0	0.000	0.000	1.000	0.000	0.000	0
2268.3	204	-0.407	-0.407	-0.914	-0.914	-0.914	1
2269.1	0	0.000	-0.407	1.000	0.000	-0.914	0
2269.5	180	0.000	-0.407	-1.000	-1.000	-1.914	1
2271.1	210	-0.500	-0.907	-0.866	-0.866	-2.780	1
2273.4	169	0.191	-0.716	-0.982	-0.982	-3.761	1
2276.8	0	0.000	-0.716	1.000	0.000	-3.761	0
2278.3	0	0.000	-0.716	1.000	0.000	-3.761	0
2282.0	197	-0.292	-1.008	-0.956	-0.956	-4.718	1
2283.7	0	0.000	-1.008	1.000	0.000	-4.718	0
2283.8	196	-0.276	-1.284	-0.961	-0.961	-5.679	1
2286.2	0	0.000	-1.284	1.000	0.000	-5.679	0
2288.8	0	0.000	-1.284	1.000	0.000	-5.679	0
2289.0	158	0.375	-0.909	-0.927	-0.927	-6.606	1
2294.8	0	0.000	-0.909	1.000	0.000	-6.606	0
2298.3	173	0.122	-0.787	-0.993	-0.993	-7.598	1
2299.6	0	0.000	-0.787	1.000	0.000	-7.598	0
2303.4	0	0.000	-0.787	1.000	0.000	-7.598	0
2306.5	0	0.000	-0.787	1.000	0.000	-7.598	0
2308.1	172	0.139	-0.648	-0.990	-0.990	-8.589	1
2312.9	0	0.000	-0.648	1.000	0.000	-8.589	0
2313.3	0	0.000	-0.648	1.000	0.000	-8.589	0
2317.4	0	0.000	-0.648	1.000	0.000	-8.589	0
2318.1	178	0.035	-0.613	-0.999	-0.999	-9.588	1
2321.3	147	0.545	-0.069	-0.839	-0.839	-10.427	1
2321.6	139	0.656	0.587	-0.755	-0.755	-11.182	1
2322.1	0	0.000	0.587	1.000	0.000	-11.182	0
2322.2	0	0.000	0.587	1.000	0.000	-11.182	0
2322.5	191	-0.191	0.397	-0.982	-0.982	-12.163	1
2322.6	183	-0.052	0.344	-0.999	-0.999	-13.162	1
2322.7	0	0.000	0.344	1.000	0.000	-13.162	0
2323.7	100	0.985	1.329	-0.174	-0.174	-13.335	1
2323.8	124	0.829	2.158	-0.559	-0.559	-13.895	1
2324.3	125	0.819	2.977	-0.574	-0.574	-14.468	1
2325.1	0	0.000	2.977	1.000	0.000	-14.468	0
2326.2	183	-0.052	2.925	-0.999	-0.999	-15.467	1
2326.4	0	0.000	2.925	1.000	0.000	-15.467	0
2326.5	172	0.139	3.064	-0.990	-0.990	-16.457	1
2327.1	176	0.070	3.134	-0.998	-0.998	-17.455	1
2327.4	137	0.682	3.816	-0.731	-0.731	-18.186	1
2327.5	144	0.588	4.404	-0.809	-0.809	-18.995	1
2327.6	0	0.000	4.404	1.000	0.000	-18.995	0
2328.5	124	0.829	5.233	-0.559	-0.559	-19.554	1
2328.8	0	0.000	5.233	1.000	0.000	-19.554	0
2329.2	0	0.000	5.233	1.000	0.000	-19.554	0
2330.2	0	0.000	5.233	1.000	0.000	-19.554	0
2332.0	0	0.000	5.233	1.000	0.000	-19.554	0
2332.3	133	0.731	5.964	-0.682	-0.682	-20.236	1
2332.6	0	0.000	5.964	1.000	0.000	-20.236	0
2333.1	0	0.000	5.964	1.000	0.000	-20.236	0
2333.6	0	0.000	5.964	1.000	0.000	-20.236	0
2335.3	0	0.000	5.964	1.000	0.000	-20.236	0
2335.8	177	0.052	6.016	-0.999	-0.999	-21.235	1

2336.7	178	0.035	6.051	-0.999	-0.999	-22.234	1
2337.8	0	0.000	6.051	1.000	0.000	-22.234	0
2341.2	0	0.000	6.051	1.000	0.000	-22.234	0
2341.5	0	0.000	6.051	1.000	0.000	-22.234	0
2342.2	0	0.000	6.051	1.000	0.000	-22.234	0
2342.4	0	0.000	6.051	1.000	0.000	-22.234	0
2345.8	0	0.000	6.051	1.000	0.000	-22.234	0
2347.7	0	0.000	6.051	1.000	0.000	-22.234	0
2349.7	0	0.000	6.051	1.000	0.000	-22.234	0
2351.1	0	0.000	6.051	1.000	0.000	-22.234	0
2351.2	0	0.000	6.051	1.000	0.000	-22.234	0
2351.3	0	0.000	6.051	1.000	0.000	-22.234	0
2351.5	0	0.000	6.051	1.000	0.000	-22.234	0
2355.0	0	0.000	6.051	1.000	0.000	-22.234	0
2356.8	0	0.000	6.051	1.000	0.000	-22.234	0
2357.4	0	0.000	6.051	1.000	0.000	-22.234	0
2358.0	0	0.000	6.051	1.000	0.000	-22.234	0
2395.8	0	0.000	6.051	1.000	0.000	-22.234	0
2397.5	0	0.000	6.051	1.000	0.000	-22.234	0
2397.6	0	0.000	6.051	1.000	0.000	-22.234	0
2401.8	0	0.000	6.051	1.000	0.000	-22.234	0
2402.0	0	0.000	6.051	1.000	0.000	-22.234	0
2402.3	0	0.000	6.051	1.000	0.000	-22.234	0
2402.5	0	0.000	6.051	1.000	0.000	-22.234	0
2402.8	0	0.000	6.051	1.000	0.000	-22.234	0
2403.1	0	0.000	6.051	1.000	0.000	-22.234	0
2403.6	0	0.000	6.051	1.000	0.000	-22.234	0
2405.8	173	0.122	6.173	-0.993	-0.993	-23.227	1
2407.8	0	0.000	6.173	1.000	0.000	-23.227	0
2410.3	0	0.000	6.173	1.000	0.000	-23.227	0
2411.8	0	0.000	6.173	1.000	0.000	-23.227	0
2413.9	0	0.000	6.173	1.000	0.000	-23.227	0
2414.7	0	0.000	6.173	1.000	0.000	-23.227	0
2415.9	0	0.000	6.173	1.000	0.000	-23.227	0
2419.5	0	0.000	6.173	1.000	0.000	-23.227	0
2419.8	0	0.000	6.173	1.000	0.000	-23.227	0
2420.2	0	0.000	6.173	1.000	0.000	-23.227	0
2421.2	0	0.000	6.173	1.000	0.000	-23.227	0
2421.5	0	0.000	6.173	1.000	0.000	-23.227	0
2422.0	0	0.000	6.173	1.000	0.000	-23.227	0
2422.1	0	0.000	6.173	1.000	0.000	-23.227	0
2423.0	0	0.000	6.173	1.000	0.000	-23.227	0
2423.2	0	0.000	6.173	1.000	0.000	-23.227	0
2424.9	0	0.000	6.173	1.000	0.000	-23.227	0
2425.3	0	0.000	6.173	1.000	0.000	-23.227	0
2425.6	0	0.000	6.173	1.000	0.000	-23.227	0
2425.7	0	0.000	6.173	1.000	0.000	-23.227	0
2425.8	0	0.000	6.173	1.000	0.000	-23.227	0
2426.0	0	0.000	6.173	1.000	0.000	-23.227	0
2426.3	0	0.000	6.173	1.000	0.000	-23.227	0
2427.9	0	0.000	6.173	1.000	0.000	-23.227	0
2428.0	0	0.000	6.173	1.000	0.000	-23.227	0
2428.3	0	0.000	6.173	1.000	0.000	-23.227	0
2429.2	0	0.000	6.173	1.000	0.000	-23.227	0
2429.7	0	0.000	6.173	1.000	0.000	-23.227	0
2430.0	0	0.000	6.173	1.000	0.000	-23.227	0
2431.0	0	0.000	6.173	1.000	0.000	-23.227	0
2431.2	0	0.000	6.173	1.000	0.000	-23.227	0

2431.5	0	0.000	6.173	1.000	0.000	-23.227	0
2431.7	0	0.000	6.173	1.000	0.000	-23.227	0
2431.8	0	0.000	6.173	1.000	0.000	-23.227	0
2432.0	0	0.000	6.173	1.000	0.000	-23.227	0
2432.3	0	0.000	6.173	1.000	0.000	-23.227	0
2432.8	0	0.000	6.173	1.000	0.000	-23.227	0
2433.1	0	0.000	6.173	1.000	0.000	-23.227	0
2433.4	0	0.000	6.173	1.000	0.000	-23.227	0
2433.6	0	0.000	6.173	1.000	0.000	-23.227	0
2433.7	0	0.000	6.173	1.000	0.000	-23.227	0
2434.0	0	0.000	6.173	1.000	0.000	-23.227	0
2434.1	0	0.000	6.173	1.000	0.000	-23.227	0
2434.2	0	0.000	6.173	1.000	0.000	-23.227	0
2434.3	0	0.000	6.173	1.000	0.000	-23.227	0
2434.6	0	0.000	6.173	1.000	0.000	-23.227	0
2435.1	0	0.000	6.173	1.000	0.000	-23.227	0
2436.3	0	0.000	6.173	1.000	0.000	-23.227	0
2436.5	0	0.000	6.173	1.000	0.000	-23.227	0
2437.0	0	0.000	6.173	1.000	0.000	-23.227	0
2437.6	0	0.000	6.173	1.000	0.000	-23.227	0
2437.9	0	0.000	6.173	1.000	0.000	-23.227	0
2438.1	0	0.000	6.173	1.000	0.000	-23.227	0
2438.8	0	0.000	6.173	1.000	0.000	-23.227	0
2439.3	0	0.000	6.173	1.000	0.000	-23.227	0
2439.5	0	0.000	6.173	1.000	0.000	-23.227	0
2439.6	0	0.000	6.173	1.000	0.000	-23.227	0
2440.2	0	0.000	6.173	1.000	0.000	-23.227	0
2440.4	0	0.000	6.173	1.000	0.000	-23.227	0
2440.5	0	0.000	6.173	1.000	0.000	-23.227	0
2441.0	0	0.000	6.173	1.000	0.000	-23.227	0
2441.3	0	0.000	6.173	1.000	0.000	-23.227	0
2441.4	0	0.000	6.173	1.000	0.000	-23.227	0
2441.7	0	0.000	6.173	1.000	0.000	-23.227	0
2442.0	0	0.000	6.173	1.000	0.000	-23.227	0
2442.1	0	0.000	6.173	1.000	0.000	-23.227	0
2442.3	0	0.000	6.173	1.000	0.000	-23.227	0
2442.4	0	0.000	6.173	1.000	0.000	-23.227	0
2442.5	0	0.000	6.173	1.000	0.000	-23.227	0
2442.8	0	0.000	6.173	1.000	0.000	-23.227	0
2443.3	0	0.000	6.173	1.000	0.000	-23.227	0
2443.6	0	0.000	6.173	1.000	0.000	-23.227	0
2444.5	0	0.000	6.173	1.000	0.000	-23.227	0
2446.0	0	0.000	6.173	1.000	0.000	-23.227	0
2446.7	0	0.000	6.173	1.000	0.000	-23.227	0
2447.5	0	0.000	6.173	1.000	0.000	-23.227	0
2448.0	140	0.643	6.816	-0.766	-0.766	-23.993	1
2453.0	0	0.000	6.816	1.000	0.000	-23.993	0
2455.6	0	0.000	6.816	1.000	0.000	-23.993	0
2455.7	0	0.000	6.816	1.000	0.000	-23.993	0
2456.1	0	0.000	6.816	1.000	0.000	-23.993	0
2456.4	0	0.000	6.816	1.000	0.000	-23.993	0
2456.8	0	0.000	6.816	1.000	0.000	-23.993	0
2457.2	0	0.000	6.816	1.000	0.000	-23.993	0
2457.3	0	0.000	6.816	1.000	0.000	-23.993	0
2460.7	0	0.000	6.816	1.000	0.000	-23.993	0
2461.2	0	0.000	6.816	1.000	0.000	-23.993	0
2461.3	0	0.000	6.816	1.000	0.000	-23.993	0
2461.6	0	0.000	6.816	1.000	0.000	-23.993	0

2461.8	0	0.000	6.816	1.000	0.000	-23.993	0
2462.4	0	0.000	6.816	1.000	0.000	-23.993	0
2462.7	0	0.000	6.816	1.000	0.000	-23.993	0
2462.8	0	0.000	6.816	1.000	0.000	-23.993	0
2463.3	0	0.000	6.816	1.000	0.000	-23.993	0
2464.0	0	0.000	6.816	1.000	0.000	-23.993	0
2464.5	0	0.000	6.816	1.000	0.000	-23.993	0
2464.6	0	0.000	6.816	1.000	0.000	-23.993	0
2464.7	0	0.000	6.816	1.000	0.000	-23.993	0
2464.8	0	0.000	6.816	1.000	0.000	-23.993	0
2465.0	0	0.000	6.816	1.000	0.000	-23.993	0
2465.1	0	0.000	6.816	1.000	0.000	-23.993	0
2465.4	0	0.000	6.816	1.000	0.000	-23.993	0
2466.1	0	0.000	6.816	1.000	0.000	-23.993	0
2466.2	0	0.000	6.816	1.000	0.000	-23.993	0
2467.1	0	0.000	6.816	1.000	0.000	-23.993	0
2467.3	0	0.000	6.816	1.000	0.000	-23.993	0
2467.4	0	0.000	6.816	1.000	0.000	-23.993	0
2467.6	0	0.000	6.816	1.000	0.000	-23.993	0
2467.7	0	0.000	6.816	1.000	0.000	-23.993	0
2467.8	0	0.000	6.816	1.000	0.000	-23.993	0
2468.7	0	0.000	6.816	1.000	0.000	-23.993	0
2469.5	0	0.000	6.816	1.000	0.000	-23.993	0
2475.0	176	0.070	6.886	-0.998	-0.998	-24.990	1
2476.3	0	0.000	6.886	1.000	0.000	-24.990	0
2477.5	0	0.000	6.886	1.000	0.000	-24.990	0
2480.3	0	0.000	6.886	1.000	0.000	-24.990	0
2480.5	0	0.000	6.886	1.000	0.000	-24.990	0
2480.9	0	0.000	6.886	1.000	0.000	-24.990	0
2481.0	0	0.000	6.886	1.000	0.000	-24.990	0
2482.6	0	0.000	6.886	1.000	0.000	-24.990	0
2483.3	0	0.000	6.886	1.000	0.000	-24.990	0
2483.4	0	0.000	6.886	1.000	0.000	-24.990	0
2483.5	0	0.000	6.886	1.000	0.000	-24.990	0
2483.8	0	0.000	6.886	1.000	0.000	-24.990	0
2484.1	0	0.000	6.886	1.000	0.000	-24.990	0
2486.3	0	0.000	6.886	1.000	0.000	-24.990	0
2489.0	0	0.000	6.886	1.000	0.000	-24.990	0
2490.5	0	0.000	6.886	1.000	0.000	-24.990	0
2491.2	0	0.000	6.886	1.000	0.000	-24.990	0
2494.3	0	0.000	6.886	1.000	0.000	-24.990	0
2502.6	0	0.000	6.886	1.000	0.000	-24.990	0
2507.7	0	0.000	6.886	1.000	0.000	-24.990	0
2515.6	0	0.000	6.886	1.000	0.000	-24.990	0
2521.5	0	0.000	6.886	1.000	0.000	-24.990	0
2526.7	0	0.000	6.886	1.000	0.000	-24.990	0
2531.9	0	0.000	6.886	1.000	0.000	-24.990	0
2538.7	0	0.000	6.886	1.000	0.000	-24.990	0
2547.2	0	0.000	6.886	1.000	0.000	-24.990	0
2553.4	0	0.000	6.886	1.000	0.000	-24.990	0
2563.7	0	0.000	6.886	1.000	0.000	-24.990	0
2572.8	0	0.000	6.886	1.000	0.000	-24.990	0
2579.7	0	0.000	6.886	1.000	0.000	-24.990	0
2581.8	0	0.000	6.886	1.000	0.000	-24.990	0
2583.4	0	0.000	6.886	1.000	0.000	-24.990	0
2584.7	0	0.000	6.886	1.000	0.000	-24.990	0
2585.8	0	0.000	6.886	1.000	0.000	-24.990	0
2585.9	209	-0.485	6.401	-0.875	-0.875	-25.865	1

2587.5	0	0.000	6.401	1.000	0.000	-25.865	0
2593.6	241	-0.875	5.526	-0.485	-0.485	-26.350	1

Arithmetic mean of strike values (col 2)= 168.0 Total measurements taken = 31

Feature Orientation measurements Well: **TOTAL DIABER c-65-D/94-B-16** Natural Fractures
 Reference Mardia 1972 for statistics of directional data

Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/Col C	C Col B/Col C	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
-0.875	-26.35	31	-0.0282	-0.8500	0.7233	0.8505	-0.0332	-0.9994	181.9	181.9	32.6

Well Name: TOTAL DIABER c-65-D/94-B-16 Incipient Breakout Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	0	0.000	0.000	1.000	0.000	0.000	0
2268.3	0	0.000	0.000	1.000	0.000	0.000	0
2269.1	0	0.000	0.000	1.000	0.000	0.000	0
2269.5	0	0.000	0.000	1.000	0.000	0.000	0
2271.1	0	0.000	0.000	1.000	0.000	0.000	0
2273.4	0	0.000	0.000	1.000	0.000	0.000	0
2276.8	0	0.000	0.000	1.000	0.000	0.000	0
2278.3	0	0.000	0.000	1.000	0.000	0.000	0
2282.0	0	0.000	0.000	1.000	0.000	0.000	0
2283.7	0	0.000	0.000	1.000	0.000	0.000	0
2283.8	0	0.000	0.000	1.000	0.000	0.000	0
2286.2	0	0.000	0.000	1.000	0.000	0.000	0
2288.8	0	0.000	0.000	1.000	0.000	0.000	0
2289.0	0	0.000	0.000	1.000	0.000	0.000	0
2294.8	0	0.000	0.000	1.000	0.000	0.000	0
2298.3	0	0.000	0.000	1.000	0.000	0.000	0
2299.6	0	0.000	0.000	1.000	0.000	0.000	0
2303.4	0	0.000	0.000	1.000	0.000	0.000	0
2306.5	0	0.000	0.000	1.000	0.000	0.000	0
2308.1	0	0.000	0.000	1.000	0.000	0.000	0
2312.9	0	0.000	0.000	1.000	0.000	0.000	0
2313.3	0	0.000	0.000	1.000	0.000	0.000	0
2317.4	0	0.000	0.000	1.000	0.000	0.000	0
2318.1	0	0.000	0.000	1.000	0.000	0.000	0
2321.3	0	0.000	0.000	1.000	0.000	0.000	0
2321.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.1	0	0.000	0.000	1.000	0.000	0.000	0
2322.2	0	0.000	0.000	1.000	0.000	0.000	0
2322.5	0	0.000	0.000	1.000	0.000	0.000	0
2322.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.8	0	0.000	0.000	1.000	0.000	0.000	0
2324.3	0	0.000	0.000	1.000	0.000	0.000	0
2325.1	0	0.000	0.000	1.000	0.000	0.000	0
2326.2	0	0.000	0.000	1.000	0.000	0.000	0
2326.4	0	0.000	0.000	1.000	0.000	0.000	0
2326.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.1	0	0.000	0.000	1.000	0.000	0.000	0
2327.4	0	0.000	0.000	1.000	0.000	0.000	0
2327.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.6	0	0.000	0.000	1.000	0.000	0.000	0
2328.5	0	0.000	0.000	1.000	0.000	0.000	0
2328.8	0	0.000	0.000	1.000	0.000	0.000	0
2329.2	0	0.000	0.000	1.000	0.000	0.000	0
2330.2	0	0.000	0.000	1.000	0.000	0.000	0
2332.0	0	0.000	0.000	1.000	0.000	0.000	0
2332.3	0	0.000	0.000	1.000	0.000	0.000	0
2332.6	0	0.000	0.000	1.000	0.000	0.000	0
2333.1	0	0.000	0.000	1.000	0.000	0.000	0
2333.6	0	0.000	0.000	1.000	0.000	0.000	0
2335.3	0	0.000	0.000	1.000	0.000	0.000	0
2335.8	0	0.000	0.000	1.000	0.000	0.000	0

2336.7	0	0.000	0.000	1.000	0.000	0.000	0
2337.8	0	0.000	0.000	1.000	0.000	0.000	0
2341.2	0	0.000	0.000	1.000	0.000	0.000	0
2341.5	0	0.000	0.000	1.000	0.000	0.000	0
2342.2	0	0.000	0.000	1.000	0.000	0.000	0
2342.4	0	0.000	0.000	1.000	0.000	0.000	0
2345.8	0	0.000	0.000	1.000	0.000	0.000	0
2347.7	0	0.000	0.000	1.000	0.000	0.000	0
2349.7	0	0.000	0.000	1.000	0.000	0.000	0
2351.1	0	0.000	0.000	1.000	0.000	0.000	0
2351.2	0	0.000	0.000	1.000	0.000	0.000	0
2351.3	0	0.000	0.000	1.000	0.000	0.000	0
2351.5	0	0.000	0.000	1.000	0.000	0.000	0
2355.0	0	0.000	0.000	1.000	0.000	0.000	0
2356.8	0	0.000	0.000	1.000	0.000	0.000	0
2357.4	0	0.000	0.000	1.000	0.000	0.000	0
2358.0	0	0.000	0.000	1.000	0.000	0.000	0
2395.8	0	0.000	0.000	1.000	0.000	0.000	0
2397.5	0	0.000	0.000	1.000	0.000	0.000	0
2397.6	0	0.000	0.000	1.000	0.000	0.000	0
2401.8	0	0.000	0.000	1.000	0.000	0.000	0
2402.0	0	0.000	0.000	1.000	0.000	0.000	0
2402.3	0	0.000	0.000	1.000	0.000	0.000	0
2402.5	0	0.000	0.000	1.000	0.000	0.000	0
2402.8	0	0.000	0.000	1.000	0.000	0.000	0
2403.1	0	0.000	0.000	1.000	0.000	0.000	0
2403.6	0	0.000	0.000	1.000	0.000	0.000	0
2405.8	0	0.000	0.000	1.000	0.000	0.000	0
2407.8	0	0.000	0.000	1.000	0.000	0.000	0
2410.3	0	0.000	0.000	1.000	0.000	0.000	0
2411.8	0	0.000	0.000	1.000	0.000	0.000	0
2413.9	0	0.000	0.000	1.000	0.000	0.000	0
2414.7	0	0.000	0.000	1.000	0.000	0.000	0
2415.9	0	0.000	0.000	1.000	0.000	0.000	0
2419.5	0	0.000	0.000	1.000	0.000	0.000	0
2419.8	0	0.000	0.000	1.000	0.000	0.000	0
2420.2	0	0.000	0.000	1.000	0.000	0.000	0
2421.2	0	0.000	0.000	1.000	0.000	0.000	0
2421.5	0	0.000	0.000	1.000	0.000	0.000	0
2422.0	0	0.000	0.000	1.000	0.000	0.000	0
2422.1	0	0.000	0.000	1.000	0.000	0.000	0
2423.0	0	0.000	0.000	1.000	0.000	0.000	0
2423.2	0	0.000	0.000	1.000	0.000	0.000	0
2424.9	0	0.000	0.000	1.000	0.000	0.000	0
2425.3	0	0.000	0.000	1.000	0.000	0.000	0
2425.6	0	0.000	0.000	1.000	0.000	0.000	0
2425.7	0	0.000	0.000	1.000	0.000	0.000	0
2425.8	0	0.000	0.000	1.000	0.000	0.000	0
2426.0	0	0.000	0.000	1.000	0.000	0.000	0
2426.3	0	0.000	0.000	1.000	0.000	0.000	0
2427.9	0	0.000	0.000	1.000	0.000	0.000	0
2428.0	0	0.000	0.000	1.000	0.000	0.000	0
2428.3	0	0.000	0.000	1.000	0.000	0.000	0
2429.2	0	0.000	0.000	1.000	0.000	0.000	0
2429.7	0	0.000	0.000	1.000	0.000	0.000	0
2430.0	0	0.000	0.000	1.000	0.000	0.000	0
2431.0	0	0.000	0.000	1.000	0.000	0.000	0
2431.2	0	0.000	0.000	1.000	0.000	0.000	0

2431.5	0	0.000	0.000	1.000	0.000	0.000	0
2431.7	0	0.000	0.000	1.000	0.000	0.000	0
2431.8	0	0.000	0.000	1.000	0.000	0.000	0
2432.0	0	0.000	0.000	1.000	0.000	0.000	0
2432.3	0	0.000	0.000	1.000	0.000	0.000	0
2432.8	0	0.000	0.000	1.000	0.000	0.000	0
2433.1	0	0.000	0.000	1.000	0.000	0.000	0
2433.4	0	0.000	0.000	1.000	0.000	0.000	0
2433.6	0	0.000	0.000	1.000	0.000	0.000	0
2433.7	0	0.000	0.000	1.000	0.000	0.000	0
2434.0	0	0.000	0.000	1.000	0.000	0.000	0
2434.1	0	0.000	0.000	1.000	0.000	0.000	0
2434.2	0	0.000	0.000	1.000	0.000	0.000	0
2434.3	0	0.000	0.000	1.000	0.000	0.000	0
2434.6	0	0.000	0.000	1.000	0.000	0.000	0
2435.1	0	0.000	0.000	1.000	0.000	0.000	0
2436.3	0	0.000	0.000	1.000	0.000	0.000	0
2436.5	0	0.000	0.000	1.000	0.000	0.000	0
2437.0	0	0.000	0.000	1.000	0.000	0.000	0
2437.6	0	0.000	0.000	1.000	0.000	0.000	0
2437.9	0	0.000	0.000	1.000	0.000	0.000	0
2438.1	0	0.000	0.000	1.000	0.000	0.000	0
2438.8	0	0.000	0.000	1.000	0.000	0.000	0
2439.3	0	0.000	0.000	1.000	0.000	0.000	0
2439.5	0	0.000	0.000	1.000	0.000	0.000	0
2439.6	0	0.000	0.000	1.000	0.000	0.000	0
2440.2	0	0.000	0.000	1.000	0.000	0.000	0
2440.4	0	0.000	0.000	1.000	0.000	0.000	0
2440.5	0	0.000	0.000	1.000	0.000	0.000	0
2441.0	0	0.000	0.000	1.000	0.000	0.000	0
2441.3	0	0.000	0.000	1.000	0.000	0.000	0
2441.4	0	0.000	0.000	1.000	0.000	0.000	0
2441.7	0	0.000	0.000	1.000	0.000	0.000	0
2442.0	0	0.000	0.000	1.000	0.000	0.000	0
2442.1	0	0.000	0.000	1.000	0.000	0.000	0
2442.3	0	0.000	0.000	1.000	0.000	0.000	0
2442.4	0	0.000	0.000	1.000	0.000	0.000	0
2442.5	0	0.000	0.000	1.000	0.000	0.000	0
2442.8	0	0.000	0.000	1.000	0.000	0.000	0
2443.3	0	0.000	0.000	1.000	0.000	0.000	0
2443.6	0	0.000	0.000	1.000	0.000	0.000	0
2444.5	0	0.000	0.000	1.000	0.000	0.000	0
2446.0	0	0.000	0.000	1.000	0.000	0.000	0
2446.7	0	0.000	0.000	1.000	0.000	0.000	0
2447.5	0	0.000	0.000	1.000	0.000	0.000	0
2448.0	0	0.000	0.000	1.000	0.000	0.000	0
2453.0	0	0.000	0.000	1.000	0.000	0.000	0
2455.6	0	0.000	0.000	1.000	0.000	0.000	0
2455.7	0	0.000	0.000	1.000	0.000	0.000	0
2456.1	0	0.000	0.000	1.000	0.000	0.000	0
2456.4	0	0.000	0.000	1.000	0.000	0.000	0
2456.8	0	0.000	0.000	1.000	0.000	0.000	0
2457.2	0	0.000	0.000	1.000	0.000	0.000	0
2457.3	0	0.000	0.000	1.000	0.000	0.000	0
2460.7	0	0.000	0.000	1.000	0.000	0.000	0
2461.2	0	0.000	0.000	1.000	0.000	0.000	0
2461.3	0	0.000	0.000	1.000	0.000	0.000	0
2461.6	0	0.000	0.000	1.000	0.000	0.000	0

2461.8	0	0.000	0.000	1.000	0.000	0.000	0
2462.4	0	0.000	0.000	1.000	0.000	0.000	0
2462.7	0	0.000	0.000	1.000	0.000	0.000	0
2462.8	0	0.000	0.000	1.000	0.000	0.000	0
2463.3	0	0.000	0.000	1.000	0.000	0.000	0
2464.0	0	0.000	0.000	1.000	0.000	0.000	0
2464.5	0	0.000	0.000	1.000	0.000	0.000	0
2464.6	0	0.000	0.000	1.000	0.000	0.000	0
2464.7	0	0.000	0.000	1.000	0.000	0.000	0
2464.8	0	0.000	0.000	1.000	0.000	0.000	0
2465.0	0	0.000	0.000	1.000	0.000	0.000	0
2465.1	0	0.000	0.000	1.000	0.000	0.000	0
2465.4	0	0.000	0.000	1.000	0.000	0.000	0
2466.1	0	0.000	0.000	1.000	0.000	0.000	0
2466.2	0	0.000	0.000	1.000	0.000	0.000	0
2467.1	0	0.000	0.000	1.000	0.000	0.000	0
2467.3	0	0.000	0.000	1.000	0.000	0.000	0
2467.4	0	0.000	0.000	1.000	0.000	0.000	0
2467.6	0	0.000	0.000	1.000	0.000	0.000	0
2467.7	0	0.000	0.000	1.000	0.000	0.000	0
2467.8	0	0.000	0.000	1.000	0.000	0.000	0
2468.7	0	0.000	0.000	1.000	0.000	0.000	0
2469.5	0	0.000	0.000	1.000	0.000	0.000	0
2475.0	0	0.000	0.000	1.000	0.000	0.000	0
2476.3	0	0.000	0.000	1.000	0.000	0.000	0
2477.5	0	0.000	0.000	1.000	0.000	0.000	0
2480.3	0	0.000	0.000	1.000	0.000	0.000	0
2480.5	0	0.000	0.000	1.000	0.000	0.000	0
2480.9	0	0.000	0.000	1.000	0.000	0.000	0
2481.0	0	0.000	0.000	1.000	0.000	0.000	0
2482.6	0	0.000	0.000	1.000	0.000	0.000	0
2483.3	0	0.000	0.000	1.000	0.000	0.000	0
2483.4	0	0.000	0.000	1.000	0.000	0.000	0
2483.5	0	0.000	0.000	1.000	0.000	0.000	0
2483.8	0	0.000	0.000	1.000	0.000	0.000	0
2484.1	0	0.000	0.000	1.000	0.000	0.000	0
2486.3	0	0.000	0.000	1.000	0.000	0.000	0
2489.0	0	0.000	0.000	1.000	0.000	0.000	0
2490.5	0	0.000	0.000	1.000	0.000	0.000	0
2491.2	0	0.000	0.000	1.000	0.000	0.000	0
2494.3	0	0.000	0.000	1.000	0.000	0.000	0
2502.6	0	0.000	0.000	1.000	0.000	0.000	0
2507.7	0	0.000	0.000	1.000	0.000	0.000	0
2515.6	0	0.000	0.000	1.000	0.000	0.000	0
2521.5	0	0.000	0.000	1.000	0.000	0.000	0
2526.7	0	0.000	0.000	1.000	0.000	0.000	0
2531.9	0	0.000	0.000	1.000	0.000	0.000	0
2538.7	0	0.000	0.000	1.000	0.000	0.000	0
2547.2	0	0.000	0.000	1.000	0.000	0.000	0
2553.4	0	0.000	0.000	1.000	0.000	0.000	0
2563.7	0	0.000	0.000	1.000	0.000	0.000	0
2572.8	0	0.000	0.000	1.000	0.000	0.000	0
2579.7	0	0.000	0.000	1.000	0.000	0.000	0
2581.8	0	0.000	0.000	1.000	0.000	0.000	0
2583.4	127	0.799	0.799	-0.602	-0.602	-0.602	1
2584.7	0	0.000	0.799	1.000	0.000	-0.602	0
2585.8	0	0.000	0.799	1.000	0.000	-0.602	0
2585.9	0	0.000	0.799	1.000	0.000	-0.602	0

2587.5	0	0.000	0.799	1.000	0.000	-0.602	0
2593.6	0	0.000	0.799	1.000	0.000	-0.602	0

Arithmetic mean of strike values (col 2)= 127.0 Total measurements taken = 1

Feature Orientation measurements
Reference Mardia 1972 for statistics of directional data
Well: TOTAL DIABER c-65-D/94-B-16 Incipient Breakouts

Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/Col C	C Col B/Col C	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
0.799	-0.602	1	0.7990	-0.6020	1.0008	1.0004	0.7987	-0.6018	127.0	233.0	#NUM!

Well Name: DIABER c-65-D/94-B-16 Intermediate Breakout Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	0	0.000	0.000	1.000	0.000	0.000	0
2268.3	0	0.000	0.000	1.000	0.000	0.000	0
2269.1	0	0.000	0.000	1.000	0.000	0.000	0
2269.5	0	0.000	0.000	1.000	0.000	0.000	0
2271.1	0	0.000	0.000	1.000	0.000	0.000	0
2273.4	0	0.000	0.000	1.000	0.000	0.000	0
2276.8	0	0.000	0.000	1.000	0.000	0.000	0
2278.3	265	-0.996	-0.996	-0.087	-0.087	-0.087	1
2282.0	0	0.000	-0.996	1.000	0.000	-0.087	0
2283.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2283.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2286.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2288.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2289.0	0	0.000	-0.996	1.000	0.000	-0.087	0
2294.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2298.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2299.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2303.4	0	0.000	-0.996	1.000	0.000	-0.087	0
2306.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2308.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2312.9	0	0.000	-0.996	1.000	0.000	-0.087	0
2313.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2317.4	0	0.000	-0.996	1.000	0.000	-0.087	0
2318.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2321.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2321.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2322.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2322.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2322.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2322.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2322.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2323.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2323.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2324.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2325.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2326.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2326.4	0	0.000	-0.996	1.000	0.000	-0.087	0
2326.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2327.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2327.4	0	0.000	-0.996	1.000	0.000	-0.087	0
2327.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2327.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2328.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2328.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2329.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2330.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2332.0	0	0.000	-0.996	1.000	0.000	-0.087	0
2332.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2332.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2333.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2333.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2335.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2335.8	0	0.000	-0.996	1.000	0.000	-0.087	0

2336.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2337.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2341.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2341.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2342.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2342.4	0	0.000	-0.996	1.000	0.000	-0.087	0
2345.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2347.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2349.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2351.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2351.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2351.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2351.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2355.0	0	0.000	-0.996	1.000	0.000	-0.087	0
2356.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2357.4	0	0.000	-0.996	1.000	0.000	-0.087	0
2358.0	0	0.000	-0.996	1.000	0.000	-0.087	0
2395.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2397.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2397.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2401.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2402.0	0	0.000	-0.996	1.000	0.000	-0.087	0
2402.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2402.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2402.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2403.1	0	0.000	-0.996	1.000	0.000	-0.087	0
2403.6	0	0.000	-0.996	1.000	0.000	-0.087	0
2405.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2407.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2410.3	0	0.000	-0.996	1.000	0.000	-0.087	0
2411.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2413.9	0	0.000	-0.996	1.000	0.000	-0.087	0
2414.7	0	0.000	-0.996	1.000	0.000	-0.087	0
2415.9	0	0.000	-0.996	1.000	0.000	-0.087	0
2419.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2419.8	0	0.000	-0.996	1.000	0.000	-0.087	0
2420.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2421.2	0	0.000	-0.996	1.000	0.000	-0.087	0
2421.5	0	0.000	-0.996	1.000	0.000	-0.087	0
2422.0	263	-0.993	-1.989	-0.122	-0.122	-0.209	1
2422.1	0	0.000	-1.989	1.000	0.000	-0.209	0
2423.0	0	0.000	-1.989	1.000	0.000	-0.209	0
2423.2	0	0.000	-1.989	1.000	0.000	-0.209	0
2424.9	0	0.000	-1.989	1.000	0.000	-0.209	0
2425.3	0	0.000	-1.989	1.000	0.000	-0.209	0
2425.6	0	0.000	-1.989	1.000	0.000	-0.209	0
2425.7	134	0.719	-1.269	-0.695	-0.695	-0.904	1
2425.8	0	0.000	-1.269	1.000	0.000	-0.904	0
2426.0	0	0.000	-1.269	1.000	0.000	-0.904	0
2426.3	0	0.000	-1.269	1.000	0.000	-0.904	0
2427.9	105	0.966	-0.303	-0.259	-0.259	-1.163	1
2428.0	0	0.000	-0.303	1.000	0.000	-1.163	0
2428.3	0	0.000	-0.303	1.000	0.000	-1.163	0
2429.2	0	0.000	-0.303	1.000	0.000	-1.163	0
2429.7	0	0.000	-0.303	1.000	0.000	-1.163	0
2430.0	0	0.000	-0.303	1.000	0.000	-1.163	0
2431.0	0	0.000	-0.303	1.000	0.000	-1.163	0
2431.2	0	0.000	-0.303	1.000	0.000	-1.163	0

2431.5	105	0.966	0.662	-0.259	-0.259	-1.421	1
2431.7	0	0.000	0.662	1.000	0.000	-1.421	0
2431.8	0	0.000	0.662	1.000	0.000	-1.421	0
2432.0	0	0.000	0.662	1.000	0.000	-1.421	0
2432.3	0	0.000	0.662	1.000	0.000	-1.421	0
2432.8	0	0.000	0.662	1.000	0.000	-1.421	0
2433.1	0	0.000	0.662	1.000	0.000	-1.421	0
2433.4	0	0.000	0.662	1.000	0.000	-1.421	0
2433.6	0	0.000	0.662	1.000	0.000	-1.421	0
2433.7	0	0.000	0.662	1.000	0.000	-1.421	0
2434.0	0	0.000	0.662	1.000	0.000	-1.421	0
2434.1	0	0.000	0.662	1.000	0.000	-1.421	0
2434.2	0	0.000	0.662	1.000	0.000	-1.421	0
2434.3	0	0.000	0.662	1.000	0.000	-1.421	0
2434.6	0	0.000	0.662	1.000	0.000	-1.421	0
2435.1	0	0.000	0.662	1.000	0.000	-1.421	0
2436.3	0	0.000	0.662	1.000	0.000	-1.421	0
2436.5	0	0.000	0.662	1.000	0.000	-1.421	0
2437.0	0	0.000	0.662	1.000	0.000	-1.421	0
2437.6	0	0.000	0.662	1.000	0.000	-1.421	0
2437.9	0	0.000	0.662	1.000	0.000	-1.421	0
2438.1	0	0.000	0.662	1.000	0.000	-1.421	0
2438.8	0	0.000	0.662	1.000	0.000	-1.421	0
2439.3	0	0.000	0.662	1.000	0.000	-1.421	0
2439.5	0	0.000	0.662	1.000	0.000	-1.421	0
2439.6	0	0.000	0.662	1.000	0.000	-1.421	0
2440.2	0	0.000	0.662	1.000	0.000	-1.421	0
2440.4	0	0.000	0.662	1.000	0.000	-1.421	0
2440.5	0	0.000	0.662	1.000	0.000	-1.421	0
2441.0	0	0.000	0.662	1.000	0.000	-1.421	0
2441.3	0	0.000	0.662	1.000	0.000	-1.421	0
2441.4	0	0.000	0.662	1.000	0.000	-1.421	0
2441.7	0	0.000	0.662	1.000	0.000	-1.421	0
2442.0	0	0.000	0.662	1.000	0.000	-1.421	0
2442.1	0	0.000	0.662	1.000	0.000	-1.421	0
2442.3	0	0.000	0.662	1.000	0.000	-1.421	0
2442.4	0	0.000	0.662	1.000	0.000	-1.421	0
2442.5	0	0.000	0.662	1.000	0.000	-1.421	0
2442.8	0	0.000	0.662	1.000	0.000	-1.421	0
2443.3	97	0.993	1.655	-0.122	-0.122	-1.543	1
2443.6	0	0.000	1.655	1.000	0.000	-1.543	0
2444.5	0	0.000	1.655	1.000	0.000	-1.543	0
2446.0	0	0.000	1.655	1.000	0.000	-1.543	0
2446.7	0	0.000	1.655	1.000	0.000	-1.543	0
2447.5	0	0.000	1.655	1.000	0.000	-1.543	0
2448.0	0	0.000	1.655	1.000	0.000	-1.543	0
2453.0	0	0.000	1.655	1.000	0.000	-1.543	0
2455.6	0	0.000	1.655	1.000	0.000	-1.543	0
2455.7	0	0.000	1.655	1.000	0.000	-1.543	0
2456.1	0	0.000	1.655	1.000	0.000	-1.543	0
2456.4	0	0.000	1.655	1.000	0.000	-1.543	0
2456.8	0	0.000	1.655	1.000	0.000	-1.543	0
2457.2	0	0.000	1.655	1.000	0.000	-1.543	0
2457.3	0	0.000	1.655	1.000	0.000	-1.543	0
2460.7	0	0.000	1.655	1.000	0.000	-1.543	0
2461.2	0	0.000	1.655	1.000	0.000	-1.543	0
2461.3	0	0.000	1.655	1.000	0.000	-1.543	0
2461.6	0	0.000	1.655	1.000	0.000	-1.543	0

2461.8	0	0.000	1.655	1.000	0.000	-1.543	0
2462.4	0	0.000	1.655	1.000	0.000	-1.543	0
2462.7	0	0.000	1.655	1.000	0.000	-1.543	0
2462.8	0	0.000	1.655	1.000	0.000	-1.543	0
2463.3	0	0.000	1.655	1.000	0.000	-1.543	0
2464.0	0	0.000	1.655	1.000	0.000	-1.543	0
2464.5	0	0.000	1.655	1.000	0.000	-1.543	0
2464.6	0	0.000	1.655	1.000	0.000	-1.543	0
2464.7	0	0.000	1.655	1.000	0.000	-1.543	0
2464.8	0	0.000	1.655	1.000	0.000	-1.543	0
2465.0	0	0.000	1.655	1.000	0.000	-1.543	0
2465.1	0	0.000	1.655	1.000	0.000	-1.543	0
2465.4	0	0.000	1.655	1.000	0.000	-1.543	0
2466.1	0	0.000	1.655	1.000	0.000	-1.543	0
2466.2	0	0.000	1.655	1.000	0.000	-1.543	0
2467.1	0	0.000	1.655	1.000	0.000	-1.543	0
2467.3	0	0.000	1.655	1.000	0.000	-1.543	0
2467.4	0	0.000	1.655	1.000	0.000	-1.543	0
2467.6	105	0.966	2.621	-0.259	-0.259	-1.802	1
2467.7	0	0.000	2.621	1.000	0.000	-1.802	0
2467.8	0	0.000	2.621	1.000	0.000	-1.802	0
2468.7	0	0.000	2.621	1.000	0.000	-1.802	0
2469.5	0	0.000	2.621	1.000	0.000	-1.802	0
2475.0	0	0.000	2.621	1.000	0.000	-1.802	0
2476.3	0	0.000	2.621	1.000	0.000	-1.802	0
2477.5	0	0.000	2.621	1.000	0.000	-1.802	0
2480.3	0	0.000	2.621	1.000	0.000	-1.802	0
2480.5	0	0.000	2.621	1.000	0.000	-1.802	0
2480.9	0	0.000	2.621	1.000	0.000	-1.802	0
2481.0	0	0.000	2.621	1.000	0.000	-1.802	0
2482.6	0	0.000	2.621	1.000	0.000	-1.802	0
2483.3	0	0.000	2.621	1.000	0.000	-1.802	0
2483.4	0	0.000	2.621	1.000	0.000	-1.802	0
2483.5	0	0.000	2.621	1.000	0.000	-1.802	0
2483.8	0	0.000	2.621	1.000	0.000	-1.802	0
2484.1	0	0.000	2.621	1.000	0.000	-1.802	0
2486.3	0	0.000	2.621	1.000	0.000	-1.802	0
2489.0	101	0.982	3.603	-0.191	-0.191	-1.993	1
2490.5	0	0.000	3.603	1.000	0.000	-1.993	0
2491.2	0	0.000	3.603	1.000	0.000	-1.993	0
2494.3	0	0.000	3.603	1.000	0.000	-1.993	0
2502.6	0	0.000	3.603	1.000	0.000	-1.993	0
2507.7	0	0.000	3.603	1.000	0.000	-1.993	0
2515.6	0	0.000	3.603	1.000	0.000	-1.993	0
2521.5	0	0.000	3.603	1.000	0.000	-1.993	0
2526.7	0	0.000	3.603	1.000	0.000	-1.993	0
2531.9	0	0.000	3.603	1.000	0.000	-1.993	0
2538.7	0	0.000	3.603	1.000	0.000	-1.993	0
2547.2	0	0.000	3.603	1.000	0.000	-1.993	0
2553.4	0	0.000	3.603	1.000	0.000	-1.993	0
2563.7	0	0.000	3.603	1.000	0.000	-1.993	0
2572.8	0	0.000	3.603	1.000	0.000	-1.993	0
2579.7	0	0.000	3.603	1.000	0.000	-1.993	0
2581.8	0	0.000	3.603	1.000	0.000	-1.993	0
2583.4	0	0.000	3.603	1.000	0.000	-1.993	0
2584.7	0	0.000	3.603	1.000	0.000	-1.993	0
2585.8	0	0.000	3.603	1.000	0.000	-1.993	0
2585.9	0	0.000	3.603	1.000	0.000	-1.993	0

2587.5	0	0.000	3.603	1.000	0.000	-1.993	0
2593.6	0	0.000	3.603	1.000	0.000	-1.993	0

Arithmetic mean of strike values (col 2)= 146.9 Total measurements taken = 8

Feature Orientation measurements Well: TOTAL DIABER c-65-D/94-B-16 Intermediate Breakouts
 Reference Mardia 1972 for statistics of directional data

Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/ColC	C ColB/ColC	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
3.603	-1.993	8	0.4504	-0.2491	0.2649	0.5147	0.8750	-0.4840	118.9	241.1	66.0

TOTAL DIABER c-65-D/94-B-16 Chatter Fracture population 2 Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	0	0.000	0.000	1.000	0.000	0.000	0
2268.3	0	0.000	0.000	1.000	0.000	0.000	0
2269.1	0	0.000	0.000	1.000	0.000	0.000	0
2269.5	0	0.000	0.000	1.000	0.000	0.000	0
2271.1	0	0.000	0.000	1.000	0.000	0.000	0
2273.4	0	0.000	0.000	1.000	0.000	0.000	0
2276.8	0	0.000	0.000	1.000	0.000	0.000	0
2278.3	0	0.000	0.000	1.000	0.000	0.000	0
2282.0	0	0.000	0.000	1.000	0.000	0.000	0
2283.7	0	0.000	0.000	1.000	0.000	0.000	0
2283.8	0	0.000	0.000	1.000	0.000	0.000	0
2286.2	0	0.000	0.000	1.000	0.000	0.000	0
2288.8	0	0.000	0.000	1.000	0.000	0.000	0
2289.0	0	0.000	0.000	1.000	0.000	0.000	0
2294.8	0	0.000	0.000	1.000	0.000	0.000	0
2298.3	0	0.000	0.000	1.000	0.000	0.000	0
2299.6	0	0.000	0.000	1.000	0.000	0.000	0
2303.4	0	0.000	0.000	1.000	0.000	0.000	0
2306.5	0	0.000	0.000	1.000	0.000	0.000	0
2308.1	0	0.000	0.000	1.000	0.000	0.000	0
2312.9	0	0.000	0.000	1.000	0.000	0.000	0
2313.3	0	0.000	0.000	1.000	0.000	0.000	0
2317.4	0	0.000	0.000	1.000	0.000	0.000	0
2318.1	0	0.000	0.000	1.000	0.000	0.000	0
2321.3	0	0.000	0.000	1.000	0.000	0.000	0
2321.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.1	0	0.000	0.000	1.000	0.000	0.000	0
2322.2	0	0.000	0.000	1.000	0.000	0.000	0
2322.5	0	0.000	0.000	1.000	0.000	0.000	0
2322.6	0	0.000	0.000	1.000	0.000	0.000	0
2322.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.7	0	0.000	0.000	1.000	0.000	0.000	0
2323.8	0	0.000	0.000	1.000	0.000	0.000	0
2324.3	0	0.000	0.000	1.000	0.000	0.000	0
2325.1	0	0.000	0.000	1.000	0.000	0.000	0
2326.2	0	0.000	0.000	1.000	0.000	0.000	0
2326.4	0	0.000	0.000	1.000	0.000	0.000	0
2326.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.1	0	0.000	0.000	1.000	0.000	0.000	0
2327.4	0	0.000	0.000	1.000	0.000	0.000	0
2327.5	0	0.000	0.000	1.000	0.000	0.000	0
2327.6	0	0.000	0.000	1.000	0.000	0.000	0
2328.5	0	0.000	0.000	1.000	0.000	0.000	0
2328.8	0	0.000	0.000	1.000	0.000	0.000	0
2329.2	0	0.000	0.000	1.000	0.000	0.000	0
2330.2	0	0.000	0.000	1.000	0.000	0.000	0
2332.0	0	0.000	0.000	1.000	0.000	0.000	0
2332.3	0	0.000	0.000	1.000	0.000	0.000	0
2332.6	0	0.000	0.000	1.000	0.000	0.000	0
2333.1	0	0.000	0.000	1.000	0.000	0.000	0
2333.6	0	0.000	0.000	1.000	0.000	0.000	0
2335.3	0	0.000	0.000	1.000	0.000	0.000	0
2335.8	0	0.000	0.000	1.000	0.000	0.000	0

2336.7	0	0.000	0.000	1.000	0.000	0.000	0
2337.8	0	0.000	0.000	1.000	0.000	0.000	0
2341.2	130	0.766	0.766	-0.643	-0.643	-0.643	1
2341.5	0	0.000	0.766	1.000	0.000	-0.643	0
2342.2	0	0.000	0.766	1.000	0.000	-0.643	0
2342.4	131	0.755	1.521	-0.656	-0.656	-1.299	1
2345.8	0	0.000	1.521	1.000	0.000	-1.299	0
2347.7	0	0.000	1.521	1.000	0.000	-1.299	0
2349.7	0	0.000	1.521	1.000	0.000	-1.299	0
2351.1	0	0.000	1.521	1.000	0.000	-1.299	0
2351.2	0	0.000	1.521	1.000	0.000	-1.299	0
2351.3	0	0.000	1.521	1.000	0.000	-1.299	0
2351.5	0	0.000	1.521	1.000	0.000	-1.299	0
2355.0	0	0.000	1.521	1.000	0.000	-1.299	0
2356.8	124	0.829	2.350	-0.559	-0.559	-1.858	1
2357.4	110	0.940	3.289	-0.342	-0.342	-2.200	1
2358.0	0	0.000	3.289	1.000	0.000	-2.200	0
2395.8	0	0.000	3.289	1.000	0.000	-2.200	0
2397.5	151	0.485	3.774	-0.875	-0.875	-3.075	1
2397.6	155	0.423	4.197	-0.906	-0.906	-3.981	1
2401.8	115	0.906	5.103	-0.423	-0.423	-4.404	1
2402.0	137	0.682	5.785	-0.731	-0.731	-5.135	1
2402.3	128	0.788	6.573	-0.616	-0.616	-5.751	1
2402.5	127	0.799	7.372	-0.602	-0.602	-6.352	1
2402.8	116	0.899	8.271	-0.438	-0.438	-6.791	1
2403.1	130	0.766	9.037	-0.643	-0.643	-7.434	1
2403.6	0	0.000	9.037	1.000	0.000	-7.434	0
2405.8	0	0.000	9.037	1.000	0.000	-7.434	0
2407.8	0	0.000	9.037	1.000	0.000	-7.434	0
2410.3	0	0.000	9.037	1.000	0.000	-7.434	0
2411.8	0	0.000	9.037	1.000	0.000	-7.434	0
2413.9	0	0.000	9.037	1.000	0.000	-7.434	0
2414.7	0	0.000	9.037	1.000	0.000	-7.434	0
2415.9	0	0.000	9.037	1.000	0.000	-7.434	0
2419.5	0	0.000	9.037	1.000	0.000	-7.434	0
2419.8	0	0.000	9.037	1.000	0.000	-7.434	0
2420.2	0	0.000	9.037	1.000	0.000	-7.434	0
2421.2	0	0.000	9.037	1.000	0.000	-7.434	0
2421.5	0	0.000	9.037	1.000	0.000	-7.434	0
2422.0	0	0.000	9.037	1.000	0.000	-7.434	0
2422.1	0	0.000	9.037	1.000	0.000	-7.434	0
2423.0	0	0.000	9.037	1.000	0.000	-7.434	0
2423.2	0	0.000	9.037	1.000	0.000	-7.434	0
2424.9	0	0.000	9.037	1.000	0.000	-7.434	0
2425.3	0	0.000	9.037	1.000	0.000	-7.434	0
2425.6	0	0.000	9.037	1.000	0.000	-7.434	0
2425.7	0	0.000	9.037	1.000	0.000	-7.434	0
2425.8	0	0.000	9.037	1.000	0.000	-7.434	0
2426.0	0	0.000	9.037	1.000	0.000	-7.434	0
2426.3	0	0.000	9.037	1.000	0.000	-7.434	0
2427.9	0	0.000	9.037	1.000	0.000	-7.434	0
2428.0	0	0.000	9.037	1.000	0.000	-7.434	0
2428.3	0	0.000	9.037	1.000	0.000	-7.434	0
2429.2	0	0.000	9.037	1.000	0.000	-7.434	0
2429.7	0	0.000	9.037	1.000	0.000	-7.434	0
2430.0	0	0.000	9.037	1.000	0.000	-7.434	0
2431.0	0	0.000	9.037	1.000	0.000	-7.434	0
2431.2	0	0.000	9.037	1.000	0.000	-7.434	0

2431.5	0	0.000	9.037	1.000	0.000	-7.434	0
2431.7	0	0.000	9.037	1.000	0.000	-7.434	0
2431.8	0	0.000	9.037	1.000	0.000	-7.434	0
2432.0	0	0.000	9.037	1.000	0.000	-7.434	0
2432.3	0	0.000	9.037	1.000	0.000	-7.434	0
2432.8	0	0.000	9.037	1.000	0.000	-7.434	0
2433.1	0	0.000	9.037	1.000	0.000	-7.434	0
2433.4	0	0.000	9.037	1.000	0.000	-7.434	0
2433.6	0	0.000	9.037	1.000	0.000	-7.434	0
2433.7	0	0.000	9.037	1.000	0.000	-7.434	0
2434.0	0	0.000	9.037	1.000	0.000	-7.434	0
2434.1	0	0.000	9.037	1.000	0.000	-7.434	0
2434.2	0	0.000	9.037	1.000	0.000	-7.434	0
2434.3	0	0.000	9.037	1.000	0.000	-7.434	0
2434.6	0	0.000	9.037	1.000	0.000	-7.434	0
2435.1	0	0.000	9.037	1.000	0.000	-7.434	0
2436.3	0	0.000	9.037	1.000	0.000	-7.434	0
2436.5	0	0.000	9.037	1.000	0.000	-7.434	0
2437.0	0	0.000	9.037	1.000	0.000	-7.434	0
2437.6	0	0.000	9.037	1.000	0.000	-7.434	0
2437.9	0	0.000	9.037	1.000	0.000	-7.434	0
2438.1	0	0.000	9.037	1.000	0.000	-7.434	0
2438.8	0	0.000	9.037	1.000	0.000	-7.434	0
2439.3	0	0.000	9.037	1.000	0.000	-7.434	0
2439.5	0	0.000	9.037	1.000	0.000	-7.434	0
2439.6	0	0.000	9.037	1.000	0.000	-7.434	0
2440.2	0	0.000	9.037	1.000	0.000	-7.434	0
2440.4	0	0.000	9.037	1.000	0.000	-7.434	0
2440.5	0	0.000	9.037	1.000	0.000	-7.434	0
2441.0	0	0.000	9.037	1.000	0.000	-7.434	0
2441.3	0	0.000	9.037	1.000	0.000	-7.434	0
2441.4	0	0.000	9.037	1.000	0.000	-7.434	0
2441.7	0	0.000	9.037	1.000	0.000	-7.434	0
2442.0	0	0.000	9.037	1.000	0.000	-7.434	0
2442.1	0	0.000	9.037	1.000	0.000	-7.434	0
2442.3	0	0.000	9.037	1.000	0.000	-7.434	0
2442.4	0	0.000	9.037	1.000	0.000	-7.434	0
2442.5	0	0.000	9.037	1.000	0.000	-7.434	0
2442.8	0	0.000	9.037	1.000	0.000	-7.434	0
2443.3	0	0.000	9.037	1.000	0.000	-7.434	0
2443.6	0	0.000	9.037	1.000	0.000	-7.434	0
2444.5	0	0.000	9.037	1.000	0.000	-7.434	0
2446.0	0	0.000	9.037	1.000	0.000	-7.434	0
2446.7	0	0.000	9.037	1.000	0.000	-7.434	0
2447.5	0	0.000	9.037	1.000	0.000	-7.434	0
2448.0	0	0.000	9.037	1.000	0.000	-7.434	0
2453.0	0	0.000	9.037	1.000	0.000	-7.434	0
2455.6	0	0.000	9.037	1.000	0.000	-7.434	0
2455.7	0	0.000	9.037	1.000	0.000	-7.434	0
2456.1	0	0.000	9.037	1.000	0.000	-7.434	0
2456.4	0	0.000	9.037	1.000	0.000	-7.434	0
2456.8	0	0.000	9.037	1.000	0.000	-7.434	0
2457.2	0	0.000	9.037	1.000	0.000	-7.434	0
2457.3	0	0.000	9.037	1.000	0.000	-7.434	0
2460.7	0	0.000	9.037	1.000	0.000	-7.434	0
2461.2	0	0.000	9.037	1.000	0.000	-7.434	0
2461.3	0	0.000	9.037	1.000	0.000	-7.434	0
2461.6	0	0.000	9.037	1.000	0.000	-7.434	0

2461.8	0	0.000	9.037	1.000	0.000	-7.434	0
2462.4	0	0.000	9.037	1.000	0.000	-7.434	0
2462.7	0	0.000	9.037	1.000	0.000	-7.434	0
2462.8	0	0.000	9.037	1.000	0.000	-7.434	0
2463.3	0	0.000	9.037	1.000	0.000	-7.434	0
2464.0	0	0.000	9.037	1.000	0.000	-7.434	0
2464.5	0	0.000	9.037	1.000	0.000	-7.434	0
2464.6	0	0.000	9.037	1.000	0.000	-7.434	0
2464.7	0	0.000	9.037	1.000	0.000	-7.434	0
2464.8	0	0.000	9.037	1.000	0.000	-7.434	0
2465.0	0	0.000	9.037	1.000	0.000	-7.434	0
2465.1	0	0.000	9.037	1.000	0.000	-7.434	0
2465.4	0	0.000	9.037	1.000	0.000	-7.434	0
2466.1	0	0.000	9.037	1.000	0.000	-7.434	0
2466.2	0	0.000	9.037	1.000	0.000	-7.434	0
2467.1	0	0.000	9.037	1.000	0.000	-7.434	0
2467.3	0	0.000	9.037	1.000	0.000	-7.434	0
2467.4	0	0.000	9.037	1.000	0.000	-7.434	0
2467.6	0	0.000	9.037	1.000	0.000	-7.434	0
2467.7	0	0.000	9.037	1.000	0.000	-7.434	0
2467.8	0	0.000	9.037	1.000	0.000	-7.434	0
2468.7	0	0.000	9.037	1.000	0.000	-7.434	0
2469.5	0	0.000	9.037	1.000	0.000	-7.434	0
2475.0	0	0.000	9.037	1.000	0.000	-7.434	0
2476.3	0	0.000	9.037	1.000	0.000	-7.434	0
2477.5	0	0.000	9.037	1.000	0.000	-7.434	0
2480.3	0	0.000	9.037	1.000	0.000	-7.434	0
2480.5	0	0.000	9.037	1.000	0.000	-7.434	0
2480.9	0	0.000	9.037	1.000	0.000	-7.434	0
2481.0	0	0.000	9.037	1.000	0.000	-7.434	0
2482.6	0	0.000	9.037	1.000	0.000	-7.434	0
2483.3	0	0.000	9.037	1.000	0.000	-7.434	0
2483.4	0	0.000	9.037	1.000	0.000	-7.434	0
2483.5	0	0.000	9.037	1.000	0.000	-7.434	0
2483.8	0	0.000	9.037	1.000	0.000	-7.434	0
2484.1	0	0.000	9.037	1.000	0.000	-7.434	0
2486.3	0	0.000	9.037	1.000	0.000	-7.434	0
2489.0	0	0.000	9.037	1.000	0.000	-7.434	0
2490.5	0	0.000	9.037	1.000	0.000	-7.434	0
2491.2	0	0.000	9.037	1.000	0.000	-7.434	0
2494.3	0	0.000	9.037	1.000	0.000	-7.434	0
2502.6	0	0.000	9.037	1.000	0.000	-7.434	0
2507.7	0	0.000	9.037	1.000	0.000	-7.434	0
2515.6	0	0.000	9.037	1.000	0.000	-7.434	0
2521.5	0	0.000	9.037	1.000	0.000	-7.434	0
2526.7	0	0.000	9.037	1.000	0.000	-7.434	0
2531.9	0	0.000	9.037	1.000	0.000	-7.434	0
2538.7	0	0.000	9.037	1.000	0.000	-7.434	0
2547.2	0	0.000	9.037	1.000	0.000	-7.434	0
2553.4	0	0.000	9.037	1.000	0.000	-7.434	0
2563.7	0	0.000	9.037	1.000	0.000	-7.434	0
2572.8	0	0.000	9.037	1.000	0.000	-7.434	0
2579.7	0	0.000	9.037	1.000	0.000	-7.434	0
2581.8	0	0.000	9.037	1.000	0.000	-7.434	0
2583.4	0	0.000	9.037	1.000	0.000	-7.434	0
2584.7	0	0.000	9.037	1.000	0.000	-7.434	0
2585.8	0	0.000	9.037	1.000	0.000	-7.434	0
2585.9	0	0.000	9.037	1.000	0.000	-7.434	0

2587.5	0	0.000	9.037	1.000	0.000	-7.434	0
2593.6	0	0.000	9.037	1.000	0.000	-7.434	0

Arithmetic mean of strike values (col 2)= 129.5 Total measurements taken = 12

Feature Orientation measurements Reference Mardia 1972 for statistics of directional data		Well: TOTAL DIABER c-65-D/94-B-16 Chatter Fractures pop 2									
Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/Col C	C ColB/ColC	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
9.037	-7.434	12	0.7531	-0.6195	0.9509	0.9751	0.7723	-0.6353	129.4	230.6	12.9

Well Name: TOTAL DIABER c-65-D/94-B-16 Bedding Orientation Measurements							
Depth KB m	Azimuth of feature	Sin Azi	Cumulative Total Sin Azi	Cos Azi	Cos Azi corrected for zero values	Cumulative Total Cos Azi	Measurement made or not 1 or 0 entered
2265.6	213	-0.545	-0.545	-0.839	-0.839	-0.839	1
2268.3	0	0.000	-0.545	1.000	0.000	-0.839	0
2269.1	182	-0.035	-0.580	-0.999	-0.999	-1.838	1
2269.5	0	0.000	-0.580	1.000	0.000	-1.838	0
2271.1	0	0.000	-0.580	1.000	0.000	-1.838	0
2273.4	0	0.000	-0.580	1.000	0.000	-1.838	0
2276.8	170	0.174	-0.406	-0.985	-0.985	-2.823	1
2278.3	0	0.000	-0.406	1.000	0.000	-2.823	0
2282.0	0	0.000	-0.406	1.000	0.000	-2.823	0
2283.7	228	-0.743	-1.149	-0.669	-0.669	-3.492	1
2283.8	0	0.000	-1.149	1.000	0.000	-3.492	0
2286.2	187	-0.122	-1.271	-0.993	-0.993	-4.485	1
2288.8	214	-0.559	-1.830	-0.829	-0.829	-5.314	1
2289.0	0	0.000	-1.830	1.000	0.000	-5.314	0
2294.8	145	0.574	-1.257	-0.819	-0.819	-6.133	1
2298.3	0	0.000	-1.257	1.000	0.000	-6.133	0
2299.6	202	-0.375	-1.631	-0.927	-0.927	-7.060	1
2303.4	218	-0.616	-2.247	-0.788	-0.788	-7.848	1
2306.5	227	-0.731	-2.978	-0.682	-0.682	-8.530	1
2308.1	0	0.000	-2.978	1.000	0.000	-8.530	0
2312.9	159	0.358	-2.620	-0.934	-0.934	-9.464	1
2313.3	170	0.174	-2.446	-0.985	-0.985	-10.448	1
2317.4	186	-0.105	-2.551	-0.995	-0.995	-11.443	1
2318.1	0	0.000	-2.551	1.000	0.000	-11.443	0
2321.3	0	0.000	-2.551	1.000	0.000	-11.443	0
2321.6	0	0.000	-2.551	1.000	0.000	-11.443	0
2322.1	203	-0.391	-2.941	-0.921	-0.921	-12.363	1
2322.2	216	-0.588	-3.529	-0.809	-0.809	-13.172	1
2322.5	0	0.000	-3.529	1.000	0.000	-13.172	0
2322.6	0	0.000	-3.529	1.000	0.000	-13.172	0
2322.7	194	-0.242	-3.771	-0.970	-0.970	-14.143	1
2323.7	0	0.000	-3.771	1.000	0.000	-14.143	0
2323.8	0	0.000	-3.771	1.000	0.000	-14.143	0
2324.3	0	0.000	-3.771	1.000	0.000	-14.143	0
2325.1	185	-0.087	-3.858	-0.996	-0.996	-15.139	1
2326.2	0	0.000	-3.858	1.000	0.000	-15.139	0
2326.4	239	-0.857	-4.715	-0.515	-0.515	-15.654	1
2326.5	0	0.000	-4.715	1.000	0.000	-15.654	0
2327.1	0	0.000	-4.715	1.000	0.000	-15.654	0
2327.4	0	0.000	-4.715	1.000	0.000	-15.654	0
2327.5	0	0.000	-4.715	1.000	0.000	-15.654	0
2327.6	247	-0.921	-5.636	-0.391	-0.391	-16.045	1
2328.5	0	0.000	-5.636	1.000	0.000	-16.045	0
2328.8	158	0.375	-5.261	-0.927	-0.927	-16.972	1
2329.2	161	0.326	-4.936	-0.946	-0.946	-17.917	1
2330.2	187	-0.122	-5.058	-0.993	-0.993	-18.910	1
2332.0	150	0.500	-4.558	-0.866	-0.866	-19.776	1
2332.3	0	0.000	-4.558	1.000	0.000	-19.776	0
2332.6	209	-0.485	-5.042	-0.875	-0.875	-20.651	1
2333.1	184	-0.070	-5.112	-0.998	-0.998	-21.648	1
2333.6	226	-0.719	-5.832	-0.695	-0.695	-22.343	1
2335.3	183	-0.052	-5.884	-0.999	-0.999	-23.341	1
2335.8	0	0.000	-5.884	1.000	0.000	-23.341	0

2336.7	0	0.000	-5.884	1.000	0.000	-23.341	0
2337.8	181	-0.017	-5.901	-1.000	-1.000	-24.341	1
2341.2	0	0.000	-5.901	1.000	0.000	-24.341	0
2341.5	208	-0.469	-6.371	-0.883	-0.883	-25.224	1
2342.2	184	-0.070	-6.441	-0.998	-0.998	-26.222	1
2342.4	0	0.000	-6.441	1.000	0.000	-26.222	0
2345.8	167	0.225	-6.216	-0.974	-0.974	-27.196	1
2347.7	174	0.105	-6.111	-0.995	-0.995	-28.191	1
2349.7	0	0.000	-6.111	1.000	0.000	-28.191	0
2351.1	0	0.000	-6.111	1.000	0.000	-28.191	0
2351.2	0	0.000	-6.111	1.000	0.000	-28.191	0
2351.3	0	0.000	-6.111	1.000	0.000	-28.191	0
2351.5	183	-0.052	-6.163	-0.999	-0.999	-29.189	1
2355.0	180	0.000	-6.163	-1.000	-1.000	-30.189	1
2356.8	0	0.000	-6.163	1.000	0.000	-30.189	0
2357.4	0	0.000	-6.163	1.000	0.000	-30.189	0
2358.0	187	-0.122	-6.285	-0.993	-0.993	-31.182	1
2395.8	194	-0.242	-6.527	-0.970	-0.970	-32.152	1
2397.5	0	0.000	-6.527	1.000	0.000	-32.152	0
2397.6	0	0.000	-6.527	1.000	0.000	-32.152	0
2401.8	0	0.000	-6.527	1.000	0.000	-32.152	0
2402.0	0	0.000	-6.527	1.000	0.000	-32.152	0
2402.3	0	0.000	-6.527	1.000	0.000	-32.152	0
2402.5	0	0.000	-6.527	1.000	0.000	-32.152	0
2402.8	0	0.000	-6.527	1.000	0.000	-32.152	0
2403.1	0	0.000	-6.527	1.000	0.000	-32.152	0
2403.6	157	0.391	-6.136	-0.921	-0.921	-33.073	1
2405.8	0	0.000	-6.136	1.000	0.000	-33.073	0
2407.8	226	-0.719	-6.856	-0.695	-0.695	-33.767	1
2410.3	171	0.156	-6.699	-0.988	-0.988	-34.755	1
2411.8	177	0.052	-6.647	-0.999	-0.999	-35.754	1
2413.9	163	0.292	-6.355	-0.956	-0.956	-36.710	1
2414.7	0	0.000	-6.355	1.000	0.000	-36.710	0
2415.9	0	0.000	-6.355	1.000	0.000	-36.710	0
2419.5	0	0.000	-6.355	1.000	0.000	-36.710	0
2419.8	0	0.000	-6.355	1.000	0.000	-36.710	0
2420.2	198	-0.309	-6.664	-0.951	-0.951	-37.661	1
2421.2	0	0.000	-6.664	1.000	0.000	-37.661	0
2421.5	0	0.000	-6.664	1.000	0.000	-37.661	0
2422.0	0	0.000	-6.664	1.000	0.000	-37.661	0
2422.1	0	0.000	-6.664	1.000	0.000	-37.661	0
2423.0	0	0.000	-6.664	1.000	0.000	-37.661	0
2423.2	0	0.000	-6.664	1.000	0.000	-37.661	0
2424.9	0	0.000	-6.664	1.000	0.000	-37.661	0
2425.3	157	0.391	-6.273	-0.921	-0.921	-38.581	1
2425.6	0	0.000	-6.273	1.000	0.000	-38.581	0
2425.7	0	0.000	-6.273	1.000	0.000	-38.581	0
2425.8	0	0.000	-6.273	1.000	0.000	-38.581	0
2426.0	0	0.000	-6.273	1.000	0.000	-38.581	0
2426.3	0	0.000	-6.273	1.000	0.000	-38.581	0
2427.9	0	0.000	-6.273	1.000	0.000	-38.581	0
2428.0	167	0.225	-6.048	-0.974	-0.974	-39.556	1
2428.3	0	0.000	-6.048	1.000	0.000	-39.556	0
2429.2	0	0.000	-6.048	1.000	0.000	-39.556	0
2429.7	0	0.000	-6.048	1.000	0.000	-39.556	0
2430.0	156	0.407	-5.641	-0.914	-0.914	-40.469	1
2431.0	228	-0.743	-6.384	-0.669	-0.669	-41.138	1
2431.2	0	0.000	-6.384	1.000	0.000	-41.138	0

2431.5	0	0.000	-6.384	1.000	0.000	-41.138	0
2431.7	0	0.000	-6.384	1.000	0.000	-41.138	0
2431.8	0	0.000	-6.384	1.000	0.000	-41.138	0
2432.0	0	0.000	-6.384	1.000	0.000	-41.138	0
2432.3	0	0.000	-6.384	1.000	0.000	-41.138	0
2432.8	0	0.000	-6.384	1.000	0.000	-41.138	0
2433.1	0	0.000	-6.384	1.000	0.000	-41.138	0
2433.4	0	0.000	-6.384	1.000	0.000	-41.138	0
2433.6	0	0.000	-6.384	1.000	0.000	-41.138	0
2433.7	0	0.000	-6.384	1.000	0.000	-41.138	0
2434.0	0	0.000	-6.384	1.000	0.000	-41.138	0
2434.1	0	0.000	-6.384	1.000	0.000	-41.138	0
2434.2	0	0.000	-6.384	1.000	0.000	-41.138	0
2434.3	0	0.000	-6.384	1.000	0.000	-41.138	0
2434.6	0	0.000	-6.384	1.000	0.000	-41.138	0
2435.1	0	0.000	-6.384	1.000	0.000	-41.138	0
2436.3	0	0.000	-6.384	1.000	0.000	-41.138	0
2436.5	176	0.070	-6.315	-0.998	-0.998	-42.136	1
2437.0	0	0.000	-6.315	1.000	0.000	-42.136	0
2437.6	173	0.122	-6.193	-0.993	-0.993	-43.129	1
2437.9	0	0.000	-6.193	1.000	0.000	-43.129	0
2438.1	0	0.000	-6.193	1.000	0.000	-43.129	0
2438.8	0	0.000	-6.193	1.000	0.000	-43.129	0
2439.3	0	0.000	-6.193	1.000	0.000	-43.129	0
2439.5	174	0.105	-6.088	-0.995	-0.995	-44.123	1
2439.6	0	0.000	-6.088	1.000	0.000	-44.123	0
2440.2	0	0.000	-6.088	1.000	0.000	-44.123	0
2440.4	0	0.000	-6.088	1.000	0.000	-44.123	0
2440.5	163	0.292	-5.796	-0.956	-0.956	-45.079	1
2441.0	0	0.000	-5.796	1.000	0.000	-45.079	0
2441.3	0	0.000	-5.796	1.000	0.000	-45.079	0
2441.4	0	0.000	-5.796	1.000	0.000	-45.079	0
2441.7	0	0.000	-5.796	1.000	0.000	-45.079	0
2442.0	0	0.000	-5.796	1.000	0.000	-45.079	0
2442.1	0	0.000	-5.796	1.000	0.000	-45.079	0
2442.3	0	0.000	-5.796	1.000	0.000	-45.079	0
2442.4	0	0.000	-5.796	1.000	0.000	-45.079	0
2442.5	0	0.000	-5.796	1.000	0.000	-45.079	0
2442.8	177	0.052	-5.744	-0.999	-0.999	-46.078	1
2443.3	0	0.000	-5.744	1.000	0.000	-46.078	0
2443.6	225	-0.707	-6.451	-0.707	-0.707	-46.785	1
2444.5	180	0.000	-6.451	-1.000	-1.000	-47.785	1
2446.0	181	-0.017	-6.468	-1.000	-1.000	-48.785	1
2446.7	0	0.000	-6.468	1.000	0.000	-48.785	0
2447.5	191	-0.191	-6.659	-0.982	-0.982	-49.767	1
2448.0	0	0.000	-6.659	1.000	0.000	-49.767	0
2453.0	170	0.174	-6.485	-0.985	-0.985	-50.751	1
2455.6	0	0.000	-6.485	1.000	0.000	-50.751	0
2455.7	0	0.000	-6.485	1.000	0.000	-50.751	0
2456.1	0	0.000	-6.485	1.000	0.000	-50.751	0
2456.4	0	0.000	-6.485	1.000	0.000	-50.751	0
2456.8	0	0.000	-6.485	1.000	0.000	-50.751	0
2457.2	0	0.000	-6.485	1.000	0.000	-50.751	0
2457.3	0	0.000	-6.485	1.000	0.000	-50.751	0
2460.7	171	0.156	-6.329	-0.988	-0.988	-51.739	1
2461.2	0	0.000	-6.329	1.000	0.000	-51.739	0
2461.3	0	0.000	-6.329	1.000	0.000	-51.739	0
2461.6	0	0.000	-6.329	1.000	0.000	-51.739	0

2461.8	0	0.000	-6.329	1.000	0.000	-51.739	0
2462.4	0	0.000	-6.329	1.000	0.000	-51.739	0
2462.7	170	0.174	-6.155	-0.985	-0.985	-52.724	1
2462.8	0	0.000	-6.155	1.000	0.000	-52.724	0
2463.3	0	0.000	-6.155	1.000	0.000	-52.724	0
2464.0	0	0.000	-6.155	1.000	0.000	-52.724	0
2464.5	129	0.777	-5.378	-0.629	-0.629	-53.353	1
2464.6	0	0.000	-5.378	1.000	0.000	-53.353	0
2464.7	0	0.000	-5.378	1.000	0.000	-53.353	0
2464.8	191	-0.191	-5.569	-0.982	-0.982	-54.335	1
2465.0	0	0.000	-5.569	1.000	0.000	-54.335	0
2465.1	0	0.000	-5.569	1.000	0.000	-54.335	0
2465.4	0	0.000	-5.569	1.000	0.000	-54.335	0
2466.1	0	0.000	-5.569	1.000	0.000	-54.335	0
2466.2	0	0.000	-5.569	1.000	0.000	-54.335	0
2467.1	0	0.000	-5.569	1.000	0.000	-54.335	0
2467.3	0	0.000	-5.569	1.000	0.000	-54.335	0
2467.4	0	0.000	-5.569	1.000	0.000	-54.335	0
2467.6	0	0.000	-5.569	1.000	0.000	-54.335	0
2467.7	0	0.000	-5.569	1.000	0.000	-54.335	0
2467.8	0	0.000	-5.569	1.000	0.000	-54.335	0
2468.7	169	0.191	-5.378	-0.982	-0.982	-55.317	1
2469.5	168	0.208	-5.170	-0.978	-0.978	-56.295	1
2475.0	0	0.000	-5.170	1.000	0.000	-56.295	0
2476.3	170	0.174	-4.996	-0.985	-0.985	-57.279	1
2477.5	151	0.485	-4.512	-0.875	-0.875	-58.154	1
2480.3	0	0.000	-4.512	1.000	0.000	-58.154	0
2480.5	0	0.000	-4.512	1.000	0.000	-58.154	0
2480.9	0	0.000	-4.512	1.000	0.000	-58.154	0
2481.0	0	0.000	-4.512	1.000	0.000	-58.154	0
2482.6	0	0.000	-4.512	1.000	0.000	-58.154	0
2483.3	0	0.000	-4.512	1.000	0.000	-58.154	0
2483.4	0	0.000	-4.512	1.000	0.000	-58.154	0
2483.5	0	0.000	-4.512	1.000	0.000	-58.154	0
2483.8	0	0.000	-4.512	1.000	0.000	-58.154	0
2484.1	0	0.000	-4.512	1.000	0.000	-58.154	0
2486.3	197	-0.292	-4.804	-0.956	-0.956	-59.110	1
2489.0	0	0.000	-4.804	1.000	0.000	-59.110	0
2490.5	170	0.174	-4.630	-0.985	-0.985	-60.095	1
2491.2	193	-0.225	-4.855	-0.974	-0.974	-61.070	1
2494.3	196	-0.276	-5.131	-0.961	-0.961	-62.031	1
2502.6	127	0.799	-4.332	-0.602	-0.602	-62.633	1
2507.7	192	-0.208	-4.540	-0.978	-0.978	-63.611	1
2515.6	167	0.225	-4.315	-0.974	-0.974	-64.585	1
2521.5	207	-0.454	-4.769	-0.891	-0.891	-65.476	1
2526.7	120	0.866	-3.903	-0.500	-0.500	-65.976	1
2531.9	166	0.242	-3.661	-0.970	-0.970	-66.946	1
2538.7	0	0.000	-3.661	1.000	0.000	-66.946	0
2547.2	200	-0.342	-4.003	-0.940	-0.940	-67.886	1
2553.4	155	0.423	-3.581	-0.906	-0.906	-68.792	1
2563.7	179	0.017	-3.563	-1.000	-1.000	-69.792	1
2572.8	159	0.358	-3.205	-0.934	-0.934	-70.726	1
2579.7	204	-0.407	-3.612	-0.914	-0.914	-71.639	1
2581.8	175	0.087	-3.524	-0.996	-0.996	-72.636	1
2583.4	0	0.000	-3.524	1.000	0.000	-72.636	0
2584.7	181	-0.017	-3.542	-1.000	-1.000	-73.635	1
2585.8	163	0.292	-3.250	-0.956	-0.956	-74.592	1
2585.9	0	0.000	-3.250	1.000	0.000	-74.592	0

2587.5	171	0.156	-3.093	-0.988	-0.988	-75.579	1
2593.6	0	0.000	-3.093	1.000	0.000	-75.579	0

Arithmetic mean of strike values (col 2)= 182.6 Total measurements taken = 83

Feature Orientation measurements Well: TOTAL DIABER c-65-D/94-B-16 Bedding Orientation Calculations
 Reference Mardia 1972 for statistics of directional data

Total Sin x thick	Total Cos x thick	Total Thickness	S Col A/Col C	C ColB/ColC	R x R	R	S/R	C/R	Azimuth from S/R	Azimuth from C/R	Standard Deviation
-3.093	-75.579	83	-0.0373	-0.9106	0.8306	0.9114	-0.0409	-0.9992	182.3	182.3	24.7