

Fracture Density Log

FRACTURE DENSITY LOG WITH IMAGE FRACATURE ANALYSIS

Image Interval: 12675-13625 ft

Scale 1:240

COMPANY: DCP Midstream LP		
WELL: Zia AGI D2		
FIELD: AGI Devonian Exploration		
COUNTRY: Lea		
STATE: New Mexico		
COUNTRY: USA		

API No.: 30-025-42207		Other Services:
Location		
Field:	1893 FSL & 950 FWL Section: 19 Township: T19S Abstract: R32S	
Sec:	19 Township: T19S Range: R32S	
Lat:	32° 38' 38.29" N	
Long:	103° 46' 40.02" W	

Permanent Datum:	GL	Elev. 3547 ft	Elevations: K.B. 3574 ft D.F. 3573 ft G.L. 3547 ft
Log Measured From:	KB	27 ft above Perm. Datum	
Drilling Measured from:	KB		
Magnetic Dec: 7.2253	Magnetic Inc: 60.4659	Magnetic Intensity: 0.482977	
Date	30-Nov-2016		
Run No.	Run 1B		
Depth Driller	13622 ft		
Depth Logger (Schl)	13637 ft		
Bitm Log Interval	13637 ft		
Top Log Interval	4702 ft		
Casing-Driller	9.625 in @ 4696 ft		
Casing-Logger	4702 ft		
Bit Size	6 in		
Type Fluid in Hole	Fresh Water		
Dens. Visc.	10 lbm/gal 41 s		
pH Fluid loss	10 9 in3		
Source of Sample	Active Tank		
Rm @ Meas. Temp.	0.08 ohmm@	72 degF	
Rtf @ Meas. Temp.	0.08 ohmm@	72 degF	
Rmc @ Meas. Temp.	-999.25 ohmm@	68 degF	
Source: Rtf Rmc	Calculated		
Rm @ BHT	0.0347157 @	174.75 degF	
Circulation Stopped	00:00:00		
Logger on Bottom	23:30:00		
Max Rec. Temp.	174.75 deg F		
Equipment Location	9105 Midland, TX		
Recorded by:	Danielle Krebs		
Witnessed by:	Jared Smith		

FOLD HERE

The well name, location and borehole reference data were furnished by the customer

ANY INTERPRETATION, RESEARCH, ANALYSIS, DATA, RESULTS, ESTIMATES, OR RECOMMENDATION FURNISHED WITH THE SERVICES OR OTHERWISE COMMUNICATED BY SCHLUMBERGER TO CUSTOMER AT ANY TIME IN CONNECTION WITH THE SERVICES ARE OPINIONS BASED ON INFERENCES FROM MEASUREMENTS, EMPIRICAL RELATIONSHIPS AND ASSUMPTIONS, WHICH INFERENCES, EMPIRICAL RELATIONSHIPS AND ASSUMPTIONS ARE NOT INFALLIBLE, AND WITH RESPECT TO WHICH PROFESSIONALS IN THE INDUSTRY MAY DIFFER ACCORDINGLY. SCHLUMBERGER CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION, RESEARCH, ANALYSIS, DATA, RESULTS, ESTIMATES OR RECOMMENDATION. CUSTOMER ACKNOWLEDGES THAT IT IS ACCEPTING THE SERVICES "AS IS", THAT SCHLUMBERGER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, OF ANY KIND OR DESCRIPTION IN RESPECT THEREOF. SPECIFICALLY, CUSTOMER ACKNOWLEDGES THAT SCHLUMBERGER DOES NOT WARRANT THAT ANY INTERPRETATION, RESEARCH, ANALYSIS, DATA, RESULTS, ESTIMATES, OR RECOMMENDATION IS FIT FOR A PARTICULAR PURPOSE, INCLUDING BUT NOT LIMITED TO COMPLIANCE WITH ANY GOVERNMENT REQUEST OR REGULATORY REQUIREMENT. CUSTOMER FURTHER ACKNOWLEDGES THAT SUCH SERVICES ARE DELIVERED WITH THE EXPLICIT UNDERSTANDING AND AGREEMENT THAT ANY ACTION TAKEN BASED ON THE SERVICES RECEIVED SHALL BEAT ITS OWN RISK AND RESPONSIBILITY AND NO CLAIM SHALL BE MADE AGAINST SCHLUMBERGER AS A CONSEQUENCE THEREOF.

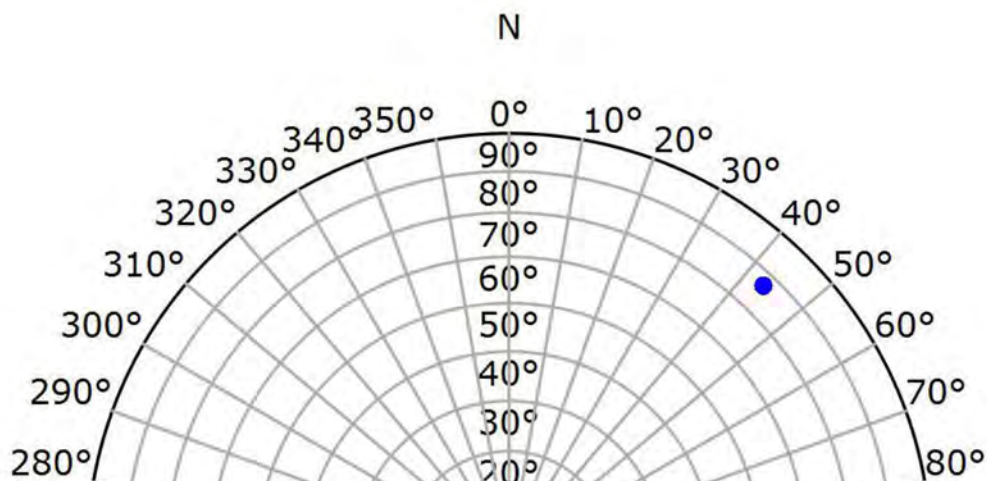
DS-2016-41710	OP Vers.: 2000-999	Process Date: 12/26/2016	Center: Midland DS	Baseline: Techlog 2013.4	Log Analyst: Oifa Zened
---------------	--------------------	--------------------------	--------------------	--------------------------	-------------------------

Remarks:

Image processing and Interpretation interval: 12675-13625 ft
All the displayed logs have been depth matched to the FMI Image
All completion decision should be made taking this into account.

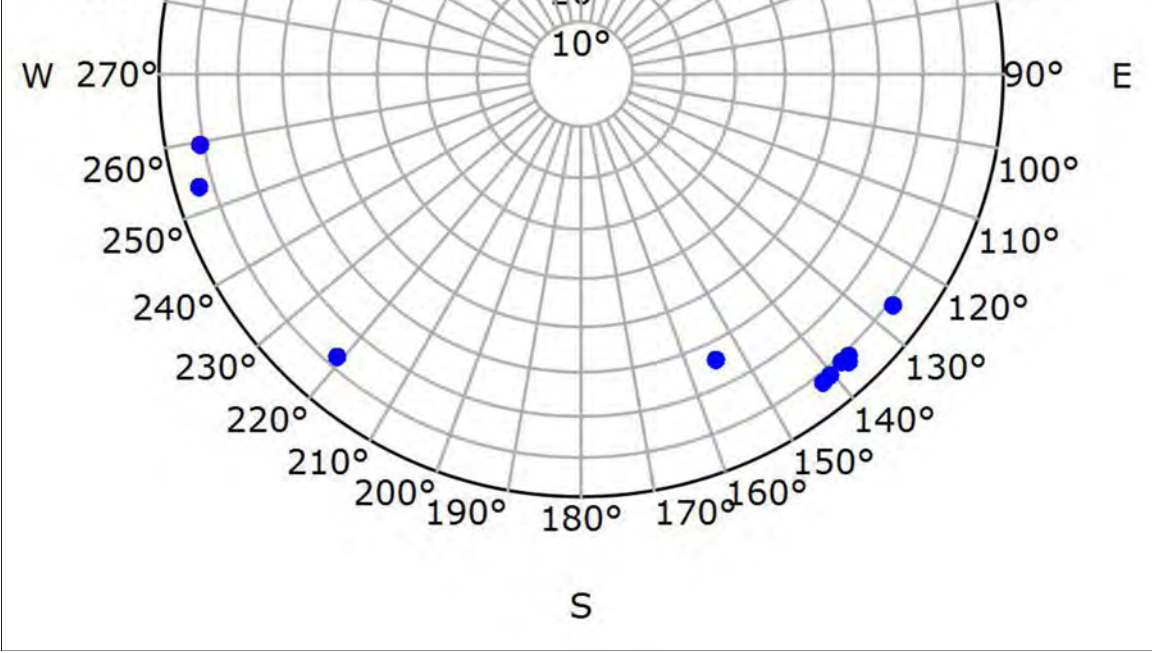
Conductive Fracture Summary All 12676ft - 13621ft

Schmidt Plot - Upper Hemisphere



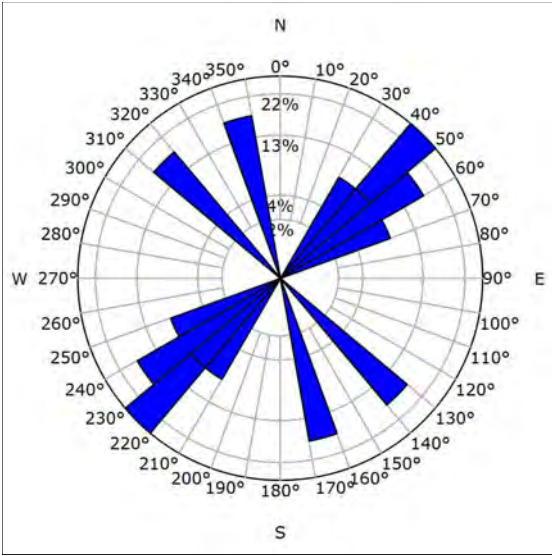
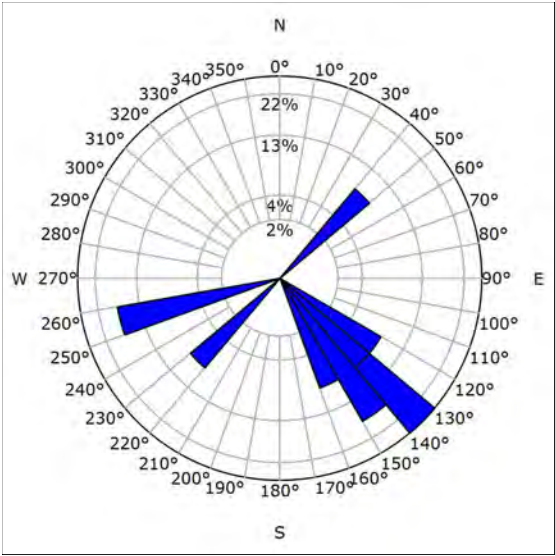
Strike Vector Plot



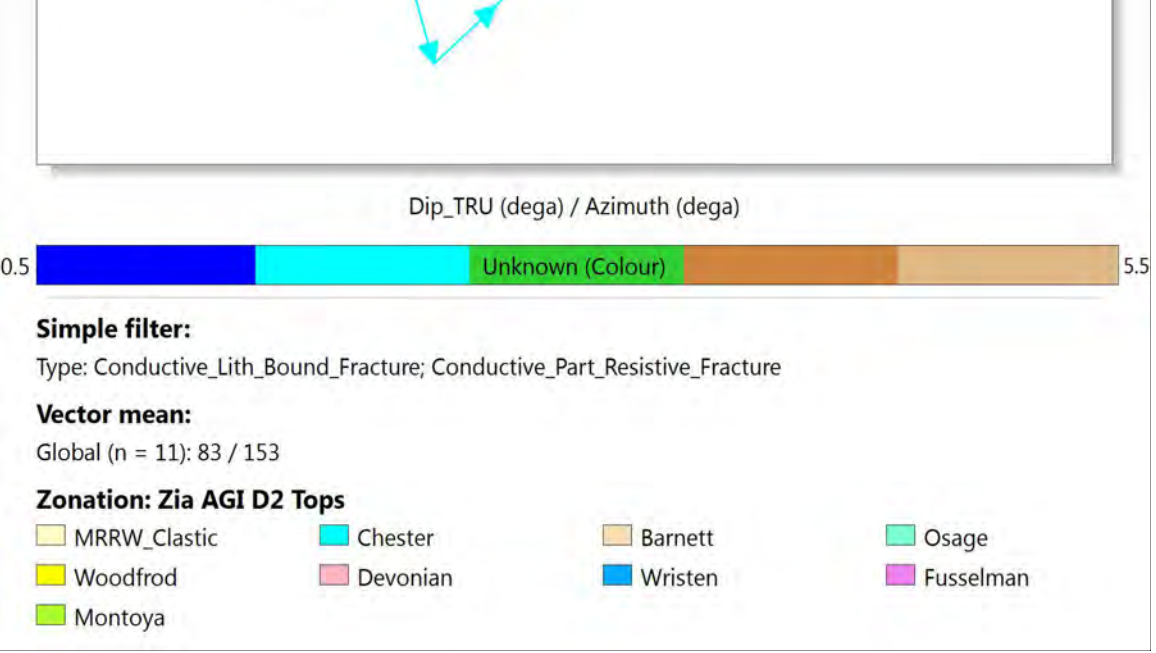
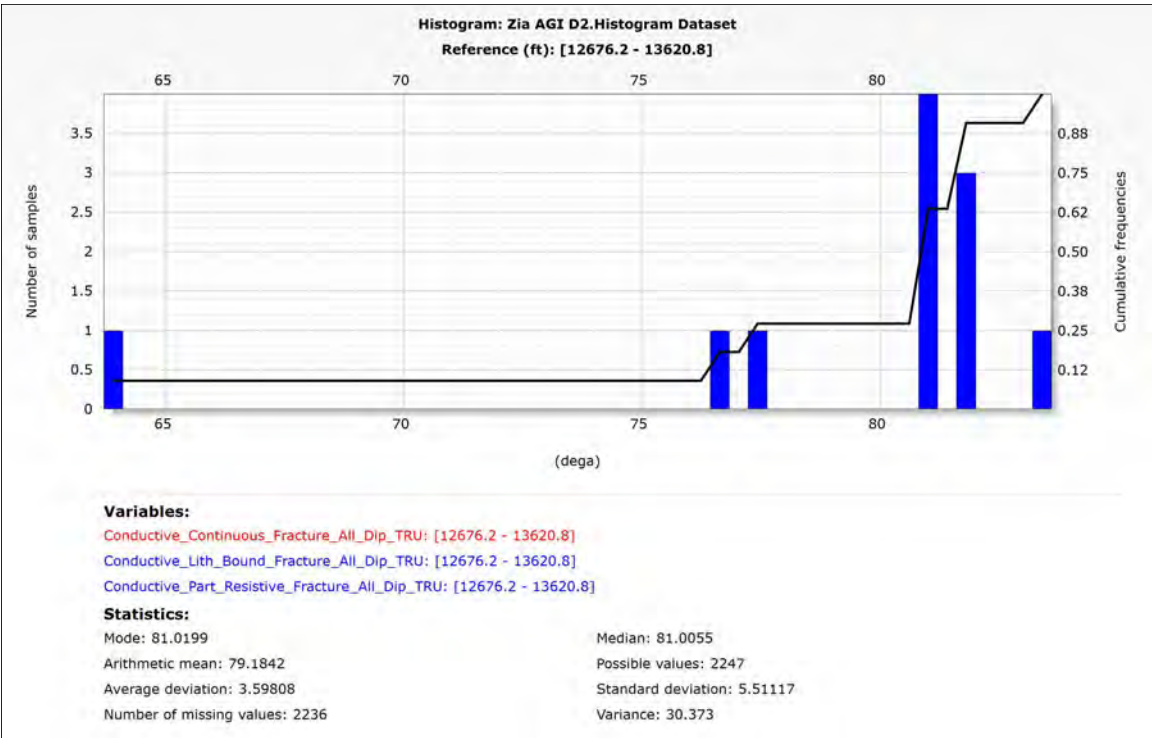


Azimuth Rosette

Strike Rosette



Dip Angle Histogram



Observations

The Conductive Continuous Fracture, Conductive Lith Bound Fracture, and Conductive Part Resistive Fracture dipsets are composed of hand traced conductive (open) natural fractures and are subdivided based on observed continuity. Conductive Continuous Fractures completely and continuously transect the wellbore. Conductive Part Resistive fractures conversely are partially healed or do not completely transect the wellbore. Conductive Lith Bound fractures terminate at an observable lithology contrast. 0 Conductive Continuous Fracture(s), 5 Conductive Lith Bound Fracture(s), and 6 Conductive Part Resistive Fracture(s) were identified within the interval from 12676ft to 13621ft. The strike rosette shows that the dominate strike orientation is NE-SW (55 Percent).

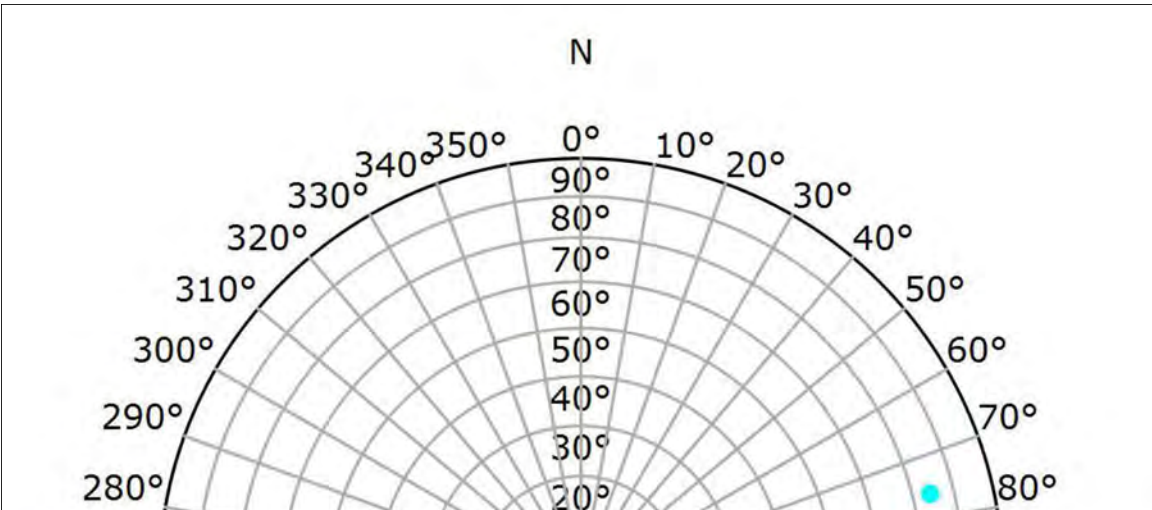
Interpretation

Few Natural open lithology-bound fractures were picked with a predominat strike orientation N50E-S50W. These features are generally interpreted as open fractures: The conductive appearance would reflect the invasion of the drilling fluid making them appear conductive. Only core data and fracture analysis on core would confirm if clay filled fractures are present. Fracture Aperture is then computed using mud filtrate resistivity. Fracture porosity computation and open fracture trace length can be used to identify the interval of major appearance of these features. However the predominant morphology observed here is partially-healed. These fractures are considered to be healed fractures with a partial aperture along some portion of the trace. They are interpreted as been partially reopened during the drilling process.

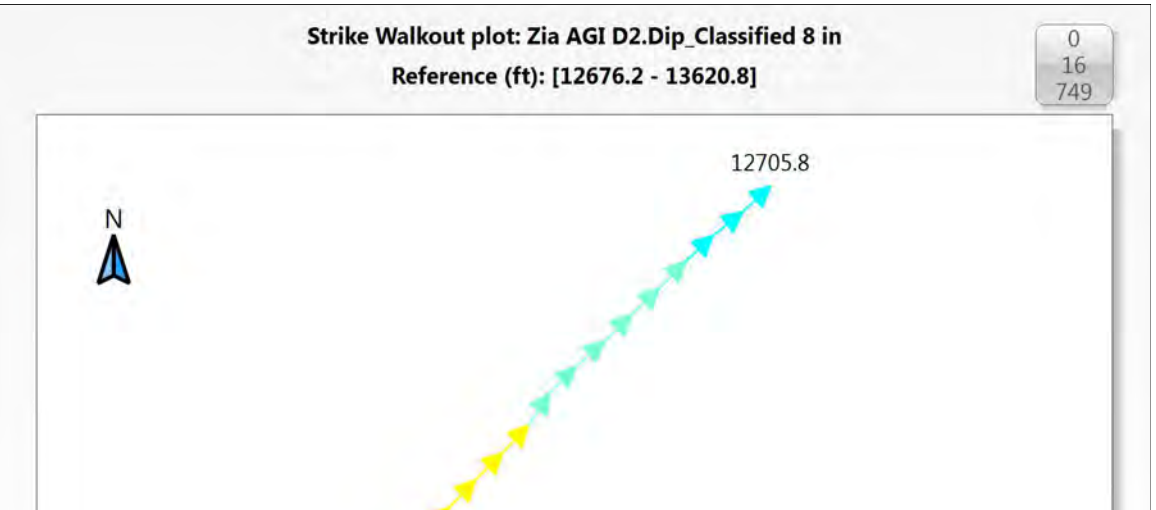
Most of these fractures are within the Chester formation

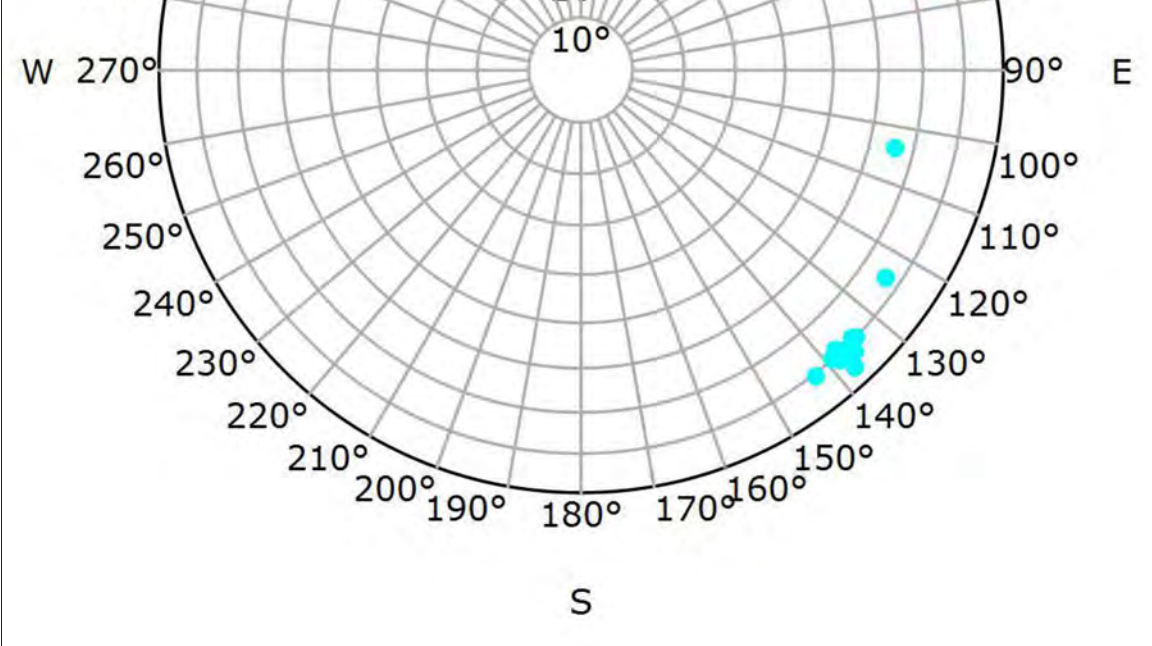
Resistive Fracture Summary All 12676ft - 13621ft

Schmidt Plot - Upper Hemisphere

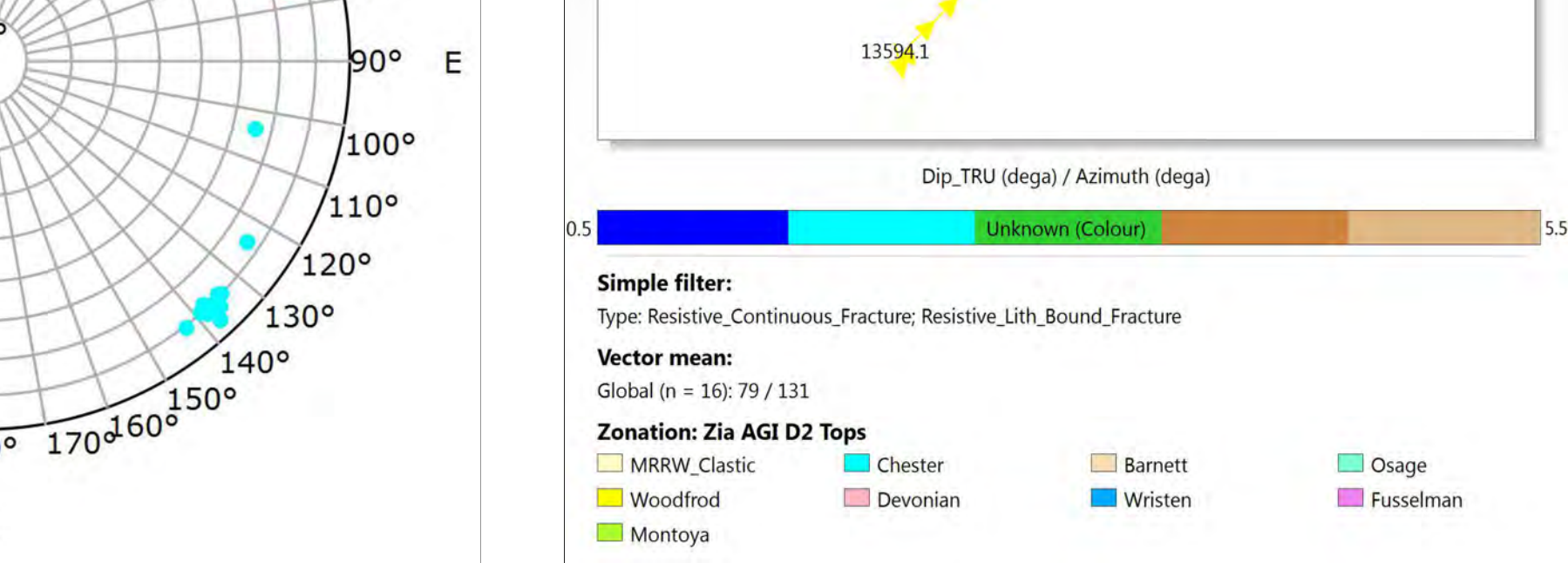


Strike Vector Plot

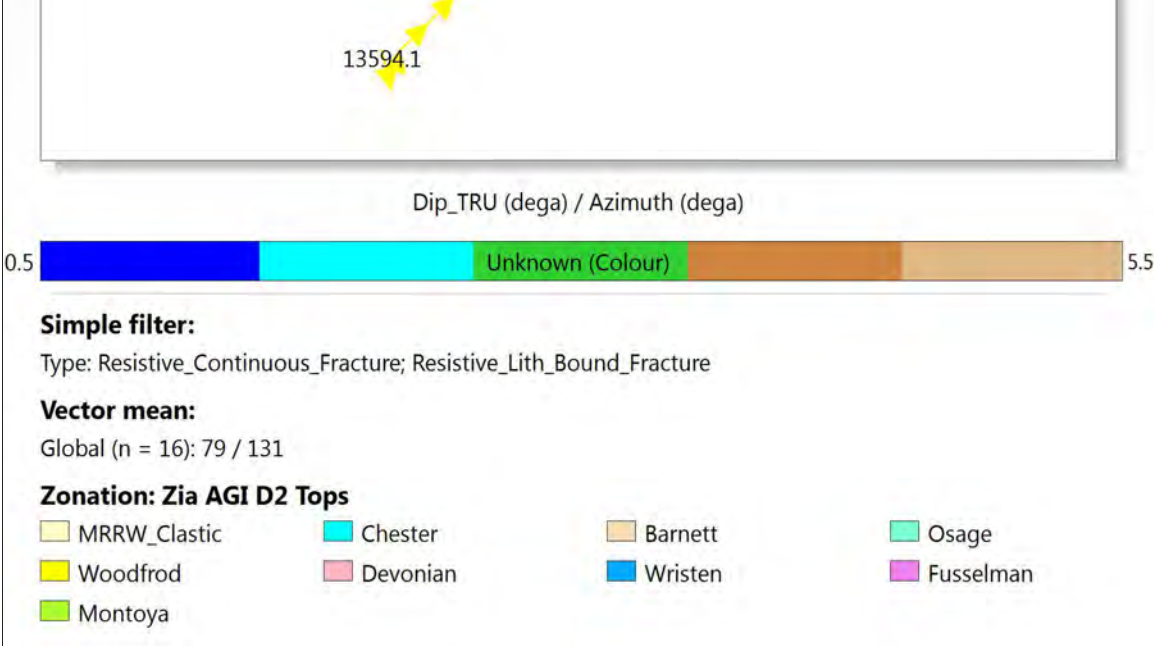




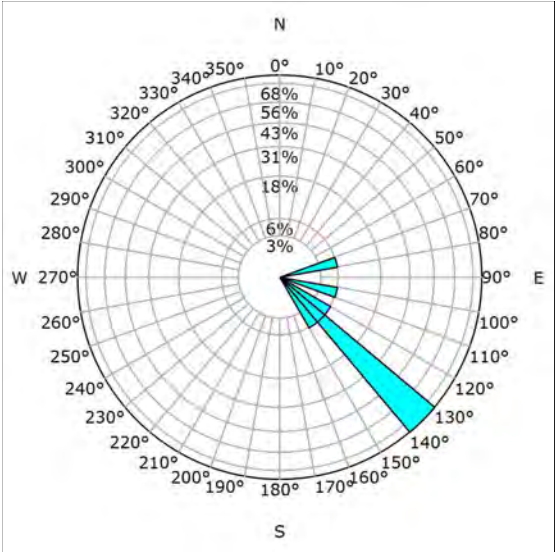
Azimuth Rosette



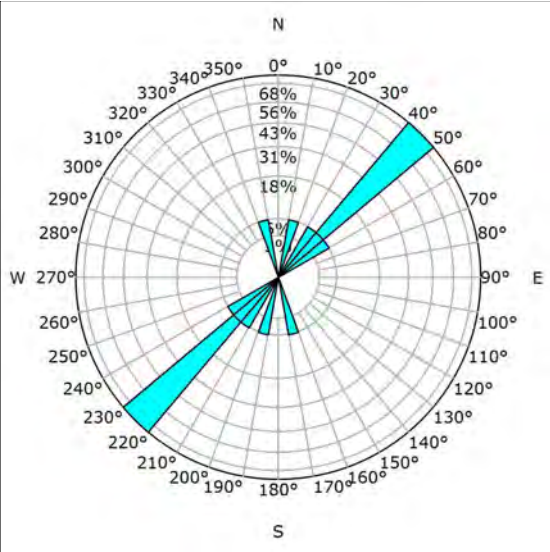
Strike Rosette



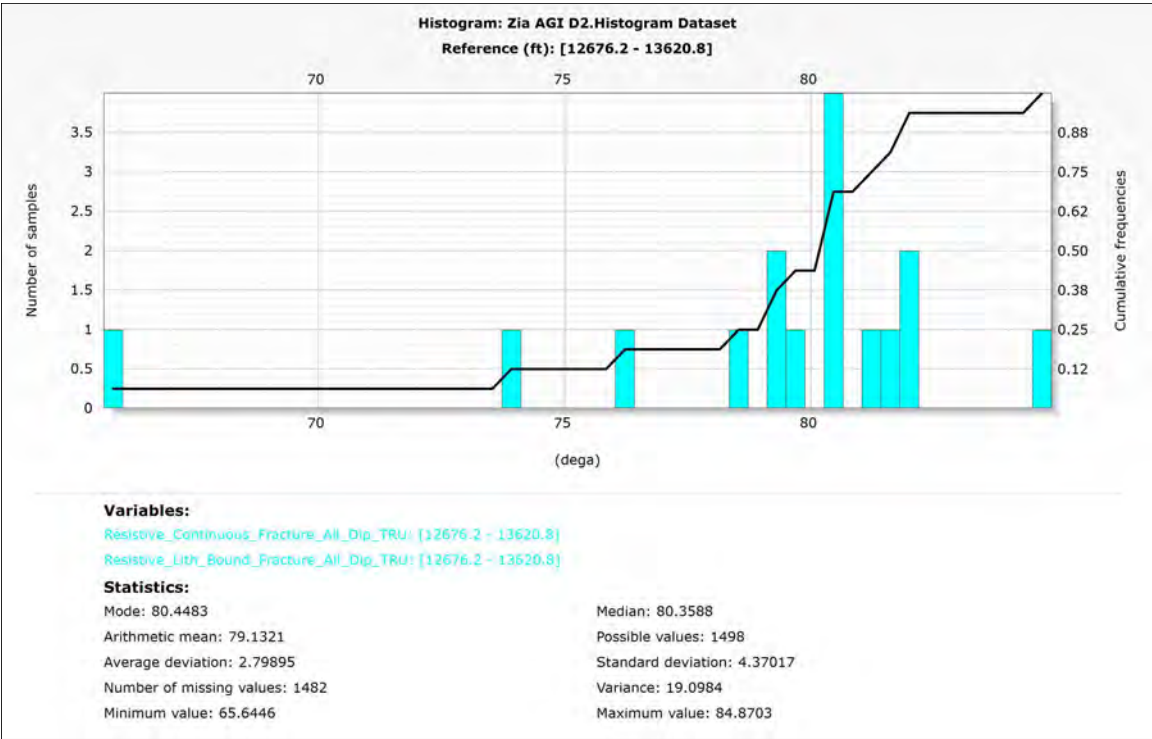
Observations



Dip Angle Histogram



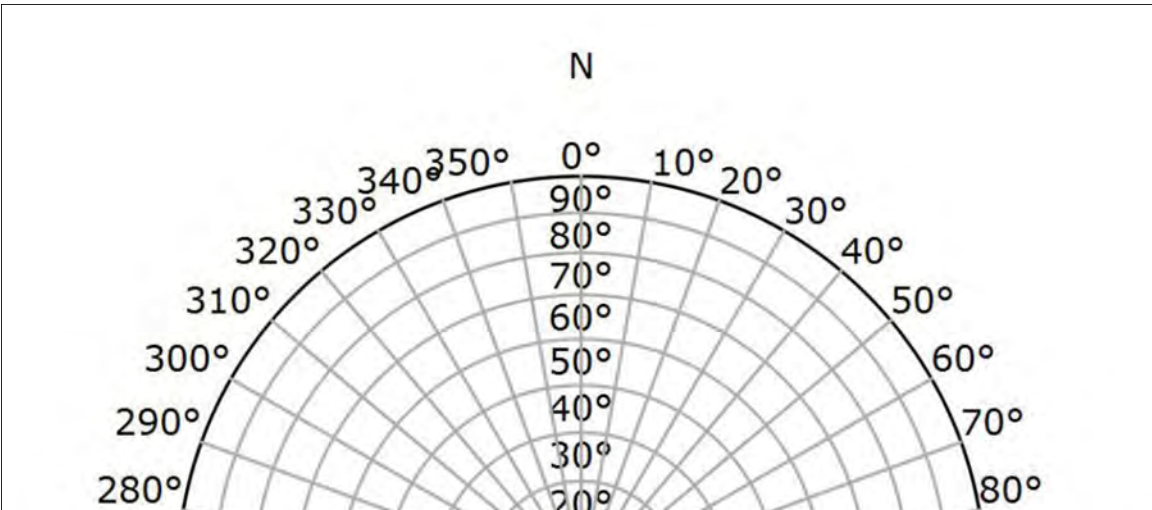
Interpretation



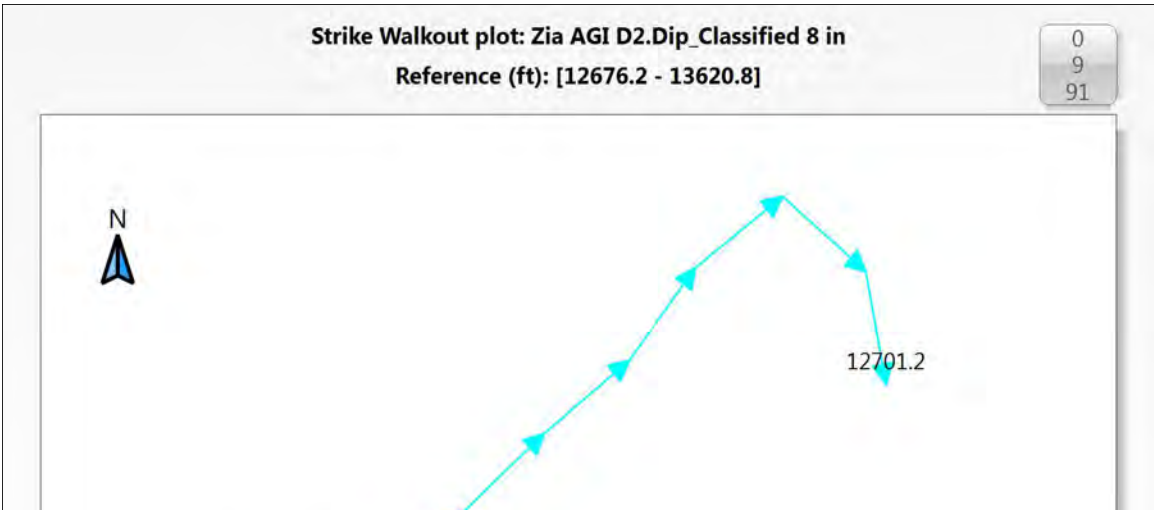
Resistive fractures are interpreted as healed fractures, filled with cemented material rich in CaCO₃ which would transfer the resistive appearance on the image. 16 resistive lithology-bound fractures and one continuous fracture were picked with a predominant NE-SW. Resistive fracture's strike can be used to identify past stress orientation if it is different from the present's day. Most of these fractures were picked within the Woodford.

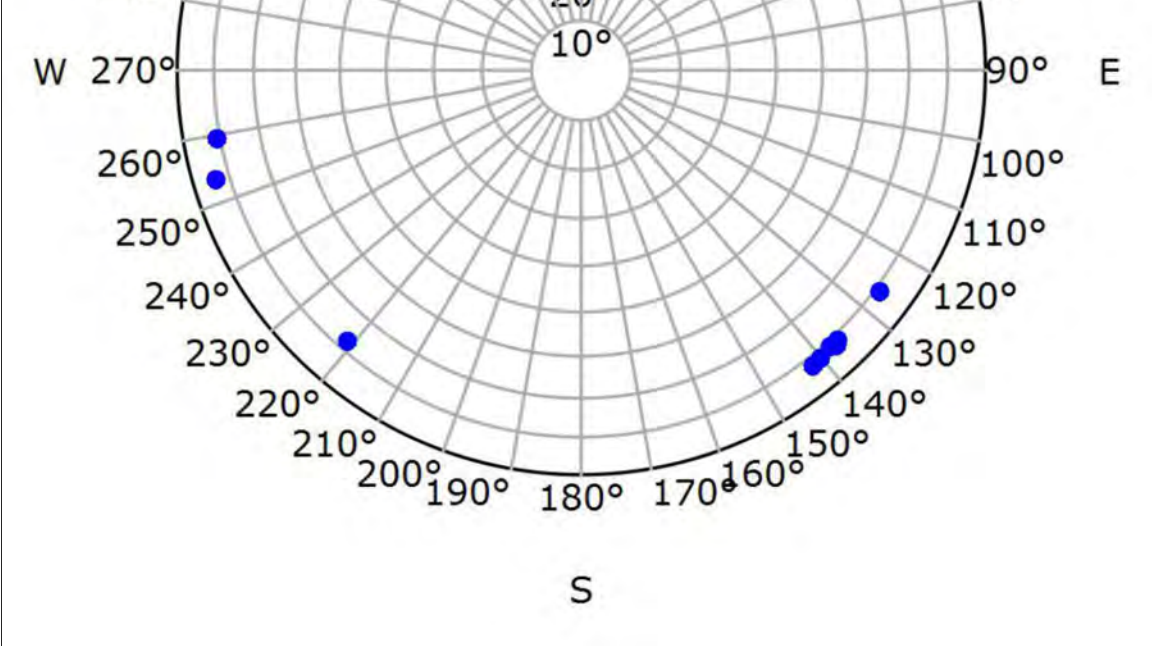
Conductive Fracture Summary Chester 12548ft - 12765ft

Schmidt Plot - Upper Hemisphere

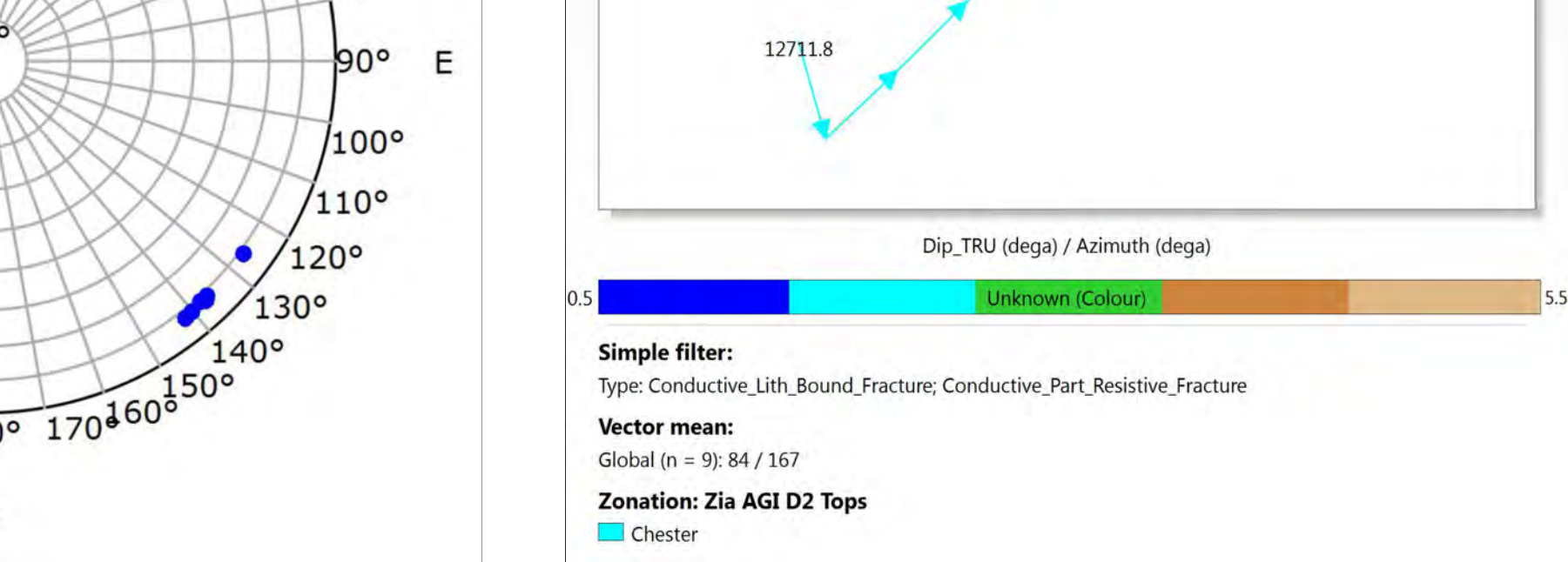


Strike Vector Plot



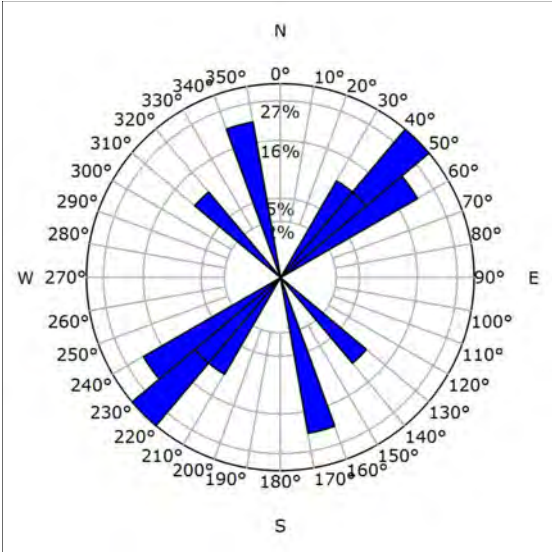
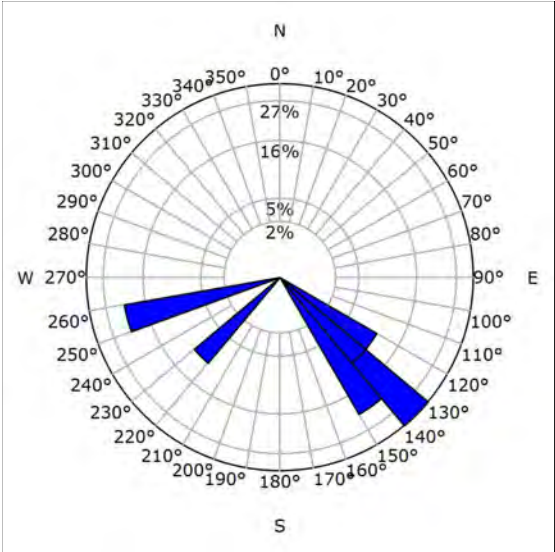


Azimuth Rosette



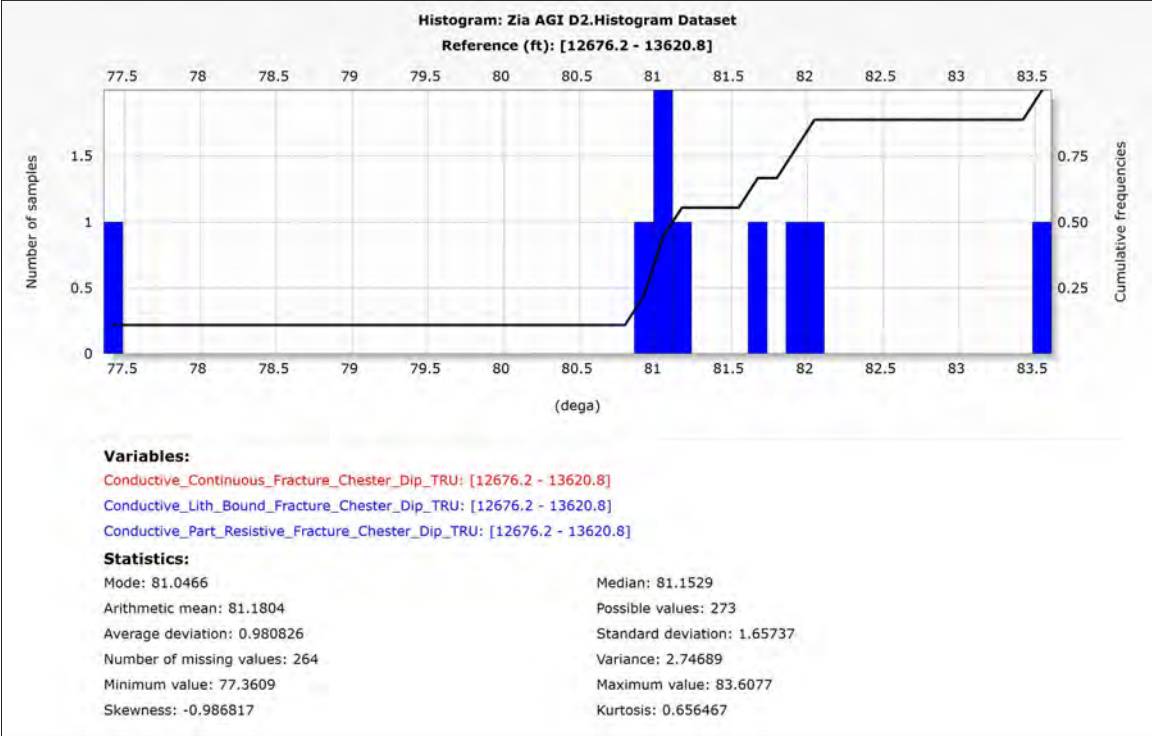
Strike Rosette

Observations



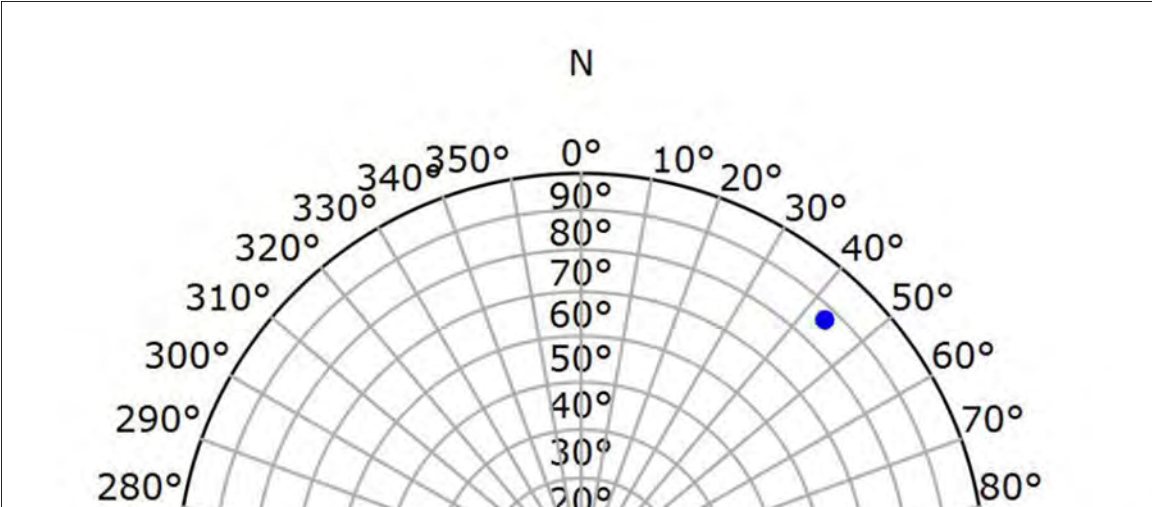
The Conductive Continuous Fracture, Conductive Lith Bound Fracture, and Conductive Part Resistive Fracture dipsets are composed of hand traced conductive (open) natural fractures and are subdivided based on observed continuity. Conductive Continuous Fractures completely and continuously transect the wellbore. Conductive Part Resistive fractures conversely are partially healed or do not completely transect the wellbore. Conductive Lith Bound fractures terminate at an observable lithology contrast. 0 Conductive Continuous Fracture(s), 4 Conductive Lith Bound Fracture(s), and 5 Conductive Part Resistive Fracture(s) were identified within the Chester interval from 12548ft to 12765ft. The strike rosette shows that the dominate strike orientation is NE-SW (67 Percent).

Dip Angle Histogram

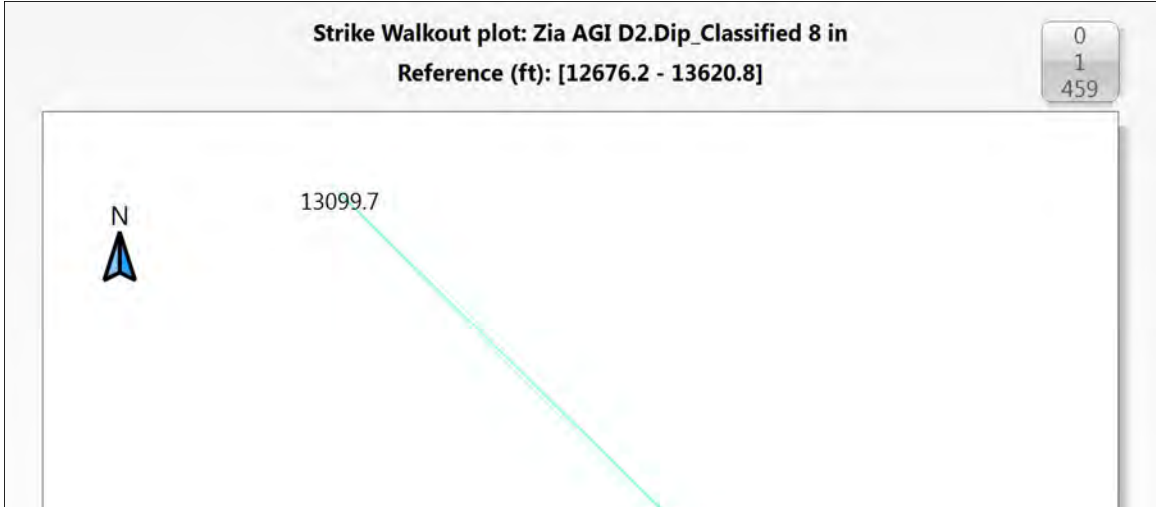


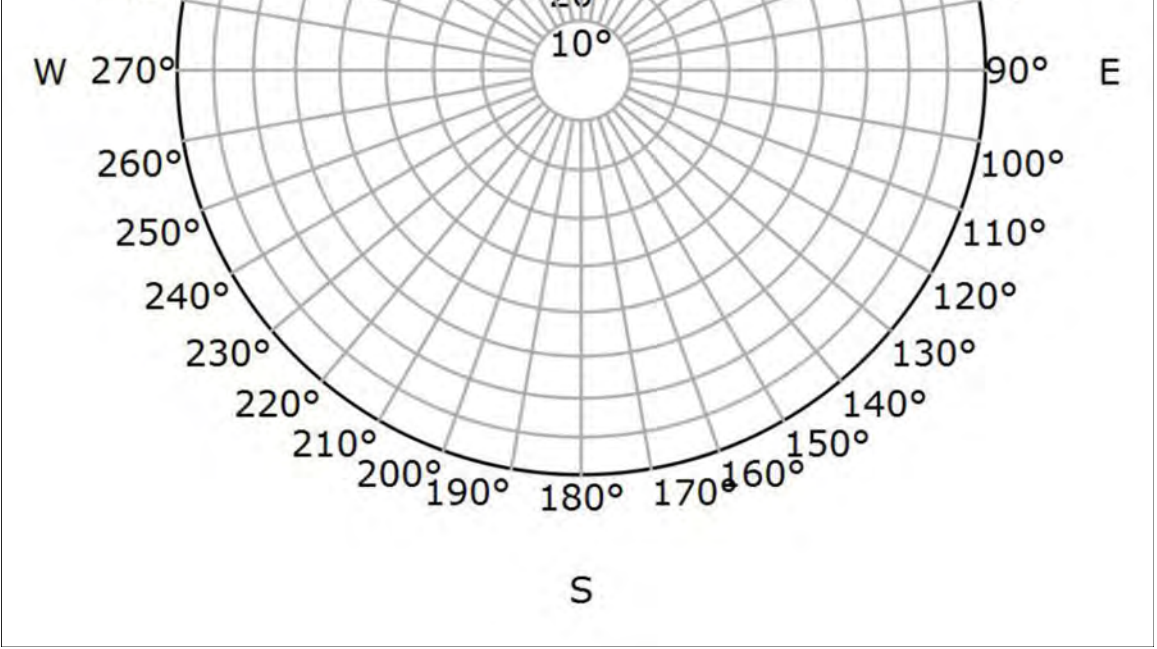
Conductive Fracture Summary Osage 12929ft - 13499ft

Schmidt Plot - Upper Hemisphere

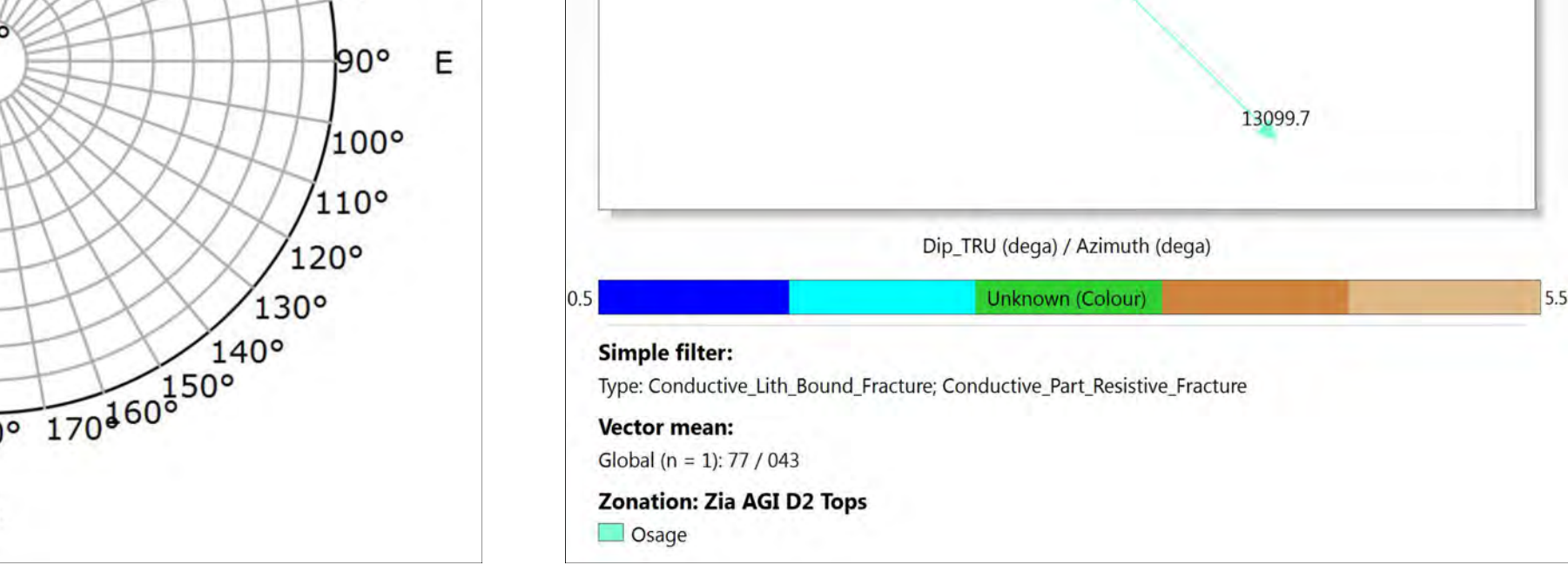


Strike Vector Plot

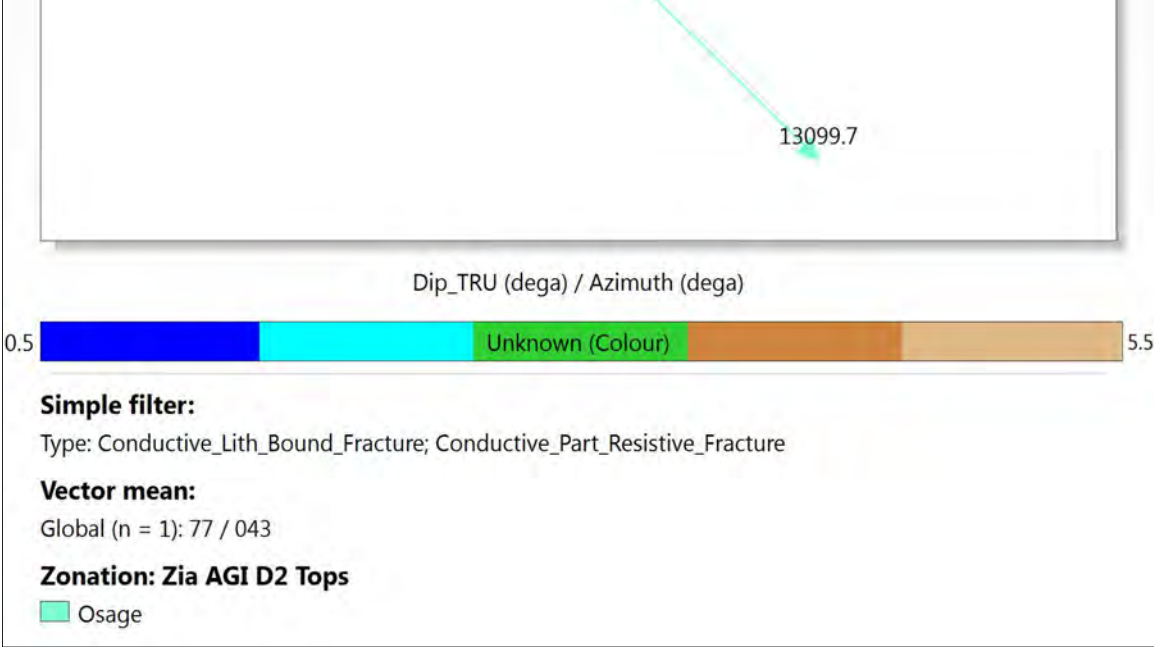




Azimuth Rosette



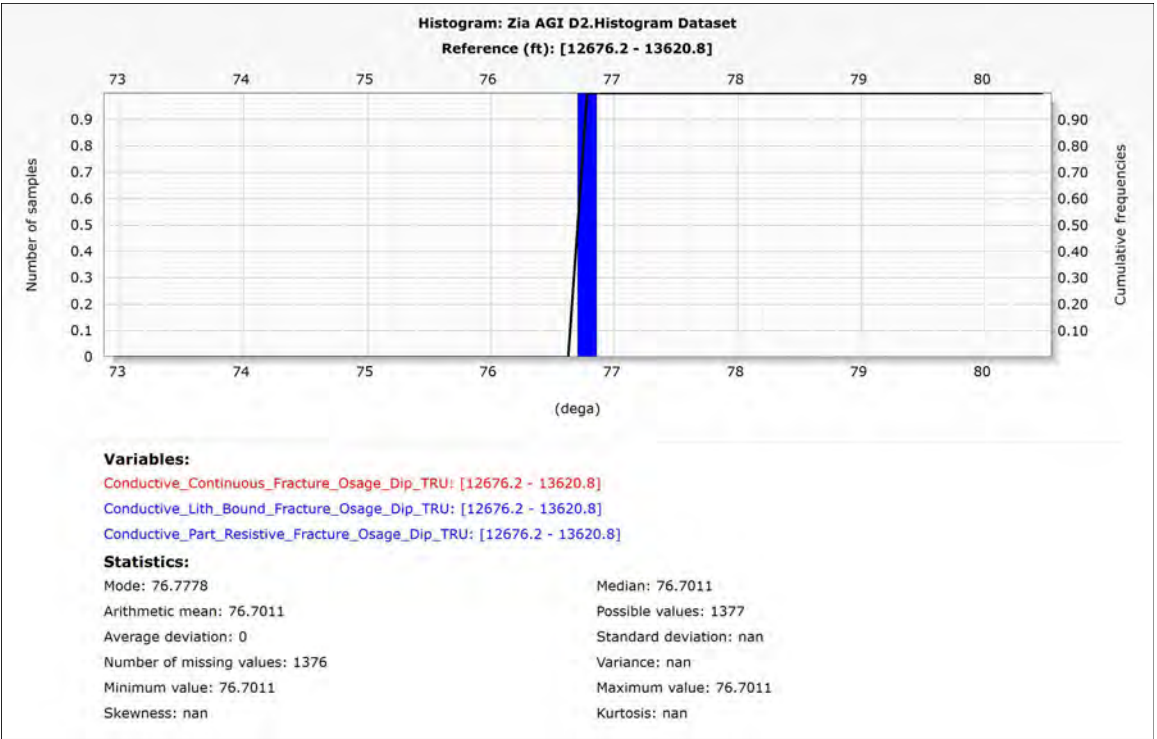
Strike Rosette



Observations

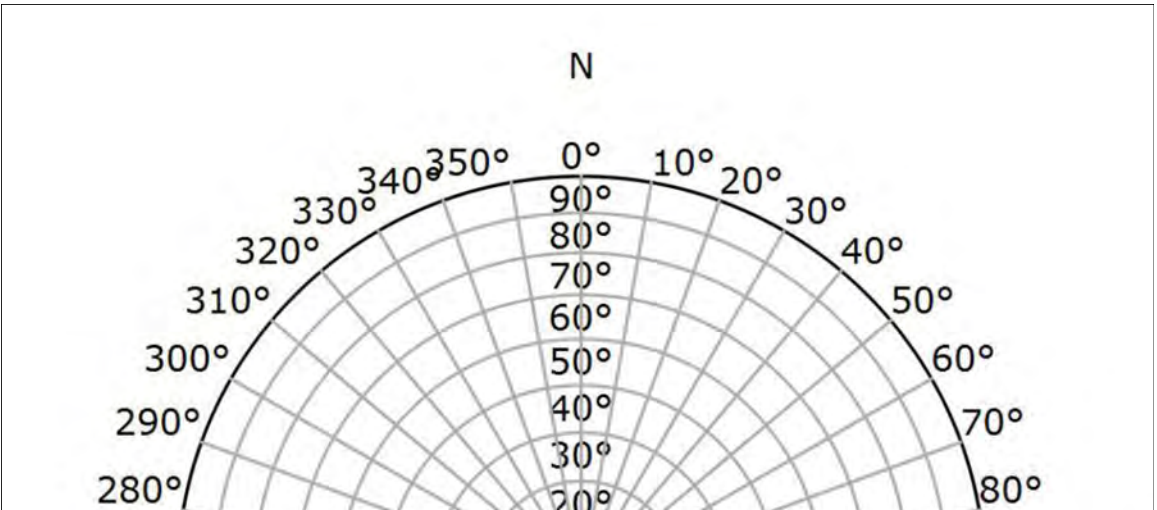
The Conductive Continuous Fracture, Conductive Lith Bound Fracture, and Conductive Part Resistive Fracture dipsets are composed of hand traced conductive (open) natural fractures and are subdivided based on observed continuity. Conductive Continuous Fractures completely and continuously transect the wellbore. Conductive Part Resistive fractures conversely are partially healed or do not completely transect the wellbore. Conductive Lith Bound fractures terminate at an observable lithology contrast. 0 Conductive Continuous Fracture(s), 1 Conductive Lith Bound Fracture(s), and 0 Conductive Part Resistive Fracture(s) were identified within the Osage interval from 12929ft to 13499ft. The strike rosette shows that the dominate strike orientation is NW-SE (100 Percent).

Dip Angle Histogram

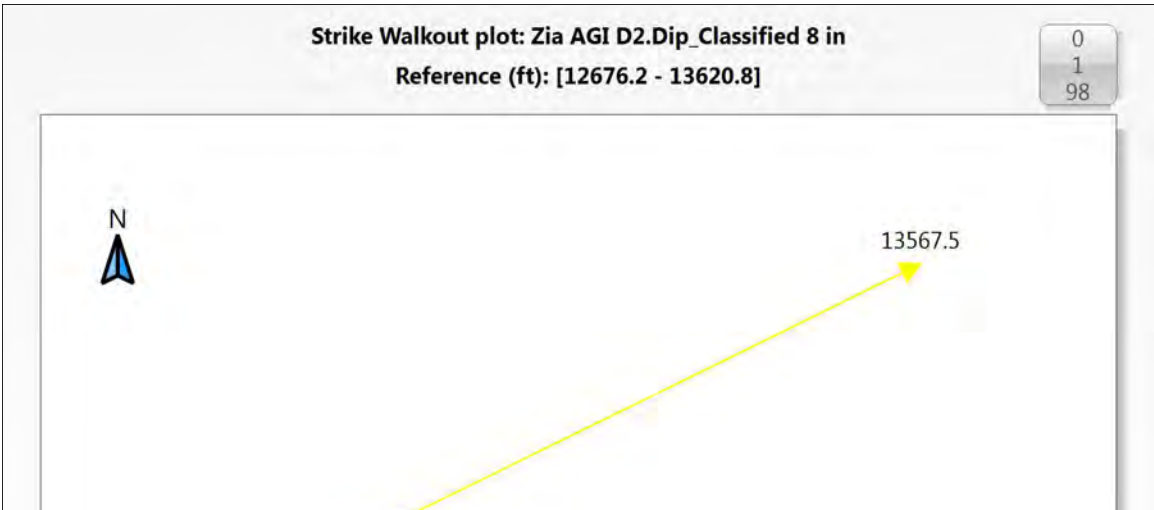


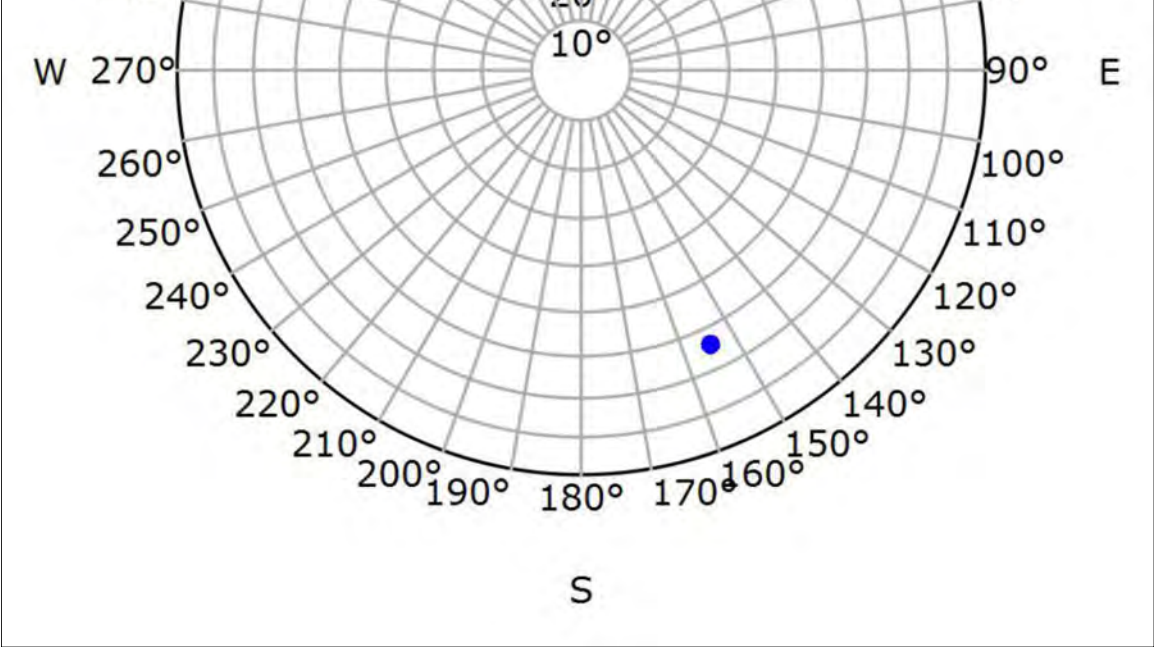
Conductive Fracture Summary Woodfrod 13499ft - 13625ft

Schmidt Plot - Upper Hemisphere

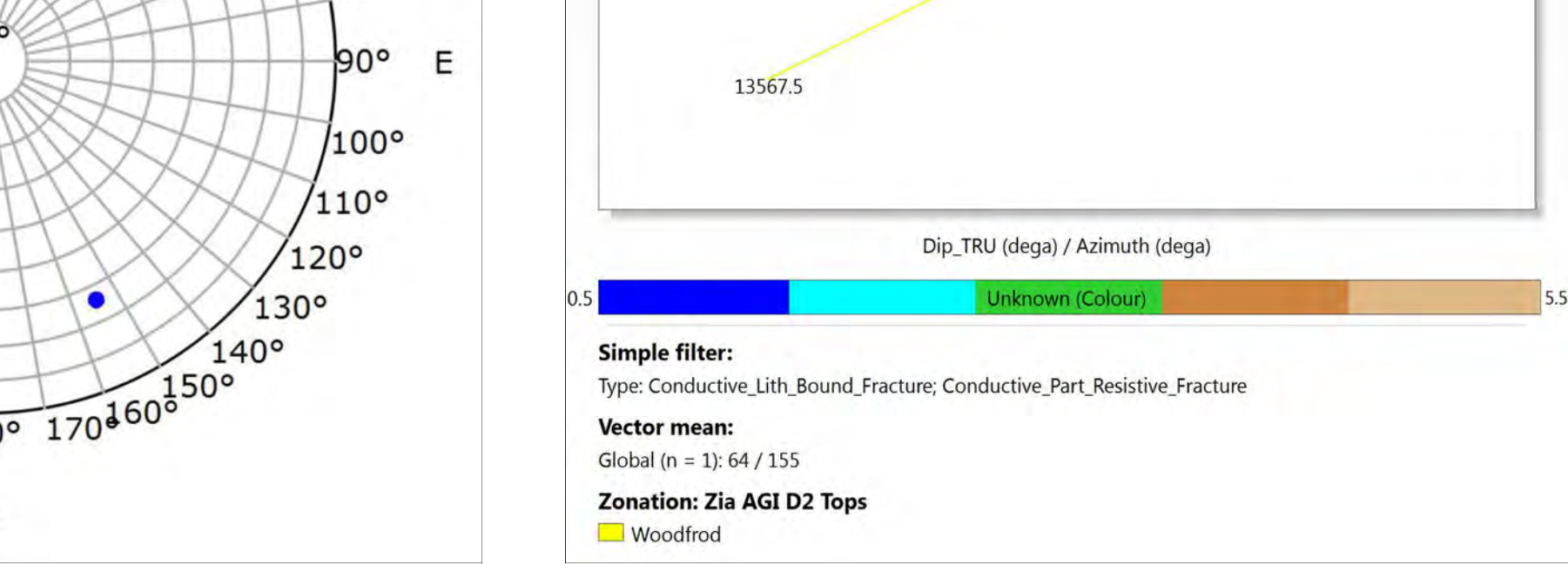


Strike Vector Plot

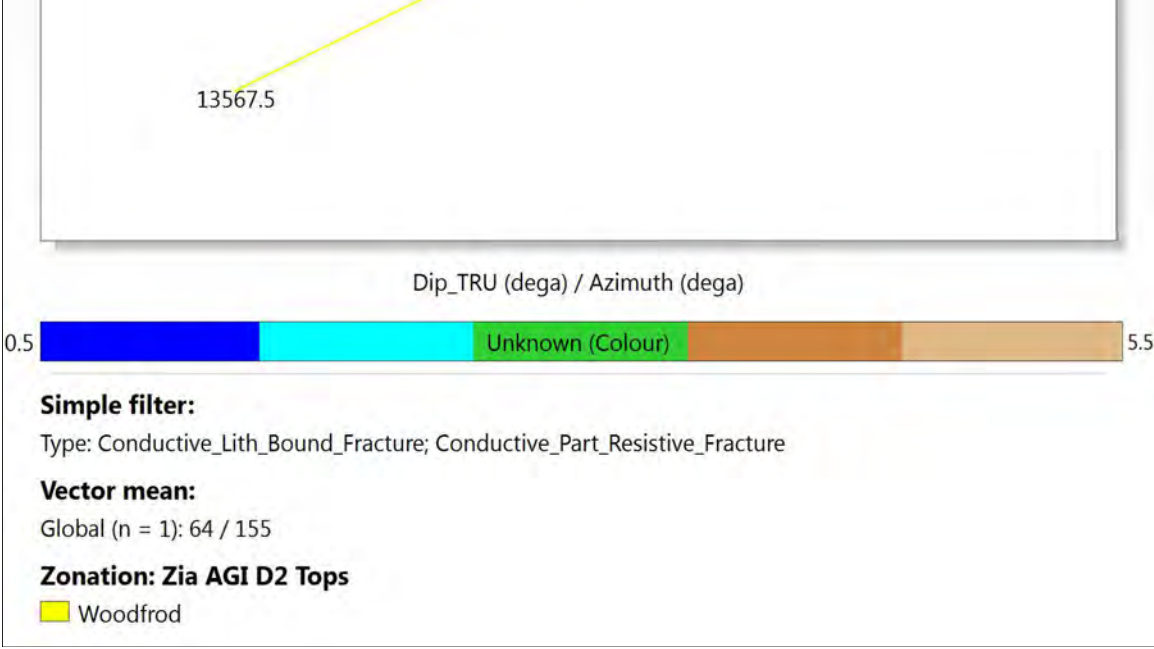




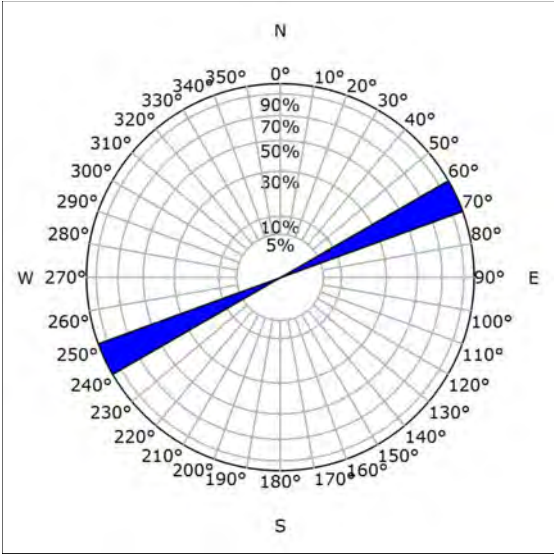
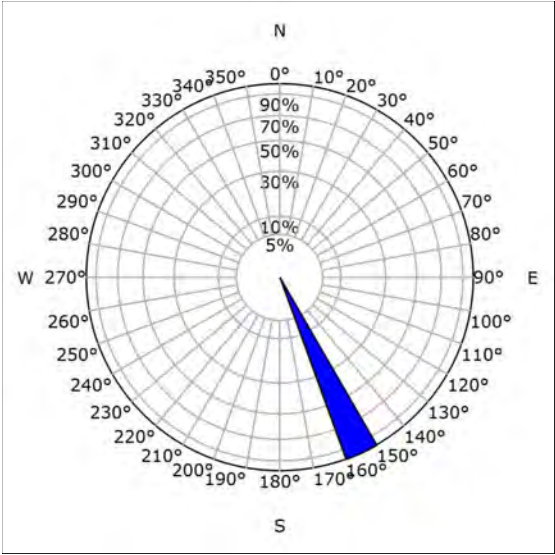
Azimuth Rosette



Strike Rosette

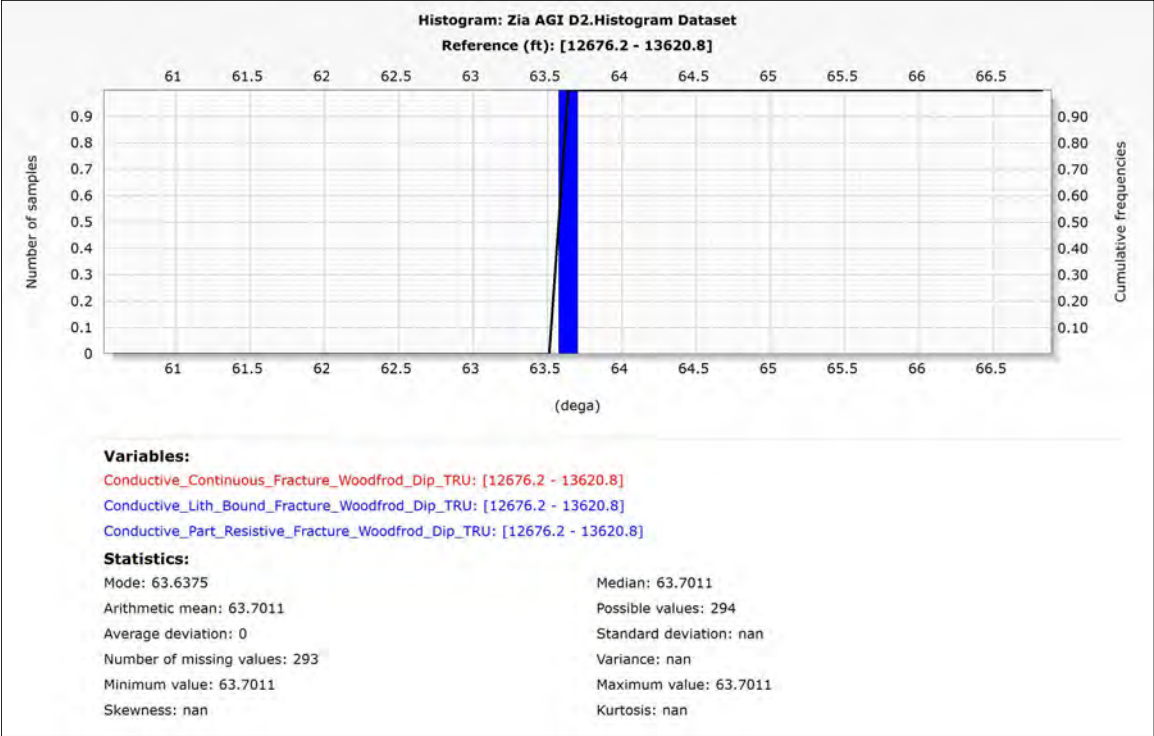


Observations



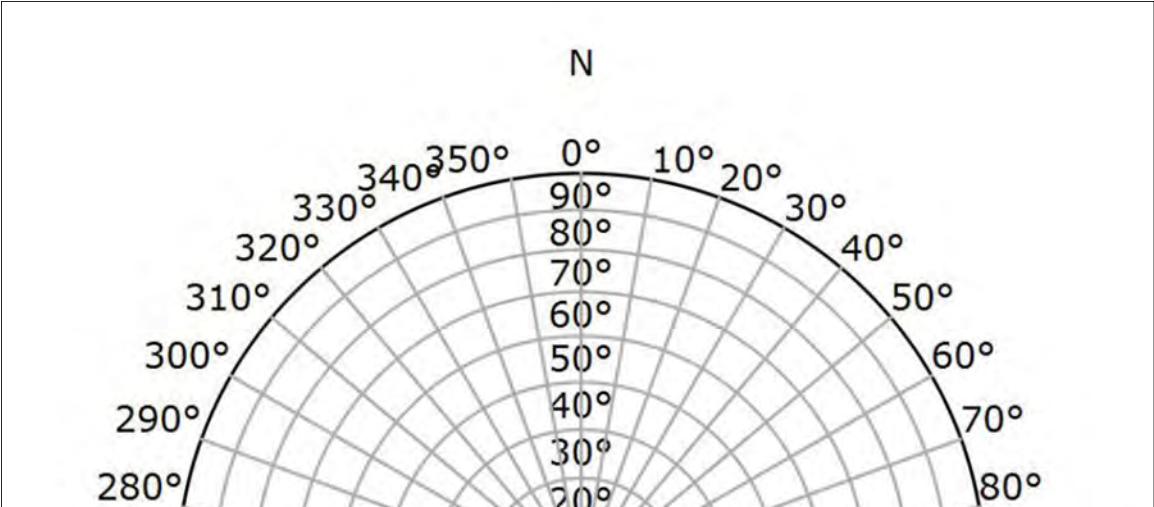
The Conductive Continuous Fracture, Conductive Lith Bound Fracture, and Conductive Part Resistive Fracture dipsets are composed of hand traced conductive (open) natural fractures and are subdivided based on observed continuity. Conductive Continuous Fractures completely and continuously transect the wellbore. Conductive Part Resistive fractures conversely are partially healed or do not completely transect the wellbore. Conductive Lith Bound fractures terminate at an observable lithology contrast. 0 Conductive Continuous Fracture(s), 0 Conductive Lith Bound Fracture(s), and 1 Conductive Part Resistive Fracture(s) were identified within the Woodfrod interval from 13499ft to 13625ft. The strike rosette shows that the dominate strike orientation is ENE-WSW (100 Percent).

Dip Angle Histogram

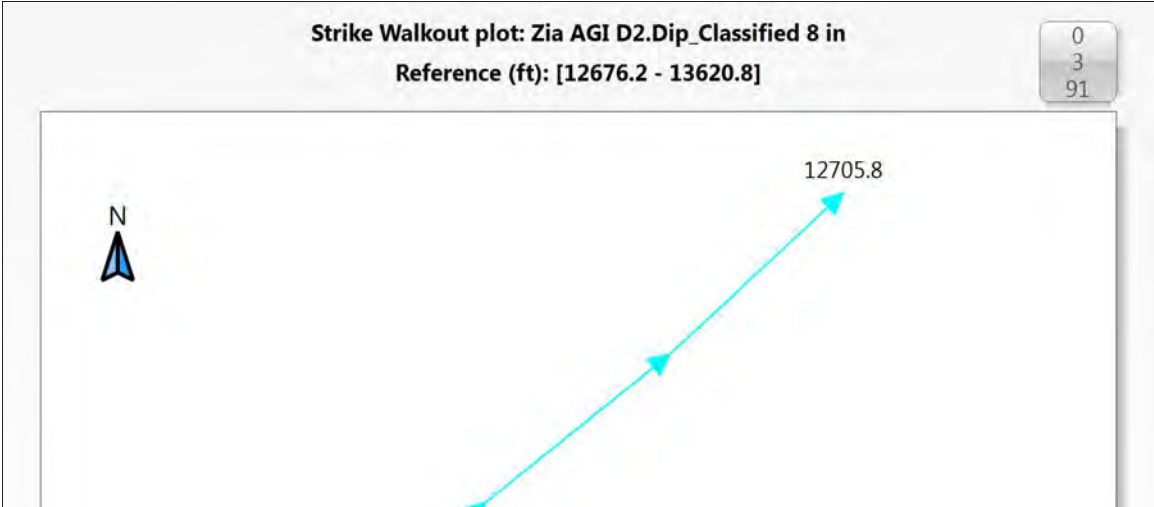


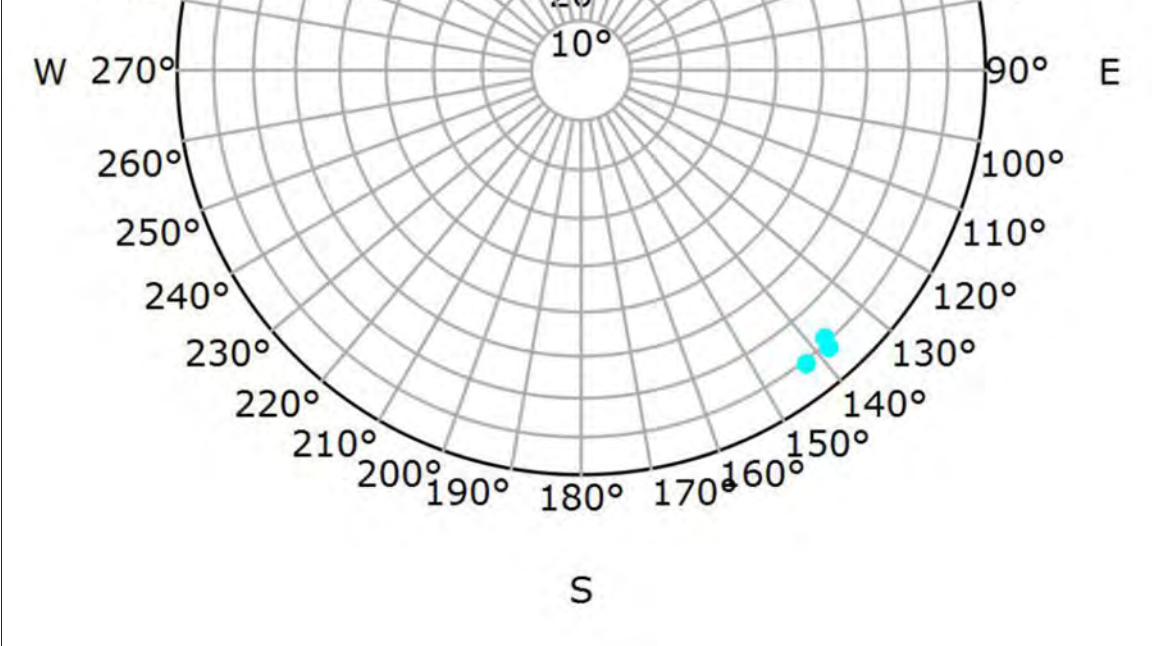
Resistive Fracture Summary Chester 12548ft - 12765ft

Schmidt Plot - Upper Hemisphere



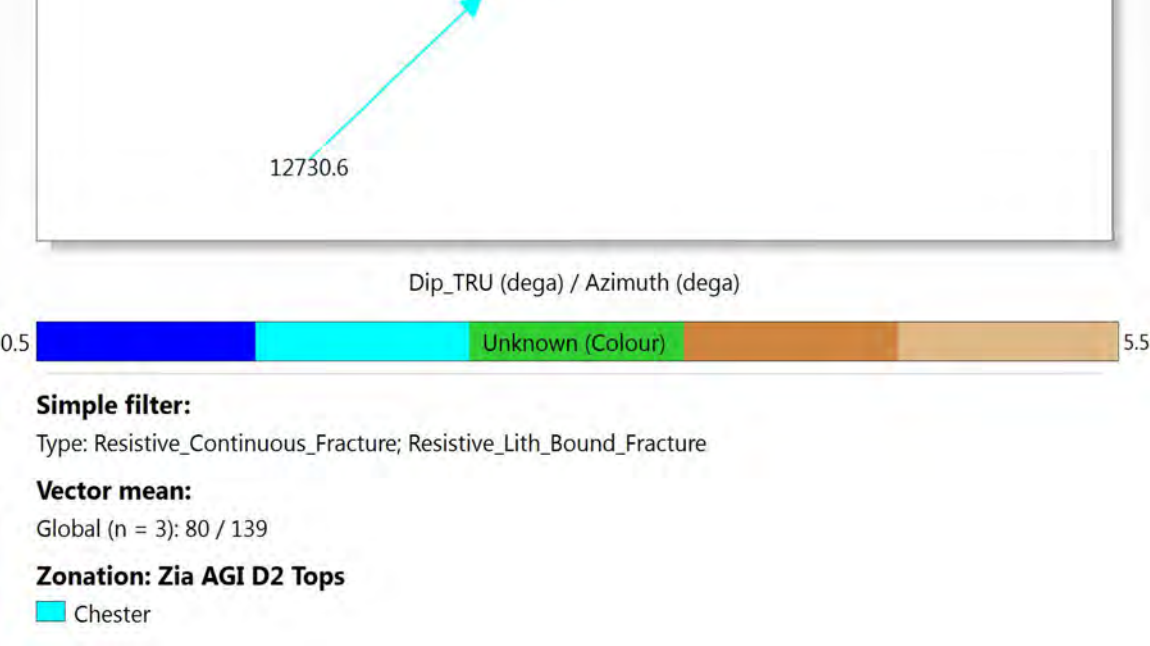
Strike Vector Plot



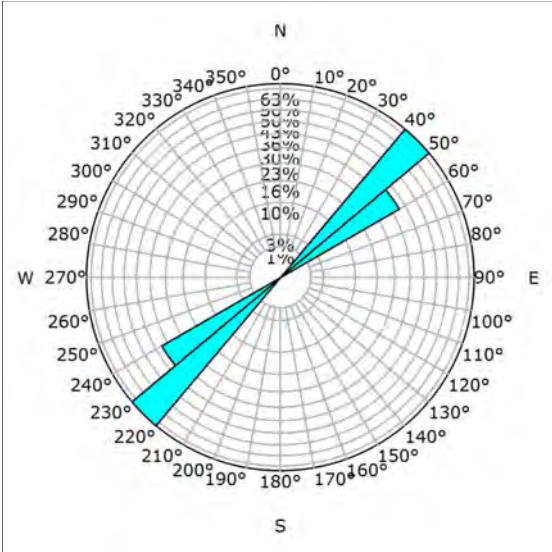
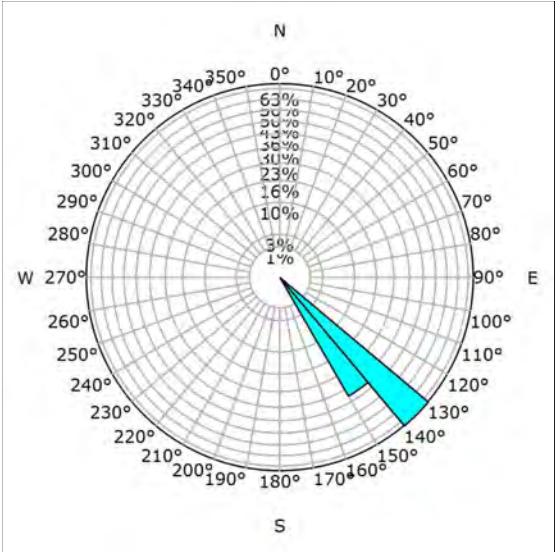


Azimuth Rosette

Strike Rosette

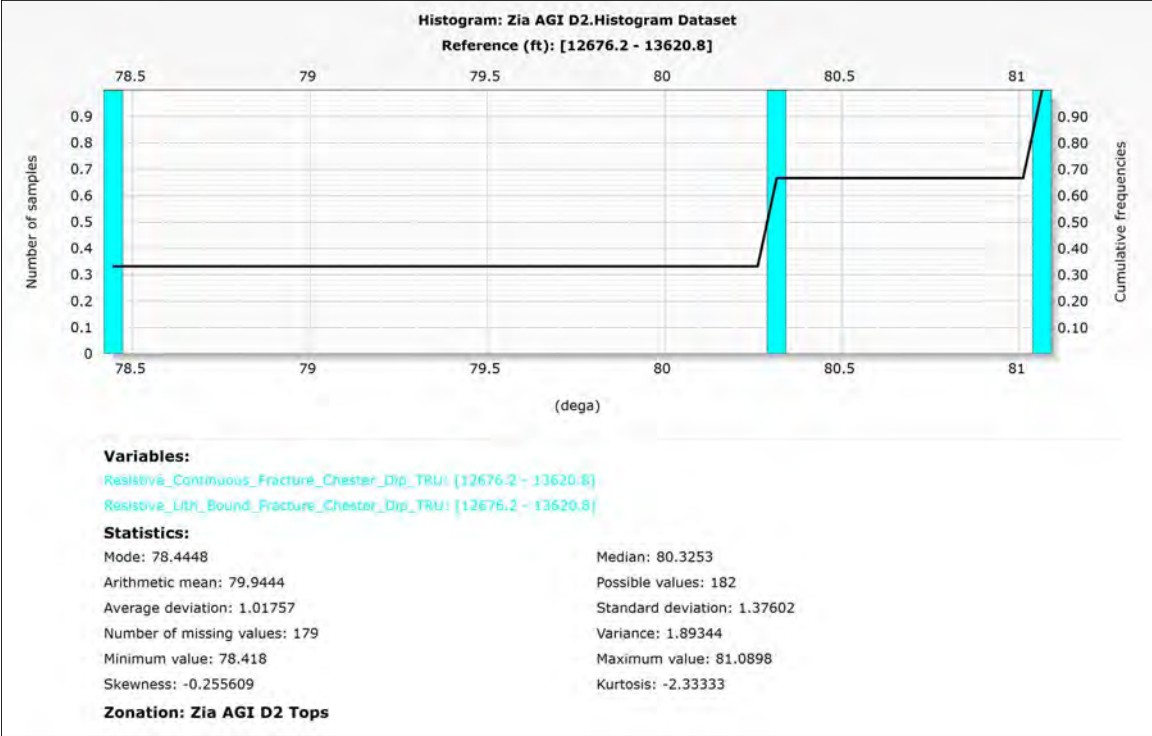


Observations



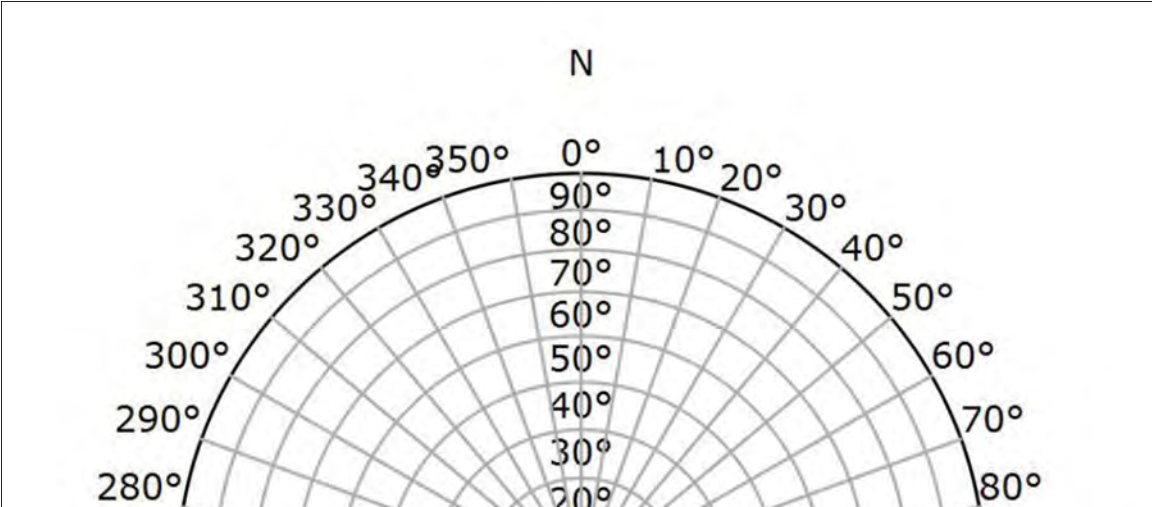
The Resistive Continuous Fracture and Resistive Lith Bound Fracture dipsets are composed of hand traced resistive (healed) natural fractures and are subdivided based on observed continuity. Resistive Continuous Fractures completely and continuously transect the wellbore. Resistive Lith Bound fractures terminate at an observable lithology contrast. 0 Resistive Continuous Fracture(s) and 3 Resistive Lith Bound Fracture(s) were identified within the Chester interval from 12548ft to 12765ft. The strike rosette shows that the dominate strike orientation is NE-SW (100 Percent).

Dip Angle Histogram

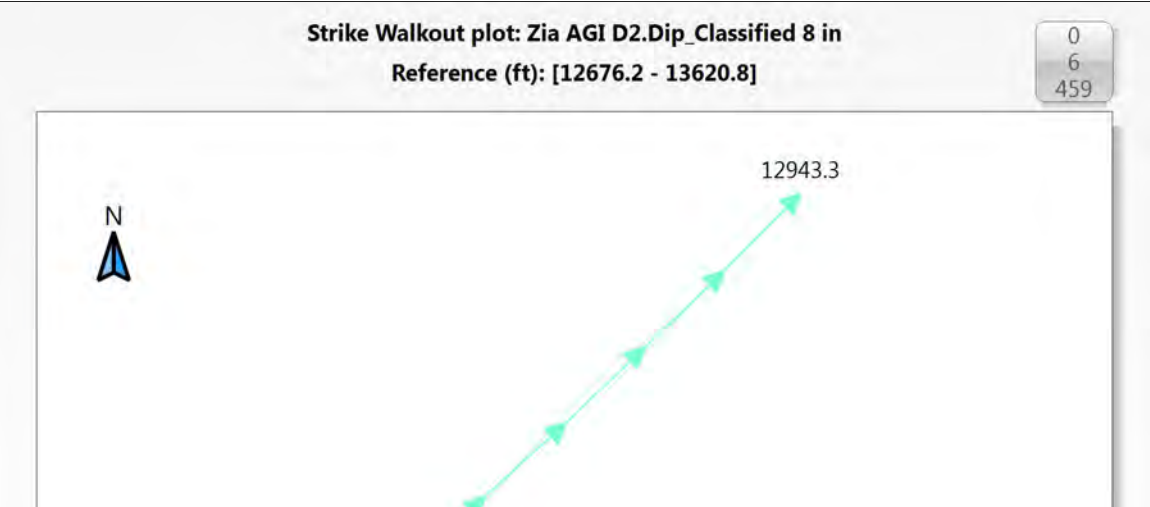


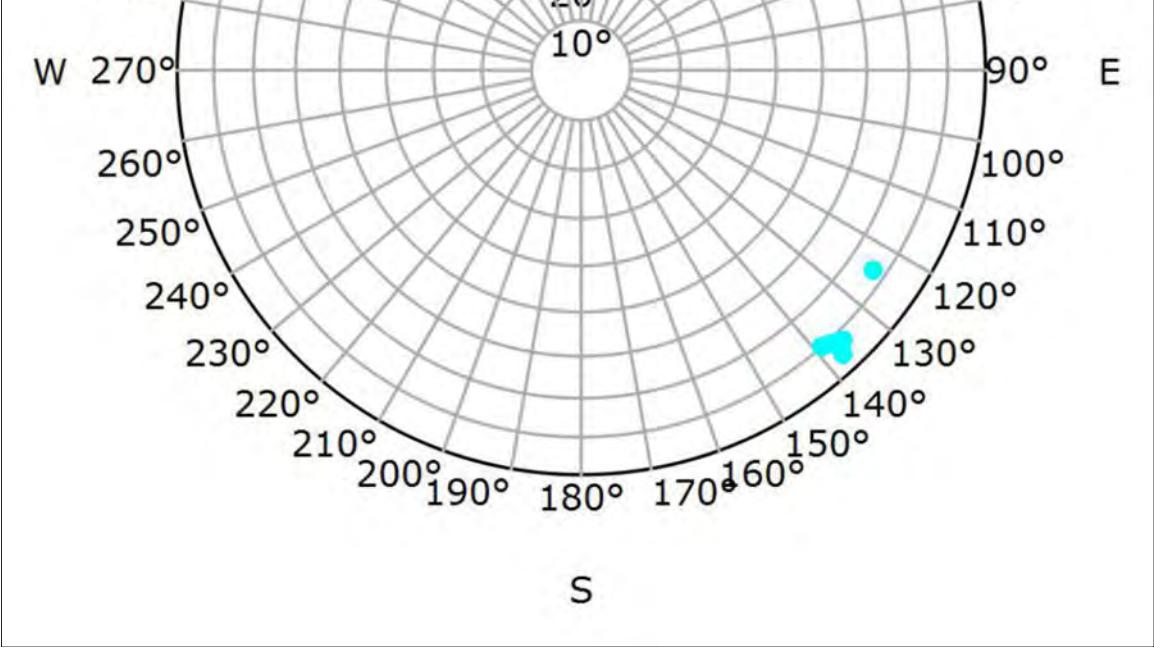
Resistive Fracture Summary Osage 12929ft - 13499ft

Schmidt Plot - Upper Hemisphere



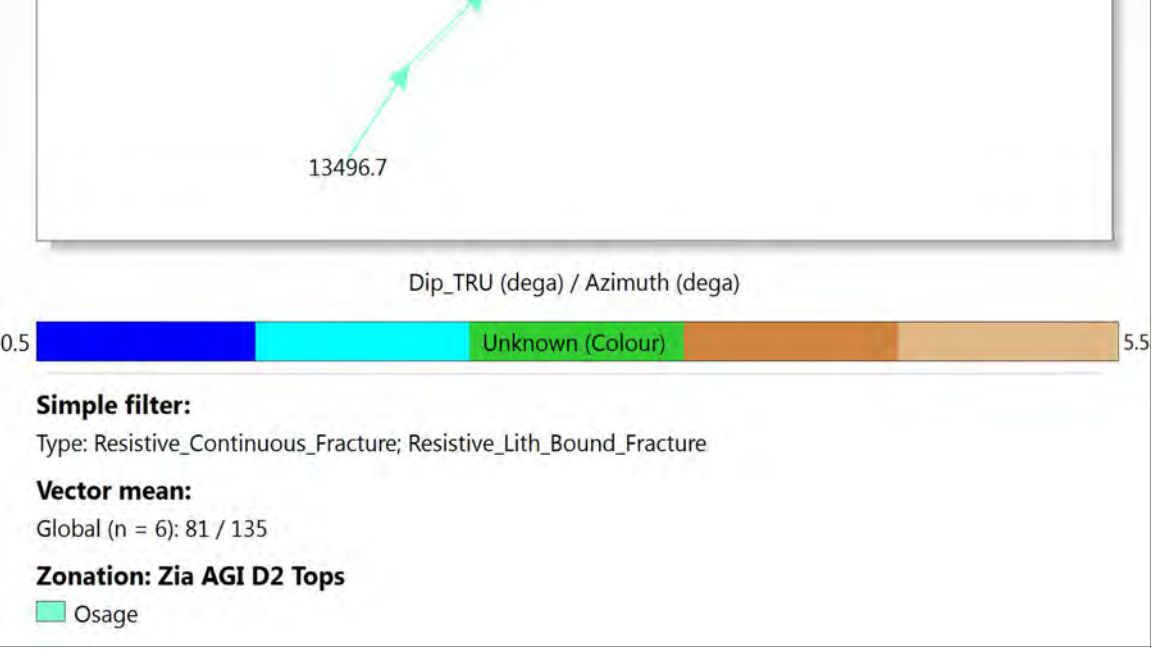
Strike Vector Plot



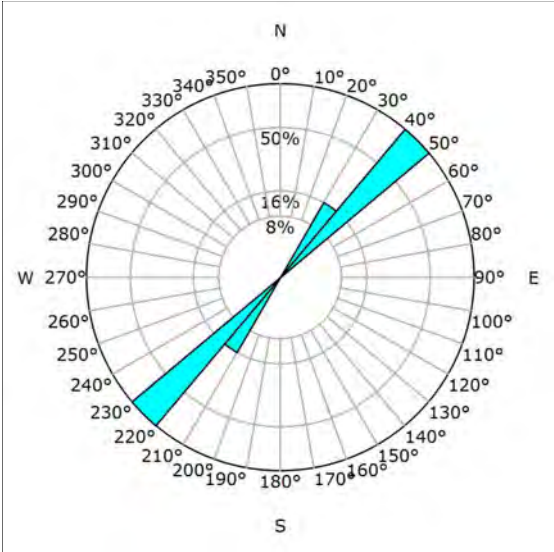
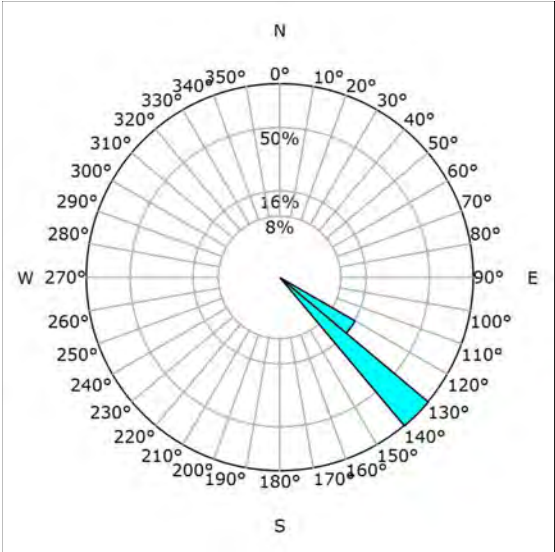


Azimuth Rosette

Strike Rosette



Observations



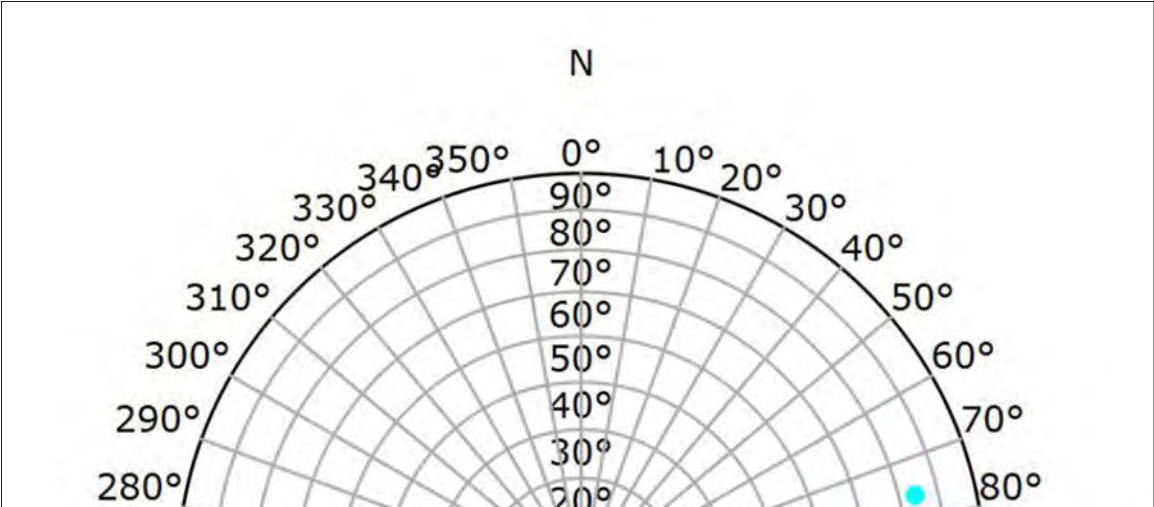
The Resistive Continuous Fracture and Resistive Lith Bound Fracture dipsets are composed of hand traced resistive (healed) natural fractures and are subdivided based on observed continuity. Resistive Continuous Fractures completely and continuously transect the wellbore. Resistive Lith Bound fractures terminate at an observable lithology contrast. 0 Resistive Continuous Fracture(s) and 6 Resistive Lith Bound Fracture(s) were identified within the Osage interval from 12929ft to 13499ft. The strike rosette shows that the dominate strike orientation is NE-SW (100 Percent).

Dip Angle Histogram

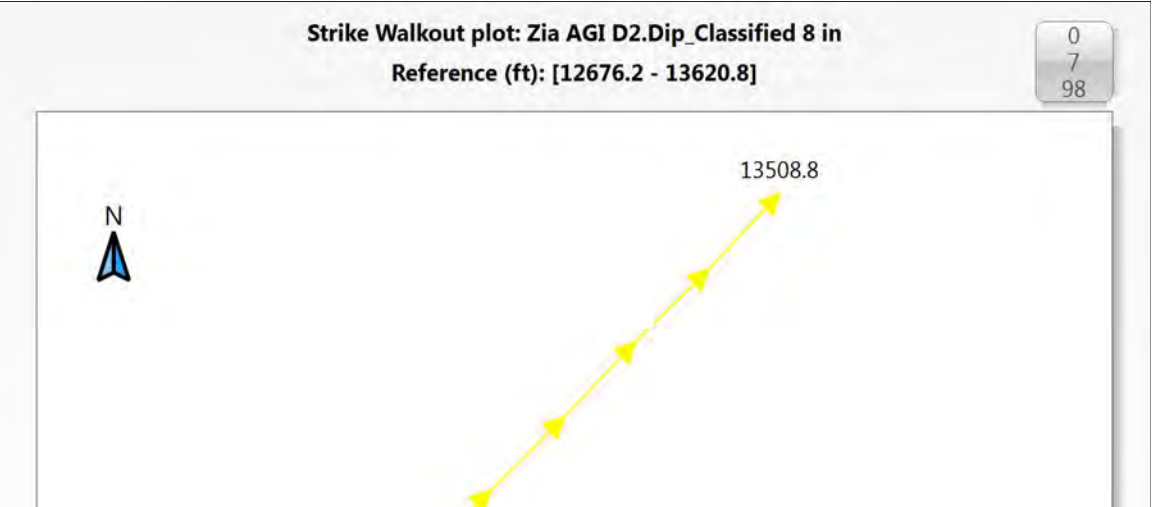


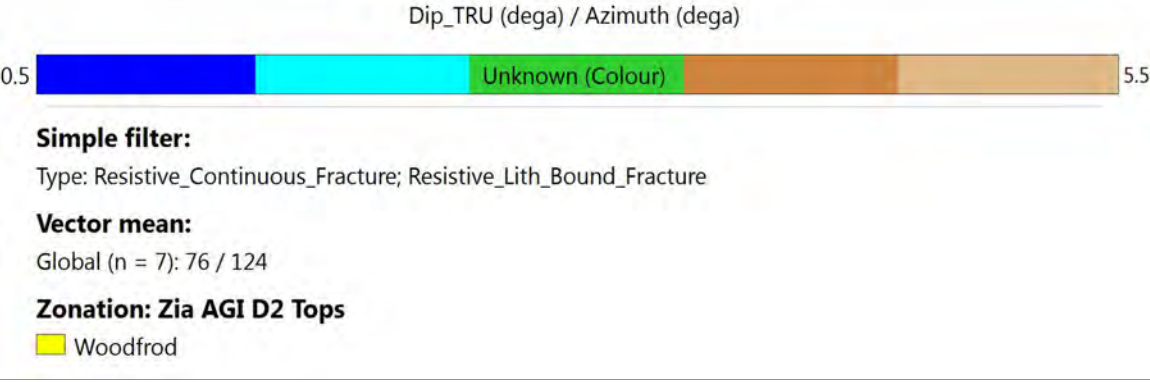
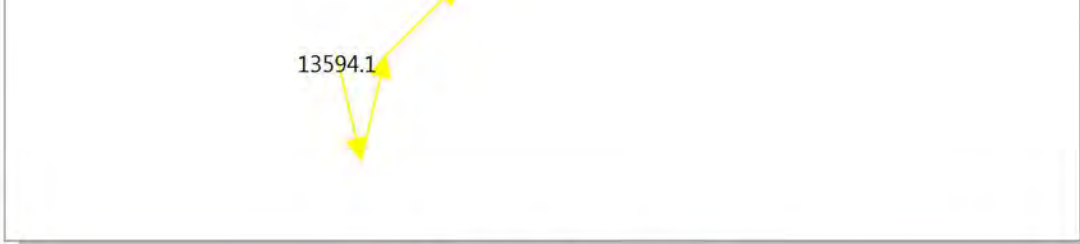
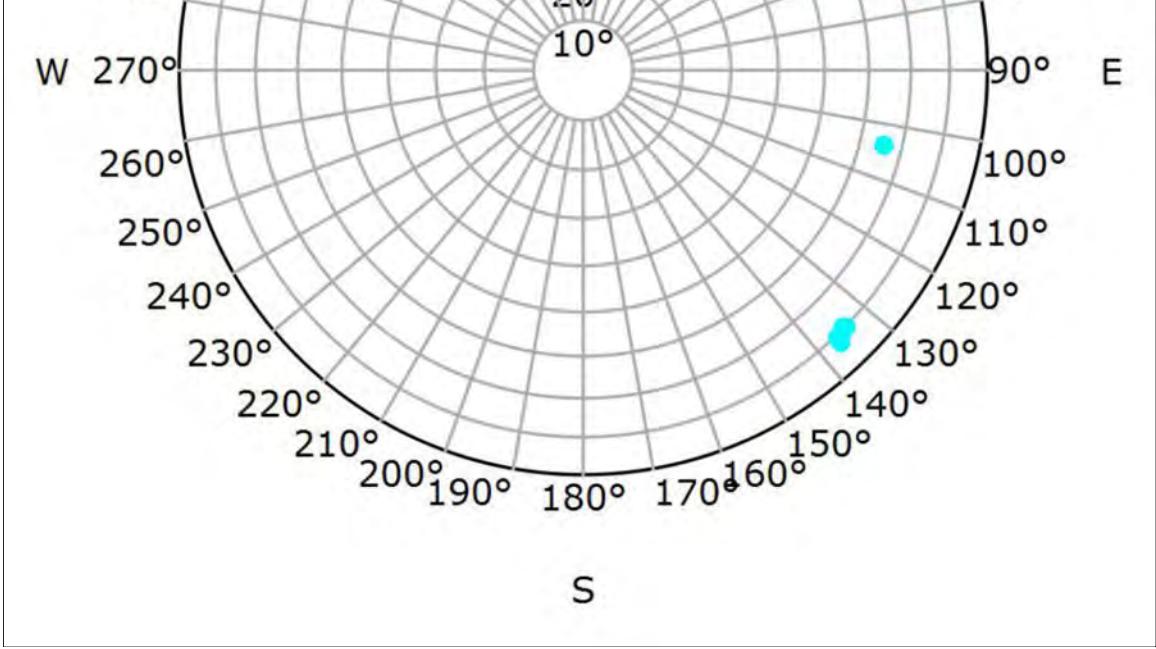
Resistive Fracture Summary Woodfrod 13499ft - 13625ft

Schmidt Plot - Upper Hemisphere



Strike Vector Plot

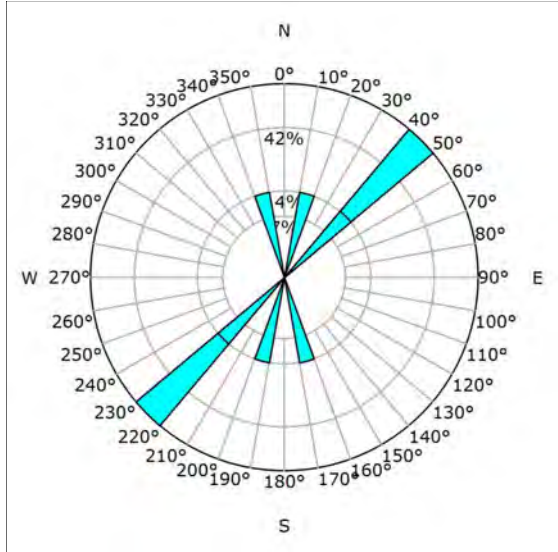
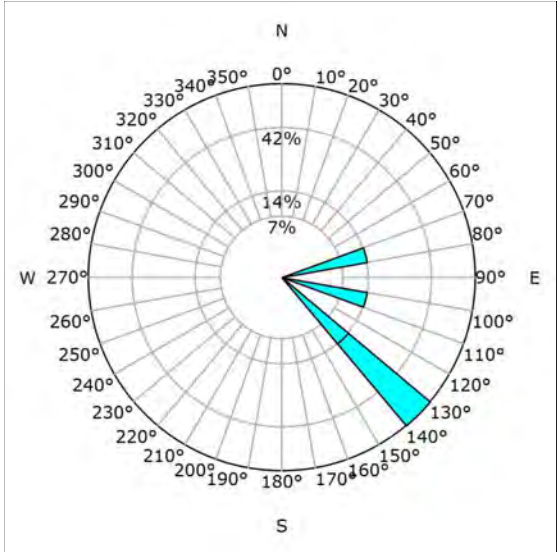




Azimuth Rosette

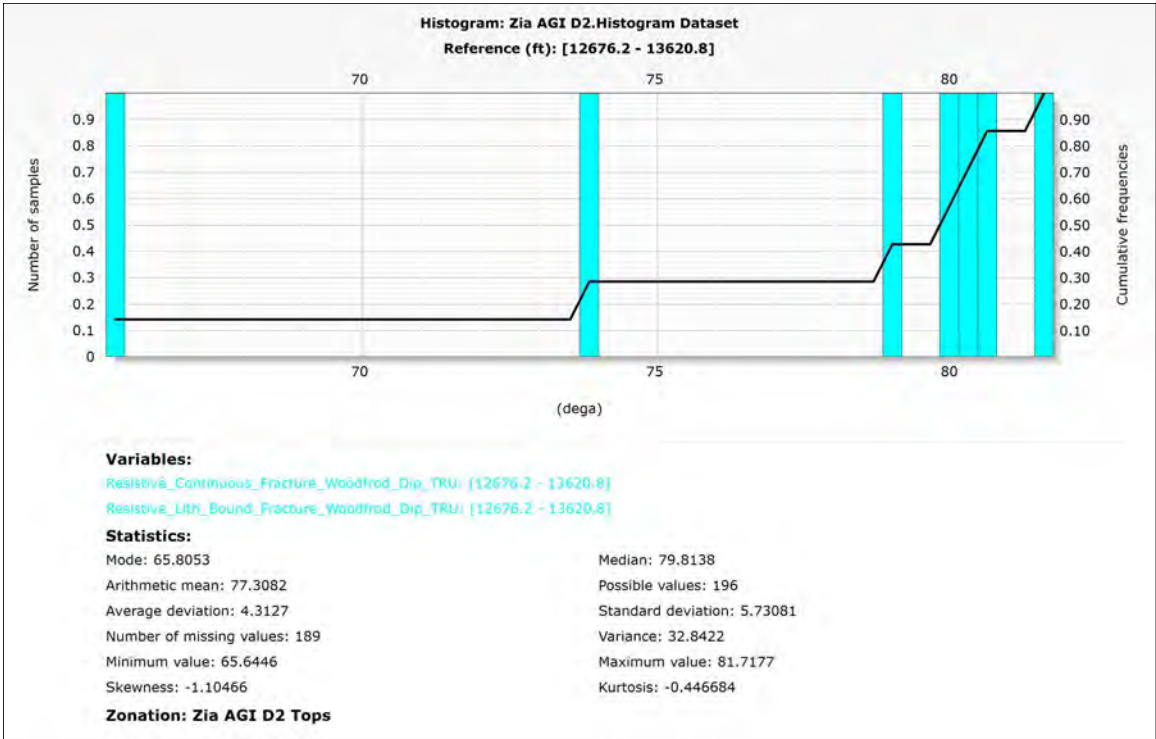
Strike Rosette

Observations



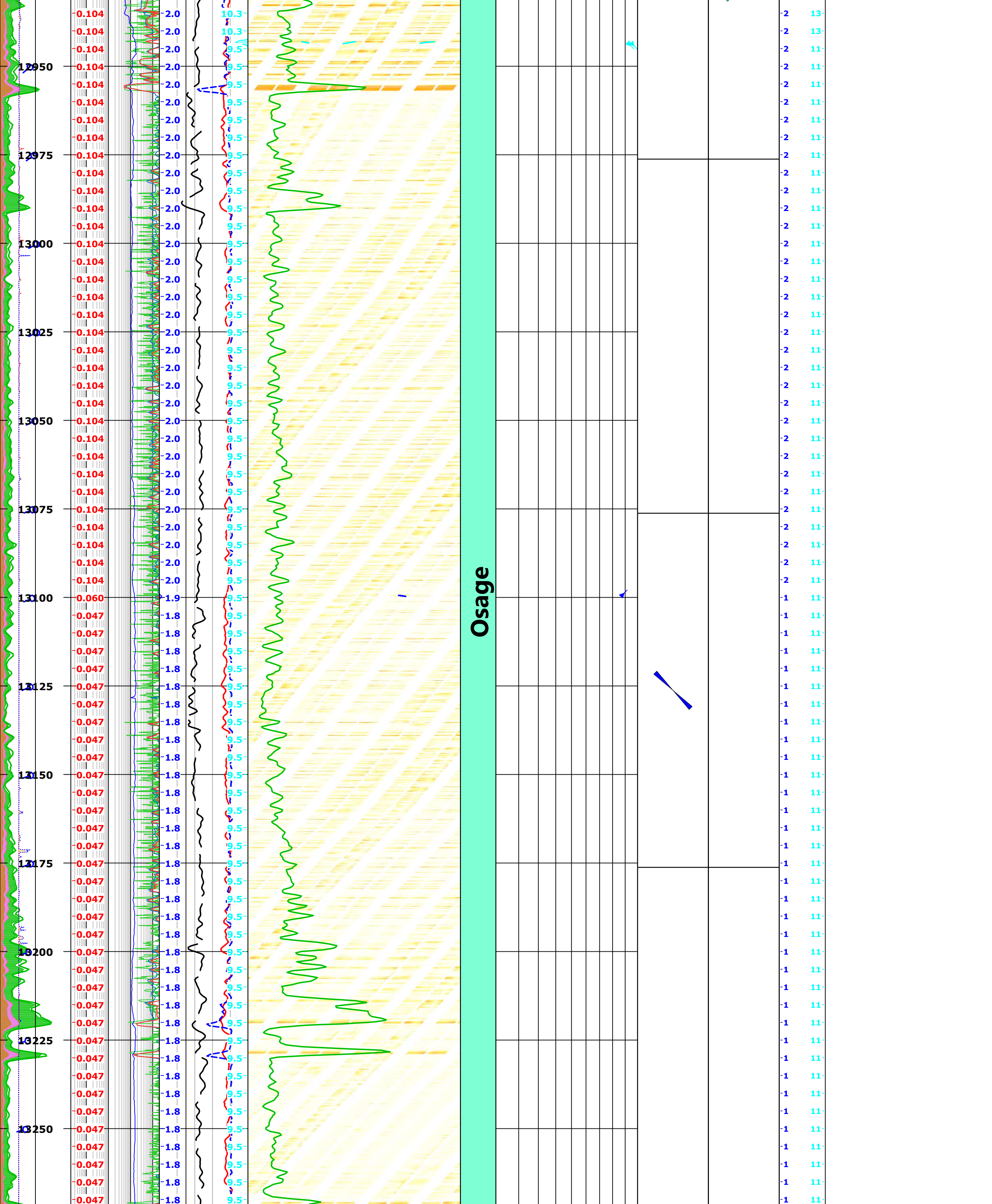
The Resistive Continuous Fracture and Resistive Lith Bound Fracture dipsets are composed of hand traced resistive (healed) natural fractures and are subdivided based on observed continuity. Resistive Continuous Fractures completely and continuously transect the wellbore. Resistive Lith Bound fractures terminate at an observable lithology contrast. 1 Resistive Continuous Fracture(s) and 6 Resistive Lith Bound Fracture(s) were identified within the Woodfrod interval from 13499ft to 13625ft. The strike rosette shows that the dominate strike orientation is NE-SW (71 Percent).

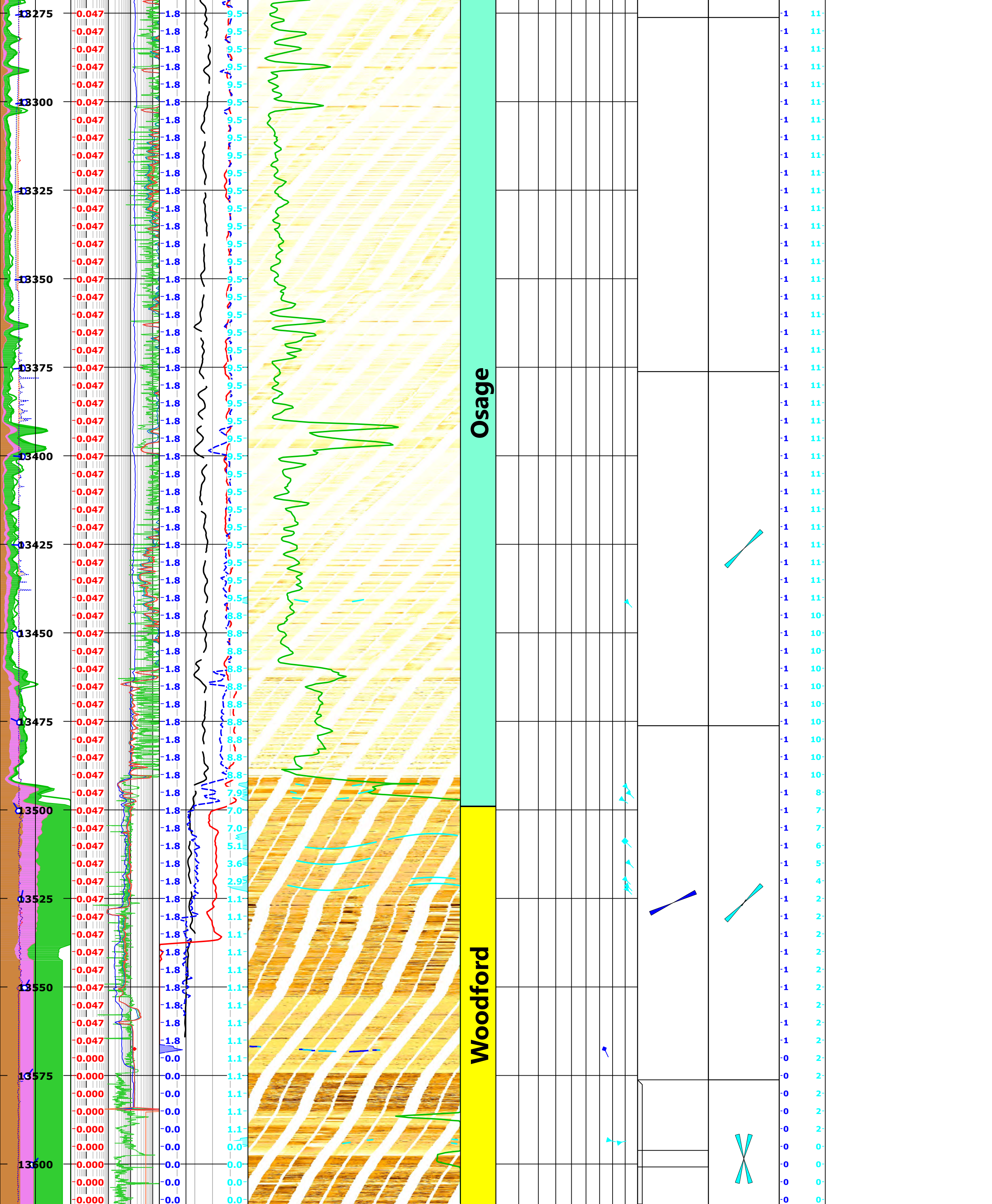
Dip Angle Histogram



						Conductive Fractures	Resistive Fractures		
Thorium									
Potassium									
Uranium	Breakout Flag								
Ovality	Tensile Fracture Flag								
N W E S	Shear Frac Flag								
Classification	Conductive_Fracture_Trace_Integr								
	0.05 v/v 0								
	Breakout Flag								
	0 unitless 10								
HoleDevDip 8 in	◆ FVAH ◆								

[illegible]







COMPANY:	DCP Midstream LP	Schlumberger
WELL:	Zia AGI D2	
FIELD:	AGI Devonian Exploration	
COUNTY:	Lea	
STATE:	New Mexico	
COUNTRY:	USA	
API No.: 30-025-42207		Date Processed: 12/26/2016