

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 01R Observer: CRK SB KU Summary:

Inclined beds w/ normal faults

Section No.	Structure ID	Top of Struct (cm)	Bottom of Struct (cm)	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes	
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → *1* Bottom → *-1*	top	bottom	az./trend	dip		
✓ 1	bedding	109	113			270	26	0	21			85	129				
✓ 5	normal fault	64	72			90	60	180	56	10	270	0	137				- visible on CT, measured in core, stepped striae
✓ CC	bedding	18	19			270	5	180	17			15	21				- visible on CT, measured in core
✓ 6	normal fault	124	131			270	51	121	0			124	140				- measured on CT image
✓ 7	fault	5	11			90	43	131	0			2	20				- measure on CT
1	bedding	5	6.3			270	19	000	05								- visible on CT, measured on CT. - laminae are parallel to bedding over the interval 0cm-11cm
2	bedding	400	410			270	03	180	14								measured on CT (WR)

DR
NIGHT SHIFT
15/5/12

Structural Geology Observation Sheet

No. _____

Entered into computer?

Exp.: 343 Site: C0019 Hole: E Core: R02 Observer: V. Toy et al. Summary: Several faults w/ slickensides, pressure solution seams, Calcite mineralization

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → "1" Bottom → "-1"	top	bottom	az./trend	dip	
X	1	Fault	52	54	<1mm	090	20	000	12							② Measured from CT. Same fault; flattens toward "SW" side
X	1	"	"	53	"	090	09	180	05							
X	1	Fault	55	56	<5mm	270	07	000	09							③ Measured from CT. This structure has complex horsetail morphology. Measured dominant strand in "NE" side of core
✓	1	Fault	98 91.5	97	<2mm	090	12	000	43							④ Has been re-activated during drilling but is decorated by ~2mm thickness CT-bright material; identified + measured from CT.
+	1	Fault	98	100	<1mm	090	17	000	16							⑤ Identified from CT. CT-bright CT-bright material
+	1	Fault	91.5	97		000	45			45	270					⑥ From whole core core fragment before it was split. Striae on surface indicate normal shear sense. Strike is 090/270 - were able to lift off faulted block.
+	1	Fault	98	100		000	25	090	15	58	090					⑦ Taken from whole block/core frag.
+	1	Fault	98	100												1cm 1cm, 2mm ampl. corrugation on surface, not "striae"
X	1	Shear fracture?	63	44	<1mm	270	25	180	63							dark surface (≤0.2mm thick) possible pressure solution seam
+	1	pressure solution seam?	97	99		90	15	180	50							dark surface (≤0.2mm thick) possible pressure solution seam
+	1	pressure seam?	98	100		90	15	180	50							calcite coated surface (less than 0.5mm thick) - this feature is 'offset' on the solution seams
+	1	Fault?	98	101		270	34	180	55							
+	1	seam?	98	104	<1mm	270	55	200	21							Darker seam that splays up the core into 3 strands.
+	1	dark band = bedding?	41	41.5	1-5mm	270	02	000	02							grades gradually darker toward top of core... v. difficult to tell if this is a bed, a solution seam, or???

BLUE PEN DENOTES # ON CT LOG

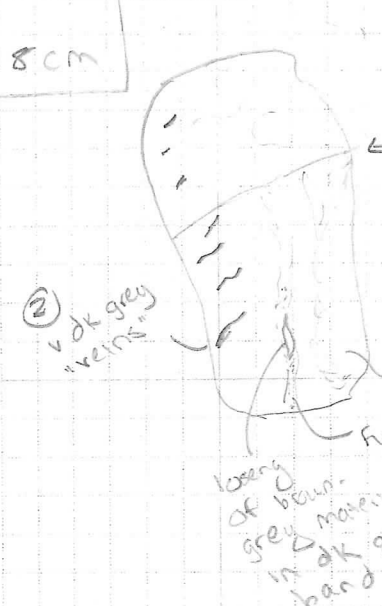
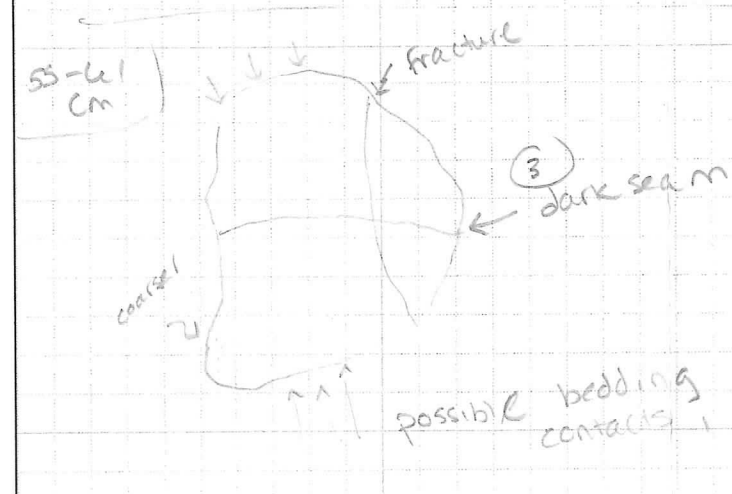
undulating surface by fine grains

pressure solution seam
truncates burn
as well?

Structural Geology Observation Sheet

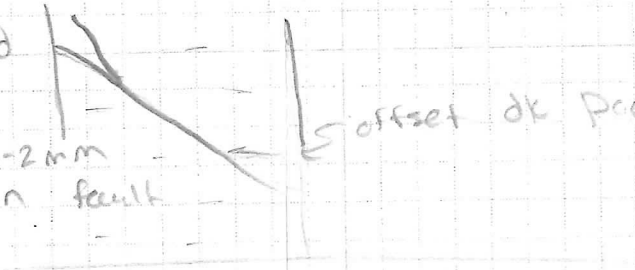

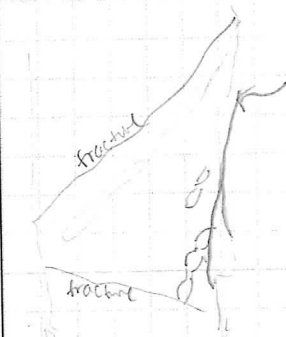
No. _____

Exp.: 343 Site: C009 Hole: E Core: 3 Observer: _____ Summary: _____

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (±90)	from (±1, 90 or 270) * Top → "1" Bottom → "-1"	top	bottom	az./trend	dip	
2	① Seam	42	45			270°	42	180	10°			40	48			<p>40-48 cm</p>  <p>outline of rock fragment * med-dk grey silty mudstone</p> <p>① dark band truncates color bands * pressure solution seam? shear band?</p> <p>② dk grey veins</p> <p>mottled lighter brown-grey fine dk grey material band (diagenetic? de-watering feature? deformation?)</p> <p>loss of brown grey material in dk grey band</p> <p>55-61 cm</p>  <p>fracture</p> <p>③ dark seam</p> <p>possible bedding changes in grain size along planar bands (but oriented parallel to core axis)</p> <p>* P-MAG correction will probably not be reliable - fragments likely rotated during drilling on vertical axis</p>
2	② sediment vein	41	44							76°	270					
2	③ seam	57	58			0	32	210	1.5			55	61			

Structural Geology Observation Sheet

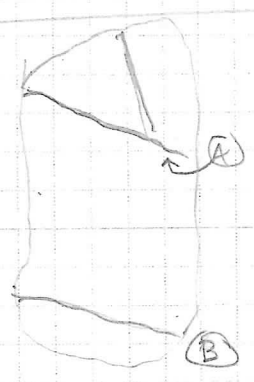
Exp.: 343 Site: C0019 Hole: E Core: 5 Observer: CR, SB Summary:

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes	
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip		
3	deformation band	85	91			90	43	0	37								- observed in core + measured, logged as syn-sed, deformation - Anastomosing lens of CT. Bright material in shear band (CT) ~ 2 cm thick zone. base is a sharp CT bright band, upper boundary is an anastomosing shear network. upper boundary truncates CT dark (bedding?) bands - Repeat measurement do not log
✓ 1	bedding	43	48			270	52	180	5			43	48				Bedding → compositional banding + bed parallel fissility Bedding → compositional banding
✓ 1	bedding	32	34			270	57	180	5			295	33.5				Bedding → contact between coarse + fine muds at Fault # 1
✓ 1	bedding	14	17			270	40	180	47			10	19				Bedding → contact between coarse + fine muds at Fault # 1
✓ 1	fracture	95	99			90	36	180	0	18	90°	90	100				✓ fine hairline fracture, offsets dark (organic?) smear parallel to bedding fracture horizontal toward 270° - Slickens on surface of dark polished material + corrugation at ~6 mm λ + 12 mm amplitude on fault surface. 
2	shear band	70	84														not measured 
✓ (2)	shear band	118	129			270	78	180	0			118	128				Dark Shear band, anastomosing network of truncated grey-banded. (Dinch + swell) sub-parallel to shear zone composition 

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 5 Observer: CR/SB Summary:

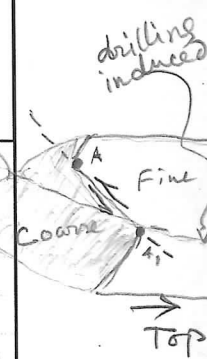
Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → +1° Bottom → -1°	top	bottom	az./trend	dip	
✓ 2	bedding	43	46			90	20	180	40			44	48			Compositional banding grain size / color
✓ 3	Ⓐ shear band	48	49			90	5	0	11			45	55			 <p>dark shear bands offsetting soft sed. deformed beds.</p>
✓ 3	Ⓑ shear band	53	54			90	13	0	71			45	55			
✓ 3	bedding	65	86			270	5	180	12			81	86			2-3 cm thick olive brown fine-grained bed
✓ 3	dark band	88	91			90	23	0	10			88	93			dark band may be a shear zone in soft sed. or may be the result of non-tectonic soft sed. deformation. feature truncates laminae.

Structural Geology Observation Sheet

Exp.: 343 Site: C0019 Hole: E Core: 5 Observer: CR, SB Summary:

cores

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *1*	top	bottom	az./trend	dip	
✓ 1	fault (normal)	9.8	20			270	27°	204	0							- CT observation: fault/shear band re fractured by drills, oblique offset of CT bright band measured in core, no slicks observed 34 mm of bed separation A+A' along fault on core face - Structure white round sub-horiz shear band, sm anastomosing lenses of CT bright material, sharp upper surface burrows truncated at shear zone - possible fault in CT, CT bright band not clearly measurable - possible fault in CT, CT bright band not clearly measurable
✓ 1	small window round fault	71	73			CT 270	9	CT 154	0							- possible fault in CT, CT bright band not clearly measurable - possible fault in CT, CT bright band not clearly measurable
✓ 2	deformation band	41	46			100	0	180	49							- offsets in bright CT banding (bedding?) in slice perpendicular to split face (difficult to see in core face) soft sediment deformation? offset dark band is burrowed through measured in CT
✓ 2	deformation band	89	92			CT 98	0	CT 180	49							- CT bright shear band (CT) white round sample
✓ 3	deformation band	9.5	11.5			270	7	180	17							- CT bright band, bedding? shear band? sub-horiz (CT) measured in CT
✓ 3	bedding	80.3	84			270	12	180	15							- CT bright-dark banding ~ bedding? (CT)
✓ 1	Dark band	92.5	92.5		1-2 mm	270	7	180	6							- 1-2 mm thick, v fine v dark grey, 2 black band, possible dark gull v plane upper + lower contacts drills mud injection below surface. prob may be drilling induced.

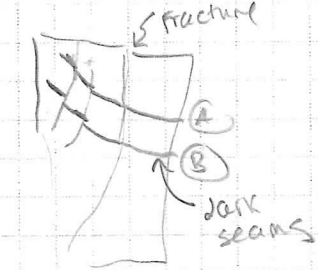


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Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: C0 Observer: CR/SB/KH Summary: highly fractured intervals (web structure?) multiple generations of offset along shear bands + small discrete faults

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *1*	top	bottom	az./trend	dip	
1	bedding	31	33			270	5°	0	27			28	35			v dark bed (org rich?) (core)
1	dark band	68	72			0	7°	270	35			65	75			possible shear zone (core)
1	(A) dark seam	93	98			90	34	180	13			93	104			2 sub parallel dark bands at small angle to Compositing banding, at small angle to each other (core)
1	(B) dark seam	95	101			90	36	180	31			93	106			possible shear zones  dark seams are offset by thin axial parallel discrete slip surfaces (small displacement)
1	bedding	116	117			270	17	0	8			116	120			
2	compositional banding	47	48			90	3	0	18			44	51			likely bedding, dark (organic) horizon

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0014 Hole: ~~A~~E Core: 7 Observer: V-TOY Summary: 1



Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (±90)	from (±1, 90 or 270) * Top → * Bottom → * *	top	bottom	az./trend	dip	
1	BEDD.			11	0mm	270	08	000	22			0	17			ON W/H. CONTACT OF DARK TUFACEOUS BED (ABOVE) + DARK BED BEDS ARE > 5cm THICK; CONTACT SL. UNDUATING
1	SHEAR BED?	83	85		4mm	270	17	000	08			70	114			SHEARED, WHITE-BEARING LAYER, IP BEDDING (= DARK BAND'S BONG) ON W/H.
1	BOD	89	89.3		<3mm	270	02	000	02			70	114			DARK (CARBONACEOUS) LAYER = BEDDING ON W/H
1	BOD	109	111		5mm	270	74	000	210	-check in CT.		70	114			DARK (CARBONACEOUS) LAYER, PLANAR @ BASE BUT W/ FLAME-LIKE STRUCTURES @ TOP GRADING TO MOTTLED DIC + PINE GRAY; LOOK TO BE "SHEARED" INTO STRUCTURE/LAYER IN A REVERSE (ie TOP → E) SENSE ON W/H. MES ON W/H.
1	BOD	107	108		1mm	270	48	000	21			70	114			W/H. DARK LAYER; NOT CONTINUOUS ACROSS CORE + DISCORDANT TO BEDDING 5cm ABOVE + BELOW ON W/H.
1	BOD			73	0mm	270	02	000	10	not good measurement. disregard		70	114			ON W/H - CLEARER THAN IT HAS RELIEF + IS STRONGER THAN SURF. MATERIAL. → POSSIBLY PGM BAND
1	BOD					270	00	180	15	check VOK						
2	BONG	13	14		1mm	270	15	000	27			0	24			DARK LAYER = ON W/H; DARK (CARBONACEOUS) BAND; PLANAR TO MIN. UNDUATING BOUNDARIES. IP BEDDING BEDDING IN CT.
2	BONG	12	15		3mm	270	16	000	20	use this		0	24			DARK BAND DECORATED BY LENSOID PARTICLES → LOOKS LIKE BONG - IP SHEARING? STRUCTURE STEEPENS IN DIP TOWARD CORE 090 + INTERSECS PREVIOUSLY MEASURED BEDDING. → SLIGHTLY (WH) AMBIGUOUS ORIENT IN 2nd DIMENSION
2	BONG				5mm	270	20	180	02		70	74				IN 'TIGER-STRIPED' MATERIAL; SL. "FRASER", ADJ; IN W/H. (WH)
2	Bedding	54	56		2mm	270	26	000	26			29	74			DARK BAND DECORATED BY LENSOID PARTICLES; MES IN W/H BEDDING FOR INTERVAL 50-74cm IS THIS.
2	FAULT	7.5	7.5		0mm	270	11	000	01			0	24			@ 74cm CAN SEE MAJOR Δ BEDDING ORIENT DUE TO CORE ROTATION? FAULT IDENTIFIED IN CT; MEASURED IN CORE; FINE DARK BAND
2	BONG	80	82		3mm	090	21	000	06			75	115			CARBONACEOUS BEDDING; (WH)
2	BONG	83	85		3mm	090	26	000	12			75	115			CARBONACEOUS BEDDING; (WH)
2	FAULT	89	93		0mm	270	37	180	42			75	115			FAULT HAS NORMAL ASPECT IN W/H CUT FACE (WH)
2	BONG	107	108		3mm	090	06	000	05			75	115			CARBONACEOUS BEDDING (WH)
2	FAULT	135	137		0mm	270	26	180	64			133	136			FAULT VISIBLE ON CT MES IN W/H

Cr only 2 FAULT 27
Cr only 1 FAULT 61 64
Cr only 1 FAULT 25

0 270 28 0
24 090 57 180
5 270 30 0

FAULT

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No. _____

Exp.: 343 Site: C0019 Hole: E Core: 8 Observer: CR/SB Summary: 15cm wide fault zone, (parallel) anastomosing shear bands

core

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *1*	top	bottom	az./trend	dip	
X 07/05	Fault/ deformation band (B)	71	79			90	65	180	14			N/A				localized series of semi parallel shear zones within 15-20 cm thick thrust shear zone each band is characterized by dark fine grained comminuted material surfaces are polished + striated striated but striae may be present but not obvious without taking a part sample B-E have same appearance brecciated fractured zone no coherent bedding
X 10/05	Fault/ def band (C)	73	84			90	65	From CT 190	22			N/A				
X 02/05	Fault def band (D)	75	88			90	65	CT 0	16			N/A				
X 06/08	Fault/ def band (E)	82	100			90	65	CT 330	0			N/A				
X 29/08	def band	100	104			270	45	0	25			90	104			- shear band parallel to bedding fine dark comminuted grains + platy alignment parallel to shear zone

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C009 Hole: E Core: 8 Observer: CR Summary: Deformation bands observed in CT


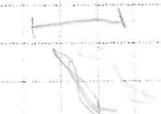
Section No.	Structure ID	Top of Struct	Bottom of Struct	ave, depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes	
						az.	dip	az.	dip	rake (≤ 90)	from ($\pm 1, 90$ or 270) * Top \rightarrow * Bottom \rightarrow -1*	top	bottom	az./trend	dip		
029/09 X 2	def band	62	66			90	50	0	65			61	81			CT observed bright band shear band	- some truncations of CT bright bands
318/59 X 2	def band	41	64			270	48	0	51			61	81			CT bright shear band	- not offset detectable

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C019 Hole: E Core: 8 Observer: CR/SB Summary: Anastomosing shear bands / lenses

2009

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
✓	2	76	51			270	17°	180	54			73	95			- composition variations between silty / coarser grain size + finer mud.
✓	2	117	117			270	4	180	16			16	117			- anastomosed zone in brown clay bed observed in core + CT
																 <p>bound on bottom by CT (bright shear band)</p> <p>measurement on deformation band</p> <p>in core basal def band is a dark fine grained layer 1-2 mm thick</p>
✓	3	44	46			270	26	0	21			40	46			- bedding in core seen as change to coarser silt as seen in CT may be finally parallel to bedding
✓	3	56	64			270	45	CT small	17	0						- Anastomosing shear bands network of multiple inter-branching shear fractures. Dense bands in core
✓	3	58	61			270	66	180	40							- def bands thinning out in CT
																 <p>widens to ~1cm spacing at periphery</p> <p>- total width ~3cm - creates pinch swell structure</p>
✓	3	87	94			270	60	CT small	18	0						- similar anastomosing shear network as above
																- total width ~3cm

46 - ac [anastomosing shear bands dip to 270]
80-94

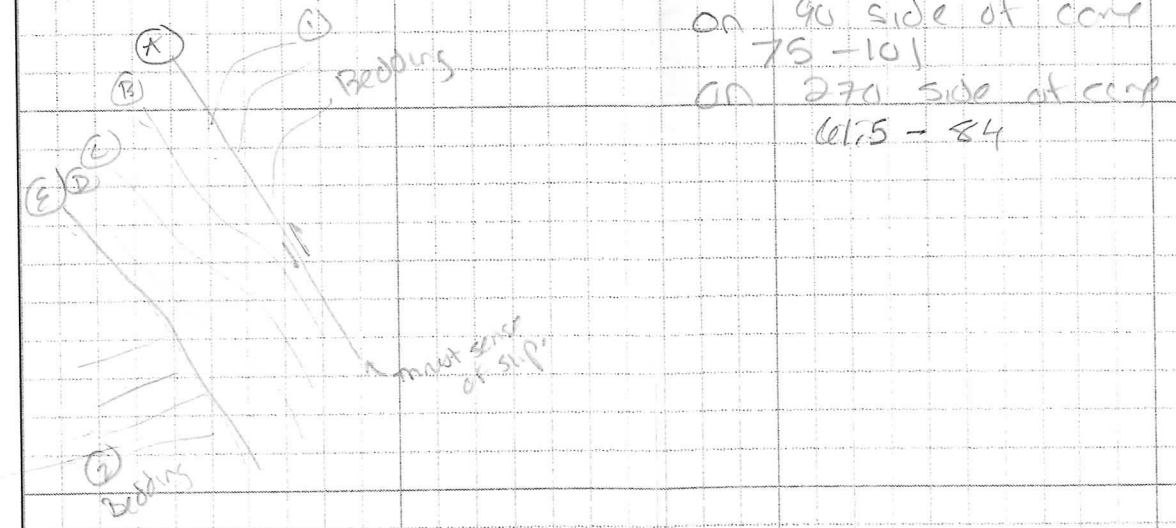
Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: BR Observer: V. TOY/CR/SB Summary: micr 15cm thick deformation zone + thrust fault.

EXL SCORE

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
X ✓	1 BDD	11	14		<3mm	270	63	180	6			7	16			FLASER (CARBONACEOUS) MATERIAL (WH) → bedding visible in CT as brassy
X ✓	1 BDD	32	38		<5mm	270	50	180	06			32	38			V. DISCONTINUOUS; X-CUT BY HIGH & MICROFAULTS I COULD NOT MEASURE; NOT A V. GOOD/RELIABLE MEASUREMENT. (WH)
X ✓	1 BDD ①	51	63		~10cm	270	50	180	26			48	74			REASONABLY PLASER BEDDING IN ASH LAYERS JUST ABOVE MAJOR FAULT. ALSO SOME DISCONT. BLENDS CARB. MAT. IN A COARSER-GRAINED BED C. 1cm THICK. (WH) PART "SHIMM FOLD" MORPHOLOGY.
X ✓	1 Bedding	99	102			270	47	180	18			90	74			CT observation bright + dark banding in CT (also visible as compositional banding / bedding in core)
X ✓	1 fault ①	63	76			90	70	0	30			40	65			① fault plane high angle bedding of brown-grey mudstone truncated at fault. measured in CT
X ✓	1 fault	62	74			90	62	180	4	90 ① 1	90	40	65			same fault as above; light bedding at high angle truncated against steeply dipping fault. fault plane is an anastomosing, polished surface aligned with fine-grained material. close-up picture of slickens
X ✓	1 bedding ②	97	100			270	45	180	21			90	103			fault lineations (slickensides) on fault surface indicate dip slip, reverse motion. bounds top of shear zone. shear zone width on 90 side of core 75-101 on 270 side of core 67.5-84



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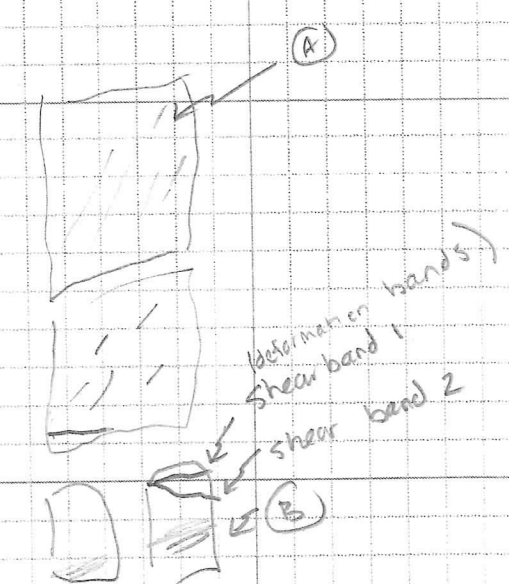
Exp.: 343 Site: C0019 Hole: 9 Core: 9 Observer: CR/SB Summary:

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
1	bed	28 28	25 29			90	20	0	35			16	33			- compositional banding → coarse silty interbed ~3mm thick measured in core
1	bed Ⓐ	20	27			90	45	0	49			16	33			Ⓐ bedding defined by finisilty partings in CT (dark rods parallel to composition change in core)
1	bed Ⓑ	29	32			270	30	180	32			16	33			Ⓑ bedding defined by less dense coarse silt be layer in core, CT dark horizon
1	def band Ⓐ	27	28			270	5	0	25			16	33			
1	def band Ⓑ	27	28			90	0	0	30			16	33			in core: deformation bands appear as dark horizons that truncate bedding. fine < mm width in CT: thin CT bright horizons (dense) result of grain comminution?

027/38

011/57

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Structural Geology Observation Sheet

No. _____

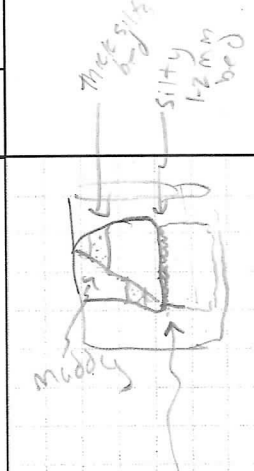
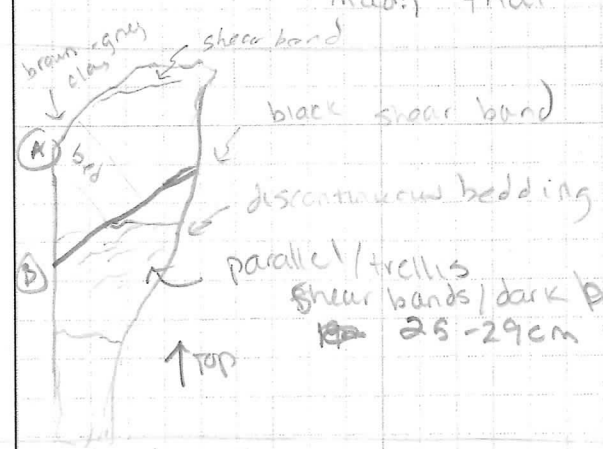
Exp.: 343 Site: C0019 Hole: E Core: 10 Observer: U-TOY Summary:

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → -1*	top	bottom	az./trend	dip	
1	LARGE ING	15	21		<1mm	270	59	200	34			15	25			ELONGATE PODS OF DARK MATERIAL; PLATE WHISPY (WH) CO-PLANAR + PURITE CHECK 2ND APP DIP ON CT → V. DIFFICULT TO SEE IN CORE
1	DIK/DC BAND	29	33		<<1mm + 3mm	270	67	000	16	HORSETAIL RANGES		25	35			SL ANASTOMOSING DARK (BANDS) & WIDER LESS DARK BANDS (WH) SPALLS/HORSETAILS
1	DIK/DC BAND	29	33		<1mm	090	36	000	00			25	35			SL ANASTOMOSING DARK SEAMS MUTUALLY X-WITHING (WH) ALSO RARE PURITE LOZ. ARE ELONGATE & THIS (IE "BRAIDED" RELATIONSHIP)
1	PURITE PODS	38	45	43	<5mm	270	58	180	25			38	47			LENSOIDAL, ELONGATE PURITE PODS W/ DARKER ZONES AROUND THEM DEFORMING PLANES (WH)
1	DK BANDS	79	83		24mm	270	31	337	15			50	93			DARK LAYERS/BANDS W/ NON-PLANAR EDGES ON MV SCALE (WH)
1	DK BANDS	80	84		<6mm	270	49	033	00			50	93			DARK LAYERS AS ↑; SL THICKER, GRADE PAPER TOWARD TOP, + ANASTOMOSE TO (WH)
	measurement on face ATT															
1	DK BAND	35	40		1mm	270	40	90	0			27	50?			Dark hammer with a small fold at 970 edge
1	BED?	86	92			270	40	22	180	-DON						compressional layering (dark wispy laminations with little horizon between) obscures drilling fracture // to columns
1	DK SEAM	85	91		<1mm	270	67	034	00			50	93			DARK ANASTOMOSING SEAMS; OPEN FRACS HAVE EXPLORED SAME ORIENT (WH)
1	DK SEAM			92	1mm	270	01	000	59			50	93			DK SEAM (WH)
1	OPEN FRAC	50	93		0mm	270	45	000	00			50	93			ANASTOMOSING OPEN FRACS SPACED @ 0.1-2cm ACROSS THIS COHERENT INTERVAL (WH)
1	"	50	85		0mm	270	36	000	58			50	93			AS ↑; SPACED 1-3cm (WH)
1	"	50	85		0mm	090	47	000	49			50	93			AS ↑; SPACED 0.5-1cm (WH)

Structural Geology Observation Sheet

Exp.: 343 Site: C0019 Hole: G Core: 12 Observer: Rappal/Boer Summary: core consists of very steeply dipping bedding w/ abundant drilling induced rotation of 2-10cm segments

No. _____

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *1*	top	bottom	az./trend	dip	
024/60 X	1	42	45			90	35	0	56			42	45			 <p>fault that offsets a 5-7 cm thick silty bed. fault has dark seam, hairy dark material adjacent to muddy horizon 12mm separation of bedding along fault in core face</p>
57/80 X	1	42	45			0	4	90	75			42	45			<p>silty bed at base of fault. Fragment is parallel piece has core barrel cut along side that indicates it has not been rotated along an axis perpendicular to the axis core. - But the fragment is surrounded by drilling breccia + is highly disturbed. Bedding orientation may be changed by rotation by drilling. - However fragmentation</p> <p>- many fragments appear to have sub-vertical bedding + fragment appear to still be aligned with core barrel</p> <p>- However there is at least one interspersed fragment w/ a flame structure (sand into mud?) that is sub horizontal</p>
X	1	73	75													<p>near vertical bedding, silty laminae not measured in core</p>
169/68 X	2	21	24			90	24	180	68			17	29			 <p>bedding above dark shear band</p> <p>main shear band - dark sharp upper surface + undulatory surface. Thickness variable</p> <p>thin < 1mm dark seam sub parallel to bedding cuts bedding at low angle</p>
a	3	21	25			270	38	CT	234	0						
Q	dark seam	48	52			270	42	180	20			49	25			

90 @

* other features logged in CT by KU

Entered to JCAR?
~~News~~ Excel Entered to Excel

CHIKYU Operation

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 17 Observer: V. Toy Summary: OBS ON SPLIT ARCHIVE + W.H.

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → "1" Bottom → "-1"	top	bottom	az./trend	dip	
1	ORANGE MS+ LOZENGES	80	81									59	93			
	LONG AXIS					270	31	180	33							
	LO2 BDM (LONG)					270	21	180	48							
	LO2 BDM (SHORT)					270	64	000	06							
1	Ⓐ DARK SEAM	37	38			090	6	000	12							
1	Ⓑ DARK BAND					270	69	180	22							
	Ⓒ LO2 LONG AXES	31	33			270	32	000	15	inside the	inside the	31	43			
	Ⓓ BOUNDING SURFACES		39	42		270	62	180	12							
	Ⓔ BOUNDING SURFACES		39	42		270	09	000	22	270	11					

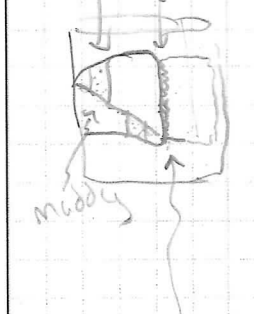
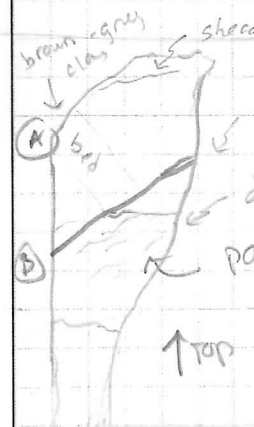
STRUCT #2

STRUCT TRACING #1

Structural Geology Observation Sheet

Exp.: 343 Site: C0019 Hole: A Core: 12 Observer: Rappal/Boyer Summary: core consists of very steeply dipping bedding w/ abundant drilling induced rotation of 5-10 cm segments

No. _____

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → * Bottom → * Bottom → *	top	bottom	az./trend	dip	
024/60 X	1	42	45			90	35	0	56			42	45			 <p>fault that offsets a 5-7 cm thick silty bed. fault has dark seam, & hairy dark material adjacent to muddy horizon 12mm separation of bedding along fault in core face</p>
87/80 X	1	42	45			0	4	90	75			42	45			<p>silty bed at base of fault. Fragment is parallel piece has core barrel cut along side that indicates it has not been rotated along an axis perpendicular to the axis core. - But the fragment is surrounded by drilling breccia + is highly disturbed. Bedding orientation may be changed by 10-15° by drilling. - However fragmentation</p> <p>many fragments appear to have sub-vertical bedding + fragment appear to still be aligned with core barrel.</p> <p>However there is at least one interspersed fragment w/ a flame structure (sand into mud) that is sub horizontal</p>
X	1	73	75			near vertical bedding, silty laminae not measured in core										
169/68 X	2	21	24			90	24	180	68			17	29			 <p>bedding above dark shear band</p> <p>thin < 1mm dark seam sub parallel to bedding cuts bedding at low angle</p>
A	3	21	25			270	38	CT	234	0						
Q	dark seam	48	52			270	42	180	20			49	25			

90 0

* other features logged in CT by KU

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 13R Observer: V. TOY Summary:

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
2	BOD	3	4		0m	270	09.	000	44			0	8			COARSE LAYER ON DOWNCORE SIDE OF CONTACT ^{FINE} ≠ LOAD CASED ^{COARSE} (WH)
2	BOD	12	18		?	270	42	180	09			13	18			DEFINED BY LONG AXIS OF MM-SIZED DIL 'BLEBS' THAT ARE DIFFUSE @ MARGINS. PYRITE SPOTS V. SL. ELONGATE & THESE ↑ BUT MOSTLY MUCH MORE EQUANT.
2	DK SEAM	15	18			270	41	000	70			13	18			ANASTOMOSING W. NEXT MEASURED DIL SEAM; HAS PYRITE STRUNG OUT ALONG IT (NOT NECESSARILY SHEARED) (WH)
2	DK SEAM	17	18			270	11	000	09			13	18			ANASTOMOSES INTO ↑ - THIS IS THE LESS DOMINANT ORIENTAT. (WH)
2	BOD	23	25		<6mm	090	28	180	23			22	44			DEFINED BY DIL BAND THAT IS TRUNCATED BY DK SEAM ABOVE & UPWARD BY THIS DIL SEAM (WH)
2	DK SEAM	23	24		0	270	06	000	06			22	44			DIL SEAMS THAT TRUNCATE BEDDING (TWO ANASTOMOSING SEAMS HENCE 2x DATA) (WH)
"	"	"	"		0	270	18	180	07							
2	OPEN FRAC	21	23		0	090	23	180	32	27	"270"	22	44			GRAPHITIC STRIAE; MAY BE DRILLING-INDUCED (WH)
2	DK SEAM	27	28		1-2	090	06	180	35			22	44			MM-THICK BUT HAS AN ANASTOMOSING "SIDEWALL RIPOUT" (IN SENSE OF SWANSON, 1998); IS NOT ENTIRELY PLANAR (λ OF UNDULATIONS c. 10 cm. AMPL c. 0.5mm IS OFFSET IN APPARENT REVERSE SENSE ON ↓) (WH)
2	OPEN FRAC = FRACT	26	30		0	270	38	000	05	30	"270"	22	44			OPEN FRAC W. APP REVERSE (VIEWED IN WH CUT FACE) OFFSET OF BY 2mm). NON-PLANAR (λ ~ 10cm; A < 0.5cm); STRIAE ARE CM-λ RIDGES + SMALLER AS FEEL AS WELL (LATER MAY BE DRILLING INDUCED)
2	BOD	27	33		whole interval	090	14	180	48			22	44			DEFINED BY DIL BLEBS
2	SED-FILLED VEINS + PYRITE BLOBS	30	34		"	270	78	008	00			22	44			SIMILAR TO FEATURES IN S1 THAT KOHANO DESCRIBED AS SED-FILLED VEINS, BUT THESE ARE JUST WINDSPY DIL SEAMS W. SL. CN EITELON ARRANGEMENT + MAX LENGTH c. 1-2cm.
2	BOD + DK SEAMS	40	42		1mm	090	22	000	09.			22	44			MST BAND W. WINDSPY (FLAME-LIKE? CONTACT ON DOWN-CORE SIDE IS OFFSET ON OPEN BUT NOT FRACTURE WITHIN INTACT FRAG. OF ROCK. CLOSER EXAMINAT ^N SHOWS THIS "BED" IS COMPOSED OF ANASTOM DIL BANDS..
2	FRAC	39	43		0	270	89.	027	00			22	44			OFFSETS ↑ W-SIDE (CORE REF FRAME) DOWN BY 1.5mm.

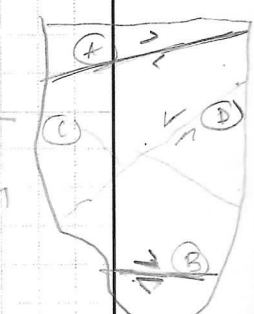
Fault

Structural Geology Observation Sheet

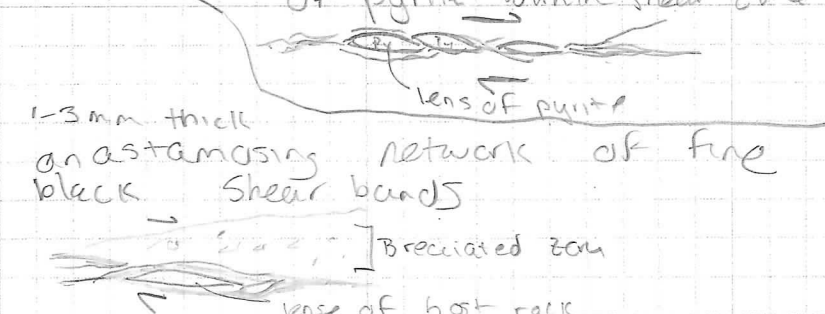
No. _____

Exp.: 343 Site: 100190 Hole: E Core: 13 Observer: CR/SB Summary: Green ~~to~~ limited mudstone w/ abundant pyrite + black deformation band

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
1	long axis of pyrite concretions	① 64.5	64.5			270	37					61	73			Aspect Ratio of pyrite concretions ① 5:2 ② 2:1 ③ 2:1 ④ 3:1 ⑤ 3:1 ⑥ 4:2 Base
		② 66	66.5			270	25					61	73			
		③ 72	72			270	20					61	73			
		④ 71.5	71.9			270	25									
		⑤ 77	78			90	60									
		⑥ 5	5			270	5									
2	bedding	2	4			270	5	0	14			0	10			- defined by compositional banding of a slightly silty bed + banding of light + dark green muds
1	deformation band	3	3			270	20	180	12°			0	10			deformation band thrust sense of slip. 1-1.5 mm thick dark band composed of parallel anastomosing bands, variable thickness w/ lenses of pyrite within shear zone
1	def band	7.5	8.5			90	12	0	31			0	10			def band. lens of pyrite
	dextral shear (normal)															1-3 mm thick anastomosing network of fine black shear bands. Precised zone. lens of host rock
1	dark seam	4	6			90	32	0	52			0	10			- hairline dark seam / shear band
1	dark seam	3	7			270	46	0	53			0	10			- hairline dark seam / shear band
1	BDD	4	5			090	04	000	33			0	10			DEFINED BY 1st CHIPS IN 1cm-thick BAND WITH
1	BDD	12	15			270	43	000	47			12	15			COURSE LAYER WITH



Sheet 2
30-27



DEFINED BY 1st CHIPS IN 1cm-thick BAND WITH

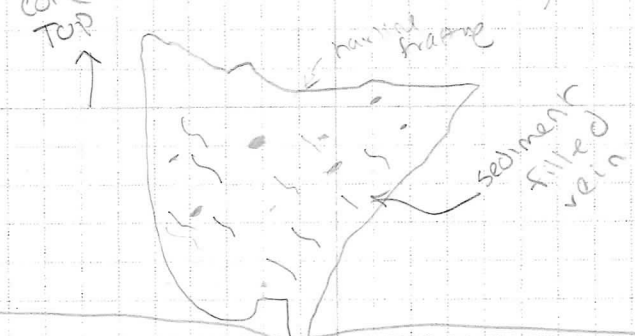
COURSE LAYER

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 13 Observer: CR/Ku/SB Summary: Shear bands + hairline dark seams in green partierich mudstone

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → "1" Bottom → "-1"	top	bottom	az./trend	dip	
X 1	dark seam	18	21			270	40	180	10			18	21			- hairline dark black seam, horsetails into two bands toward 270
X 1	Sed filled veins	31	35			090	76	355	00			21	33			- sediment-filled veins at ~90° to a hairline fracture some are sigmoidal
X 1	BDD	42	43			270	16	000	40			40	44			BDD; DARK BAND COINCIDENT W/ CONTACT OF SANDY (UP-CORE) ON MUDDY LAYER (WH)
X 1	dark seam	42	43			270	18	180	30			40	44			- dark band, 2mm scale TRUNCATES BEDDING (WH)
X 1	BDD			48	0mm	270	23	180	52			47	48			COARSE LAYER UNDERLIES CONTACT IN CORE ⇒ OVERTURNED?? MES IN (A4) b/c WH HAD BEEN SAMPLED FOR PP (WH)
X 1	DK SEAM (SHEAR)	38	41	3	0	090	43	000	47			38	41			MM-THICK DARK SEAM / SHEAR BAND (WH)
X 1	BDD	38	41		3cm	270	61	180	32			38	41			COARSE GRAINED LAYER + GRAIN ALIGNMENT W/IN THIS (WH) 3. 3 WAS SAMPLED FOR HPENV
X 1	FRAC	38	41		0	270	45	180	32	08	"270"	38	41			OPEN FRACTURE, > 2mm A UNIPOLAR W/ STRIAE; WELL DEVELOPED → NOT DRILLING-INDUCED? LOOK @ CT FOR OFFSET OF CORE (WH)
(A) (B) (C) (D) 1	DK SEAM (SHEAR)	69	70		0	270	22	000	37					61	79	SEE STRUCTURE TRACING FOR THIS INTERVAL FOR LETTERS CORRESPONDING TO THESE STRUCTURES
(B) 1	DK SEAM			68	0	090	07	000	15					61	79	(WH)
(C) 1	OPEN FRAC	61	72		3mm 3mm	270	55	000	51	18	"270"			61	79	STRIAE MAY BE DRILLING-INDUCED. (also present on bedding surface) → mostly trend downcore (ie all P) so v. suspicious
(D) 1	BDD			69	0	090	04	000	34					61	79	



need pmag!

X 1 DK SEAM (SHEAR) 80 81 5mm 090 09 180 13 80 81 25mm zone made up of an anastomosing network of mm-thick dk seams. - really looks like a S-zone w/ underlying white poph CT ONLY

X 1 DK SEAM 15 17 090 7 0 49

Structural Geology Observation Sheet

Exp.: 343 Site: C0019 Hole: E Core: 13R Observer: V. TOY Summary:

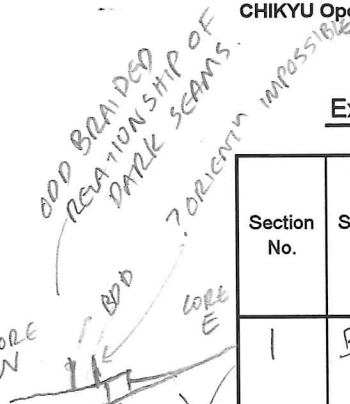
Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
2	BOD	3	4		0m	270	09	000	44			0	8			COARSE LAYER ON DOWNCORE SIDE OF CONTACT ^{FINE} ≠ LOAD CASING - COARSE WH
2	BOD	12	18		?	270	42	180	09			13	18			DEFINED BY LONG AXIS OF MM-SIZED DIL 'BLEBS' THAT ARE DIFFUSE @ MARGINS. PYRITE SPOTS V. SL. ELONGATE & THOSE ↑ BUT MOSTLY MUCH MORE EQUANT.
2	DK SEAM	15	18			270	41	000	70			13	18			ANASTOMOSING W. NEXT MEASURED DIL SEAM; HAS PYRITE STRUNG OUT ALONG IT (NOT NECESSARILY SITEALD) WH
2	DK SEAM	17	18			270	11	000	08			13	18			ANASTOMOSSES INTO ↑ - THIS IS THE LESS DOMINANT ORIGIN. WH
2	BOD	23	25		<6mm	090	28	180	23			22	44			DEFINED BY DIL BAND THAT IS TRUNCATED BY DIL SEAM ABOVE & UPWARD BY THIS DIL SEAM WH
2	DK SEAM	23	24		0	270	06	000	06			22	44			DIL SEAMS THAT TRUNCATE BEDDING (TWO ANASTOMOSING SEAMS HENCE 2x DATA) WH
"	"	"	"		0	270	18	180	07							
2	OPEN FRAC	21	23		0	090	23	180	32	27	"270"	22	44			GRAPHIC STRIAE; MAY BE DRILLING-INDUCED WH
2	DK SEAM	27	28		1-2	090	06	180	35			22	44			MM-THICK BUT HAS AN ANASTOMOSING "SIDEWAY RIPOUT" (IN SENSE OF SWANSON, 1998); IS NOT ENTIRELY PLANAR (λ OF UNDULATIONS < 10cm, AMPL < 0.5mm) IS OFFSET IN APPARENT REVERSE SENSE ON ↓ WH
2	OPEN FRAC = FAULT	26	30		0	270	38	000	05	30	"270"	22	44			OPEN FRAC W. APP REVERSE (VIEWED IN WH CUT FACE) OFFSET OF ✓ BY 2mm). NON-PLANAR (λ ~ 10cm; A < 0.5cm); STRIAE ARE ON-λ RIDGES + SMALLER AS FEAT AS WELL (CATER MAY BE DRILLING INDUCED)
2	BOD	27	33		whole interval	090	14	180	48			22	44			DEFINED BY DIL BLEBS SIMILAR TO FEATURES IN §1 THAT KOHANO DESCRIBED AS SCD-FILLED VEINS, BUT THESE ARE JUST WIMPY DIL SEAMS w. SL. EN GATELON ARRANGEMENT + MV LENGTH C. 1-2cm.
2	SED-FILLED VEINS + PYRITE BLOBS	30	34		"	270	78	008	00			22	44			
2	BOD + DK SEAMS	40	42		1mm	090	22	000	09			22	44			MST BAND W. WIMPY (FRAME-LIKE? CONTACT ON DOWN-CORE SIDE IS OFFSET ON OPEN BUT NOT FRACTURE WITHIN INTACT FRAG. OF ROCK. CLOSER EXAMINAT ^N SHOWS THIS "BOD" IS COMPOSED OF ANASTOM. DIL BANDS..
2	OPEN FRAC = FAULT	39	43		0	270	89	027	00			22	44			OFFSETS ↑ W-SIDE (CORE REF FRAME) DOWN BY 1.5mm.

Handwritten checkmarks and symbols in the left margin, including 'X', '✓', and '4'.

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 14 Observer: V.T04 Summary: _____



✓ REFER TO STRUCT TRACING

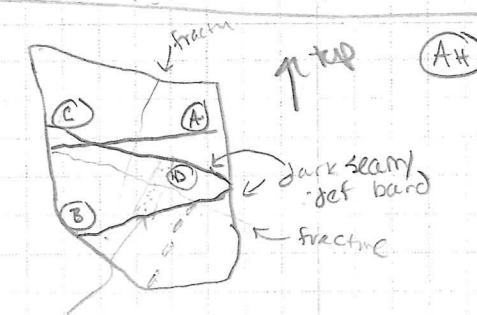
Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
1	BDD	8	12		whole interval	270	41	000	06			7	32			DEFINED BY ELONGATE DK BLEBS + SLIGHT ALIGNMENT OF COARSE GRAINS. PYRITE FRAMBOIDS ARE ELONGATE P. BDDING IN BOTH CUT FACE + SIDE OF CORE. (WH)
1	DK SEAM = SHEAR	9	10		<1mm	090	05	000	08			7	32			ANASTOMOSING MM-THICK SEAMS, ODD BRAIDED RELATIONSHIP W. VERTICAL DK SEAMS THAT DISSIPATE UP-CORE AS SHOWN IN SKETCH. (WH)
1	DARK SEAM (SHEAR)	18	20		<2mm	090	24	180	38			7	32			ANASTOMOSING SUB-MM THICK BANDS THAT COALESCE IN PLACES TO A SINGLE SURFACE; REVERSE OFFSET OF / ON P SEAM BY <1mm. (WH)
1	DARK SEAM	16	26		<1mm	270	70	180	30			7	32			OFFSET BY ↑ IN REVERSE SENSE BUT IN OTHER PLACES, OFFSET IS APPARENT NORMAL → COULD MISC FULL SLIP VECTOR THRO A SERIES OF CAREFUL MEASUREMENTS IN CUT BLOCK... (WH)
1	BDD	17	27		WHOLE INTERVAL	270	26	180	05			7	32			DEFINED BY ELONGATE, 1x3MM DARK LENSES. (WH)
1	PYRITE LENSE	38	38.5		5mm	270	28	043	00			33	53			ELONGATE AXIS OF PYRITE LUMP 7x3MM DIAM. (WH)
1	FRAG. LENSES	39	50		0mm.	270	34	000	00	41	"270"	33	53			ANASTOMOSING SET OF FRACTURES, SPACED @ 0.5-3CM; LOWERMOST ONE IS V. PLANAR (WH)
1	BDD	44	45		<2mm	270	56	?	? GET FROM CT.			33	53			DK BANDING W. SHARP BASE (ON CORE 'E' SIDE) GRADING P/ER UP CORE → CORE W (WH)
1	BDD	40	40.5		1mm.	270	20	180	08			33	53			DK BANDING AS WELL → NOT SURE IF THIS OR ↑ IS MAJOR BDDING ORIENTN; MM-SCALE WHISPS P THIS ORIENTN (WH)
1	DK SEAM	39	52		<1mm	270	02-06	GET FROM CT.				33	53			DK SHEARS THAT OCC. DISPLAY TOP → CORE E OFFSET OF DK SEAM SET (F) + OF WHAT I HAVE CALLED BDD (WH)
1	SHEAR	42	50		<1mm.	270	49-60 av. 43	000	10			33	53			DK SEAMS NOT OFFSETTING BDD; ANASTOMOSING N-WK. BUT P TO BDD (WH)
1	BDD	85	94		WHOLE INT	270	04	180	32			85	94			CONTACT OF COARSE (ABOVE) + FINE-GRAINED LAYERS; ALSO LONG AXES OF 1x2MM DARK BLEBS + ~ LONG AXIS OF PYRITE ELLIPSOIDS (WH)
1	DK SEAM = SHEAR	89	94		<1mm	090	40	180	17	CHECK ON CT.		85	94			2x P DK SEAMS W/ NORMAL SENSE ON CUT FACE DISPL OF DK BLEB BY 1mm. (WH)

IW SAMPLE

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 14R Observer: V. TOY/ Regalla/ Base Summary: Numerous dark shear bands in pyrite-rich

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → "1" Bottom → "-1"	top	bottom	az./trend	dip	
2	SHEAR	2	3		4mm	270	18	000	04	78	270	0	9			DARK ANASTOMOSING BEAMS IN THIS OPEN FRACTURE, WHICH IS STRIATED. BEDDING IS TRUNCATED BY IT, AS IS SEAM. (WH)
2	BDD	2	5		WHOLE INTERVAL	090	35	000	47			0	9			GREENISH LAYER W. DARK FLECKS IP TO IT + ?? FOSSIL + PATCH OF PALER MATERIAL. (WH)
2	DARK SEAM	2	5		0	090	40	180	35	14	"270"	0	9			EXPLOITED AS FRACTURE THRO' PART OF CORE PAINT GROOVE-LIKE STRIAE REVEALED WHEN ACCIDENTALLY BROKE ALONG IT! (WH)
2	DARK SEAM (SHARPER)	0	2		4mm	090	52	180	39			0	9			OFFSETS IN REVERSE SENSE BY < 0.5mm; 2nd SEAM IP + DOWNCORE BY 1.5cm. (WH)
2	DARK SEAMS	0	2		4mm	270 270	51 24	180 180	03 01			0	9			TWO ANASTOMOSING SEAMS HENCE 2x MEASUREMENTS. (WH)
2	BDD	7	8			180	12	090	19			0	9			COARSE-GRAINED, LAYER, TAPERS TOWARD W (UPDIP). (WH)
2	bed	8	10			90	15	180	18°			0	12			POSS. SILTY layer defining bedding (AH)
2	elliptical patch	14	19			90	20					13	28			light patch of minor lithology elliptical bedding // to bedding? - measured long axis (AH)
2	DK (A) SEAM	24	24		4mm	90	0	0	3	CT		13	30			 <p>Cross cutting dark seams. (C) + (B) are ~1mm thick (A) ~1mm. C+B clearly truncate burrow in CT interval. Amount of offset along C+B not clear but likely more than width of core lenses of adjacent bedding (AH)</p>
2	DK (B) SEAM	26	27		4mm	90	10	180	2	CT		"	"			
2	DK (C) SEAM	24	28		~1mm	270	28	0	16	CT		"	"			
2	bed (D)	24	26		~1cm	90	40	194	0			"	"			
2	def band	31	31.3		<1mm	270	3	0	15	22	270	13	30?			curvilinear array of dark seams (AH)
2	bed	28	30		0.5cm	90	30°	180	20			13	30?			silt layer ~0.5cm (AH)
2	open fracture	37	39			90	25	180	16°			N/A				fracture in set of parallel fractures. may be drilling induced but is likely a primary feature that has been additionally damaged by drilling (AH)

10/1/23
14
270

10/1/11

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 1GR Observer: ^{Basal} ~~Basal~~ ^{pebble} ~~pebble~~ Summary: ^(Drilling) ~~Shattered~~ ^{gray mudstone w/ pervasive shear bands/dark bands but} ~~does not appear to be brecciated~~ like core R13

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes	
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → *1* Bottom → *-1*	top	bottom	az./trend	dip		
																	<p>Entire interval too fractured to reliably measure fracture orientations from core.</p> <p>① Bedding + ③ fracture measurements logged from CT</p> <p>→ see VCD Sheet for CT orientation measurements</p>

Structural Geology Observation Sheet

Exp.: 343 Site: C0019 Hole: C0019E Core: 18R Observer: KU/SB/CR Summary: brown silty clayey mudstone w/ probable scaly & fabric bands

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → +1° Bottom → -1°	top	bottom	az./trend	dip	
1		45.5	49			90	20	190	0			29	54			bright band in xCT in structural whole round
1		119	121			90	17	135	0			?	105	122		dark band in xCT in structural whole round
1	shear between scaly fabric	66	70			90	28	180	35			66	90			lower boundary between zone of probably scaly fabric + a cohesive, relatively non-sheared block where bedding alignment of lensoid fragments of brown + dk lithologies 2nd azimuth may not be reliable
1	shear fracture	70	80			0	25	90	22			66	90			Planar band of comminuted material that appears to be of probable nature shear origin (may be drilling too)
1	bed?	140	143			230	30	180	2							1-1.5 cm thick band of brown clay not able to discern the bed in the 3rd dimension not measured
CC	shear					230	30	180	2							probable shear band
1	long axis locentals	55	75			090	36	180	18			55	95			is this is the scaly fabric 'foliation' as per definition used for core R17. if this fabric existed pre-drilling, it has been reactivated + intensified during drilling

55

(AH)

Structural Geology Observation Sheet


Appearance of incipient breccia throughout section

Exp.: 343 Site: C0019 Hole: E Core: 15R Observer: Regalla Boso KU Summary:

Damage zone. sheared + brecciated green pumice mudstone heavy brecciated near base. Healed. too many shear bands / dark seams to measure

No.

* only measuring through-going, representative shear bands

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → * Bottom → *-1*	top	bottom	az./trend	dip	
✓ 1	dark seam	63	64			270	22	0	0			49	70			dark green <1mm seam (shear bands?) that cross-cuts brecciated green mudstone (W)
✓ 1	dark seam	65.5	66			270	18	0	23			49	70			thin <1mm dark seam that cross-cuts brecciated green m.s. (W)
✓ 1	dark seam	77.5	78.5			270	4	180	26			73	88			hairline to <1mm dark seam that X cuts breccia (W)
✓ 1	dark band	79	81.5			90	54	0	50			73	88			 dark band of variable thickness sharp upper contact + undulatory lower contact, thickness variable small inclusions of water rock light white gray material → SS 80.7cm
✓ 1	dark seam	90	91			270	12	0	18			90	102			dark seam <1mm bifurcated
✓ 1	dark seam	94	94			270	0	0	60			90	102			curvilinear dark seam cross-cuts steeply dipping dark seams
✓ 1	dark seam	100.5	101.5			270	16	0	65			90	102			curvilinear dark seam change in thickness along length
✓ 1	dark seam	104	105			90	12	180	15			102.5	112.5			curvilinear dark seam cross-cuts relatively high angle seams
✓ 1	"	105.5	106.5			270	5	0	10			102.5	112.5			dominated by anastomosing dark seams (coherent piece 102.5 - 112.5 cm)
✓ 1	"	106.5	107			270	10	0	3			102.5	112.5			
✓ CC																network of dark seams not in place + not measured

CHIKYU Operation

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C0019 Hole: E Core: 19R Observer: *Regalla* Summary: *Brown clay unit*

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → "1" Bottom → "-1"	top	bottom	az./trend	dip	
1	BED	11	12			90	20	180	30			8	14			Bedding defined by black patches broadly aligned cut by hairline fracture shear fracture (also showing a possible bedding
1	SHEAR FRACTURE	7	14.5			90	62	0	0			8	14			
1		30	35													hairline structure web of structure cutting white patches of nuclear origin
1		38	38.5													
1	BED	40	44			90	45	0	20			40	46			bedding defined by patches of dark and reddish material
1	BED	55	57			270	15	180	20			55	72			
1	BED	78	80			90	20	180	30			78	83.5			bedding defined by dark patches bedding defined by brown material hairline 0.2m of a normal displacement of the bedding
1	SHEAR FRACTURE	78	83.5			270	35	180	23			78	83.5			
1	BED	100.5	102.5			90	48	270	35							contact between dark & red material cut by a within the shear fracture
1	SHEAR FRACTURE	100.5	102.5			270	35	000	0							
2	BED	60	62			90	0	180	35			53	62			hairline fracture cutting the bedding (broadly defined by patches of different color)
2	REVERSE FAULT	58	62			270	55	000	28			53	62			
3	SHEAR FRACTURE	41.5	49			90	45	180	32			11.4	49			bedding defined by alignment of layer of dark material strongly disturbed quite difficult to define bedding orientation, strongly disturbed the patches are strongly discontinuous
3	BED?	41	47			90	13	0	26			11.4	49			

sect 1 fracture
103-5
105-110
sect 2
6-42
3
24-27
frac.
740
10

main orientation of fracture (DILLING induced) in the upper part of the sec 1
1 OPEN FRACTURE 8 23
90 20 000 0
90 45 000

Structural Geology Observation Sheet

No. _____

Exp.: 343 Site: C009 Hole: E Core: 20 Observer: KU, CR, SB Summary: brown-gray silty mudstone transition to pink/black/buff clay transition to chert
 minor to no deformation.

Section No.	Structure ID	Top of Struct	Bottom of Struct	ave. depth	Thickness of Struct	Core face app. Dip		2nd app. Dip		Striation on surface		Coherent interval (for P-mag)		P-mag pole		Notes
						az.	dip	az.	dip	rake (≤90)	from (±1, 90 or 270) * Top → +1° Bottom → -1°	top	bottom	az./trend	dip	
1	Red	83	84			270	22	180	2			83	89			Bedding is characterized by column banding from gray to dark gray → possibly from brown silty clay mudstone to mm. bearing mudstone
1	Dark Seam	83.5	84.5			270	8	180	7			83	89			measured in core split face in the dark mudstone bed.
1	Dark Seam	104	106			270	23	180	51			104	107			
2	Dark Seam	12	14			270	13	000	03			Δ	15			
2	bed	53	53.5			270	05	000	05			50	63			1st red-brown clay bed below mudstone
2	bed	56	57			270	09	000	01			50	63			1st big pink silty/clay bed
2	bed	71.5	72			90	03	000	04			70	97			bed in clay laminae very clear
2	bed	89	90 89.5			270	04	180	06			70	97			bed in clay laminae very clear
2	bed	97	97			270	03	180	06			70	97			white laminae in clay
2	bed	113.5	114			270	03	000	01			112	114			pink bed in yellow clay
2	FAULT	55	58									50	63			UNCLEAR TO WHAT EXTENT THIS IS DRILLING-INDUCED CONTACT WITH THAT BEDDING STEPS ALONG
2	FAULT	60	62			090	14	180	02			50	63			MM ALSO BE DRILLING RELATED → UNITS ABOVE + BELOW ARE V. SOFT; THRUST SENSE IN NW FACE
2	FAULT	63	70			090	55	180	10			63	84			NORMAL FAULT, TENSIONAL (NOT SURROUNDED BY V. COMPACT UNIT)
2	FAULT	94	95			090	28	330	00			70	90			V. SMALL CORE E. SIDE WITHIN D'SPL. CLOSELY TENSIONAL!

ON STRUCTURE TRACING
 *
 (A)
 (B)