

## Appendix 4

### 4.1 Vein paragenesis

During the two logging campaigns, drill core was logged and photographed. This allowed for crosscutting relationships between vein types to be developed. The matrices below show the relationships between veins in each drill core. Each “x” represents an observation of this relationship. The sequence is the most interpreted sequence of veins, based on these observations, with early veins depicted with lower numbers, “±” in this suggests similar timing and “?” depicts an uncertainty.

Abbreviations used in the matrices: Anh=anhydrite, ser=sericite, felds=k-feldspar, qtz=quartz, gran=granular, lg=light grey, dg=dark grey, vug=vuggy mag=magnetite, cpy=chalcopyrite, py=pyrite, cal=calcite, moly=molybdenite, cntr=mineral in cntr of vein, hem=hematite, dik=dickite, chl=chlorite, kaol=kaolinite, brx=breccia, carb=carbonate, musc=muscovite, dol=dolomite, mont=montmorillonite

Appendix 4: Vein paragenesis

	Sequence	Crosscutting veins										
Crosscut veins		<b>CCD 106</b>	feld/gran Qtz	mag (feld)	lg Qtz, mag (feld)	Qtz mag (cntr)	lg Qtz	Qtz eye	dg Qtz	Qtz, mag, cpy	py	cal
	1	feld/gran Qtz							x	x		
	±1	mag (feld)										
	±1	lg Qtz, mag (feld)										
	±1	Qtz mag (cntr)										
	3	lg Qtz						x?	x?	xx	xxxxxxx	
	2?	Qtz eye										
	4	dg Qtz								x	xxxxxxx	xx
	5	Qtz, mag, cpy										
	5	py										xx
	6	cal										

		Crosscutting veins				
Crosscut veins		<b>CCD 182</b>	lg Qtz	dg Qtz	vug Qtz	py
	1	lg Qtz	xx	xx	xxx	xxxx
	2	dg Qtz	x			
	3?	vug Qtz				
	4	py				

		Crosscutting veins

*Appendix 4: Vein paragenesis*

	<b>CCD 243</b>	lg qtz	lg-dg qtz cntr	qtz cpy (cntr)	mag- cpy (cntr)	mag (edge), cpy (cntr)	lg qtz- mag	mag	qtz cpy moly (cntr)	py	magmatic contact	cal
<b>Crosscut veins</b>	1	lg qtz					xx	x	x	x		x
	1	lg-dg qtz cntr					x					
	1	qtz cpy (cntr)										
	1b	mag-cpy (cntr)					x					
	1a	mag (edge), cpy (cntr)										
	2	lg qtz- mag									x	
	2	mag										
	2	qtz cpy moly (cntr)										
	2	py										
	3	magmatic contact	x									
	4	cal										





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		Crosscutting veins											
		GFD 178	anh (feld)	lg qtz (feld)	mag	lg qtz	lg qtz-mag cntr (feld)	dg qtz	lg qtz-py	py-cal	py (ser)	dg qtz-py (cntr)	py-cpy-cal
Crosscut veins	1	anh (feld)						x			x		
	1	lg qtz (feld)			x								
	2	mag				x	xxx						
	3	lg qtz					x	x	x				x
	4	lg qtz-mag cntr (feld)											
	4	dg qtz							x		xxxxx		
	5	lg qtz-py								x	x		
	6	py-cal											
	7	py (ser)											
	?	dg qtz-py (cntr)											
	> 3	py-cpy-cal											

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		Crosscutting veins								
Crosscut veins		GFD 190	rosy qtz	rosy qtz Py (cntr)	lg qtz mag (edges)	Mag	lg qtz	mag cpy	py	cal
	1?	rosy qtz								
	1?	rosy qtz Py (cntr)							x	
	1	lg qtz mag (edges)					X	x	xXx	x
	2	mag					x			
	3	lg qtz				xxx		x	xxxxXxx	
	>3?	mag cpy								
	>3	py								
	>3	cal								

		Crosscutting veins					
Crosscut veins		GFD 153	dg qtz-py (cntr)	dg qtz	py	mag	qtz-mag
	1	dg qtz-py (cntr)					
	1?	dg qtz			xxxx	x	
	>1	py					
	2	mag					
	3	qtz-mag				x	







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		Crosscutting veins														
	<b>GFD 315</b>	<b>300-400 m</b>	feld	mag (feld)	Kaol	qtz- mag	Py-cal (chl)	vug qtz- cal	lg qtz	Py-cpy (chl)	Py (chl)	Py-mag (chl)	Py-hem (chl)	Py-cpy-mag (chl)	cal	
<b>Crosscut veins</b>	?	feld				xxx	x			xx						
	2	mag (feld)				x						x				
	2?	Kaol				x										
	3	qtz-mag					xx	x	xx	xx	xxx	x			xx	
	3+	Py-cal (chl)														
	3+	vug qtz-cal														
	4	lg qtz									xx	xx	x	xx	x	xx
	4+	Py-cpy (chl)														x
	4+	Py (chl)														x
	4+	Py-mag (chl)														
	4+	Py-hem (chl)														
	4+	Py-cpy-mag (chl)														
5	cal															



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		Crosscutting veins																			
	GFD 315	600-800 m	lg qtz-z	lg qtz-mag	py-anh (ser)	mag	lg qtz-mag (feld)	feld	mag (feld)	Multi qtz-mag	D ggq tz	py-cpy (chl)	magmatic contact	rosy qtz-mag	anhy-cpy-moly (chl)	carb-ser-py-moly	Py	py (chl)	cal-py	cal	vug cal-cpy (chl)
Crosscut veins	1	lg qtz				x						x			x		x	x		x	
	1a	lg qtz-mag			x			x	x	x	x	xx						x	x		
	1a+	py-anh (ser)																			
	1b	mag	xx	x						x	x	x					x	x	x	x	
	1b?	lg qtz-mag (feld)	x									x			x	x					
	1b	feld				x											x	xxx	x		
	1b	mag (feld)	xx									x	x	x			x				
	1b+	Multiqtz-mag										x								x	



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		Crosscutting veins																		
GFD 315	600-800 m	lg qt z	lg qt z-mag	py-anh (ser)	m a g	lg qt z-mag (feld)	f e l d	mag (feld)	Multi qt z-mag	D gq tz	py-cpy (chl)	magma tic contact	rosy qt z-mag	anhy-cpy-moly (chl)	carb-ser-py-moly	P y	py (chl)	ca l-py	c a l	vug cal-cpy (chl)
?	vug cal-cpy (chl)																			

		Crosscutting veins																		
GFD 315	800-1000 m	feld	rosy qt z	musc-moly-cpy	qt z-anh	Multi qt z	lg qt z	qt z-py	py-musc	py (ser)	musc (chl)	anhy-cpy-moly	py (chl)	cpy-py-mag	cal-cpy-moly (ser)	p y	py-cpy (chl)	c a l	carb-dol?	
Crosscut veins	1	feld					xxx xx	x	xx	xxx x				x					x x	
	1	rosyqtz																x		
	1	musc-moly-cpy												x						
	1	qtz-anh												x						
	1	Multi qt z																x		
	2	lg qt z								xxx xx	x	x			x	x	x	xx	x	
	2	qtz-py								x										
	2	py-musc												x						

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		<b>Crosscutting veins</b>																		
<b>GFD</b>	<b>800-1000 m</b>	feld	rosy qtz	musc- moly- cpy	qtz- anh	Multi qtz	lg qtz	qtz -py	py- mus c	py (ser )	musc (chl)	anh- cpy- moly	py (chl )	cpy- py- mag	cal-cpy- moly (ser)	p y	py-cpy (chl)	c a l	carb- dol?	
3	py (ser)																x			
3	musc (chl)																x			
3	anh- cpy- moly																			
3	py (chl)																	x	x	
3	cpy-py- mag																			
3	cal-cpy- moly (ser)																			
3	py																	x		
post- 3	py-cpy																			
4	cal																			
4	carb- dol?																			





