GEYSERS FELSITE

WELLS ANG-1 to GDC-5

GL04330

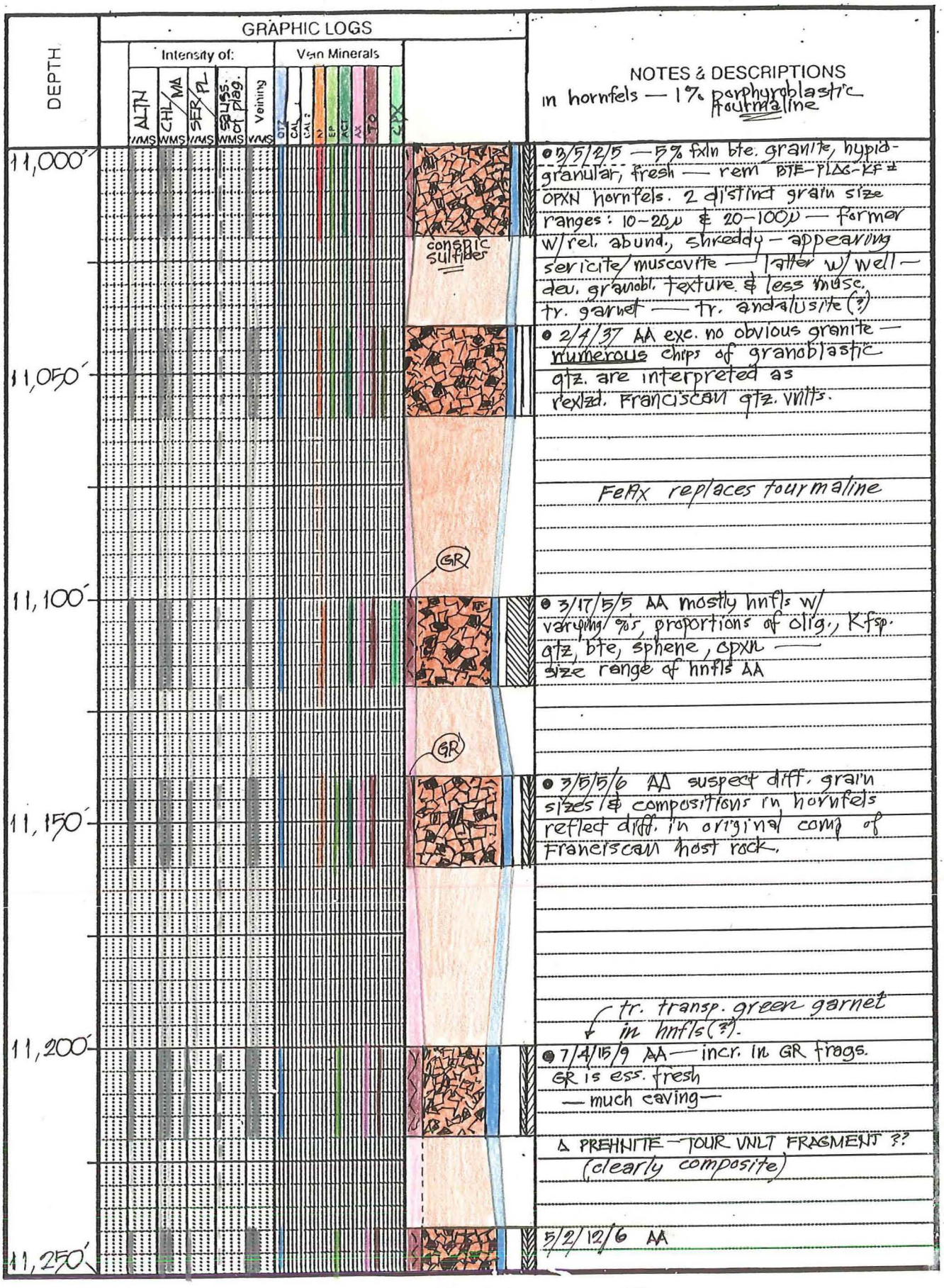
DEPTH	GRAPHIC LOGS: Intensity of: ALTN /MS	CH/MA WMS	SER/PL /MS	Stress of plag WMS	Veining /MS	Vein Minerals: QTZ	CAL	CAL?	EP	ACT	TO	CPX	LITHOLOGY AND CONTAMINANTS	NOTES & DESCRIPTIONS
11,250'														gr contains minor hbl.
														tr. tourmaline/plagioclase ⇩
														sev. chips and ppy encapsulated in rust
11,300'														• % intrusive increases: HORNBLENDE-BIOTITE-OPX GRANITE, hypid.-granular avg. grain size 0.1-0.2 mm up to 0.5 mm (at least) prob. ~5% TL mafics — NO ACICULAR RUTILE BUT TR APATITE — could be a mafic differentiate of the East Geysers granodiorite
														• (AA)
11,350'														note: further search reveals more rutile — suspect PX is a GRP-GR hybrid as in GDC-21. ⇩
11,400'														• AA, but much less contam. only tr. rutile, but quite abundant apatite — also (hbl) — suspect this is variant of East Geysers granodiorite — rock is quite fresh — tr. epidote, tr tourm. after plag.
11,440'														• GRANITE becomes much coarser-grained (at least 0.30 mm); much more acicular rutile appears; hornblende diminished; also less apatite — this rock really looks like the typical Geysers granite rather than the GRD — exc. for the hbl.
TD														

Borehole No. ANG-1

Depth Interval 11,250-11,440'

Logged By JH

Date



Borehole No. ANG-1

Depth Interval 11,000 – 11,250'

Logged By JH

Date

vvv 0.3%
vv 0.2%
v 0.1%
. <0.1%

ANG-1 RECALC. TO ELIMINATE CONTAMINATION

MINERALOGY, APPROX. WT.% ☐ (or) RELATIVE ABUNDANCE ☐

SAMPLE NO.	QUARTZ	PLAGIOCL.	K-FELDSP.	CALCITE	OPAL / CPX	ACTINOLITE	EPIDOTE	PREHNITE	ILMENITE / MAGNETITE / SPHENE / LEUCOXN.	PYRITE / CPY	TOURMALINE	FERROAXINITE	BIOTITE	ILLITE / phen	CHLORITE	TALC / PYROPH.	SERPENTINE	"RUTILE"	APATITE	VEIN FRAGS & VEINS	TL contam.	
11,000-20	35	22	5		4/Tr	2	Tr		1	2	2/Tr	3	1	11	9	13					6	10	
11,040-60	28	19	6		4/1	2	TR		1	2	1/Tr	6	1	15	8	12					8	9	
11,100-25 (26)	~~36~~	~~24~~ (17)	~~16~~ (6)		4/1	3	1		1	3	1/Tr	4	1	(12)	8	~~12~~ (11)					7	25	
11,140-60	25	17	6		4/TR	2	1	TR	2	3	2/Tr	4	2	13	8	11					7	14	
11,200-20	23	18	6		4/Tr	4	3	1	1	3	2/Tr	5	1	13	8	11					12	26	Tr. garnet
11,240-60	32	18	9		2/Tr	2	1	1	(1)	2	2/Tr	4	1	12	6	7					7	10	
11,300-20	35	25	15		2/—	2/2	2	TR	TR	1	Tr/Tr	2	2	7	2	3			✓		7	40	
11,340-60	37	27	17		2/—	2/Tr	2	TR	1	1	1/Tr	4	2	8	2	4			✓		12	51	
11,400-20	41	29	18		3/—	1/1	1	—	Tr	1	Tr/—	1	TR	3	TR	1		.	✓		4	27	
11,440-60	37	32	20		2/—	1/Tr	2	—	Tr	1	Tr/—	1	TR	3	TR	1		vv	.		5	13	

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE , EARTH SCIENCE LABORATORY

* mag scale in large part

ANG-1 - raw #'s

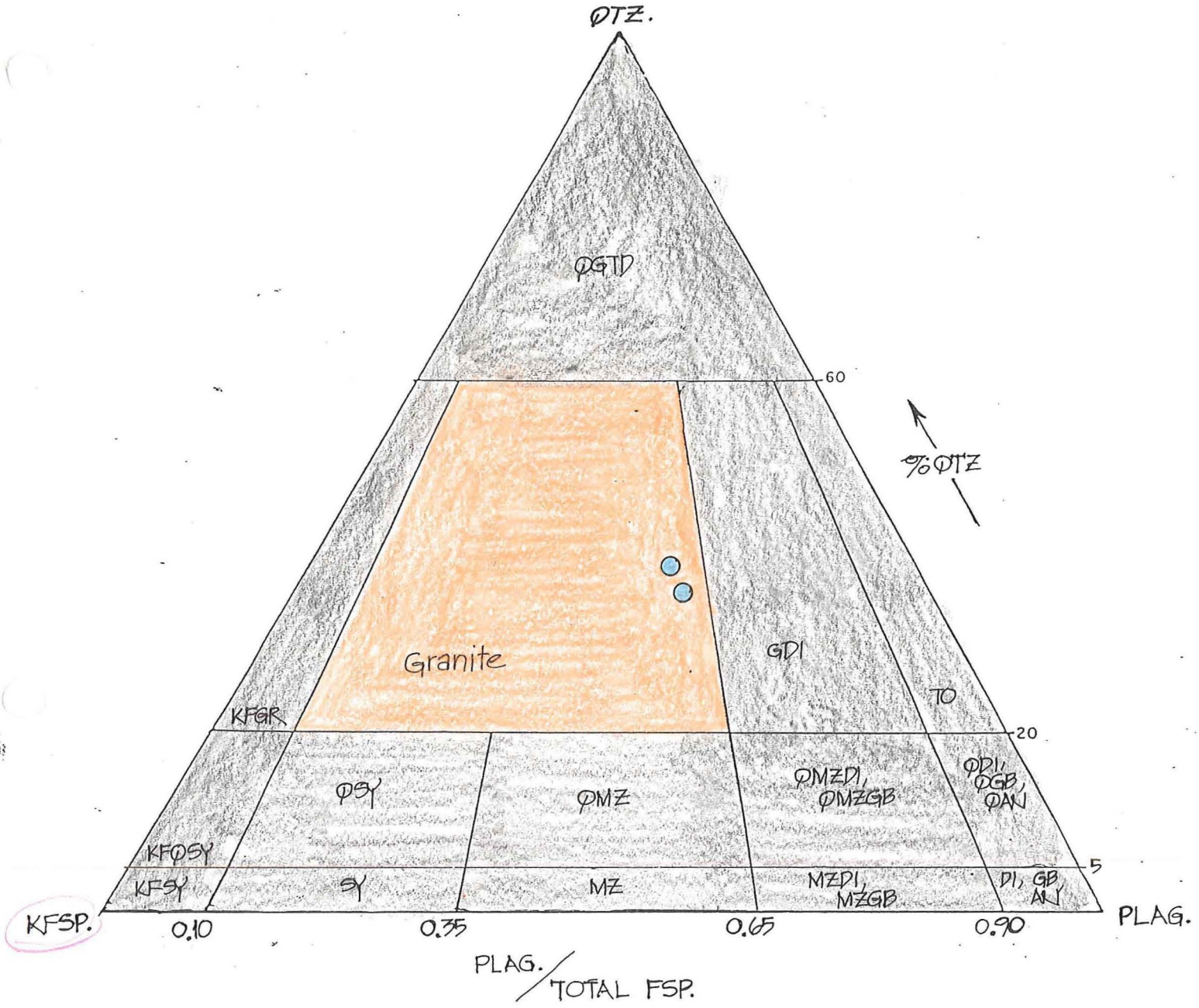
MINERALOGY, APPROX. WT.% ☐ (or) RELATIVE ABUNDANCE ☐

SAMPLE NO.	QTZ	PL	KF	CAL	OPX/CPX	ACT/HORN-BLENDE	EP	PR	ILM/MAG	SPH/LEUC.	PY/CPY	TOUR	FeAX	BTE	ILLITE	CHL	TALC/PYROPH	SERP		VEIN FRAGS.	"RUTILE"	APATITE	RUST	STEEL	CAVED FRAGMENTS	CEMENT	TOTAL CONTAMI-NANTS.
11,000 - 20'					4/Tr	2	TR		1	2	2/Tr	(3)	(1)	10	8	12				5			5	3	2		10
11,040 - 60'					4/1	2	TR		1	2	1/Tr	(5)	(1)	13	7	11				7			4	2	3		9
11,100 - 20					3/1	2	1		1	3	1/Tr	(3)	(1)	10	7	9				5			17	3	5		25
11,140 - 60					3/Tr	2	1	Tr	2	5	2/Tr	(3)	(2)	11	7	9				6			5	3	5	1	14
11,200 - 20'					3/Tr	3	(2)	1	1	2	2/Tr	(4)	(1)	11	6	8				9			4	7	15		[crossed out] 26
11,240 - 60'					2/Tr	2	(1)	1	1	2	2/Tr	(4)	(1)	11	5	6				6			2	5	12		10
11,300 - 20'					1/–	1/(1)	(1)	TR	TR	1	TR	(1)	(1)	4	1	2				4		✓	15	5	10		(40) ~~38~~
11,340 - 60' F?					1/–	1/(TR)	(1)	TR	1	1	(1)	(2)	(1)	4	1	2				6		✓	23	3	25		(51)
11,400 - 20 F					2/–	1/(1)	(1)	—	Tr	1	TR	(1)	TR	2	TR	1				3	Tr.	✓	15	5	7		(27) [crossed out]
11,440 - 60' F					1/–	1/(Tr)	(2)	—	Tr	Tr	(TR)	(1)	TR	3	Tr	1				4	✓✓	Tr	6	4	3		13

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE , EARTH SCIENCE LABORATORY



ANG-1 : FELSITE COMPOSITIONS

(2 SAMPLES ONLY)

ANGELI 1
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)
1				S35E		
2	199	199	0.75	S35E	-1.07	0.75
3	386	386	1.75	S53E	-4.00	3.58
4	581	581	3.75	S51E	-9.76	10.95
5	760	759	3.00	S66E	-15.27	19.94
6	856	855	2.50	S71E	-16.96	24.22
7	1013	1012	2.00	S84E	-18.29	30.24
8	1138	1137	1.50	S73E	-19.05	33.98
9	1264	1263	1.50	S62E	-20.31	37.03
10	1375	1374	1.50	N60E	-20.26	39.93
11	1499	1498	2.25	S27E	-21.41	43.82
12	1593	1592	2.25	S38E	-24.53	45.81
13	1654	1653	2.00	S41E	-26.27	47.25
14	1748	1747	1.75	S38E	-28.65	49.20
15	1874	1873	2.00	S30E	-32.06	51.51
16	2059	2057	10.50	S23E	-50.09	60.49
17	2151	2148	2.00	S22E	-59.34	64.33
18	2401	2398	1.75	S14E	-67.12	66.85
19	2623	2620	1.75	S10E	-73.75	68.26
20	2750	2747	1.75	S17E	-77.52	69.17
21	2876	2873	1.75	S23E	-81.14	70.49
22	3003	3000	2.00	S17E	-85.04	71.91
23	3115	3112	1.50	S13W	-88.46	72.03
24	3268	3265	2.00	S39W	-92.66	69.98
25	3489	3485	3.00	S29W	-100.65	64.59
26	3622	3618	3.50	S36W	-107.01	60.54
27	3717	3713	4.00	S32W	-112.16	57.06
28	3717	3713	4.00	S32W	-112.16	57.06
29	3961	3956	5.25	S35W	-128.57	46.20
30	4085	4080	5.25	S37W	-137.75	39.53
31	4241	4235	5.50	S34W	-149.65	31.05
32	4358	4351	6.00	S36W	-159.25	24.32
33	5070	5059	6.00	N42W	-163.14	-50.00
34	5228	5217	6.25	S48W	-162.26	-66.83
35	5432	5419	6.25	S50W	-176.83	-83.59
36	5651	5637	6.25	S67W	-189.29	-103.92
37	6468	6448	7.50	S83W	-214.60	-198.39
38	6708	6686	6.50	S72W	-220.93	-226.94
39	6974	6951	5.75	S83W	-227.07	-254.65
40	7321	7296	5.75	N85W	-227.68	-289.41

JAN 03,1979 WEIGHTING FACTOR: 0.50

IGELI 1
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)
41	7608	7582	5.75	N77W	-223.18	-317.81
42	8357	8327	5.00	S57W	-235.36	-386.91
43	8477	8447	6.00	S53W	-241.96	-396.33
44	8588	8557	6.00	S53W	-248.94	-405.60
45	8710	8678	7.75	S46W	-258.43	-416.70
46	8791	8759	7.25	S51W	-265.43	-424.62
47	8837	8804	7.75	S53W	-269.13	-429.35
48	8980	8946	7.00	S48W	-280.81	-443.51
49	9060	9025	6.50	S48W	-287.10	-450.50
50	9175	9140	6.25	S38W	-296.44	-459.21
51	9284	9248	7.50	S39W	-306.65	-467.33
52	9416	9379	8.25	S37W	-320.90	-478.47
53	9513	9475	8.50	S35W	-332.33	-486.77
54	9606	9567	8.75	S35W	-343.75	-494.77
55	9706	9665	8.50	S36W	-355.96	-503.48
56	9774	9733	8.25	S36W	-363.98	-509.30
57	9900	9857	8.75	S54W	-377.14	-522.47
58	10007	9963	8.75	S57W	-386.36	-535.88
59	10099	10054	9.25	S56W	-394.31	-547.88
60	10174	10128	9.25	S60W	-400.70	-558.11
61	10256	10209	9.00	S57W	-407.49	-569.20
62	10541	10491	8.00	S57W	-430.43	-604.53
63	10603	10552	7.25	S56W	-434.97	-611.39
64	10659	10608	7.75	S65W	-438.57	-617.75
65	10726	10674	7.00	S63W	-442.34	-625.48
66	10780	10728	7.25	S62W	-445.44	-631.42
67	10849	10796	7.50	S72W	-448.90	-639.57
68	11063	11008	9.00	S74W	-457.87	-668.94
69	11189	11133	6.00	S78W	-461.85	-684.89
70	11252	11196	5.00	S83W	-462.85	-690.85
71	11307	11250	5.75	S72W	-463.96	-695.88
72	11379	11322	5.25	S73W	-466.04	-702.46
73	11440	11383	4.25	S67W	-467.77	-707.21

JAN 03,1979 WEIGHTING FACTOR: 0.50

WELL: BIA 2 OH
LOCATION: 1797614E 410352N
SURFACE ELEVATION: 2322.
CASING SHOE: 6155.
FLOWRATE (KLBS/HR): 0.

COMMENTS: DRY HOLE-NEVER TESTED. FORMER NAME B&R UNIT.

M.D.	T.V.D	N(-S)	E(-W)	COMP. INC
0.	0.	0.	0.	0.
200.	200.	1.	1.	-100.
400.	400.	1.	3.	-100.
600.	600.	2.	4.	-100.
800.	800.	4.	6.	-100.
1000.	1000.	5.	7.	-100.
1048.	1048.	5.	8.	0.
1200.	1200.	9.	10.	-100.
1400.	1400.	13.	13.	-100.
1600.	1600.	15.	14.	-100.
1800.	1800.	16.	15.	-100.
2000.	2000.	15.	15.	-100.
2065.	2065.	15.	15.	0.
2200.	2200.	12.	16.	-100.
2400.	2399.	8.	16.	-100.
2600.	2599.	3.	14.	-100.
2800.	2798.	-3.	9.	-100.
2990.	2988.	-9.	2.	0.
3000.	2992.	-9.	2.	-100.
3200.	3191.	-18.	-12.	-100.
3400.	3391.	-27.	-26.	-100.
3600.	3590.	-35.	-40.	-100.
3800.	3789.	-43.	-54.	-100.
4000.	3989.	-51.	-68.	-100.
4007.	4002.	-52.	-69.	0.
4200.	4194.	-61.	-85.	-100.
4400.	4394.	-69.	-100.	-100.
4600.	4593.	-76.	-115.	-100.
4800.	4792.	-83.	-129.	-100.
5000.	4992.	-88.	-141.	-100.
5025.	5017.	-89.	-143.	0.
5200.	5192.	-85.	-151.	-100.
5400.	5392.	-83.	-161.	-100.
5600.	5591.	-85.	-170.	-100.
5800.	5791.	-89.	-180.	-100.
6000.	5990.	-96.	-191.	-100.
6042.	6032.	-98.	-193.	0.
6155.	6145.	-104.	-198.	-10.
6200.	6190.	-106.	-200.	-100.
6400.	6390.	-119.	-211.	-100.
6600.	6589.	-135.	-222.	-100.
6800.	6787.	-154.	-234.	-100.
6934.	6920.	-169.	-243.	0.
7000.	6985.	-180.	-249.	-100.
7200.	7181.	-212.	-268.	-100.
7400.	7377.	-244.	-285.	-100.
7600.	7574.	-276.	-301.	-100.
7800.	7771.	-308.	-316.	-100.
8000.	7968.	-340.	-329.	-100.
8050.	8017.	-348.	-332.	0.
8200.	8167.	-371.	-339.	-100.
8400.	8365.	-402.	-348.	-100.
8600.	8563.	-433.	-357.	-100.
8800.	8759.	-465.	-365.	-100.
9000.	8955.	-497.	-374.	-100.
9002.	8957.	-497.	-374.	0.
9200.	9150.	-529.	-382.	-100.
9400.	9344.	-561.	-391.	-100.
9600.	9536.	-594.	-399.	-100.
9800.	9728.	-627.	-407.	-100.
10000.	9919.	-660.	-415.	-100.
10005.	9924.	-661.	-415.	0.

OPEN HOLE DESCRIPTION

SIZE (IN)	**** INTERVAL ****** TOP	BOTTOM
8.75	6155.	9367.
8.50	9367.	10005.

WELL: BIA 2
LOCATION: 1797614E 410352N
SURFACE ELEVATION: 2322.
CASING SHOE: 6155.
FLOWRATE (KLBS/HR): 0.

COMMENTS: PLUGGED ORIGINAL HOLE AND KICKED OFF NEW HOLE AT 6248'.USED AS DISPOSAL WELL. FORMER NAME B&R UNIT RD1.

M.D.	T.V.D	N(-S)	E(-W)	COMP. INC
0.	0.	0.	0.	0.
200.	200.	1.	1.	-100.
400.	400.	1.	3.	-100.
600.	600.	2.	4.	-100.
800.	800.	4.	6.	-100.
1000.	1000.	5.	7.	-100.
1048.	1048.	5.	8.	0.
1200.	1200.	9.	10.	-100.
1400.	1400.	13.	13.	-100.
1600.	1600.	15.	14.	-100.
1800.	1800.	16.	15.	-100.
2000.	2000.	15.	15.	-100.
2065.	2065.	15.	15.	0.
2200.	2200.	12.	16.	-100.
2400.	2399.	8.	16.	-100.
2600.	2599.	3.	14.	-100.
2800.	2798.	-3.	9.	-100.
2990.	2988.	-9.	2.	0.
3000.	2992.	-9.	2.	-100.
3200.	3191.	-18.	-12.	-100.
3400.	3391.	-27.	-26.	-100.
3600.	3590.	-35.	-40.	-100.
3800.	3789.	-43.	-54.	-100.
4000.	3989.	-51.	-68.	-100.
4007.	4002.	-52.	-69.	0.
4200.	4194.	-61.	-85.	-100.
4400.	4394.	-69.	-100.	-100.
4600.	4593.	-76.	-115.	-100.
4800.	4792.	-83.	-129.	-100.
5000.	4992.	-88.	-141.	-100.
5025.	5017.	-89.	-143.	0.
5200.	5191.	-86.	-151.	-100.
5400.	5391.	-85.	-161.	-100.
5600.	5590.	-86.	-171.	-100.
5800.	5790.	-90.	-181.	-100.
6000.	5990.	-97.	-191.	-100.
6042.	6032.	-98.	-193.	0.
6155.	6145.	-103.	-199.	-10.
6157.	6147.	-103.	-199.	0.
6200.	6190.	-106.	-200.	-100.
6400.	6390.	-111.	-197.	-100.
6513.	6502.	-108.	-189.	0.
6600.	6589.	-100.	-175.	-100.
6800.	6784.	-75.	-138.	-100.
7000.	6976.	-41.	-94.	-100.
7018.	6993.	-38.	-90.	0.
7200.	7157.	18.	-34.	-100.
7400.	7336.	79.	28.	-100.
7600.	7516.	140.	92.	-100.
7619.	7533.	145.	98.	40.
7800.	7695.	200.	157.	-100.
8000.	7873.	260.	223.	-100.
8029.	7899.	269.	233.	0.
8200.	8050.	322.	293.	-100.
8310.	8148.	355.	331.	1.
8400.	8228.	382.	363.	-100.
8600.	8405.	442.	433.	-100.
8800.	8583.	500.	504.	-100.
9000.	8761.	558.	576.	-100.
9068.	8821.	577.	600.	0.
9200.	8938.	614.	647.	-100.
9400.	9116.	669.	720.	-100.
9600.	9295.	723.	793.	-100.
9800.	9473.	777.	866.	-100.
9920.	9580.	808.	910.	0.

OPEN HOLE DESCRIPTION

	**** INTERVAL ******	
SIZE (IN)	TOP	BOTTOM
8.75	6155.	9920.

WELL: BIA 3
LOCATION: 1794042E 405884N
SURFACE ELEVATION: 2534.
CASING SHOE: 4007.
FLOWRATE (KLBS/HR): 146.

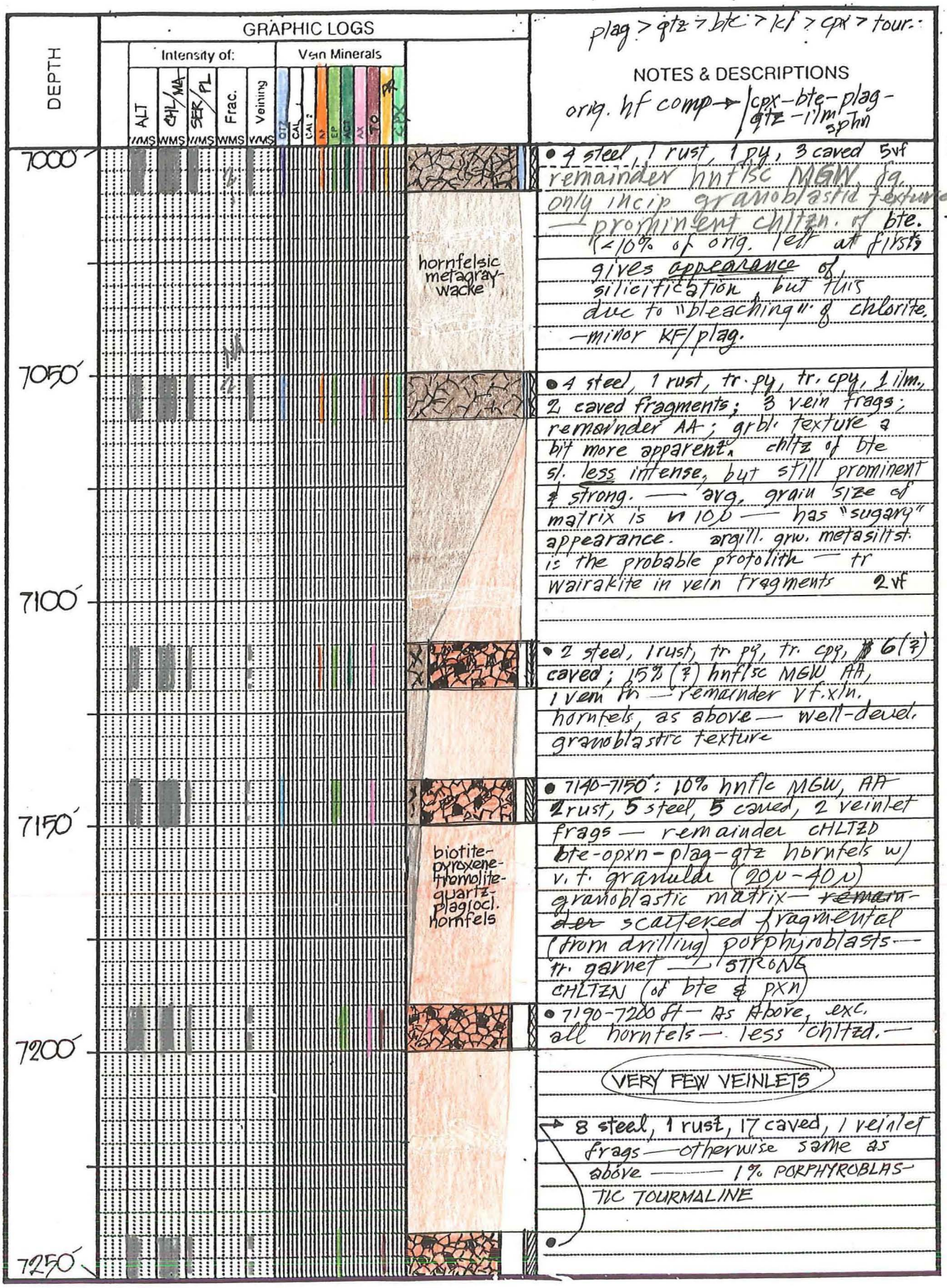
COMMENTS:

M.D.	T.V.D	N(-S)	E(-W)	COMP. INC
0.	0.	0.	0.	0.
200.	200.	29.	1.	-100.
400.	400.	53.	3.	-100.
600.	599.	70.	5.	-100.
800.	799.	81.	6.	-100.
1000.	999.	87.	8.	-100.
1035.	1034.	87.	9.	0.
1200.	1199.	73.	8.	-100.
1400.	1399.	58.	8.	-100.
1600.	1599.	44.	10.	-100.
1800.	1799.	31.	14.	-100.
2000.	1999.	20.	19.	-100.
2066.	2065.	17.	21.	0.
2200.	2201.	-4.	21.	-100.
2400.	2403.	-25.	26.	-100.
2600.	2602.	-33.	35.	-100.
2800.	2800.	-29.	49.	-100.
3000.	2996.	-11.	68.	-100.
3004.	3000.	-11.	68.	0.
3200.	3256.	35.	97.	-100.
3400.	3473.	87.	128.	-100.
3600.	3657.	146.	163.	-100.
3800.	3815.	212.	199.	-100.
4000.	3951.	284.	238.	-100.
4007.	3955.	287.	240.	0.
4007.	3955.	287.	240.	-10.
4066.	3991.	310.	252.	0.
4200.	4111.	368.	280.	-100.
4400.	4286.	458.	324.	-100.
4600.	4454.	554.	372.	-100.
4679.	4519.	593.	392.	-3.
4745.	4573.	626.	409.	-3.
4800.	4617.	654.	424.	-100.
5000.	4774.	761.	479.	-100.
5003.	4776.	762.	480.	0.
5200.	4919.	883.	543.	-100.
5400.	5062.	1007.	608.	-100.
5600.	5203.	1131.	675.	-100.
5800.	5342.	1256.	744.	-100.
6000.	5480.	1382.	816.	-100.
6032.	5502.	1402.	827.	0.
6200.	5612.	1512.	890.	-100.
6400.	5744.	1642.	966.	-100.
6600.	5876.	1770.	1044.	-100.
6800.	6009.	1897.	1123.	-100.
7000.	6142.	2022.	1203.	-100.
7007.	6147.	2027.	1206.	0.
7200.	6283.	2143.	1281.	-100.
7400.	6421.	2264.	1361.	-100.
7600.	6556.	2384.	1445.	-100.
7800.	6689.	2505.	1532.	-100.
8000.	6820.	2626.	1622.	-100.
8089.	6877.	2680.	1663.	0.
8171.	6926.	2734.	1703.	10.
8200.	6943.	2752.	1717.	-100.
8400.	7063.	2879.	1815.	-100.
8600.	7184.	3002.	1915.	-100.
8800.	7308.	3120.	2018.	-100.
8860.	7345.	3155.	2049.	10.
8875.	7354.	3164.	2057.	10.
8890.	7364.	3173.	2065.	5.
8898.	7369.	3177.	2069.	5.
9000.	7433.	3235.	2123.	-100.
9053.	7466.	3265.	2151.	0.
9200.	7559.	3347.	2230.	-100.
9326.	7640.	3415.	2299.	32.
9385.	7678.	3446.	2331.	0.

OPEN HOLE DESCRIPTION

	**** INTERVAL ******	
SIZE (IN)	TOP	BOTTOM
8.75	4007.	9385.

some lrgr. pcs appear to contain porphyroblastic tourmaline.



plag > qtz > bte > kf > cpx > tour.

NOTES & DESCRIPTIONS

orig. hf comp → cpx-bte-plag-qtz-ilm-sphn

- 4 steel, 1 rust, 1 py, 3 caved 5vf remainder hnflsc MGW, fg. only incip granoblastic texture — prominent chltzn. of bte. (<10% of orig. left at first); gives appearance of silicification, but this due to "bleaching" & chlorite. — minor KF/plag.
- 4 steel, 1 rust, tr. py, tr. cpy, 1 ilm, 2 caved fragments; 3 vein frags; remainder AA; grbl. texture a bit more apparent. chltz of bte sl. less intense, but still prominent & strong. — avg. grain size of matrix is ~ 10μ — has "sugary" appearance. argill. grw. metasilt st. is the probable protolith — tr wairakite in vein fragments 2 vf
- 2 steel, 1 rust, tr. py, tr. cpy, ~ 6(?) caved; 15% (?) hnflsc MGW AA, 1 vein fr — remainder vf.x'ln. hornfels, as above — well-devel. granoblastic texture
- 7140-7150': 10% hnflc MGW, AA 2 rust, 5 steel, 5 caved, 2 veinlet frags — remainder CHLTZD bte-opxn-plag-qtz hornfels w/ v. f. granular (20μ-40μ) granoblastic matrix — ~~remainder~~ scattered fragmental (from drilling) porphyroblasts — tr. garnet — STRONG CHLTZN (of bte & PXN)
- 7190-7200 ft — As Above, exc. all hornfels — less chltzd. —

VERY FEW VEINLETS

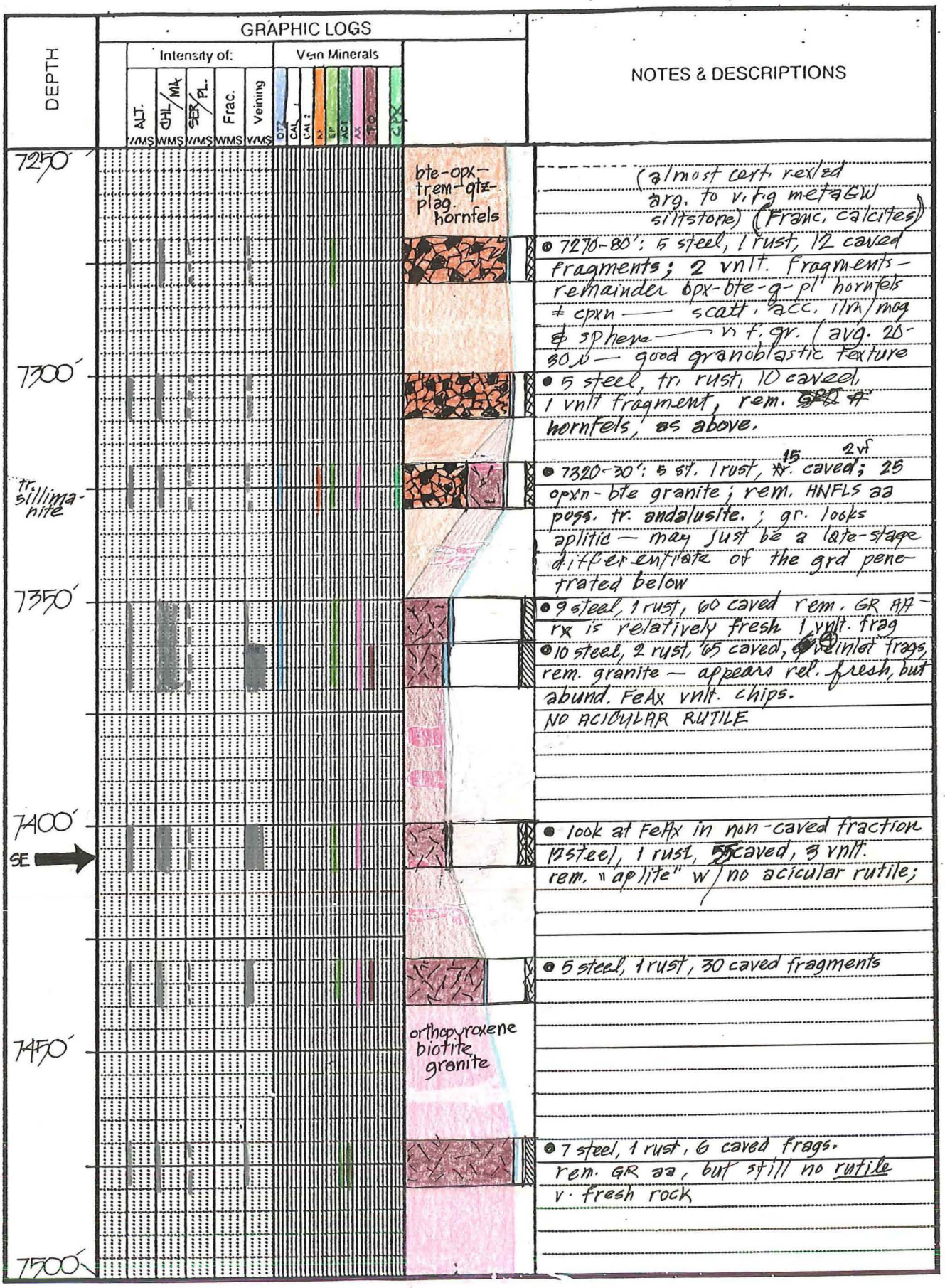
- 8 steel, 1 rust, 17 caved, 1 veinlet frags — otherwise same as above — 1% PORPHYROBLASTIC TOURMALINE

Borehole No. C11-RD2

Depth Interval 7000-7250 ft

Logged By JH

Date

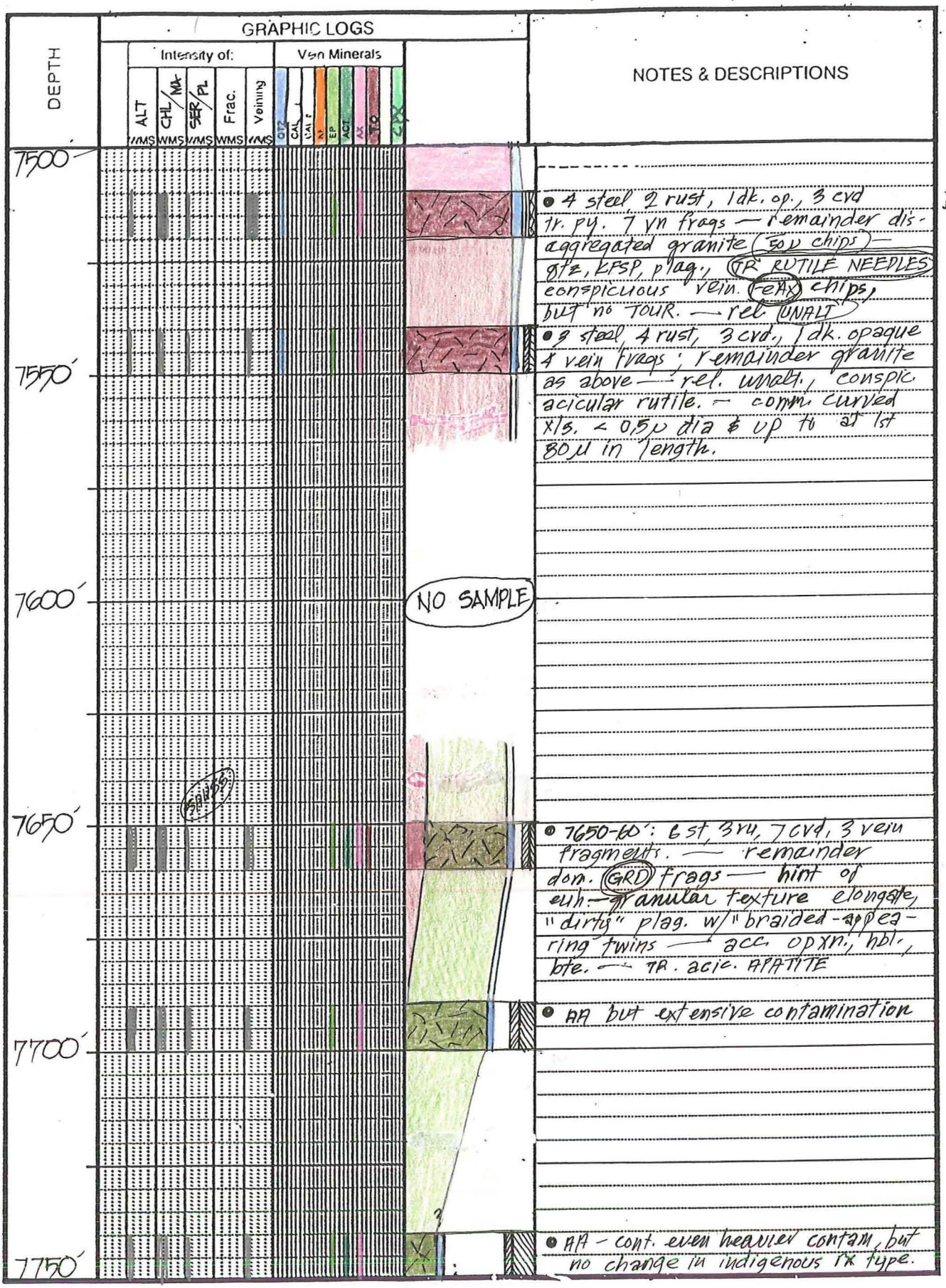


Borehole No. C11 RD2

Logged By JH

Depth Interval _____

Date _____



tr. vn chl, too

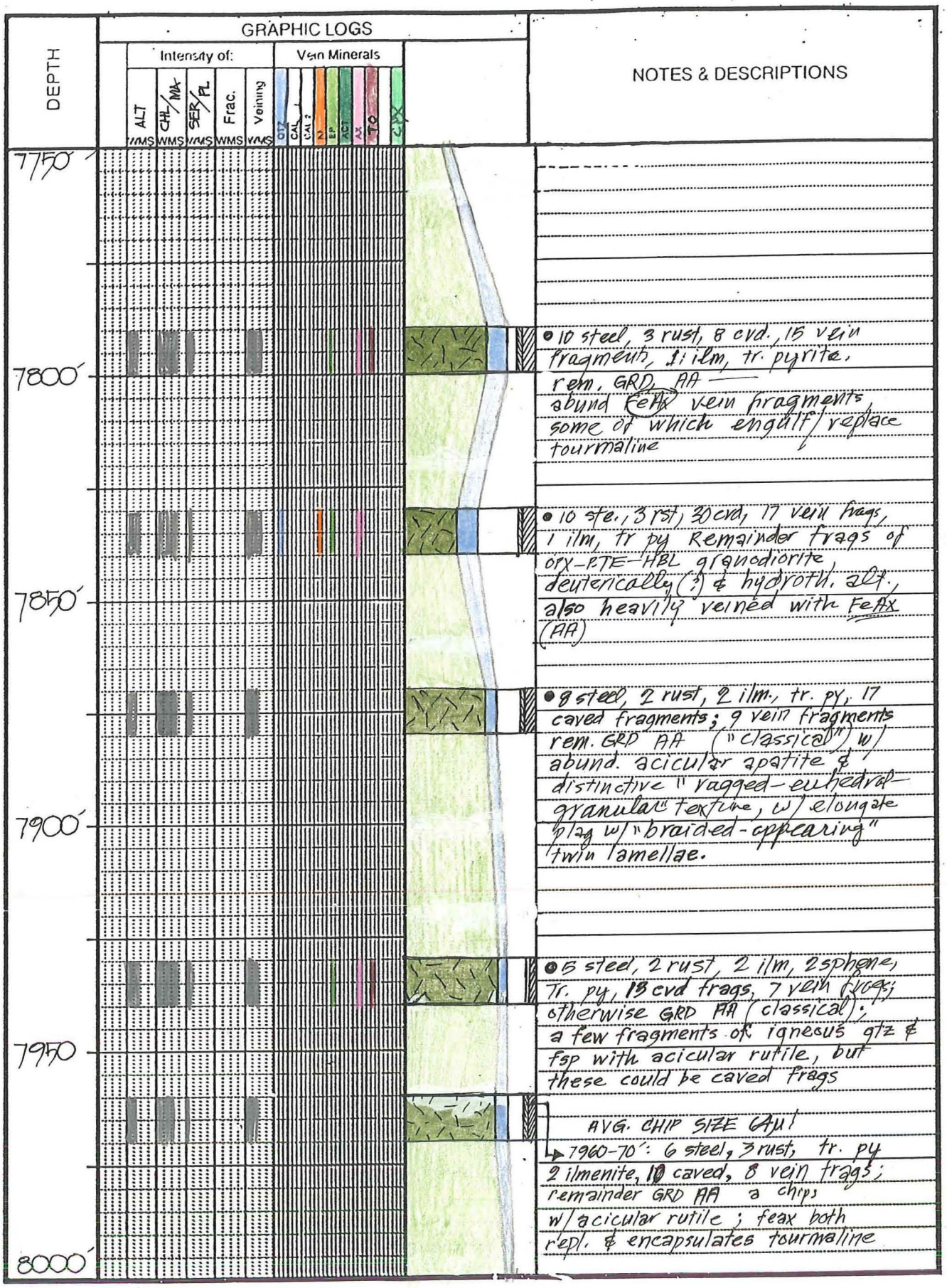
80μ

Borehole No. d11-RD2

Logged By JH

Depth Interval

Date

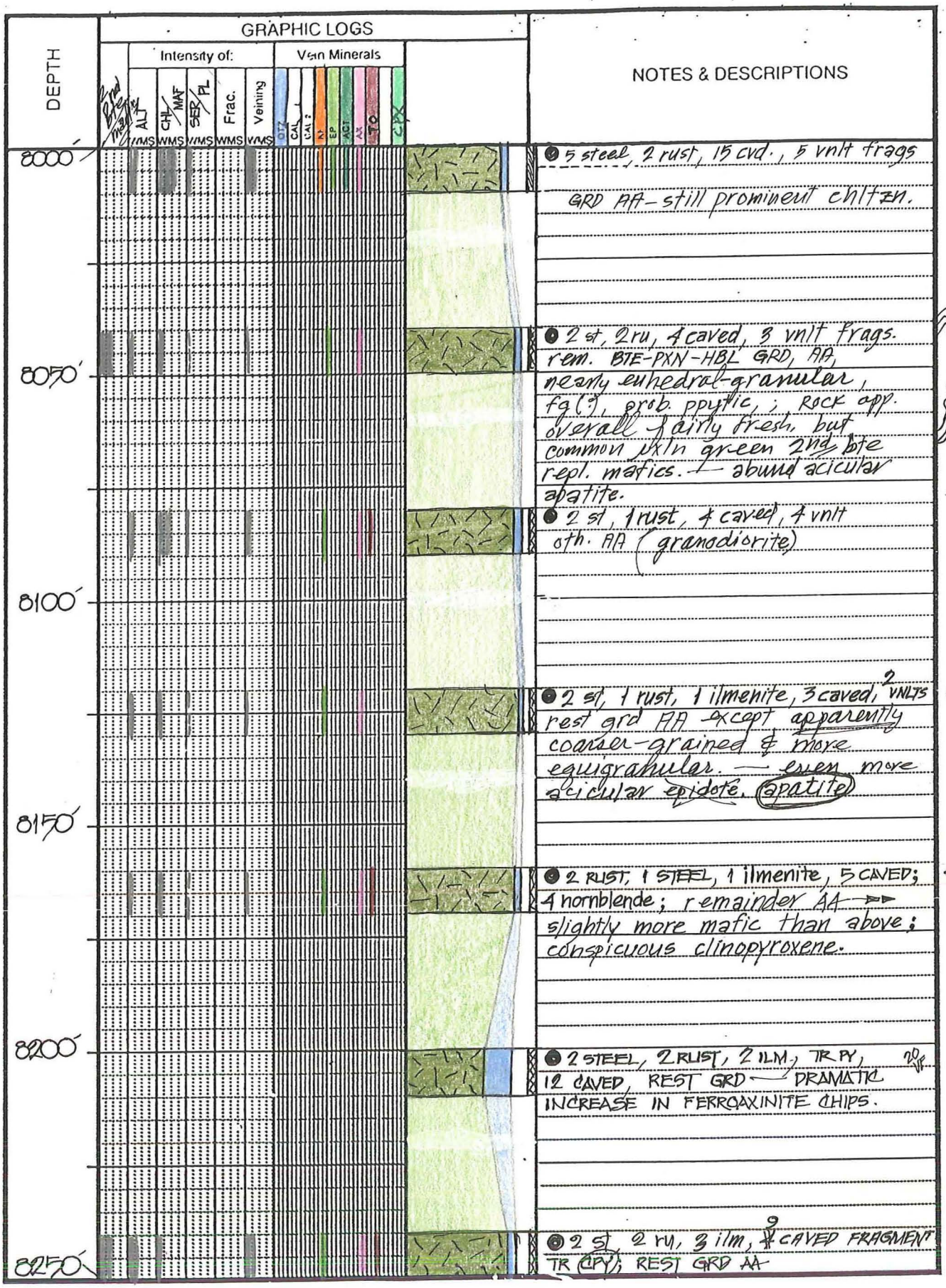


Borehole No. 11-RD2

Logged By JH

Depth Interval

Date



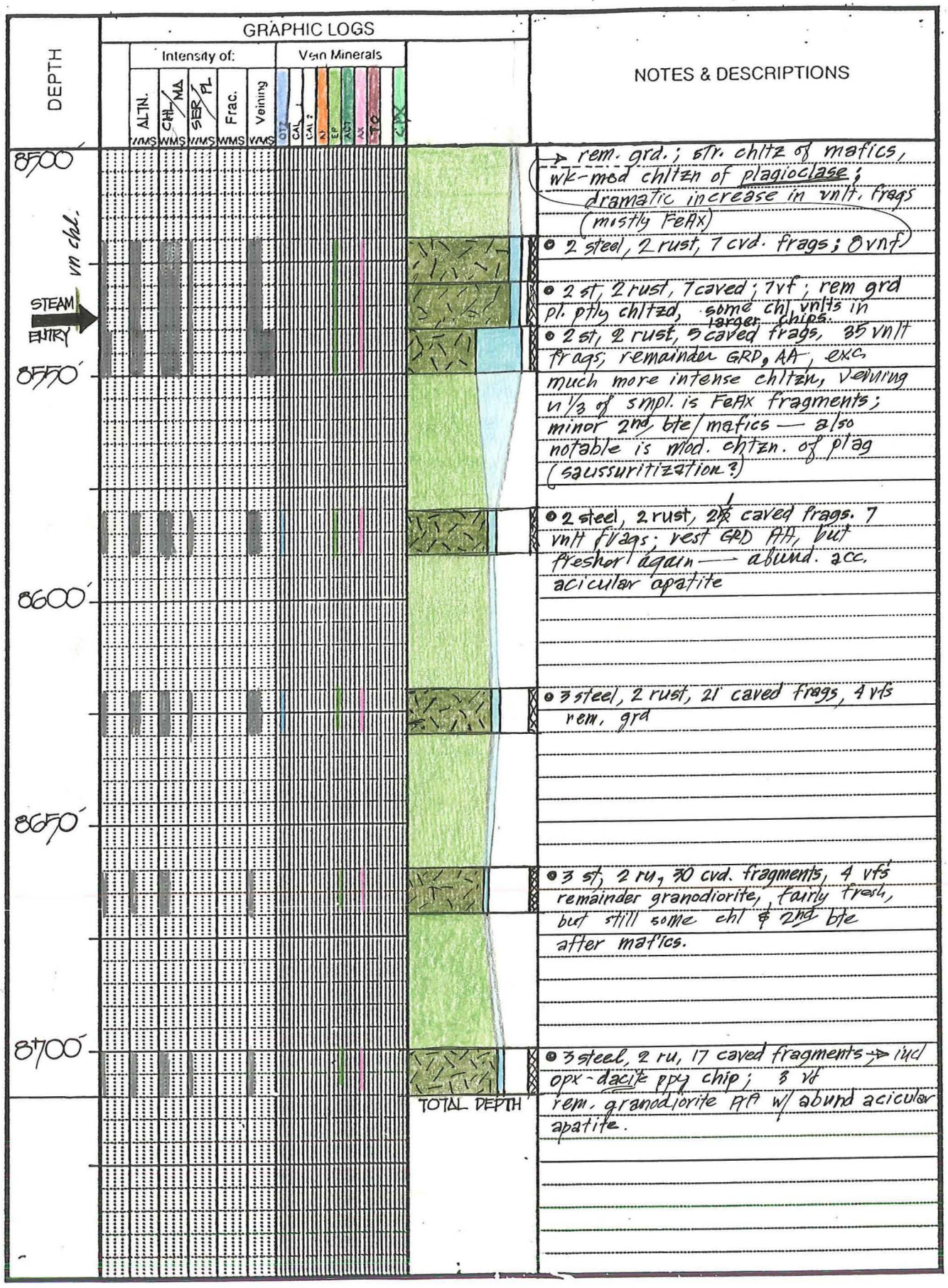
Borehole No. C11-RD2

Logged By JH

Depth Interval

Date

vwk <2
w 2-5
m 5-10
s 10-20
vs >20



Borehole No. C11-RD2

Depth Interval 8500-8710'

Logged By JH

Date

C-11
RECALC. TO ELIM. CONT.

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

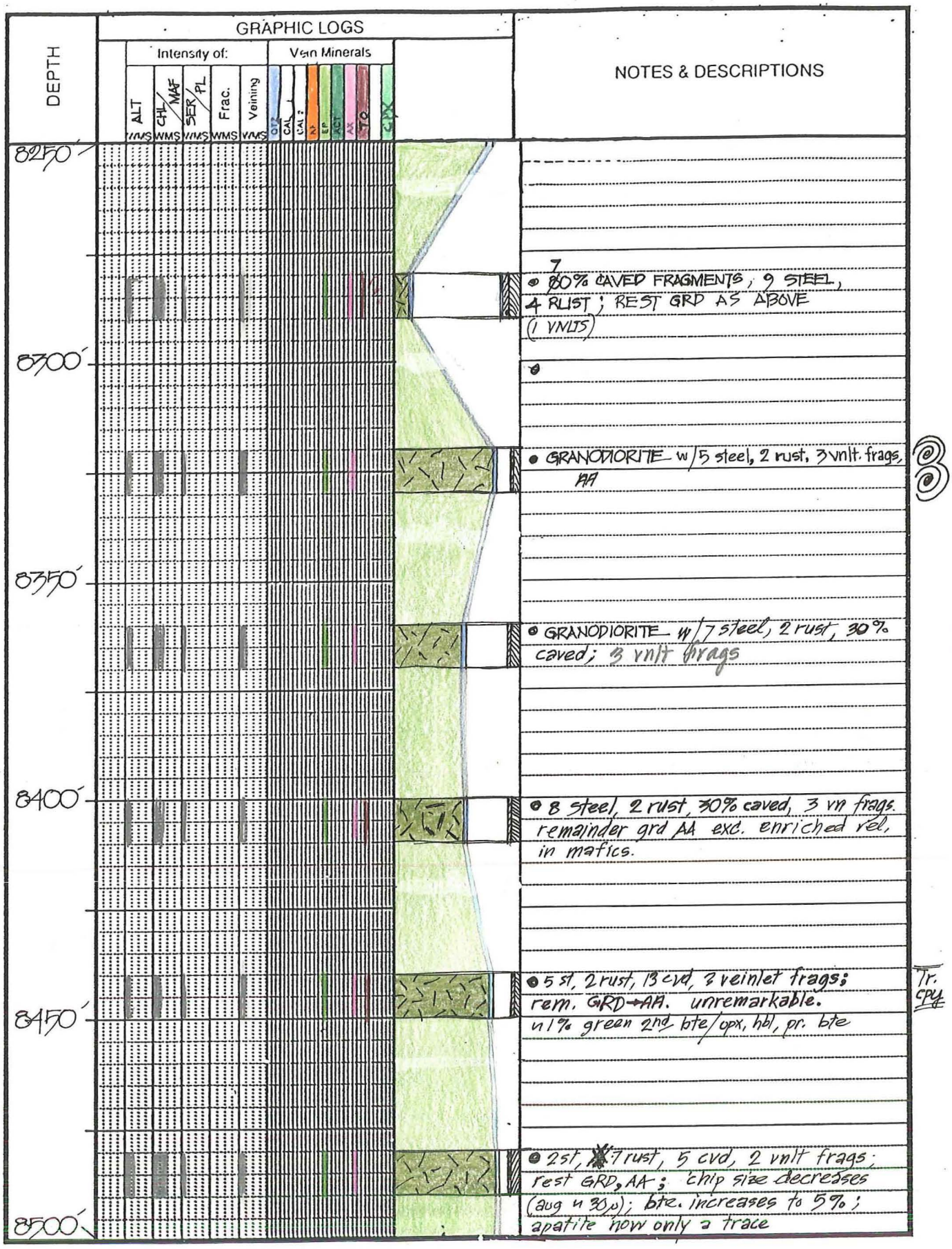
UNIVERSITY OF UTAH RESEARCH INSTITUTE, EARTH SCIENCE LABORATORY

APPROX. WT. %*

SAMPLE NO.	QUARTZ	PLAGIOCL.	K-FELDSP.	CALCITE	OPX / CPX	ACTINOLITE / HBL.	EPIDOTE	PREHNITE	ILMENITE / MAGNETITE	SPHENE / LEUCOXN.	PYRITE / CPY	TOURMALINE	FERROAN.	BIOTITE	ILLITE	CHLORITE	TALC / PYROPH.	SERPENTINE	TREMOLITE	other	TOTAL VEINLET FRAGMENTS
7000-10'				3	1		2	1	1	3	1	3	1	2	4	18					5
7050-60'				5	1		1	1	1	3	TR	2	1	4	5	16					3
7110-20'				10	2		1	1	1	4	TR	–	TR	4	4	12			6	Tr. vein wair.	2
7140-50'				15	3		1	–	2	3	TR	–	TR	7	8	19			3		2
7190-7200'				20	6	2	TR	TR	1	4	TR	TR	TR	9	8	14			7		2
7240-50'				(23)	(7)	(3)	(1)	–	(1)	(4)	TR	TR	TR	TR	(11)	(7)	(18)			(7)		(1)
7270-80'				33	4	2	TR	TR	1	4	1	–	–	9	6	7			6		2
7300-10'				29	5	2	TR	TR	1	4	1	–	–	9	5	6			8		2
7320-30'				20	4	2	TR	TR	1	4	TR	–	TR²	7	4	5			6		2
7340-50'				(1)	–	(TR)	(1)	(TR)	(1)	(TR)	TR	–	TR	(2)	(TR)	(1)			–		(3)
7360-70'				(1)	–	(TR)	(2)	(1)	(1)	(TR)	–	(2)	(17)	(2)	(1)	(1)			–		(21)
7400-10'				(1)	–	(TR)	(2)	(1)	(1)	(TR)	TR	–	(9)	(2)	(TR)	(1)			–		(11)
7430-40'				(1)	–	(TR)	(2)	(TR)	(1)	(TR)	TR	–	(3)	(1)	(TR)	(2)					(5)
7470-80'				1	–	(TR)	TR	–	TR	1	TR	TR	TR	–	TR	TR					(2)
7510-20'				1	–	(TR)	1	–	TR	TR	TR	–	8	TR	TR	TR					(9)
7540-50'				TR	–	TR	1		TR	TR	TR	TR	3	TR	1	TR					4
7650-60'				2	2	2	1		1	1	–	5	1	TR	1	TR				HORNBLENDE APPEARS	4
7690-7700'				3	2	3	3		1	1	–	1	4	3	TR	1					8
7740-50'				(3)	(1)	(2)	TR		(3)	(2)	TR	(4)	(2)	(4)	(1)	(4)					7
7790-7800'				1	1	1	1		3	1	TR	4	16	2	1	5					21
7830-40'				(2)	TR	(3)	(4)		(3)	1	–	(5)	(16)	(2)	TR	(7)					(25)
7870-80'				(3)	–	(3)	(3)		(3)	(2)	TR	(1)	(10)	(2)	(TR)	(4)					(15)
7920-30'				1	1	2	3		2	1	TR	TR	6	1	TR	4					

SE ▶

( ) = contaminants > 25% — ∴ recalc. mineral % quite approx.

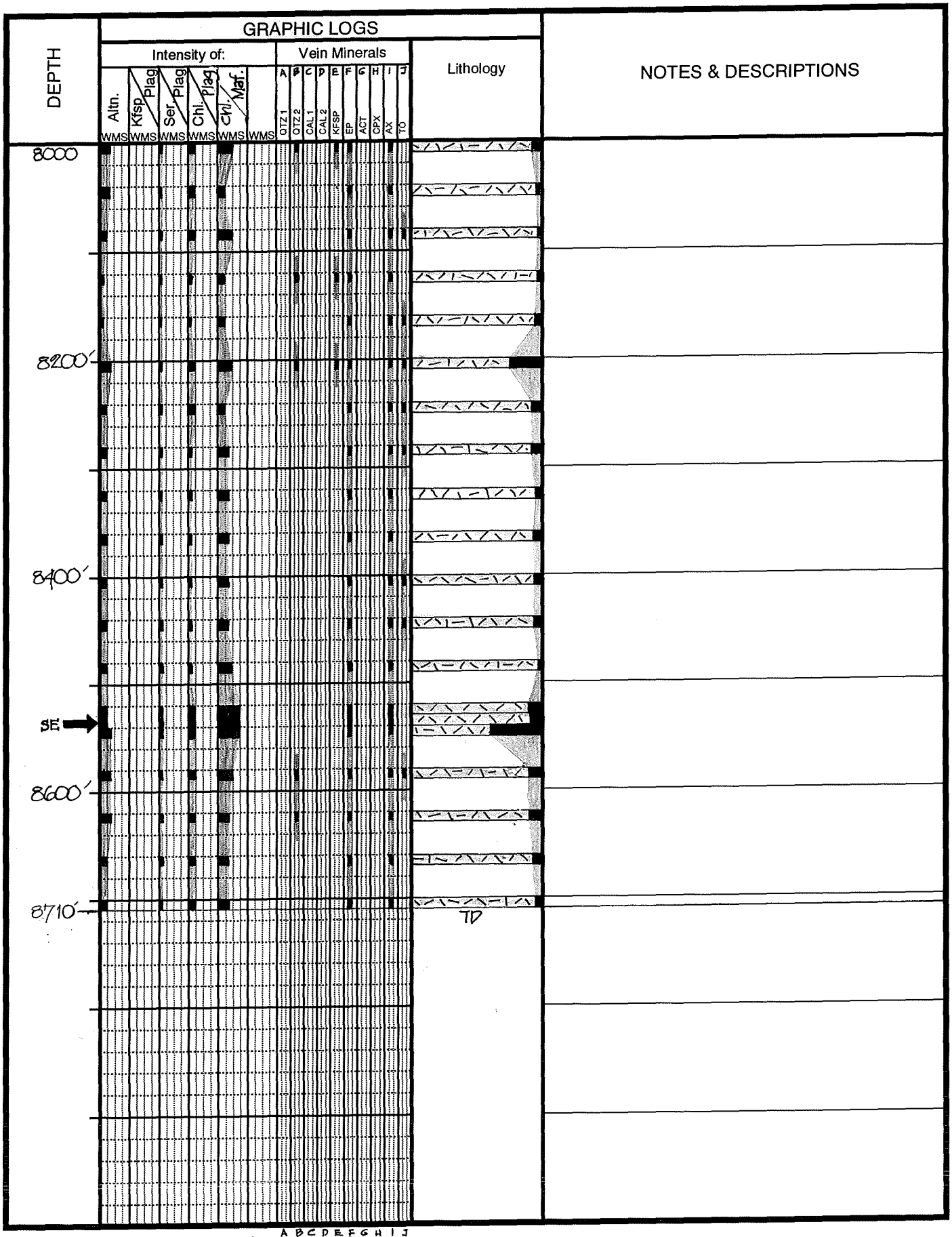


Borehole No. C11-RD2

Logged By JH

Depth Interval _____

Date _____



Borehole No. C11-RD2 (~~NCPA~~ Calpine) Location SOUTH GEYSERS Logged By J. HULEN

Depth Interval 8000-8710 ft
2438.2-2654.7 m

Date 1993

DRD INC.
Survey Report

Problem: C-11RD2
Description:
Location:
Well Number:

Date: 01/13/1994 Time: 09:28 Page: 1

SURFACE LOCATION

Surface Location
Slot
N+/-S 0.0 ft
E+/-W 0.0 ft
Latitude 0.000000 deg N
Longitude 0.000000 deg E

LAMBERT X 1793498.0 ft
LAMBERT Y 398911.0 ft
FNL 0.0 ft
FEL 0.0 ft

Location OFFSHORE
RKB Wellhead 0.0 ft
RKB MGL 0.0 ft
RKB MSL 0.0 ft
Water Depth 0.0 ft
RKB Mudline 0.0 ft

SURVEY (REFERENCED TO UTM-LAMBERT COORDINATES)

SURFACE ELEV, AND ELEV OF ALL DEPTHS

PLANNED AZIMUTH N55.00W

LAMB PTS

MD	INCL	DIREC	TVD	VERT SECT	CLOS DIST	CLOS DIREC	+N / -S	+E / -W	DLS	BUILD	WALK
ft	deg	quad	ft	ft	ft	quad	ft	ft	d/100ft	d/100ft	d/100ft
0.0	0.00	N 0.00E	-3067.0	0.0	0.0	N 0.00E	398911.0	1793498.0	0.00	0.00	0.00
209.0	0.75	S62.00W	-2858.0	1.1	1.1	N59.00W	398911.6	1793497.0	0.36	0.36	-56.46
366.0	1.25	S73.00W	-2701.0	2.6	3.5	S82.51W	398910.5	1793494.5	0.34	0.32	7.01
397.0	1.75	S61.00W	-2670.0	3.0	4.3	S79.64W	398910.2	1793493.7	1.90	1.61	-38.71
459.0	3.00	S52.00W	-2608.1	4.0	6.8	S71.05W	398908.8	1793491.6	2.10	2.02	-14.52
521.0	3.75	S34.00W	-2546.2	4.5	10.1	S61.32W	398906.2	1793489.1	2.08	1.21	-29.03
602.0	5.25	S40.00W	-2465.5	4.7	16.1	S51.97W	398901.1	1793485.2	1.94	1.85	7.41
696.0	6.00	S47.00W	-2371.9	6.1	25.3	S48.89W	398894.4	1793479.0	1.08	0.80	7.45
790.0	7.50	S49.00W	-2278.6	8.5	36.3	S48.62W	398887.0	1793470.7	1.62	1.60	2.13
884.0	9.75	S51.00W	-2185.6	12.2	50.4	S49.01W	398877.9	1793460.0	2.41	2.39	2.13
962.0	10.00	S47.00W	-2108.8	15.4	63.8	S49.01W	398869.2	1793449.9	0.94	0.32	-5.13
1026.0	9.50	S31.00W	-2045.7	16.2	74.4	S47.56W	398860.8	1793443.1	4.29	-0.78	-25.00
1055.0	9.75	S31.00W	-2017.1	15.8	79.1	S46.56W	398856.6	1793440.6	0.86	0.86	0.00
1084.0	9.25	S16.00W	-1988.5	14.9	83.5	S45.28W	398852.2	1793438.6	8.68	-1.72	-51.72
1191.0	7.00	S11.00W	-1882.6	9.4	96.7	S40.55W	398837.5	1793435.1	2.20	-2.10	-4.67
1361.0	6.25	S 1.00W	-1713.7	-0.1	113.4	S34.93W	398818.1	1793433.1	0.81	-0.44	-5.88
1503.0	6.00	S 3.00W	-1572.5	-8.4	126.3	S31.19W	398802.9	1793432.6	0.23	-0.18	1.41
1550.0	6.00	S 3.00W	-1525.8	-11.0	130.7	S30.17W	398798.0	1793432.2	0.00	0.00	0.00
1612.0	4.00	S24.00W	-1464.0	-13.0	135.9	S29.52W	398792.8	1793431.0	4.32	-3.23	33.87
1691.0	3.25	S49.00W	-1385.2	-12.8	140.8	S29.77W	398788.8	1793428.1	2.19	-0.95	31.65
1846.0	3.75	S47.00W	-1230.5	-10.7	149.8	S30.90W	398782.5	1793421.1	0.33	0.32	-1.29
2003.0	4.25	S47.00W	-1073.9	-8.4	160.3	S31.99W	398775.0	1793413.1	0.32	0.32	0.00
2160.0	4.25	S51.00W	-917.3	-5.6	171.5	S33.12W	398767.4	1793404.2	0.19	0.00	2.55
2316.0	3.50	S49.00W	-761.7	-2.9	181.6	S34.09W	398760.6	1793396.2	0.49	-0.48	-1.28
2472.0	4.00	S56.00W	-606.0	0.2	191.3	S35.05W	398754.4	1793388.1	0.43	0.32	4.49
2629.0	3.25	S49.00W	-449.3	3.2	200.8	S35.90W	398748.3	1793380.2	0.55	-0.48	-4.46
2784.0	3.00	S43.00W	-294.5	4.8	209.1	S36.31W	398742.5	1793374.1	0.27	-0.16	-3.87
2941.0	3.00	S51.00W	-137.8	6.5	217.2	S36.71W	398736.9	1793368.1	0.27	0.00	5.10
3099.0	2.75	S56.00W	20.0	9.0	224.8	S37.29W	398732.2	1793361.7	0.22	-0.16	3.16
3255.0	2.75	S48.00W	175.9	11.2	232.0	S37.76W	398727.6	1793355.9	0.25	0.00	-5.13
3412.0	2.50	S40.00W	332.7	12.3	239.2	S37.95W	398722.4	1793350.9	0.28	-0.16	-5.10
3569.0	2.00	S73.00W	489.6	14.5	244.9	S38.40W	398719.0	1793345.9	0.87	-0.32	21.02
3725.0	2.00	S66.00W	645.5	17.6	249.6	S39.05W	398717.1	1793340.7	0.16	0.00	-4.49
3882.0	1.50	S89.00W	802.4	20.8	253.4	S39.72W	398716.1	1793336.1	0.54	-0.32	14.65
4039.0	1.50	S67.00W	959.4	23.6	256.6	S40.28W	398715.2	1793332.1	0.36	0.00	-14.01
4196.0	1.00	S87.00W	1116.3	25.9	259.3	S40.73W	398714.5	1793328.7	0.42	-0.32	12.74
4351.0	1.00	N59.00W	1271.3	28.4	260.5	S41.26W	398715.1	1793326.2	0.38	0.00	21.94
4508.0	1.50	N58.00W	1428.3	31.8	261.1	S42.00W	398716.9	1793323.2	0.32	0.32	0.64
4663.0	1.50	N24.00W	1583.2	35.7	260.7	S42.87W	398719.9	1793320.6	0.57	0.00	21.94
4819.0	1.50	N13.00W	1739.1	39.0	258.7	S43.66W	398723.8	1793319.4	0.18	0.00	7.05
4976.0	1.25	N22.00E	1896.1	40.8	255.9	S44.19W	398727.5	1793319.6	0.55	-0.16	22.29
5132.0	1.50	N43.00E	2052.1	41.0	252.2	S44.36W	398730.7	1793321.6	0.36	0.16	13.46
5289.0	2.25	N21.00E	2209.0	41.3	247.3	S44.61W	398735.0	1793324.4	0.65	0.48	-14.01
5446.0	2.75	N23.00E	2365.8	42.8	240.9	S45.24W	398741.3	1793326.9	0.32	0.32	1.27
5603.0	2.25	N47.00E	2522.7	42.8	234.3	S45.53W	398746.9	1793330.9	0.73	-0.32	15.29
5759.0	2.00	N49.00E	2678.6	41.5	228.5	S45.47W	398750.8	1793335.1	0.17	-0.16	1.28
5914.0	3.00	N61.00E	2833.4	39.2	221.8	S45.18W	398754.6	1793340.6	0.72	0.65	7.74
6070.0	3.25	N51.00E	2989.2	36.2	213.5	S44.75W	398759.4	1793347.7	0.38	0.16	-6.41
6226.0	3.50	N48.00E	3144.9	33.9	204.3	S44.54W	398765.3	1793354.6	0.20	0.16	-1.92
6382.0	3.50	N52.00E	3300.6	31.4	194.9	S44.27W	398771.5	1793362.0	0.16	0.00	2.56
6537.0	3.50	N52.00E	3455.3	28.6	185.5	S43.88W	398777.3	1793369.4	0.00	0.00	0.00
6694.0	3.25	N59.00E	3612.1	25.4	176.5	S43.28W	398782.5	1793377.0	0.31	-0.16	4.46
6850.0	3.00	N54.00E	3767.8	22.3	168.2	S42.61W	398787.2	1793384.1	0.24	-0.16	-3.21
7008.0	3.25	N46.00E	3925.6	20.1	159.7	S42.22W	398792.7	1793390.7	0.32	0.16	-5.06
7166.0	3.75	N38.00E	4083.3	18.9	150.0	S42.23W	398799.9	1793397.1	0.44	0.32	-5.06

DRD INC.
Survey Report

Problem: C-11RD2 Date: 01/13/1994 Time: 09:28 Page: 2
Description:
Location:
Well Number:

SURVEY (REFERENCED TO UTM-LAMBERT COORDINATES)
PLANNED AZIMUTH N55.00W

MD	INCL	DIREC	TVD	VERT SECT	CLOS DIST	CLOS DIREC	+N / -S	+E / -W	DLS	BUILD	WALK
ft	deg	quad	ft	ft	ft	quad	ft	ft	d/100ft	d/100ft	d/100ft
7322.0	4.25	N33.00E	4238.9	18.8	139.2	S42.75W	398808.8	1793403.5	0.39	0.32	-3.21
7477.0	5.00	N41.00E	4393.4	18.3	126.8	S43.32W	398818.7	1793411.0	0.64	0.48	5.16
7637.0	8.25	N30.00E	4552.3	18.2	108.6	S44.64W	398833.7	1793421.7	2.17	2.03	-6.87
7668.0	8.50	N27.00E	4583.0	18.7	104.2	S45.33W	398837.7	1793423.9	1.62	0.81	-9.68
7730.0	8.00	N23.00E	4644.3	20.2	96.0	S47.18W	398845.8	1793427.6	1.23	-0.81	-6.45
7852.0	8.00	N25.00E	4765.2	23.5	80.6	S51.93W	398861.3	1793434.5	0.23	0.00	1.64
7942.0	9.75	N37.00E	4854.1	24.4	67.9	S56.12W	398873.2	1793441.6	2.82	1.94	13.33
8087.0	12.00	N23.00E	4996.5	26.8	45.0	S71.60W	398896.8	1793455.2	2.38	1.55	-9.66
8241.0	13.75	N20.00E	5146.6	34.8	34.9	N59.53W	398928.7	1793467.9	1.22	1.14	-1.95
8368.0	14.75	N20.00E	5269.7	42.9	50.9	N22.42W	398958.1	1793478.6	0.79	0.79	0.00
8530.0	14.00	N25.00E	5426.6	51.6	84.3	N 2.75W	398995.2	1793494.0	0.89	-0.46	3.09
8653.0	12.50	N22.00E	5546.3	57.3	110.3	N 3.74E	399021.1	1793505.2	1.34	-1.22	-2.44
8710.0	12.50	N22.00E	5602.0	60.0	122.1	N 5.55E	399032.5	1793509.9	0.00	0.00	0.00

POINTS OF INTEREST

DESCRIPTION	MD	INCL	DIREC	TVD	+N / -S	+E / -W	CLOS DIST
	ft	deg	quad	ft	ft	ft	ft
FELSITE	7350.0	4.39	N34.45E	-4266.8	398810.5	1793404.6	137.1

ELEV. (WITH SIGNS REVERSED)

THIS IS REALLY ELEVATION (W/ WRONG SIGN) NOT TVD.

TVD IS 4266.8
+ 3067. SURF ELEV
7333.8 TVD OF T/FELSITE

FELSITE TOP LOCATION IN LAMBERTS

WELL: 958-6
LOCATION: 1799503E 400953N
SURFACE ELEVATION: 2222.
CASING SHOE: 4052.
FLOWRATE (KLBS/HR): 70.

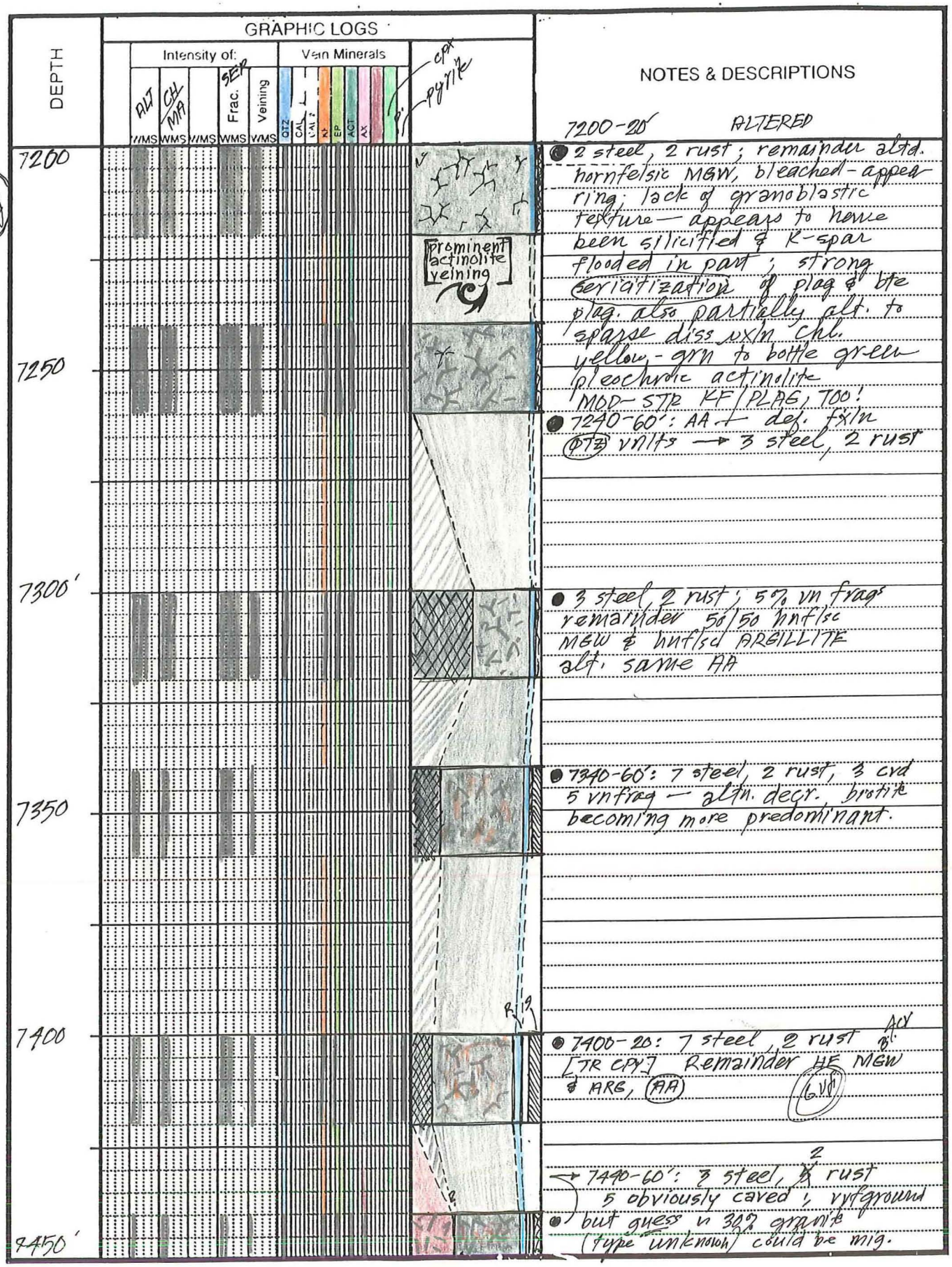
COMMENTS: CONVERTED TO INJECTION
WELL WITH 6.63" CSG TO 7834'. BH.LOC EXTRAPOLATED

M.D.	T.V.D	N(-S)	E(-W)	COMP. INC
0.	0.	0.	0.	0.
200.	200.	1.	1.	-100.
400.	400.	3.	4.	-100.
597.	597.	6.	9.	0.
600.	600.	6.	9.	-100.
800.	799.	11.	15.	-100.
1000.	999.	15.	23.	-100.
1061.	1060.	17.	26.	0.
1200.	1199.	24.	34.	-100.
1400.	1398.	29.	45.	-100.
1478.	1476.	29.	49.	0.
1600.	1599.	27.	60.	-100.
1800.	1798.	18.	66.	-100.
1854.	1852.	14.	65.	0.
2000.	1997.	3.	54.	-100.
2134.	2129.	-14.	40.	0.
2200.	2192.	-31.	29.	-100.
2400.	2382.	-82.	-3.	-100.
2590.	2564.	-129.	-32.	0.
2600.	2574.	-131.	-33.	-100.
2800.	2766.	-179.	-59.	-100.
3000.	2958.	-228.	-86.	-100.
3128.	3081.	-260.	-103.	0.
3200.	3149.	-280.	-113.	-100.
3400.	3340.	-333.	-141.	-100.
3600.	3532.	-383.	-167.	-100.
3601.	3533.	-383.	-167.	0.
3800.	3726.	-424.	-189.	-100.
4000.	3919.	-469.	-213.	-100.
4052.	3969.	-481.	-219.	0.
4052.	3969.	-481.	-219.	-10.
4200.	4112.	-516.	-237.	-100.
4400.	4304.	-567.	-263.	-100.
4507.	4406.	-595.	-277.	0.
4600.	4494.	-621.	-290.	-100.
4800.	4684.	-679.	-318.	-100.
5000.	4873.	-738.	-347.	-100.
5066.	4935.	-758.	-356.	0.
5200.	5061.	-800.	-375.	-100.
5400.	5248.	-863.	-403.	-100.
5600.	5436.	-927.	-431.	-100.
5671.	5502.	-950.	-441.	10.
5730.	5557.	-969.	-449.	10.
5800.	5623.	-992.	-459.	-100.
5805.	5627.	-994.	-460.	24.
5989.	5799.	-1054.	-485.	70.
6000.	5809.	-1058.	-487.	-100.
6064.	5869.	-1079.	-496.	0.
6200.	5996.	-1124.	-516.	-100.
6400.	6182.	-1191.	-545.	-100.
6410.	6191.	-1194.	-547.	8.
6600.	6368.	-1259.	-574.	-100.
6800.	6554.	-1328.	-601.	-100.
7000.	6740.	-1397.	-628.	-100.
7062.	6797.	-1419.	-636.	0.
7200.	6925.	-1469.	-653.	-100.
7400.	7109.	-1540.	-678.	-100.
7600.	7294.	-1612.	-703.	-100.
7686.	7374.	-1643.	-714.	0.
7800.	7479.	-1684.	-728.	-100.
7820.	7498.	-1691.	-731.	0.

— 3280 E/

OPEN HOLE DESCRIPTION

SIZE (IN)	**** INTERVAL ****** TOP	BOTTOM
8.75	4052.	7820.

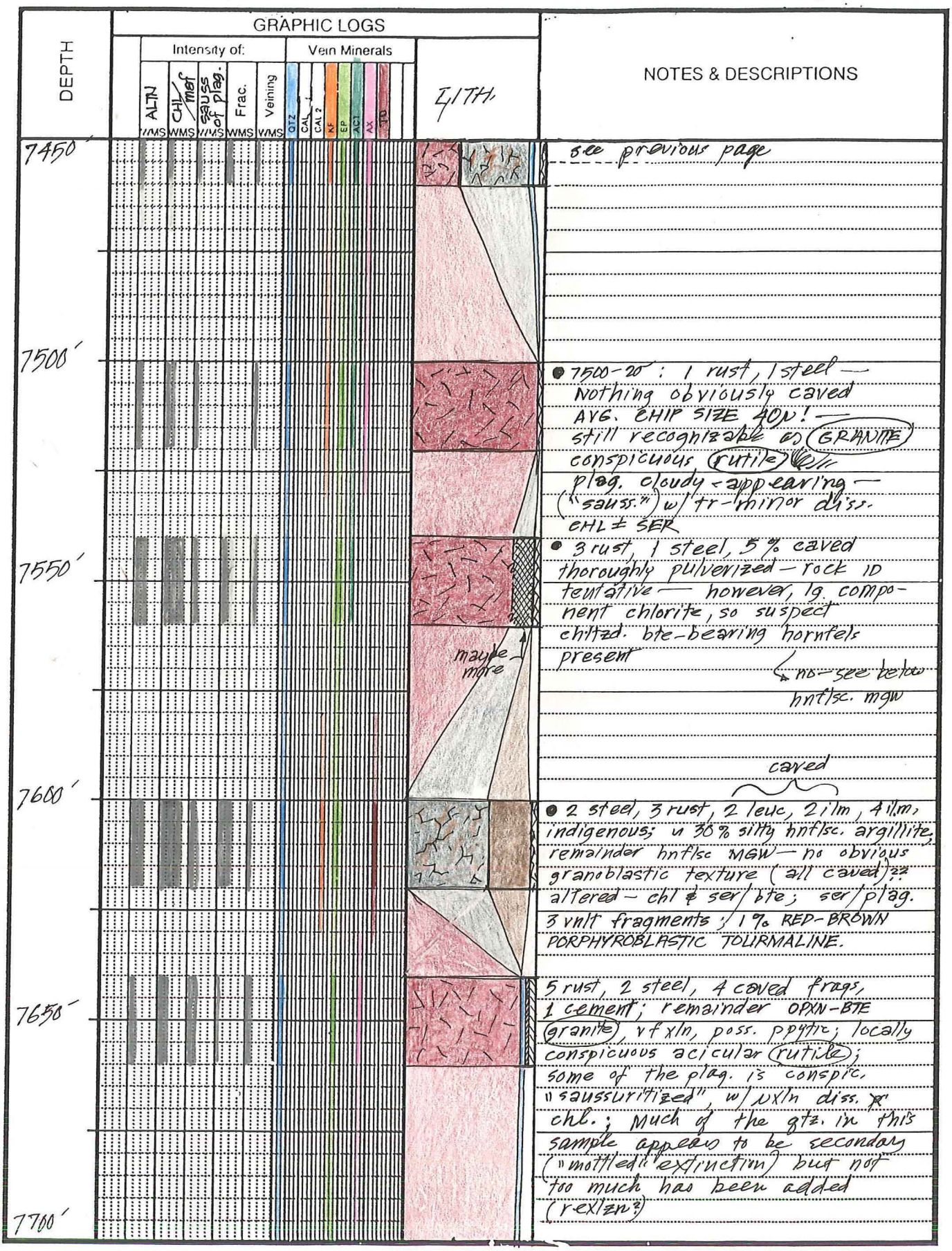


Borehole No. CMHC-7

Depth Interval 7200-7450

Logged By JH

Date



Borehole No. CMHC-7

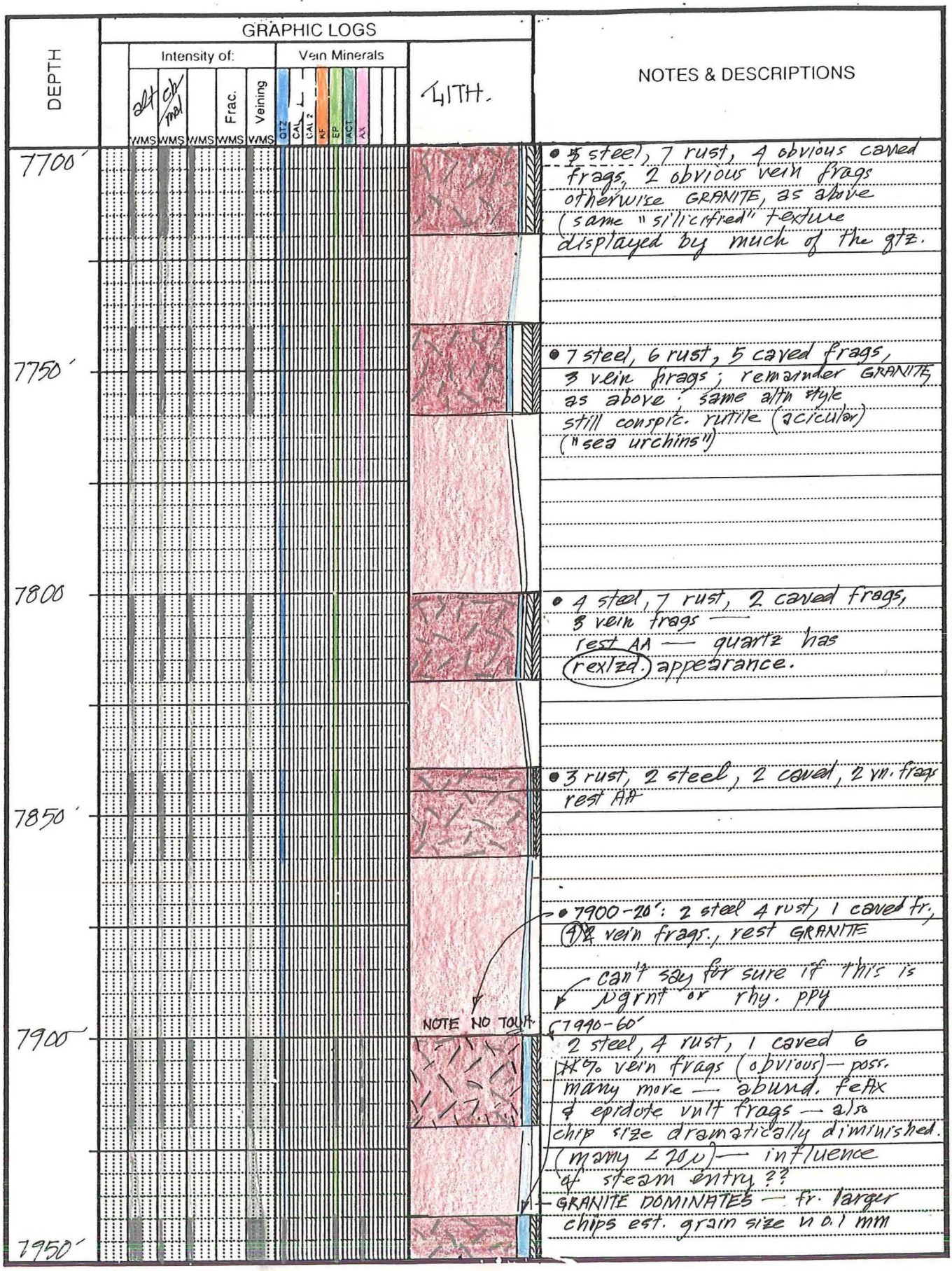
Depth Interval 7450-7700'

= RUST

= steel

Logged By JH

Date

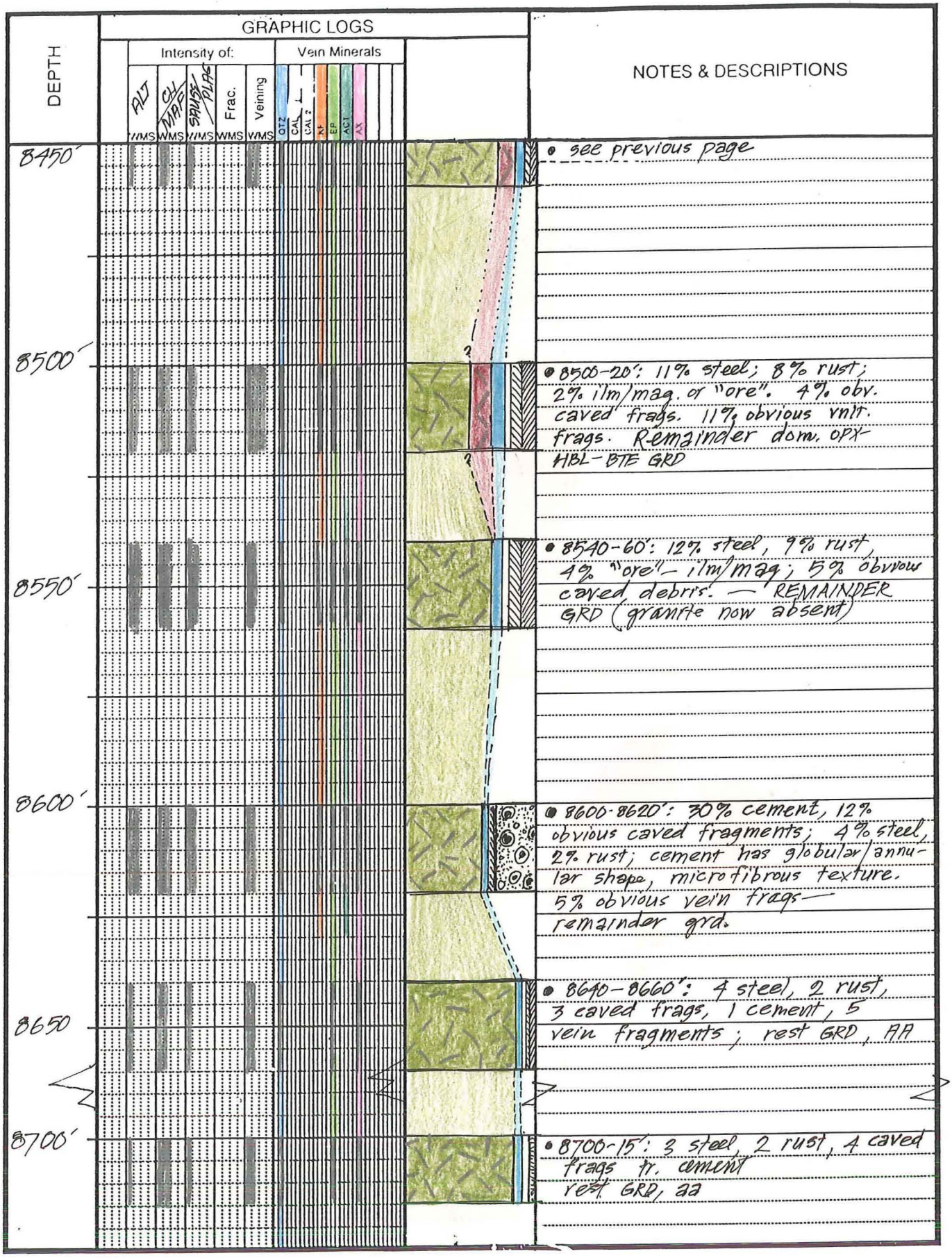


Borehole No. CMHC-7

Depth Interval 7700-7950'

Logged By JBH

Date

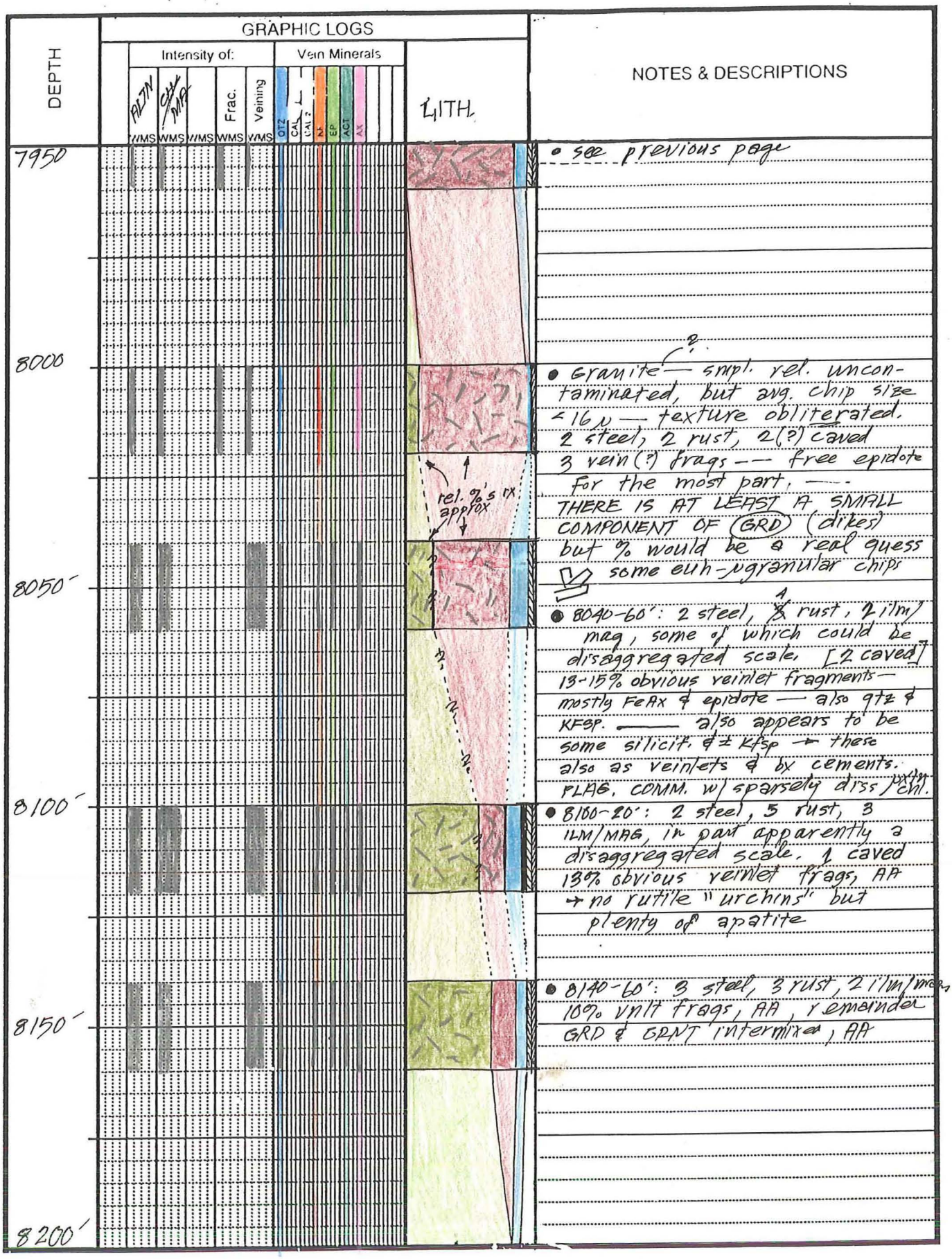


Borehole No. CMHC-7

Depth Interval 8450-8715'

Logged By JH

Date

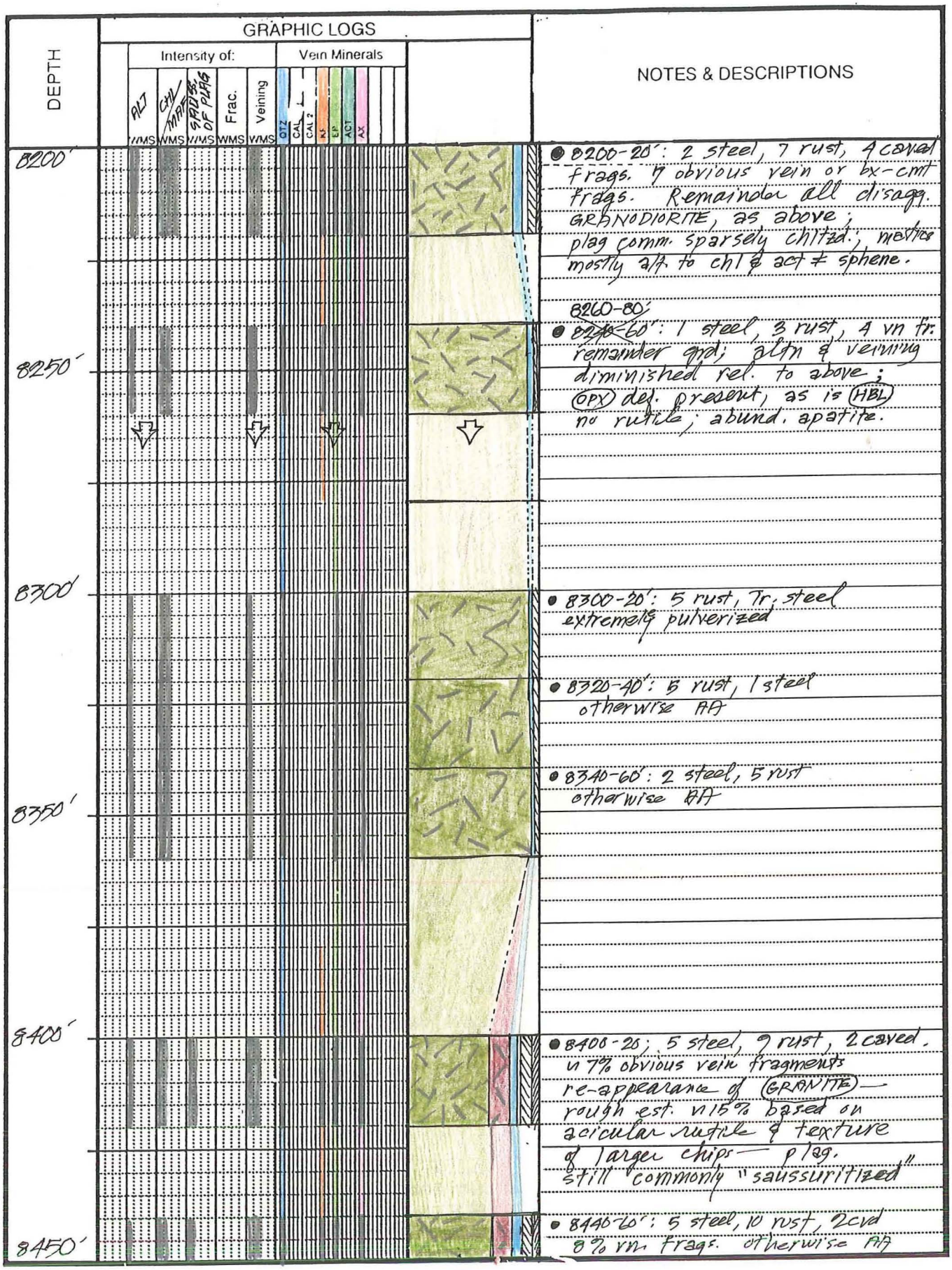


Borehole No. CMHC-7

Depth Interval 7950-8200'

Logged By JBH

Date



Borehole No. DMHC-7

Depth Interval 8200-8450'

Logged By JH

Date

7800-20' → Tr | Tr | 1 | – | 1 | Tr | | | Tr | Tr | 1 | | | | Tr | |

CMHC-7
RAW No's.

MINERALOGY, APPROX. WT.% ☐ (or) RELATIVE ABUNDANCE ☐

SAMPLE NO.	QUARTZ	PLAGIOCL.	K-FELDSP.	CALCITE	OPAL / CPX	ACTINOLITE	EPIDOTE	PREHNITE	ILMENITE / MAGNETITE / SPHENE / LEUCOXN.	PYRITE	TOURMALINE	FERROAXINITE	BIOTITE	ILLITE	CHLORITE	TALC / PYROPH.	SERPENTINE	HORNBL.	RUTILE	APATITE	ZIRCON	
7200-20'			7		1 / Tr	3	3	–	3	2	1	–	–	5	9	10						tr. allanite 4 foreign
7240-60'			9		2	2	2		2	2	1	–	–	4	12	8						
7300-20'			8		1	Tr	1		2	2	1	–	-	5	12	10						Tr, (po), Tr (cpy)
7340-60'			5	Tr	1 / 5	1	2		2	2	1			9	7	8						" "
7400-20'					1 / 3	1	1		3	2	Tr			8	11	9						Tr po, Tr (cpy)
7440-60'					1	1	1		1	1	Tr		2	4	3	4						
7500-20'	41	34	21		Tr	Tr	1		1	Tr	–		Tr	1	1	2						
7540-60'	31	36	17	15?	Tr / 1?	Tr	1		2	1	–	(1?)	Tr	Tr	2	XX9						
7600-20'	30	25	XX	(11)	Tr	3	1		4	2	–	(XX)	–	5	///7	12						9 foreign
7640-60'	45	29	22		1	1	2		Tr	Tr			1	1	Tr	3		Tr	(Tr)	Tr		10 foreign (cont)
7700-20'				?	Tr	Tr	2		Tr	Tr			Tr	1	Tr	1		,	(Tr)			16 foreign "
7740-60'				?	Tr	Tr	2		Tr	Tr			Tr	Tr	Tr	1		–	(Tr)			18 foreign "
7840-60'				?	Tr / –	–	1		Tr	Tr			–	Tr	Tr	1			(Tr)			13 foreign
7900-20'					–	–	1		Tr	Tr		(3)		–	–	1		–	(Tr)			7 foreign
7940-60'						Tr	(3)		Tr	Tr			(1)	Tr	Tr	Tr		–	–			7 foreign
8000-20'				?	1	1	3		1	Tr			1	1	Tr	3		Tr	–	Tr		6 foreign
8040-60'				?	Tr	1	4		2*	1			9	1	Tr	2		–	–	Tr		8 "
8100-20'					–	1	3		3*	1			8	1	Tr	2		–	–	Tr		8
8140-60'					–	1	3		2*	1			5	1	Tr	2		–	–	Tr		6 foreign
8200-20'					Tr	2	2		1	1			4	1	Tr	3		1	–	Tr		13 foreign
8260-80					1	2	3		1	1			1	2	Tr	3		?	–	Tr		
8300-20'				?	Tr	1?	2		2	1			Tr	2	Tr	2		Tr	–	Tr		5 "
8320-40'				?	Tr	1?	2		2	1			1	2	Tr	2		1	–	Tr		
8340-60'				?	Tr	Tr	3		2	1			Tr	1	Tr	3		Tr	–	Tr		6 "

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE , EARTH SCIENCE LABORATORY

* in part scale.

CMHC-7 RAW No.'s

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE , EARTH SCIENCE LABORATORY

MINERALOGY, APPROX. WT.% ☐ (or) RELATIVE ABUNDANCE ☐

SAMPLE NO.	QUARTZ	PLAGIOCL.	K-FELDSP.	CALCITE	OPX / CPX	ACTINOLITE	EPIDOTE	PREHNITE	ILMENITE / MAGNETITE	STILPNOMELANE / LEUCOXN.	PYRITE	TOURMALINE	FERROAXINITE	BIOTITE	ILLITE	CHLORITE	TALC / PYROPH.	SERPENTINE	HORNBL.	RUTILE	APATITE	ZIRCON
8400-20'				1	2	3		1	1			4	2	Tr	3			1?	Tr	Tr		
8440-60'				1 / Tr	1	3 or 4		1	Tr			3	2	Tr	3			1?	Tr	Tr		
8500-20'				1	2	5		2	1		Tr	5	1	Tr	3			1?	Tr	Tr		
8540-60'				1	2	4		4*	1			3	2	Tr	4			1		Tr		
8600-20'				Tr	1	3		2	Tr			2	Tr	Tr	3			1?	—	Tr		
8640-60'				1	1	3		Tr	Tr			3	1	Tr	3			1		Tr		
8700-15'				Tr	1	3		1	Tr			2	1	Tr	4			Tr?		Tr		

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

* prob. disagg. scale for the most part

COBB MOUNTAIN HUNTING CLUB 7
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SECTION
1				N08E			
2	86	86	0.50	N08E	0.37	0.05	0.38
3	190	190	0.75	S64W	1.04	-0.87	1.51
4	310	310	0.75	S08W	-0.23	-1.79	3.08
5	409	409	1.25	S02W	-1.95	-1.94	4.81
6	494	494	1.00	S17W	-3.60	-2.21	6.48
7	622	622	1.00	S23E	-5.83	-2.10	8.71
8	744	744	1.00	S51W	-7.90	-2.61	10.84
9	869	869	1.00	S67E	-10.06	-2.31	13.02
10	995	995	0.50	N59E	-9.94	-0.66	14.67
11	1116	1116	0.50	N35E	-9.22	0.11	15.73
12	1243	1243	0.50	N00E	-8.16	0.44	16.84
13	1370	1370	1.75	N63W	-6.04	-0.86	19.33
14	1431	1431	2.25	N30W	-4.57	-2.41	21.46
15	1494	1494	3.00	N52W	-2.40	-4.30	24.34
16	1557	1557	2.75	N51W	-0.43	-6.77	27.50
17	1650	1650	3.25	N57W	2.43	-10.71	32.37
18	1745	1744	3.75	N62W	5.38	-15.71	38.17
19	1845	1844	4.50	N56W	9.08	-21.87	45.36
20	1937	1936	4.75	N52W	13.44	-27.87	52.78
21	2026	2025	4.50	N48W	18.05	-33.37	59.96
22	2139	2137	4.50	N44W	24.21	-39.75	68.82
23	2265	2263	5.25	N36W	32.42	-46.63	79.53
24	2350	2347	5.75	N34W	39.09	-51.30	87.68
25	2486	2483	6.00	N38W	50.35	-59.49	101.60
26	2611	2607	6.25	N42W	60.57	-68.06	114.94
27	2730	2725	6.25	N36W	70.64	-76.21	127.89
28	2856	2850	6.25	N37W	81.66	-84.37	141.61
29	2982	2976	6.25	N39W	92.47	-92.82	155.33
30	3109	3102	6.50	N40W	103.35	-101.79	169.43
31	3236	3228	6.75	N40W	114.58	-111.20	184.08
32	3359	3350	6.75	N42W	125.49	-120.69	198.54
33	3483	3473	6.75	N47W	135.88	-130.90	213.11
34	3609	3598	7.00	N51W	145.78	-142.29	228.19
35	3732	3721	6.75	N47W	155.44	-153.40	242.92
36	3776	3764	7.50	N50W	159.05	-157.49	248.37
37	3807	3795	6.25	N56W	161.29	-160.45	252.09
38	3839	3827	6.50	N68W	162.96	-163.59	255.64
39	3871	3859	6.00	N80W	163.92	-166.94	259.12
40	3903	3890	6.50	S89W	164.19	-170.41	262.61

MAR 06,1979 WEIGHTING FACTOR: 0.50

COB(. NTAIN HUNTING CLUB 7
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
41	4021	4007	10.00	S76W	161.98	-187.20	279.54
42	4140	4124	10.50	S72W	156.14	-207.55	300.71
43	4264	4246	10.75	S64W	147.58	-228.75	323.58
44	4328	4309	11.00	S63W	142.19	-239.56	335.65
45	4343	4324	11.00	S62W	140.87	-242.10	338.51
46	4373	4353	11.25	S67W	138.38	-247.32	344.30
47	4405	4384	12.00	S70W	136.01	-253.32	350.75
48	4438	4417	11.75	S75W	133.97	-259.80	357.54
49	4469	4447	11.50	S82W	132.73	-265.92	363.79
50	4501	4479	11.25	S87W	132.12	-272.20	370.10
51	4573	4549	10.00	N82W	132.70	-285.46	383.37
52	4665	4640	10.00	N82W	134.92	-301.28	399.35
53	4760	4733	10.00	N85W	136.79	-317.67	415.84
54	4856	4828	11.00	N82W	138.77	-335.05	433.34
55	4951	4921	12.50	N80W	141.80	-354.16	452.68
56	5045	5012	15.00	N80W	145.68	-376.16	475.03
57	5138	5102	17.00	N84W	149.25	-401.55	500.66
58	5201	5162	18.25	N81W	151.74	-420.46	519.74
59	5295	5250	20.00	N86W	155.22	-451.06	550.53
60	5387	5336	21.50	N85W	157.78	-483.55	583.13
61	5481	5424	22.50	N82W	161.77	-518.54	618.34
62	5543	5481	23.00	N83W	164.90	-542.31	642.32
63	5607	5539	24.00	N89W	166.68	-567.77	667.84
64	5670	5597	25.00	N81W	168.95	-593.80	693.96
65	5733	5654	26.00	N84W	172.49	-620.69	721.08
66	5827	5738	26.25	N83W	177.18	-661.81	762.48
67	5925	5825	28.00	N82W	183.01	-706.11	807.16
68	6019	5908	29.00	N83W	188.87	-750.58	852.01
69	6112	5989	30.00	N84W	194.05	-796.08	897.81
70	6208	6071	31.25	N82W	200.01	-844.62	946.71
71	6303	6152	32.00	N82W	206.94	-893.95	996.52
72	6392	6227	33.00	N84W	212.77	-941.41	1044.34
73	6487	6306	34.75	N85W	217.85	-994.12	1097.29
74	6563	6368	35.25	N80W	223.54	-1037.34	1140.89
75	6656	6445	34.00	N80W	232.71	-1089.38	1193.73
76	6751	6523	35.00	N80W	242.06	-1142.37	1247.54
77	6845	6601	33.00	N81W	250.73	-1194.21	1300.10
78	6923	6668	30.50	S87W	252.88	-1235.20	1341.15
79	6986	6722	29.00	S84W	250.43	-1266.37	1372.41
80	7049	6778	27.50	S83W	247.05	-1295.99	1402.23

BETTY A. LESSNAU
MAR - 6 1979

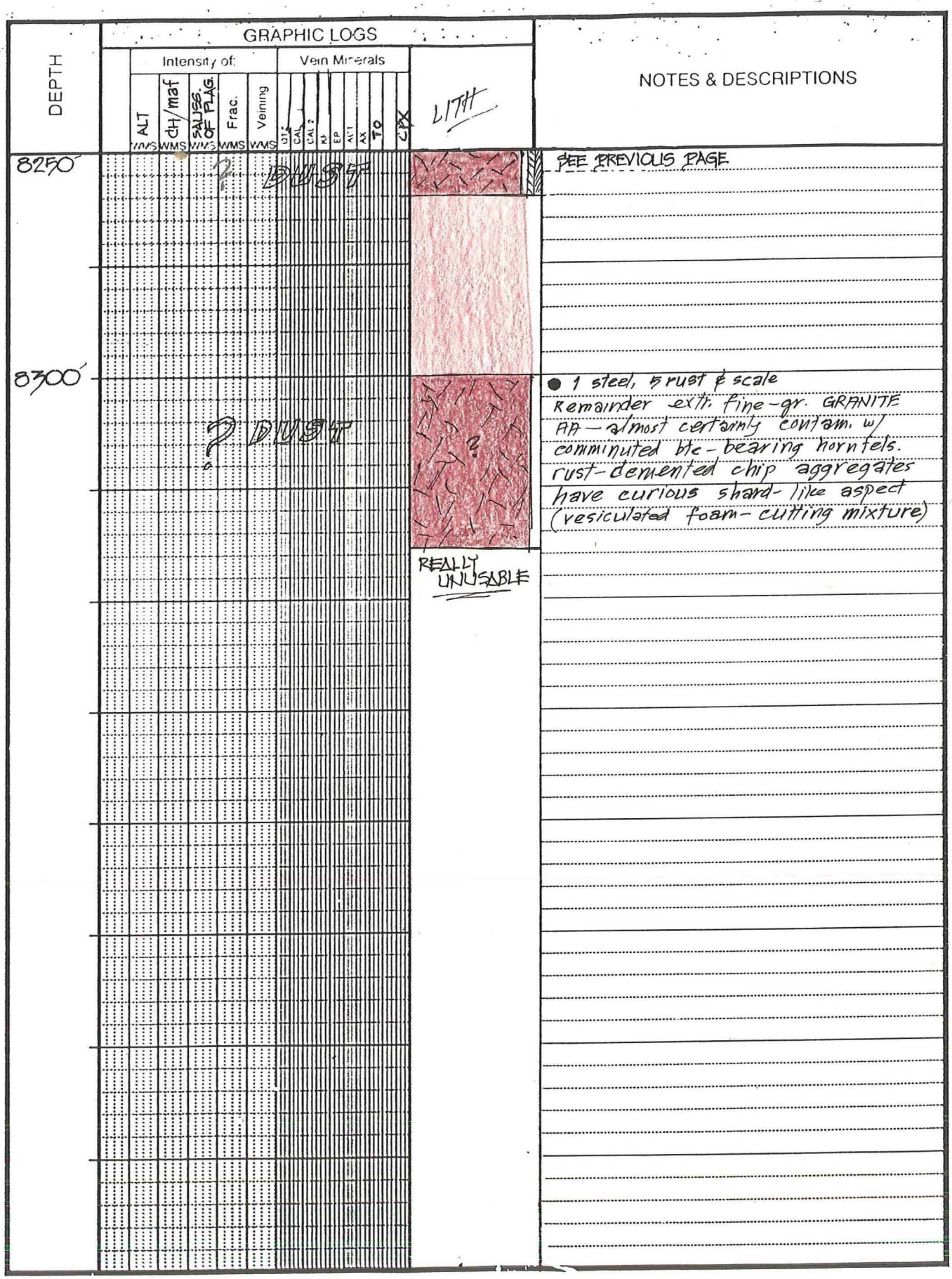
MAR 06,1979 WEIGHTING FACTOR: 0.50

COBB M[illegible]TAIN HUNTING CLUB 7
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
81	7114	6835	28.25	S79W	242.30	-1326.01	1432.62
82	7207	6917	29.00	S74W	231.90	-1369.33	1477.17
83	7271	6973	29.00	S72W	222.82	-1399.00	1508.20
84	7365	7054	31.00	S70W	207.52	-1443.44	1555.20
85	7461	7135	34.00	S69W	189.46	-1491.76	1606.78
86	7548	7206	36.25	S68W	171.11	-1538.33	1656.83
87	7650	7288	37.00	S69W	148.81	-1594.95	1717.69
88	7744	7363	37.25	S68W	128.02	-1647.73	1774.42
89	7870	7463	37.50	S66W	98.13	-1718.14	1850.91
90	7997	7564	37.00	S68W	68.10	-1788.90	1927.78
91	8124	7666	36.00	S72W	42.26	-1859.89	2003.32
92	8238	7759	35.75	S71W	21.06	-1923.24	2070.13
93	8363	7861	34.25	S69W	-3.46	-1990.61	2141.82
94	8490	7966	33.75	S69W	-28.91	-2056.91	2212.84
95	8584	8046	31.50	S72W	-45.83	-2104.69	2263.52
96	8713	8156	31.00	S72W	-66.51	-2168.33	2330.44

MAR 16,1979 WEIGHTING FACTOR: 0.50

BETTY A. [illegible]ESSNAU
MAR 16 1979



Borehole No. CURRY-3

Depth Interval 8250-8340'

Logged By JH

Date

Recalc. to elim. contamination

Curry 3

MINERALOGY, APPROX. WT.% ☐ (or) RELATIVE ABUNDANCE ☐

SAMPLE NO.	QTZ	PL	KF	CAL	OPX/CPX	ACT	EP	PR	ILM/MAG	SPH/LEUC.	PY	TOUR	FeOX	BTE	ILLITE	CHL	TALC/PYROPH	SERP		RUTILE	APATITE	RUST	STEEL	LAYER FRAGMENTS	CEMENT	TOTAL CONTAMINANTS
8000-20					1	3	4		1	TR	TR	TR	3	1	Tr	4						9	6	7		(22)
8040-60					2	3	~~BA~~		1	TR	—	TR	2	2	TR	5						10	8	17		(35)
8100-20					2	3	3		2	TR	—	TR	2	2	TR	3						13	10	9		(32)
8140-60																										
8200-20					2	2						BAD, NOT USABLE										15	7	25		(47)
8240-60																						5	3	4		(12)
8300-35																										

DUST, that is.

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE , EARTH SCIENCE LABORATORY

CURRY-3

SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE , EARTH SCIENCE LABORATORY

MINERALOGY, APPROX. WT.% ☑ (or) RELATIVE ABUNDANCE ☐

SAMPLE NO.	QTZ	PLAG	KF	CAL	ORD/CRN	RCT	EP.	PREHN.	ILM/MAG	SPH/LEUCX	PX	BTE	ILL	CHL	TALC	PYROPH.	TOURMALINE	FERROAXINITE	rutile	apatite	AVG. CHIP DIA. mm	MAX. CHIP DIA. mm	
8000-8020'	40	27	20		1	2	3	1	Tr	Tr	1		3			Tr	2	—	—	Tr	0.08	0.30	mostly pluton already
8040-8060'	39	26	17		1	2	3	1	Tr		1		3			Tr	1	—			0.11	0.52	ratty
8100-8120'	36	23	19		1	2	2	1	Tr		1		2			Tr	1	—		Tr	0.10	0.62	beaut (allanite)
8140-8160'	31	27	19		?	—		1?	Tr?		2?	(8)	2			?	?						bad smpl. NOTE INCR. IN BTE.
8200-8220'	28	16	8		1?	1?	1?	2?	1?		2?	(4)	4			2	Tr						back in hnfls? caved?
8240-8260'	20	19	17		1	2	1	1?	1?		3		3			TR	TR				0.008	0.08	dust
8300-8380'					1?	1?					4		3			TR	TR				"	0.09	dust

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

CURRY-3 XRD

CURRY-3
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
1	0	0	0.00	S38W	0	0	0
2	240	240	0.50	S38W	-1	-1	-1
3	374	374	1.00	S08W	-2	-1	-2
4	496	496	2.00	S44W	-5	-3	-4
5	684	684	3.25	S68W	-10	-10	-13
6	810	810	3.00	S66W	-13	-16	-20
7	936	935	3.75	S52W	-17	-23	-27
8	1006	1005	3.25	S60W	-19	-26	-31
9	1036	1035	2.25	S76W	-20	-27	-32
10	1093	1092	0.00	S76W	-20	-29	-34
11	1186	1185	0.50	N53E	-19	-29	-34
12	1310	1309	0.25	N30W	-19	-28	-33
13	1491	1490	1.75	N88W	-17	-31	-35
14	1624	1623	2.25	S88W	-17	-36	-39
15	2004	2003	3.25	S65W	-21	-54	-58
16	2127	2125	3.50	S70W	-24	-60	-65
17	2407	2405	3.75	S69W	-30	-77	-83
18	2444	2442	3.75	S60W	-31	-79	-85
19	2478	2476	2.25	S55W	-32	-81	-87
20	2509	2507	0.75	S35W	-33	-81	-87
21	2540	2538	0.75	S30E	-33	-81	-87
22	2571	2569	2.25	N80E	-33	-80	-87
23	2603	2601	3.50	N73E	-33	-79	-85
24	2659	2657	3.75	N66E	-32	-75	-82
25	2726	2723	5.00	N69E	-30	-71	-76
26	2852	2849	6.00	N70E	-25	-59	-64
27	2946	2942	8.00	N69E	-21	-48	-53
28	3069	3063	11.50	N63E	-13	-29	-32
29	3165	3157	13.50	N58E	-3	-11	-12
30	3198	3189	14.50	N64E	1	-4	-4
31	3282	3270	14.25	N66E	10	15	17
32	3343	3330	14.00	N68E	15	28	32
33	3434	3416	14.50	N65E	24	49	54
34	3591	3570	14.00	N59E	42	83	93
35	3682	3658	14.25	N58E	54	102	114

APR 16,1985 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N70E

CURRY-3
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	DOG LEG SEC
36	3747	3721	14.50	N58E	62	116	130
37	3780	3753	14.25	N63E	66	123	138
38	3811	3783	14.00	N64E	70	130	146
39	3842	3813	13.50	N69E	73	136	153
40	3874	3844	13.25	N76E	75	143	160
41	3937	3906	13.25	N80E	78	158	175
42	4043	4009	13.50	N82E	82	182	199
43	4231	4192	13.00	N81E	88	224	241
44	4326	4284	13.00	N80E	92	246	262
45	4577	4529	12.50	N76E	103	300	317
46	4694	4644	12.25	N78E	109	324	342
47	4821	4768	12.25	N77E	115	350	369
48	5041	4982	12.75	N76E	126	397	416
49	5287	5222	13.75	N74E	140	451	472
50	5494	5422	14.75	N73E	155	500	523
51	5659	5582	15.75	N73E	168	542	566
52	5787	5705	16.50	N73E	178	576	602
53	5945	5856	16.75	N77E	190	619	647
54	6174	6076	15.50	N75E	205	681	710
55	6383	6279	13.00	N85E	214	732	761
56	6609	6499	11.50	S79E	212	779	805
57	6857	6743	10.00	S78E	202	825	844
58	6941	6826	9.75	S82E	200	839	857
59	7067	6950	10.75	S84E	197	861	877
60	7436	7308	17.00	S87E	190	949	957
61	7654	7516	18.00	S87E	187	1015	1018
62	7902	7752	17.50	N68E	199	1090	1092
63	8338	8167	18.00	N45E	273	1200	1221

APR 16,1985 WEIGHTING FACTOR: 0.50

SECTION PROJECTED TO AZIMUTH N70E

CURRY-3
MARKER COORDINATE REPORT

E-LOG MARKER NAME	DEPTHS MEAS	DEPTHS VERT	DEPTHS SUBSEA	COORDINATES NS	COORDINATES EW	LAMBERT X	CLOSURE
30#	4930	4874	-2946	120	373	373	120
20#	4957	4900	-2972	122	379	379	122
20#	4996	4938	-3010	124	387	387	124
10#	7347	7222	-5294	192	928	928	192
15#	7830	7684	-5756	196	1068	1068	196

APR 16,1985 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N70E

CURRY-3
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	E W(-)	DEPARTURE SEC
1	0	0	0.00	S38W	0	0	0
2	73	73	0.50	S38W	0	0	0
3	114	114	1.00	S08W	-1	0	-1
4	151	151	2.00	S44W	-2	-1	-1
5	208	208	3.25	S68W	-3	-3	-4
6	247	247	3.00	S66W	-4	-5	-6
7	285	285	3.75	S52W	-5	-7	-8
8	307	306	3.25	S60W	-6	-8	-9
9	316	316	2.25	S76W	-6	-8	-10
10	333	333	0.00	S76W	-6	-9	-10
11	361	361	0.50	N58E	-6	-9	-10
12	399	399	0.25	N30W	-6	-9	-10
13	454	454	1.75	N88W	-5	-10	-11
14	495	495	2.25	S88W	-5	-11	-12
15	611	610	3.25	S65W	-6	-16	-18
16	648	648	3.50	S70W	-7	-18	-20
17	734	733	3.75	S69W	-9	-23	-25
18	745	744	3.75	S60W	-10	-24	-26
19	755	755	2.25	S55W	-10	-25	-26
20	765	764	0.75	S35W	-10	-25	-27
21	774	773	0.75	S80E	-10	-25	-27
22	784	783	2.25	N80E	-10	-24	-26
23	793	793	3.50	N73E	-10	-24	-26
24	810	810	3.75	N66E	-10	-23	-25
25	831	830	5.00	N69E	-9	-21	-23
26	869	868	6.00	N70E	-8	-18	-20
27	898	897	8.00	N69E	-7	-15	-16
28	935	934	11.50	N63E	-4	-9	-10
29	965	962	13.50	N58E	-1	-3	-4
30	975	972	14.50	N64E	0	-1	-1
31	1000	997	14.25	N68E	3	4	5
32	1019	1015	14.00	N68E	5	9	10
33	1047	1042	14.50	N65E	7	15	17
34	1095	1088	14.00	N59E	13	25	28
35	1122	1115	14.25	N53E	15	31	35

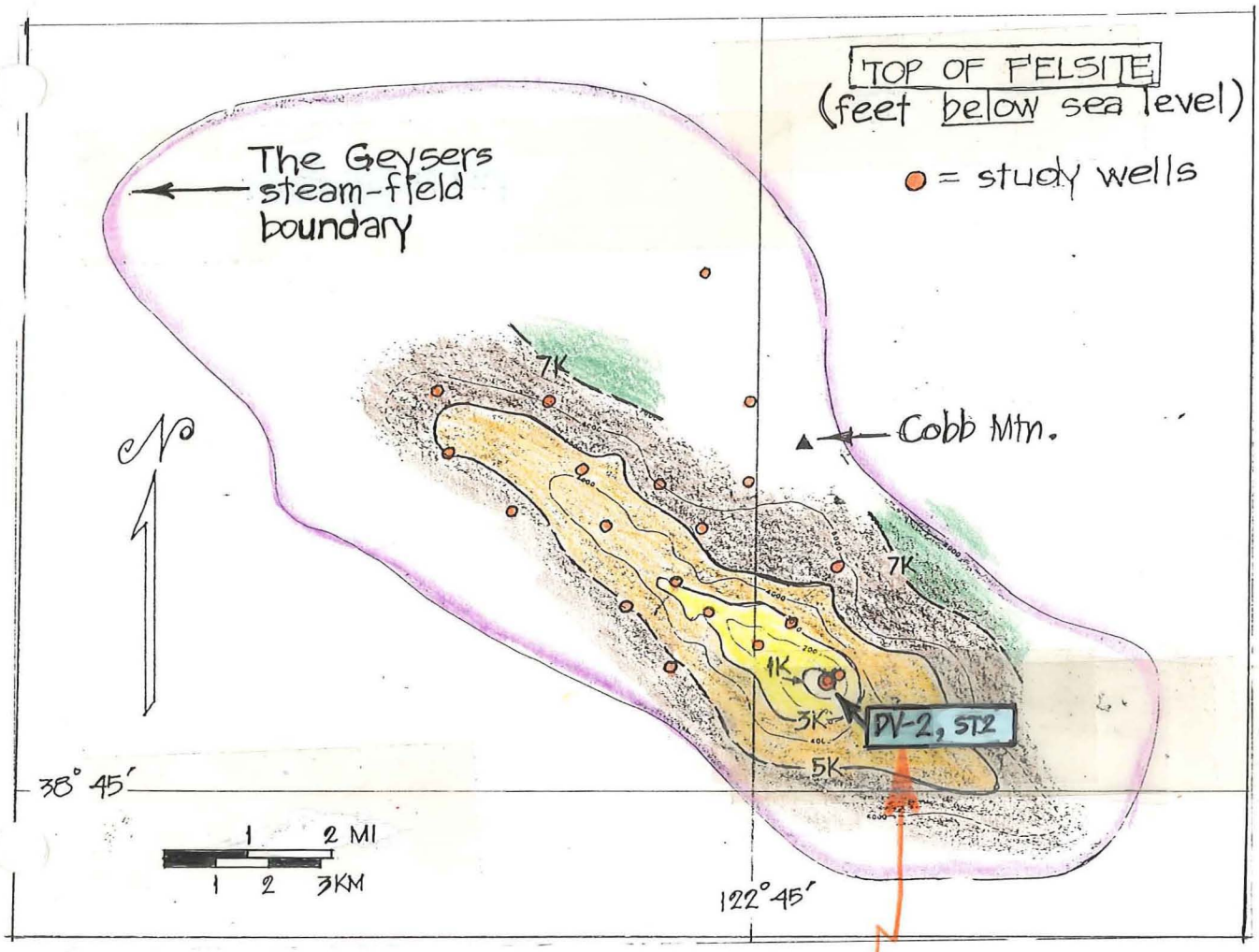
APR 16, 1985 WEIGHTING FACTOR: 0.50 MEASUREMENTS ARE IN METERS
SECTION PROJECTED TO AZIMUTH N70E

CURRY-3
STANDARD SURVEY TABLE

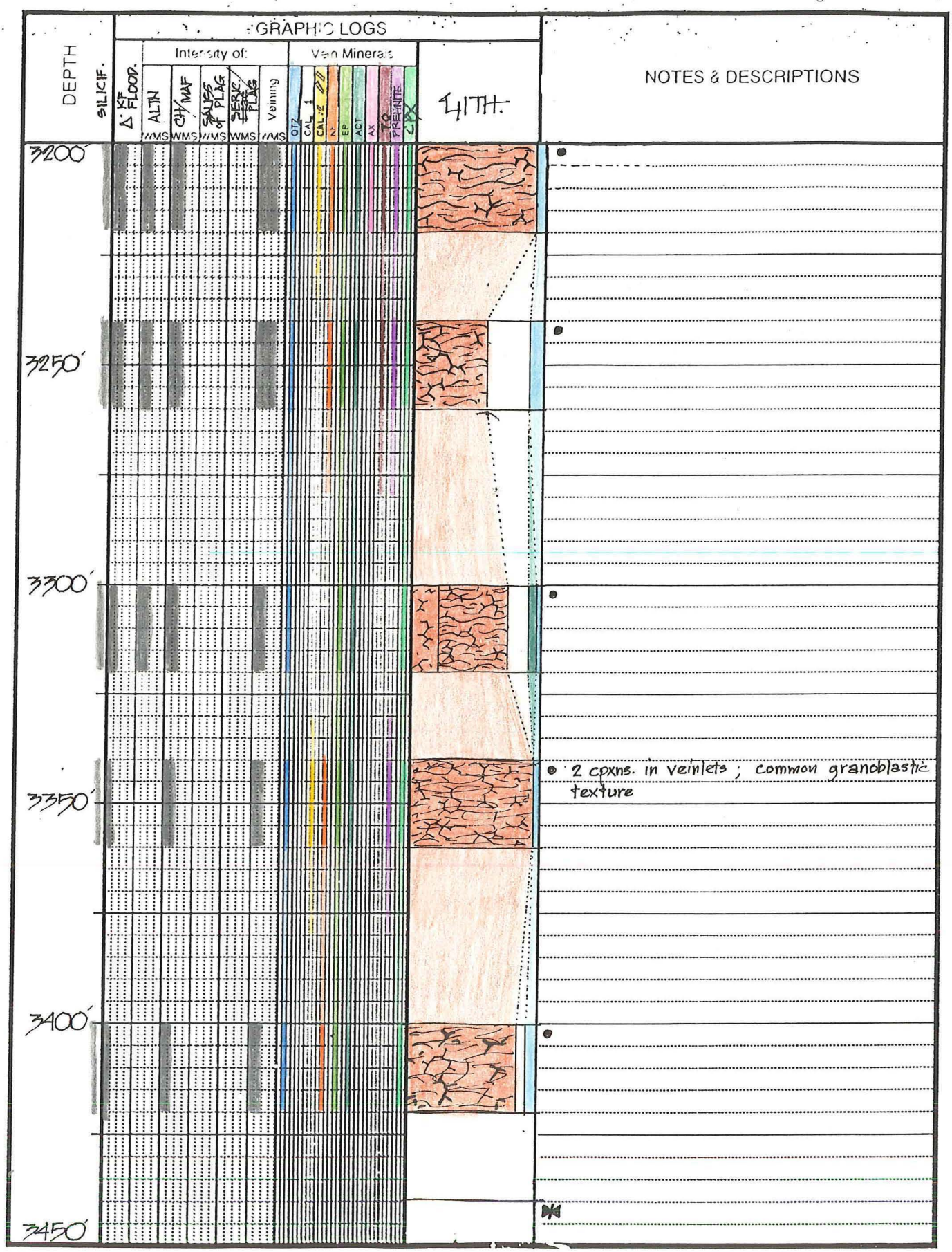
STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	E W(-)	TOTAL S@
36	1142	1134	14.50	N58E	19	35	40
37	1152	1144	14.25	N63E	20	37	42
38	1162	1153	14.00	N64E	21	40	44
39	1171	1162	13.50	N69E	22	42	47
40	1181	1172	13.25	N76E	23	44	49
41	1200	1190	13.25	N80E	24	48	53
42	1232	1222	13.50	N82E	25	55	61
43	1290	1278	13.00	N81E	27	68	73
44	1319	1306	13.00	N80E	28	75	80
45	1395	1381	12.50	N76E	31	91	97
46	1431	1415	12.25	N78E	33	99	104
47	1469	1453	12.25	N77E	35	107	112
48	1537	1519	12.75	N76E	38	121	127
49	1611	1592	13.75	N74E	43	138	144
50	1675	1653	14.75	N73E	47	152	159
51	1725	1701	15.75	N73E	51	165	173
52	1764	1739	16.50	N73E	54	175	183
53	1812	1785	16.75	N77E	58	189	197
54	1882	1852	15.50	N75E	63	208	216
55	1946	1914	13.00	N85E	65	223	232
56	2014	1981	11.50	S79E	64	238	245
57	2090	2055	10.00	S78E	62	251	257
58	2110	2081	9.75	S82E	61	256	261
59	2154	2118	10.75	S84E	60	263	267
60	2267	2227	17.00	S87E	58	289	292
61	2333	2291	18.00	S87E	57	309	310
62	2409	2363	17.50	N68E	61	332	333
63	2541	2489	18.00	N45E	83	366	372

APR 16,1985 WEIGHTING FACTOR: 0.50 MEASUREMENTS ARE IN METERS

SECTION PROJECTED TO AZIMUTH N70E



Bob, please emphasize



Borehole No. DV-2

Depth Interval 3200 - 3450'

Logged By JH

Date

DEPTH	GRAPHIC LOGS														NOTES & DESCRIPTIONS
	Intensity of:					Vein Minerals								LITH.	
	ALTN	CH/maf.	sauss. of plag.	SER/PL.	Veining	QTZ	CAL	CAL 2	KF	EP	ACT	AX	?O	CPX	
	WMS	WMS	WMS	WMS	WMS										
3450′															SEE PREVIOUS PAGE
3500′															•
															•
3550′															
3600′															•
															•
3650′															
3700′															

Borehole No. DV-2,

Depth Interval

Logged By JH

Date

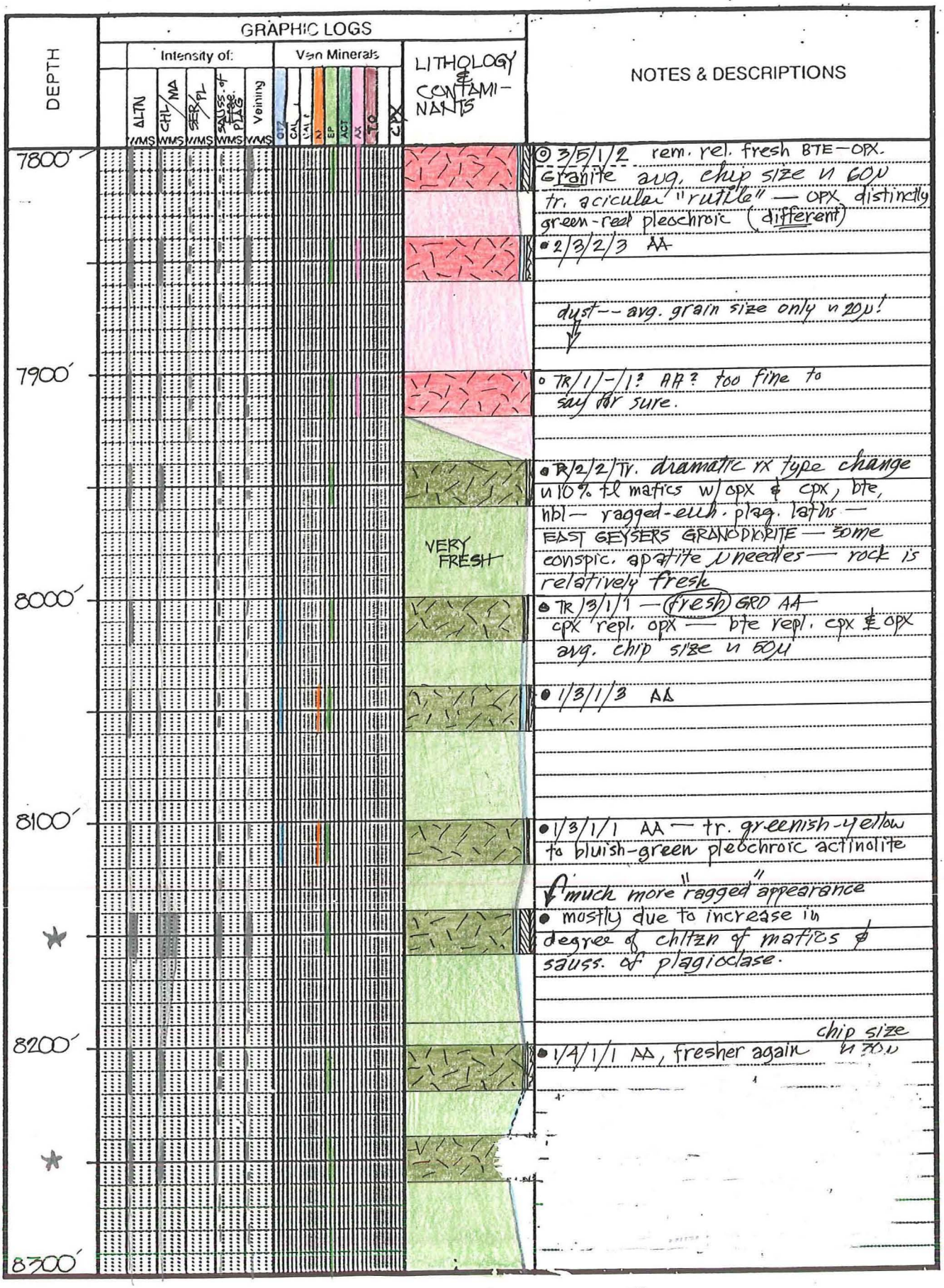
DEPTH	GRAPHIC LOGS			NOTES & DESCRIPTIONS
	Intensity of: ALTN, CH/maf, sauss of plag, ser/ plag, Veining (W M S)	Vein Minerals: QTZ, CAL, CAL 2, KF, EP, ACT, AX, PO, CPX	LITH.	
3700'				
3750'				
3800'				
3850'				
3900'				
3950'				

Borehole No. DV-2

Depth Interval

Logged By JH

Date

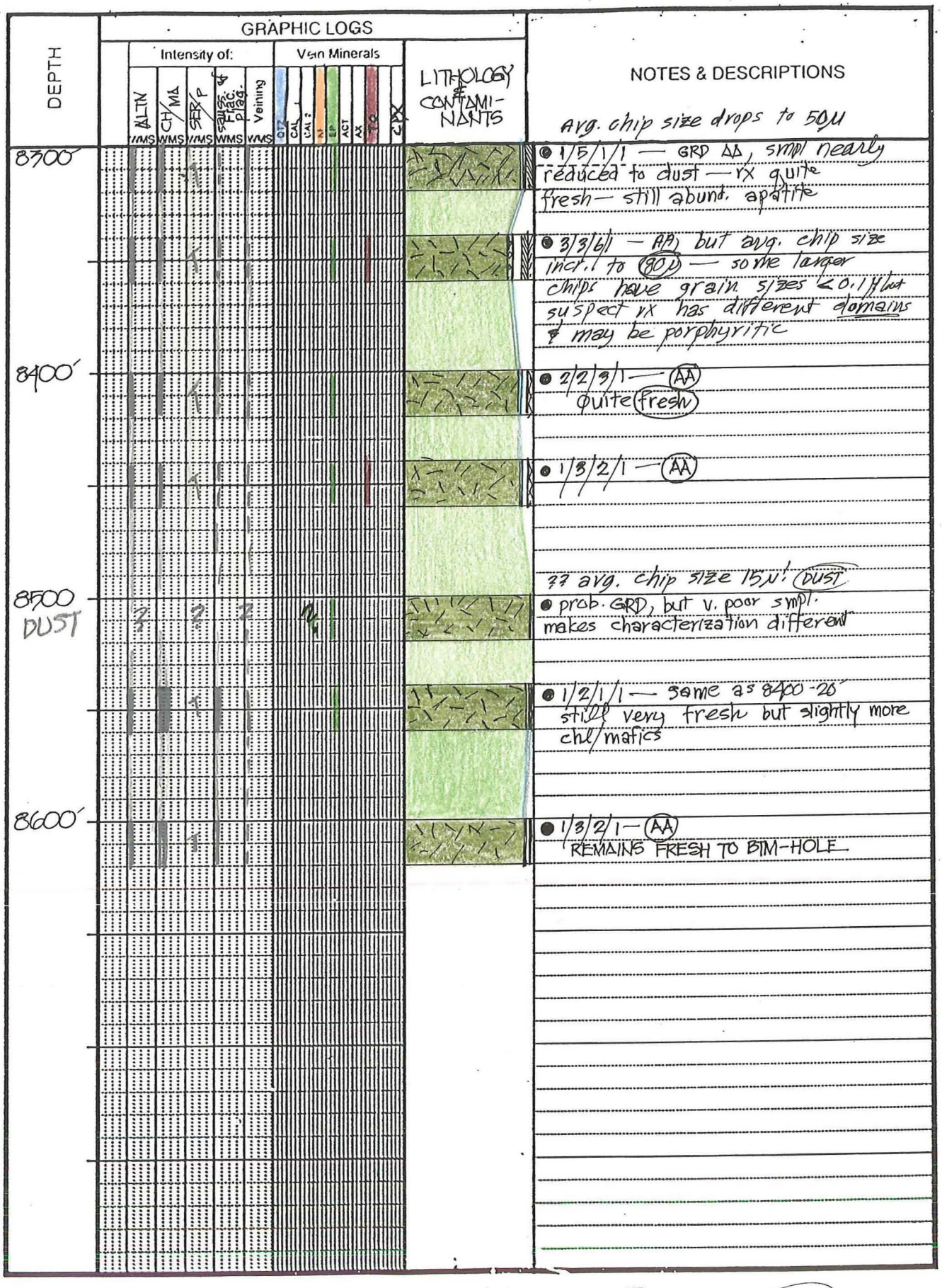


Borehole No. DV-2

Depth Interval 7800-8300'

Logged By J. HULEN

Date

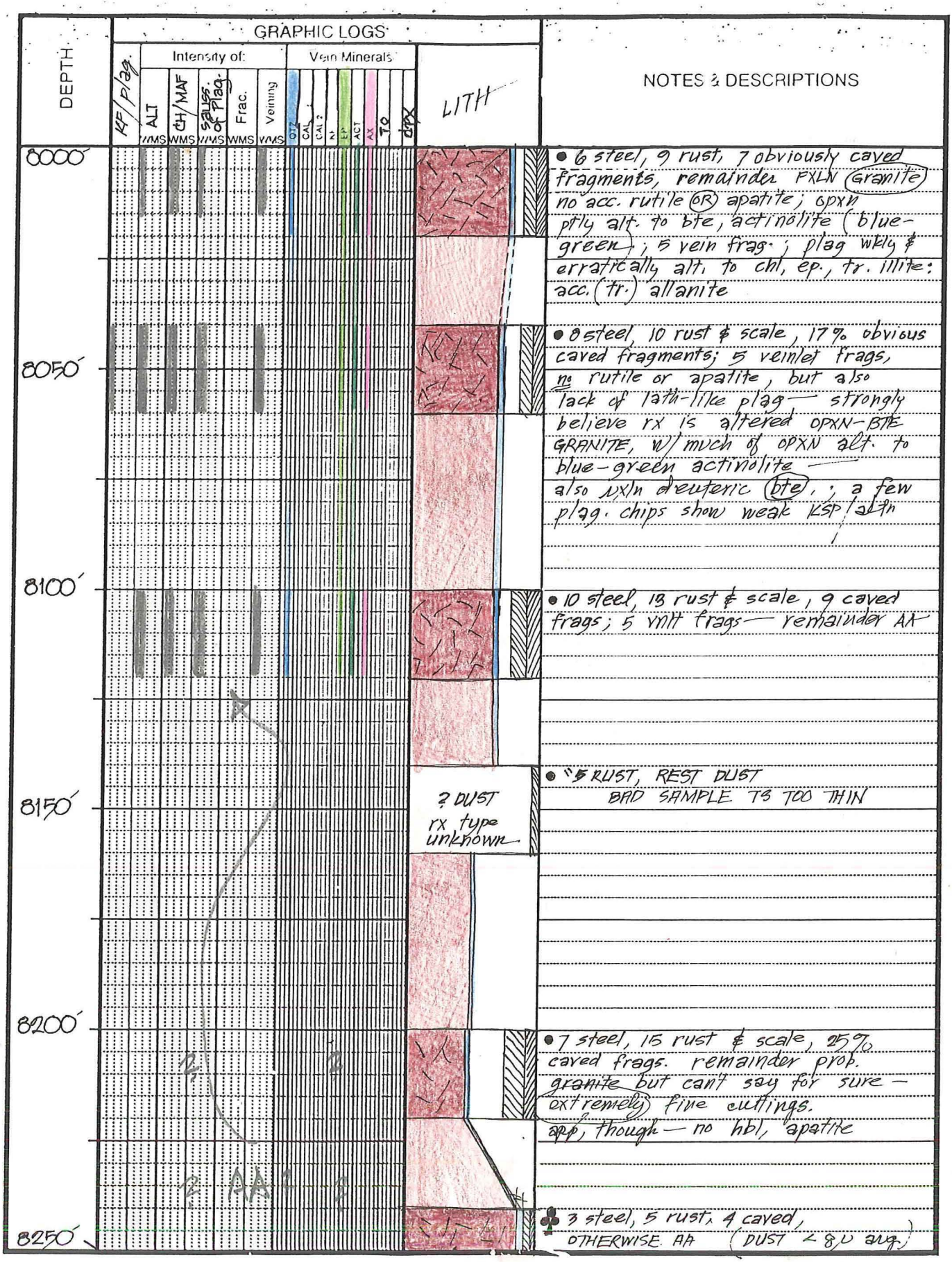


Borehole No. DV-2

Depth Interval 8300 - 8600'

Logged By JH

Date

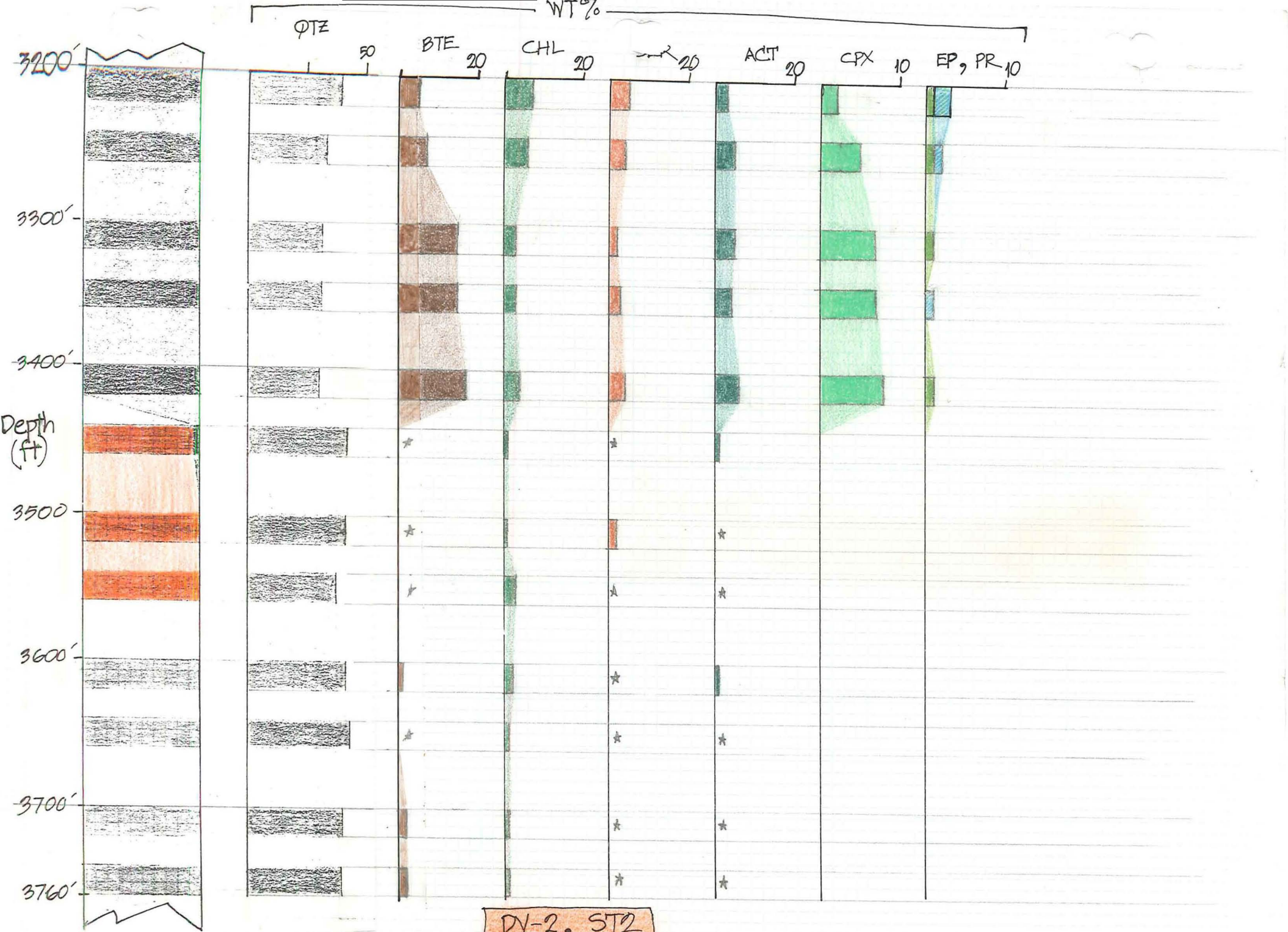


Borehole No. CURRY 3

Depth Interval 8000-8250

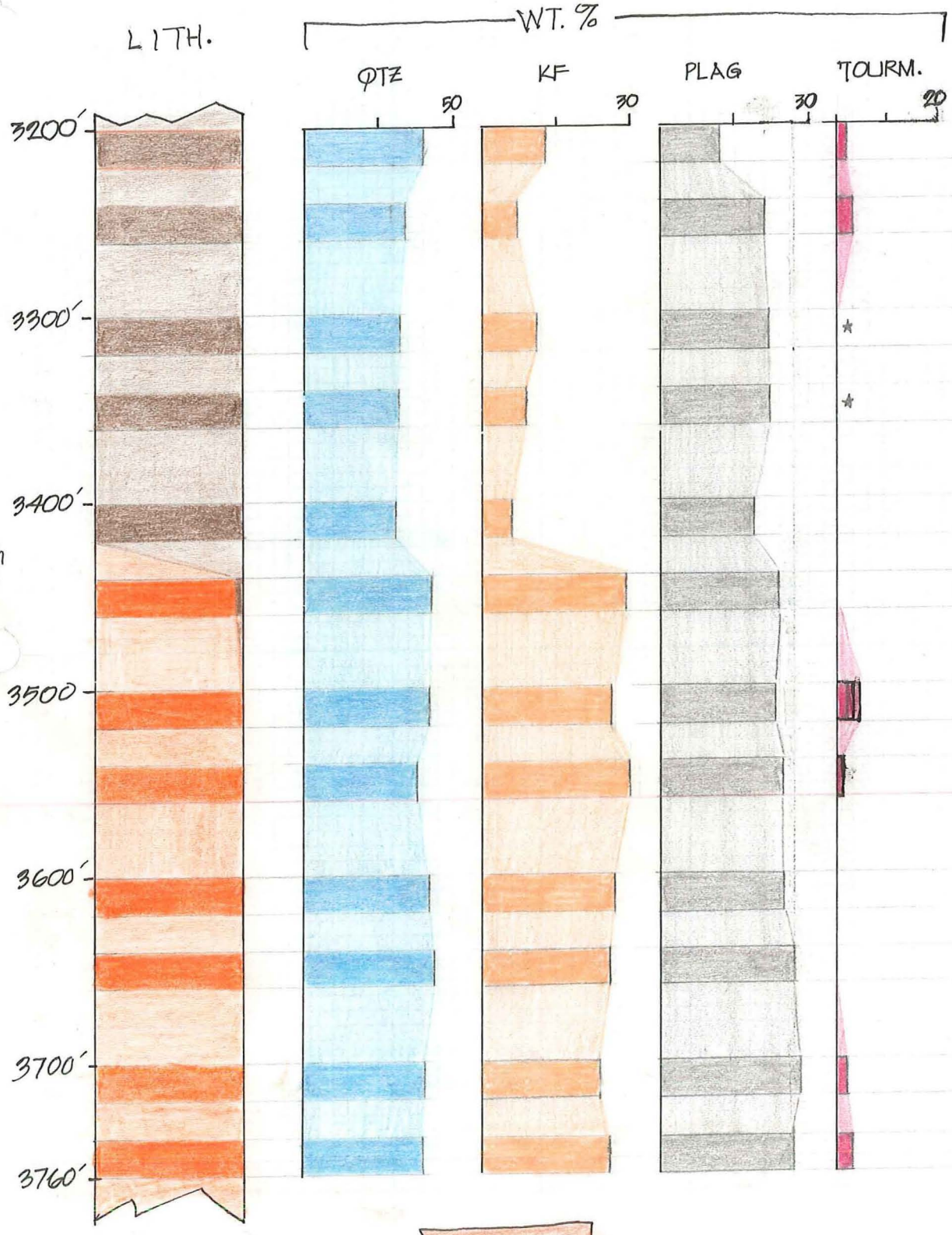
Logged By HH

Date



DV-2, ST2

FELSITE CONTACT: MINERALOGY



DV-2, ST2

FELSITE CONTACT: MINERALOGY

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
DV-2 3200-3240	JBH

Rock Type

QTZ-OLIG-PHENGITE-GARNET HORNFELS (w/chlor/leucoxn) (qtz. & oligoclase seem to encapsulate actinolite (now chltzd?)

HORNFELSIC MGW SEMISCHIST — bte-bearing. (qtz, bte, oligocls, leucoxn — tr. allanite ± irreg. aggregates of acicular actinolite ± irregular granoblastic CPXN aggregates.

DISCRETE VNLT FRAGS — 5%

Tr. serpentinite (caved)

Mineralization

Alteration/Metamorphism

Some KFSP flooding adjacent to CHL-KF veinlets

Tr. late cal. clots/matrix

POTASSIC ALTN. of MGW widespread, intense; erratically dist., diffuse to fairly solid aggregates in which orig. plag. is alt. to KFSP. — accompanied by silicification

Tr. colli- be siderite (prob. I's)

Fluid Inclusions

- — 95% (V)
- — 5% L:V ≈ 2.5-3:1

Porosity Summary

note Q-KF — Bladed calcite veinlet.

~~Interpreted Paragenesis~~ of Vein- and Vug-Filling Minerals

✓ Q-KF cuts TOUR-qtz ± kf

VNLTS & VNLT frags. account for ≈ 12% of the rock

(Prehnite) (KFSP.)
Q-KF — epidote
QTZ
(~~ACT~~) - QTZ - (chl)(cal)(sulf.)
TOURM — (QTZ)(kf)(spn)
ACT - PREhnite - CALCITE
Q-KF
Chl. - leucoxn - actinolite
KFSP — CPXN — (qtz)

~~Q-Chl~~ ACT-q-(chl)-(leu)

CHL - KFSP

some Franc. quartz

Notes, Miscellaneous

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
DV-2 3240-3260	JBH

Rock Type

10% discrete veinlet fragments
~~5~~5% hornfelsic semi-schist, as above
25% uxb- massive to weakly foliated q-plag-bte ± tour, act HORNFELS

Mineralization

Alteration/Metamorphism

one allanite xl. ptly rimmed with epidote (same as above overall)

Bte ptly alt. to chlor. plus leucxn

oligo → ptly, evr, to epidote grain.

Fluid Inclusions	Porosity Summary
AA	NA

Interpreted Paragenesis of Vein- and Vug-Filling Minerals

(rosettes) TOUR/KF/qtz/actin.

◊ PLAG/tour — kf

(QTZ)-(KF)-(CAL)-(DATOLITE?)

PR - sulf

KF

ACT - qtz - kf

cpx? (act)- QTZ - EP -

(QTZ)- ~~BTE~~ (bte) - (~~ACT~~) — chl

QTZ/BTE/ACT — chl.

phengite or green bte.

KF/gar - pheng - leuc.

EP/KF - PR

Notes, Miscellaneous

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
DV2-3700'	JBA

Rock Type

10% mafic/ic ARGILLITE
5% discrete vein frags
~~85%~~ mafic. bte-cpxn-olig-qtz ± act., ilm. SEMI-SCHIST

Mineralization

Alteration/Metamorphism

chl + pheng + KF ± qtz / bte
chl/ mafics
KF "flooding" — altn. of oligoclase.

Fluid Inclusions	Porosity Summary

Interpreted Paragenesis of Vein- and Vug-Filling Minerals

(phg)/Q/BTE/AC coarse
[act]-ilm/mag-CHL-ep.
ACT/CPXN/EP-QTZ
QTZ-CAL-EP
ACT-ILM-CH (rb)
KF/CPX-bte (r)
Q/KF/PR
Q/AC
[CPX]-QTZ (en minor)
CHL
def. late chlorite vnlts.
PO/cpy/BTE/qtz-chl — looks like OF-27A-2

Notes, Miscellaneous

Petrographic Summary

Sample Identification DV-2 ~~3300'~~ ~~#~~ 3340

Petrographer/Date of Examination JBH

Rock Type

~~45% Hornfelsic ARGILLITE~~
~~92% CPXN-QTZ-OLIG. HNFLS. ± actinolite~~
~~~60 Hnflsc MGW semi-schist~~ > qtz-bte-cpxn-oligoclase (spn) ± apatite
~~20 Hnfls. MGW~~

5% vein frags.
95% hflsc MGW semi-schist

→ true granoblastic texture — common in qtz clots in hnflsc semischist

→ some olig. forms porphyroblasts sieved w/ cpxn, bte.

Mineralization

Alteration/Metamorphism

patchy rare aggr. of vxh siderite locally repl. bte (± leuc.) chl.)

poss. in some vnlts: bte repl. actinolite
also chlorite & phengite after bte.

green bte repl. actinolite (or hbl) in vnlts.

(bte. also repl. cpxn)

Fluid Inclusions

Porosity Summary

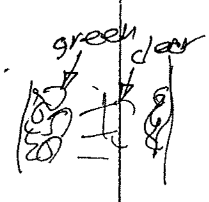
~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

[act]-CAL-PR/KF (act enc in CAL) w/ KFSP selvage
FL-QTZ/KF-PR

enc→ = encapsulated in
[ ] = relict

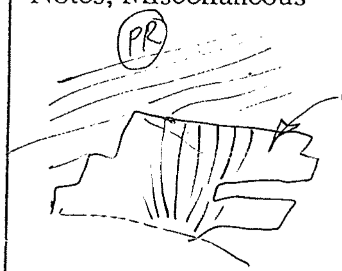
DIOP—ACT (replaced by)
= replaced by

QTZ/ACT – sulf
QTZ – chl (aft act.?)
QTZ – ep.
QTZ – CPXN < 2 var
KFSP.
QTZ – ACT
QTZ – BTE – CPXN – MAG.



Notes, Miscellaneous

Bte has gone from wk-mod. orange-brn to vivid red-brown.



calcite encaps. actinolite (∴ calcite post-dates actinolite, pre-dates prehnite)
~~~

DV-3206-20 — is bladed calcite (#) as vn/t frag; oligoclase porphyroblast replaced w/ K-fsp (interior)
deep rose – lt. amber allanite.

The DV-2 pinchpy was emplaced shallower → possibly did not create such an intense hornfels.

33 : chl. post-dates prehnite in veins.
2 kinds ~~of~~ cpx'n – one greenish, one colorless.

3500' — good photo op — veins folded ptygmatically
only 2nd inclusions within
Q-KF-Tour vn/ts —
some amygdules.

PAGE NO.

04/19/92

PREPARED BY

DATE

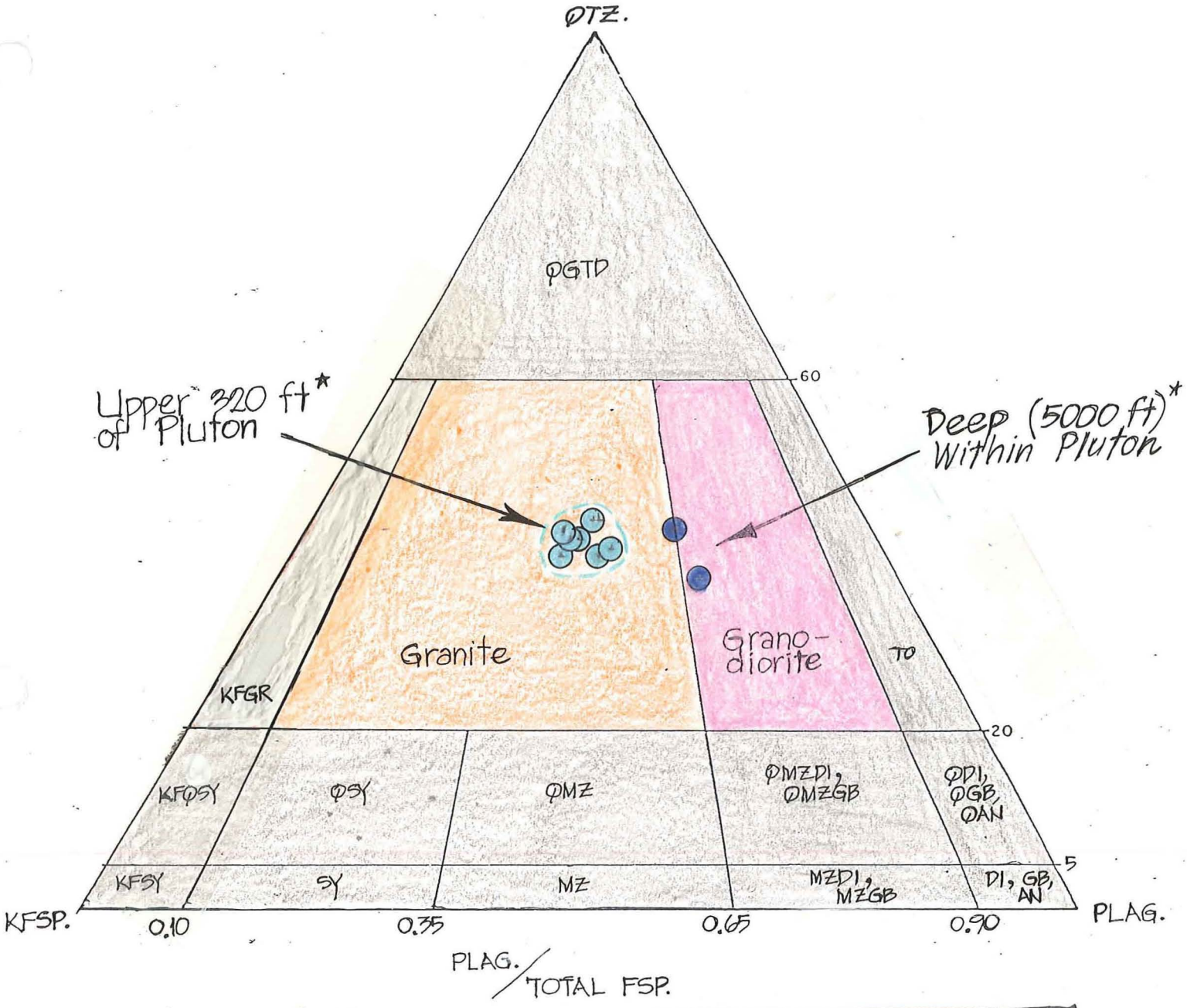
DV25 ST-2 Notes

2300' — clearly calcite (Fr) repl. by calc-silicates, posi. first pxn — then actinolite
good granobl. rexln. of Franc. qtz.

2600' — pluton — intense sericitization

2740' — great silicific., 2nd KFSP, sericitization —
bipyramided qtz. — amygdules,

executive



DV-2, ST2: FELSITE COMPOSITIONS

* measured depths

JBH/LIURI/92

LAMBERTS

ELV. 2949

D&V #2 SIDETRACK #1
STANDARD SURVEY TABLE

N 402,147.53
E 1789,699.3C

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
1				S72E			
2	115	115	1.25	S72E	-0.39	1.19	1.24
3	285	285	1.75	S00E	-3.99	3.81	5.24
4	342	342	2.00	S17W	-5.83	3.53	5.86
5	482	482	4.00	S21W	-12.76	1.15	7.00
6	639	638	4.50	S23W	-23.55	-3.21	8.22
7	766	765	4.25	S36W	-31.98	-7.98	7.97
8	982	980	4.00	S30W	-45.01	-16.44	6.61
9	1170	1168	4.50	S42W	-56.28	-24.63	4.67
10	1281	1279	4.00	S69W	-60.94	-31.41	0.87
11	1343	1340	3.00	S55W	-62.72	-34.75	-1.24
12	1375	1372	1.50	S35W	-63.61	-35.64	-1.61
13	1407	1404	1.00	S34E	-64.30	-35.65	-1.29
14	1438	1435	2.25	S63E	-64.89	-34.99	-0.43
15	1472	1469	3.75	S76E	-65.51	-33.32	1.33
16	1505	1502	4.50	S64E	-66.32	-31.09	3.68
17	1537	1534	5.75	S66E	-67.53	-28.50	6.54
18	1593	1590	8.75	S64E	-70.52	-22.10	13.60
19	1680	1675	11.00	S65E	-76.94	-8.63	28.50
20	1815	1807	14.25	S69E	-88.47	18.53	57.90
21	1939	1927	14.25	S72E	-98.66	47.30	88.08
22	2062	2046	14.75	S70E	-108.69	76.42	113.50
23	2220	2199	14.75	S71E	-122.11	114.34	158.29
24	2337	2312	14.75	S70E	-132.06	142.42	187.75
25	2472	2443	14.25	S72E	-143.06	174.38	221.13
26	2599	2566	13.75	S72E	-152.56	203.60	251.39
27	2693	2657	14.00	S69E	-160.08	224.85	273.68
28	2927	2885	12.25	S75E	-176.50	275.39	326.01
29	2979	2936	10.25	N86E	-177.47	285.48	335.38
30	3074	3030	10.75	N83E	-175.81	302.72	349.82
31	3179	3133	12.00	N82E	-173.11	323.25	366.68
32	3337	3287	13.50	N84E	-168.86	357.86	395.24
33	3500	3445	14.00	N84E	-164.81	396.39	427.36
34	3625	3567	12.25	N81E	-161.11	424.53	450.47
35	3753	3692	12.25	N83E	-157.33	451.42	472.44

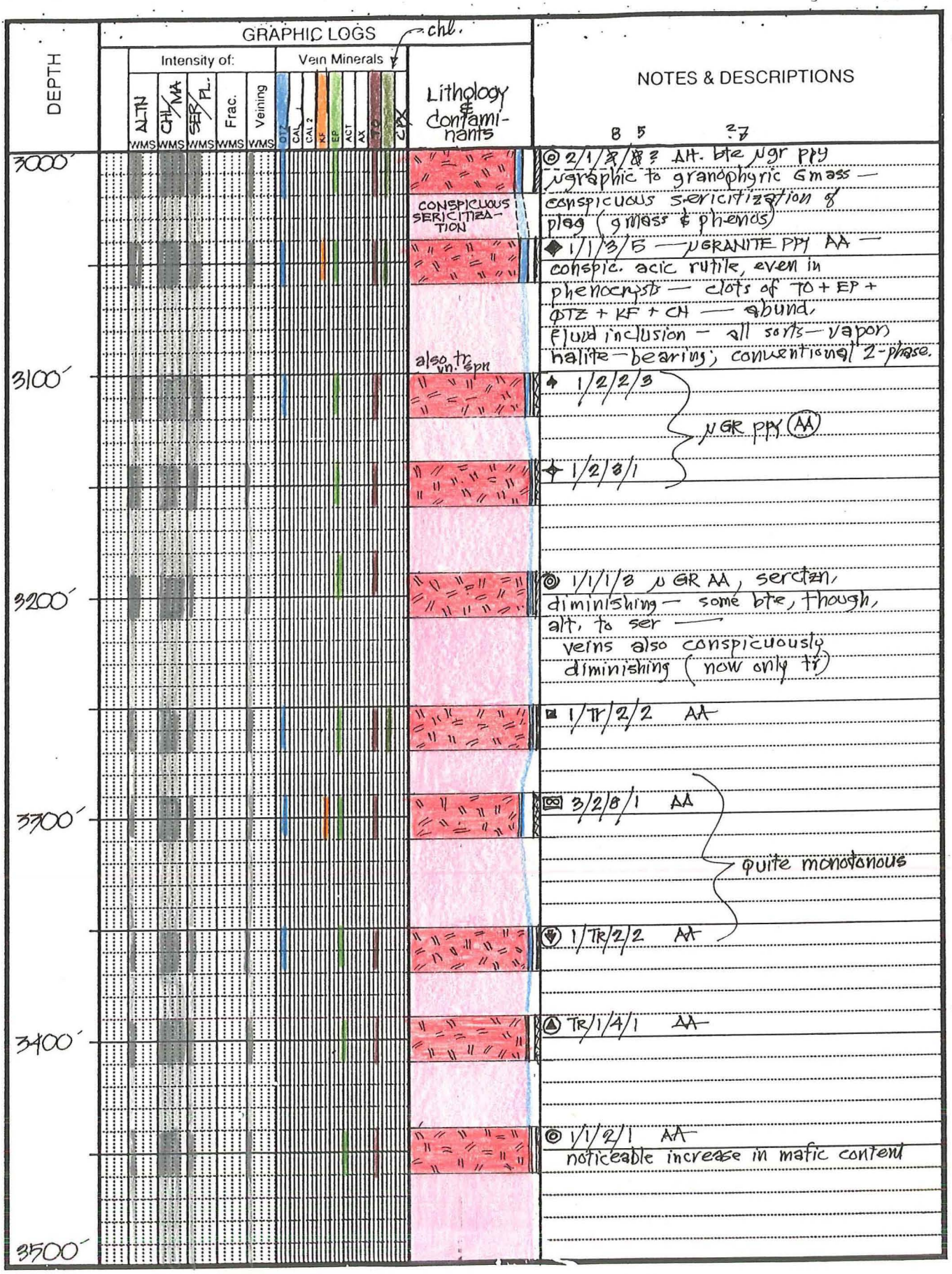
MAY 23,1980 WEIGHTING FACTOR: 0.50

COLE DENTAL

DEV #2 SIDETRACK #1
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
36	3912	3847	13.00	N81E	-152.49	485.84	500.56
37	4070	4001	13.25	N80E	-146.57	521.22	529.02
38	4282	4207	14.00	N81E	-138.33	570.48	568.64
39	4571	4487	14.00	N80E	-126.79	639.44	624.11
40	4760	4671	14.00	N78E	-118.06	684.32	659.64
41	5077	4978	14.00	N77E	-101.46	759.19	717.96
42	5325	5219	13.50	N77E	-88.20	816.63	762.44
43	5608	5494	14.50	N79E	-73.97	883.59	814.89
44	5702	5585	15.00	N79E	-69.40	907.09	833.49
45	5905	5780	16.25	N81E	-59.91	960.93	876.57
46	6108	5975	17.00	N78E	-49.32	1018.04	922.03
47	6381	6235	18.25	N87E	-38.53	1099.99	989.32
48	6796	6629	18.45	N78E	-21.48	1229.52	1095.69
49	7262	7071	18.50	N72E	16.74	1372.16	1203.69
50	7516	7313	17.00	N57E	50.08	1442.05	1249.75
51	7846	7627	18.45	N69E	95.69	1531.57	1307.37
52	8623 T.D.	8372	14.50	N52E	204.20	1723.36	1425.77

JUN 16,1980 WEIGHTING FACTOR: 0.50

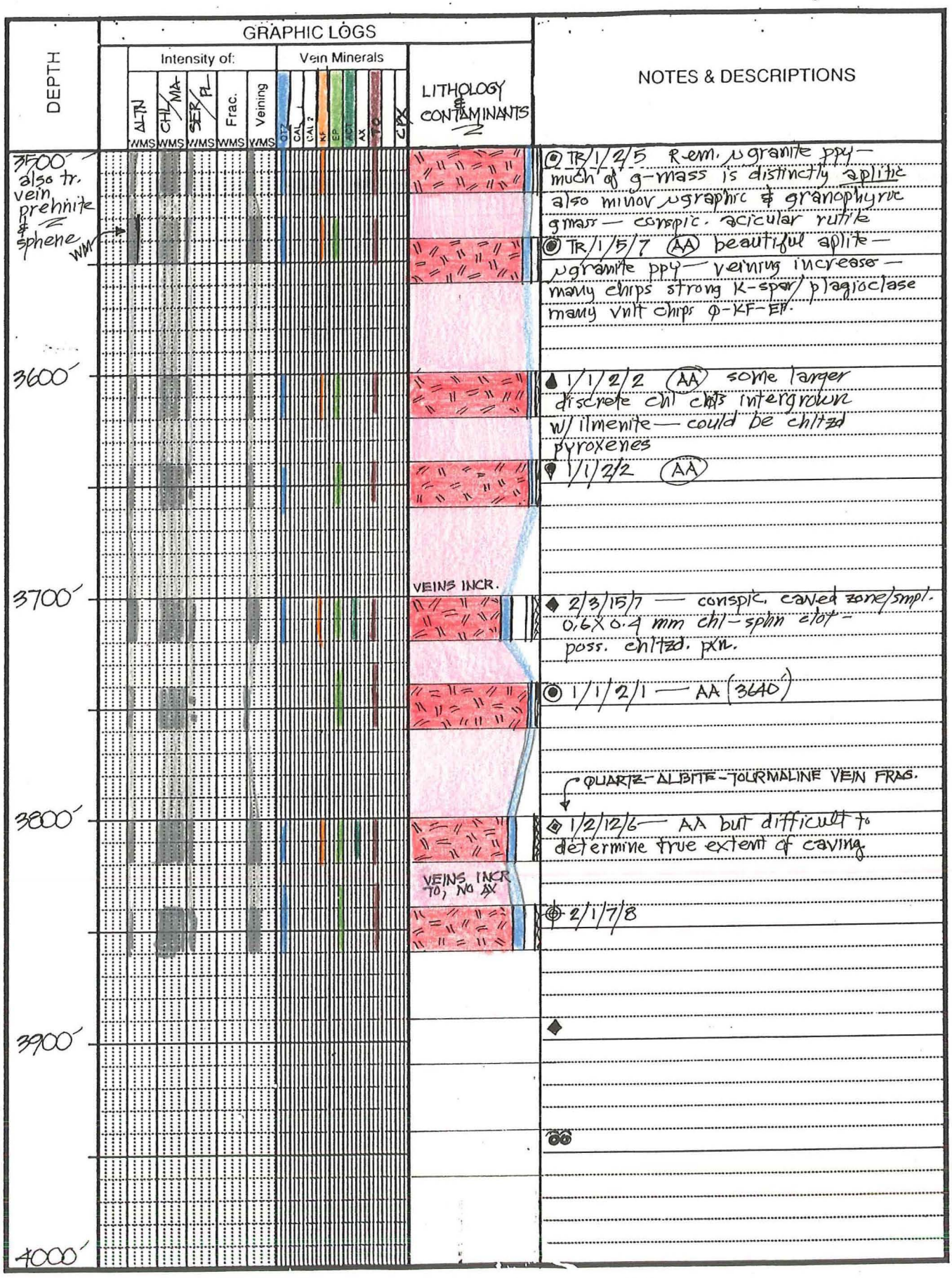


Borehole No. PV-25, ST1

Depth Interval 3000-3500'

Logged By JH

Date



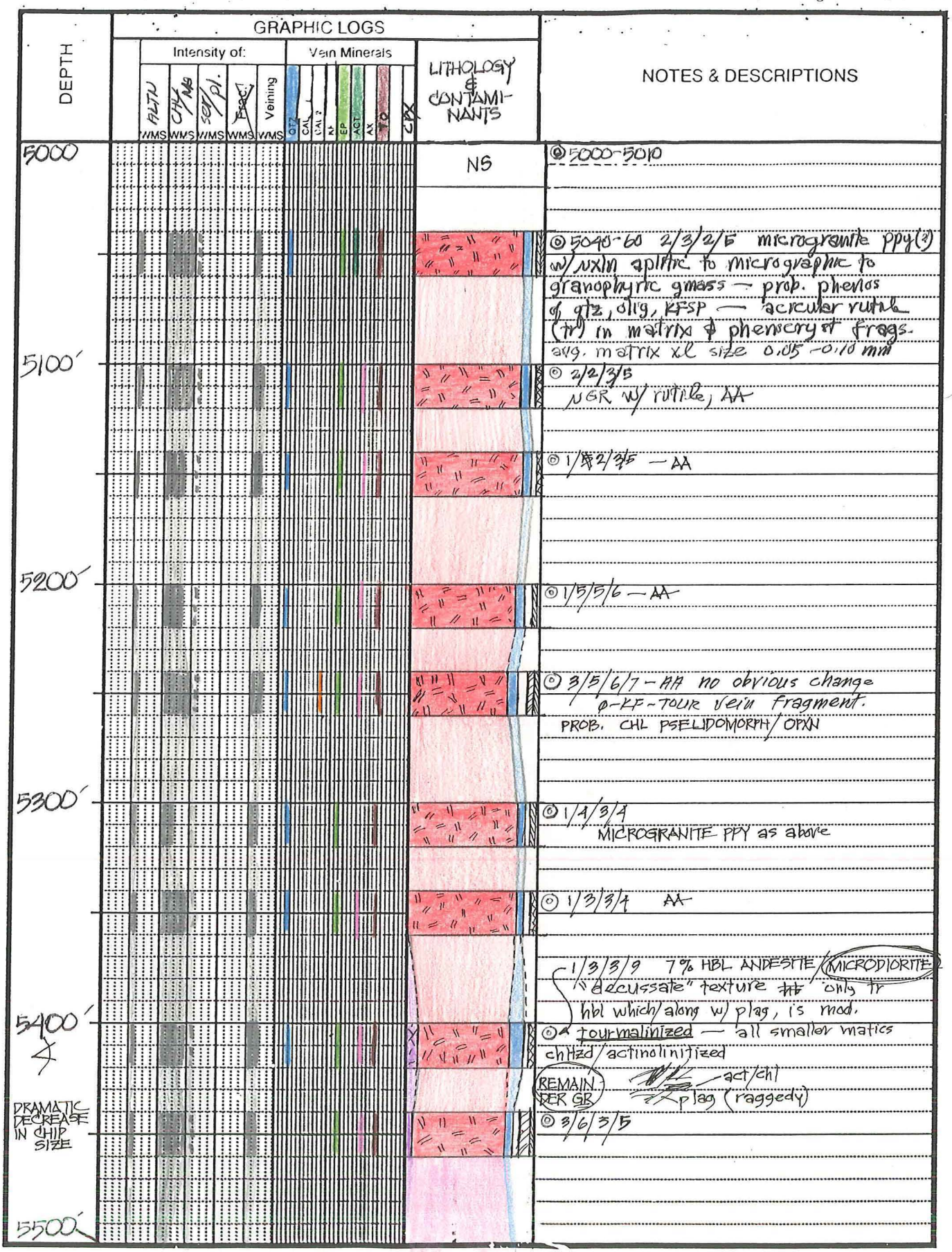
<1% VWK
1-5% WK
>5-15% M
>15-30% S
> 30% VS

Borehole No. DV-25, ST1

Depth Interval 3500-4000'

Logged By JBH

Date

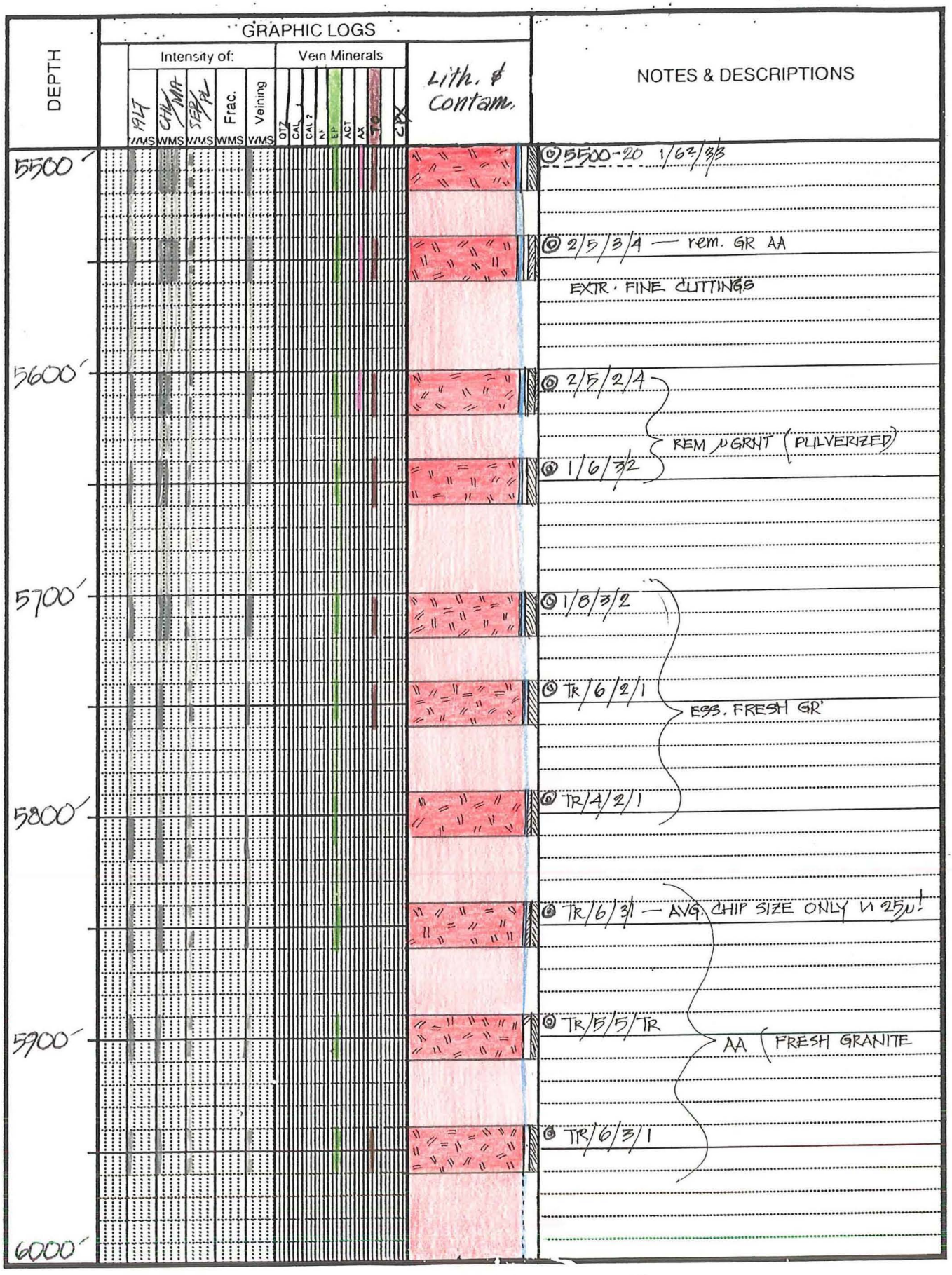


Borehole No. DV-25

Depth Interval 5000-5500

Logged By JH

Date

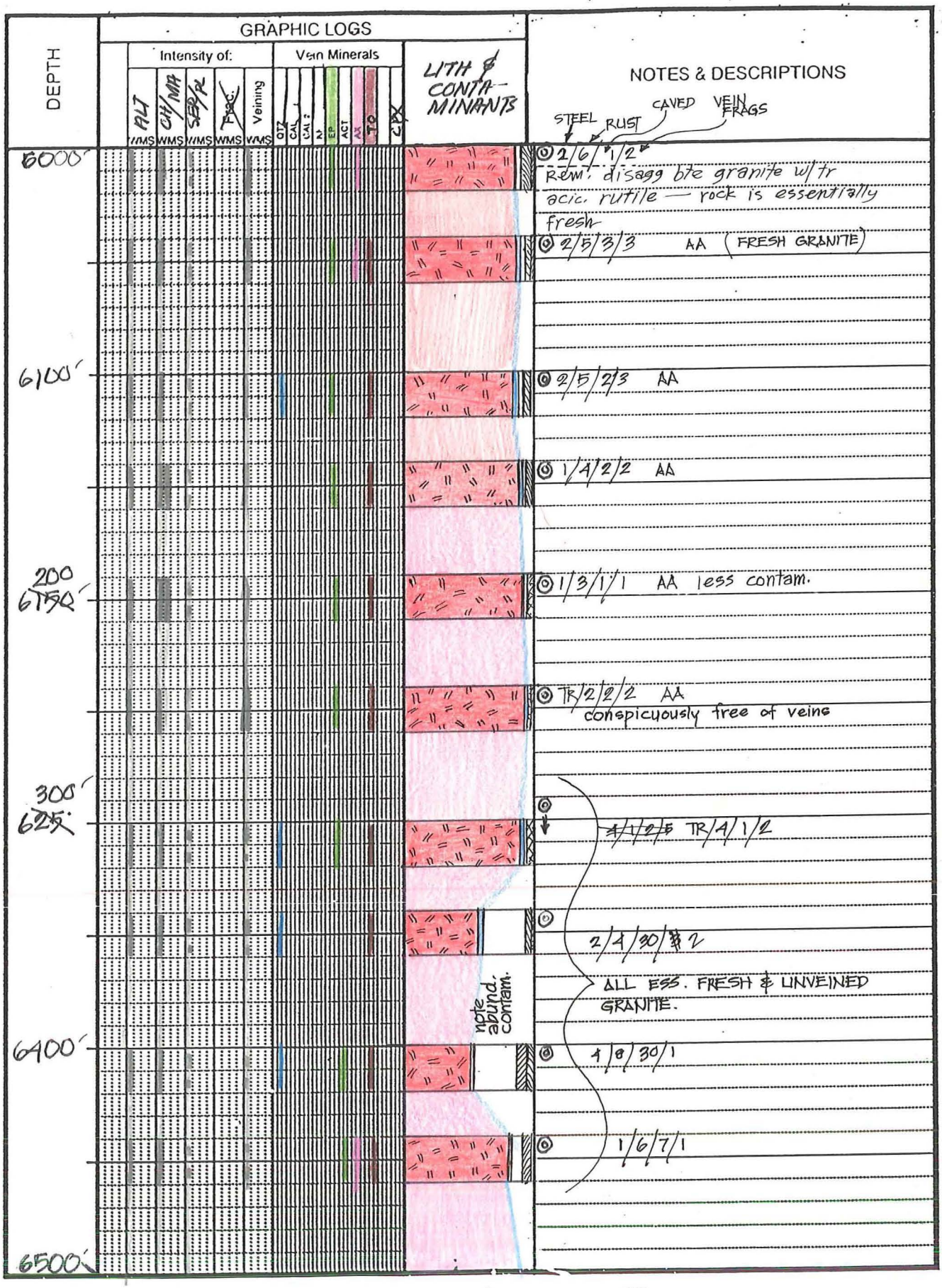


Borehole No. _____

Depth Interval _____

Logged By _____

Date _____

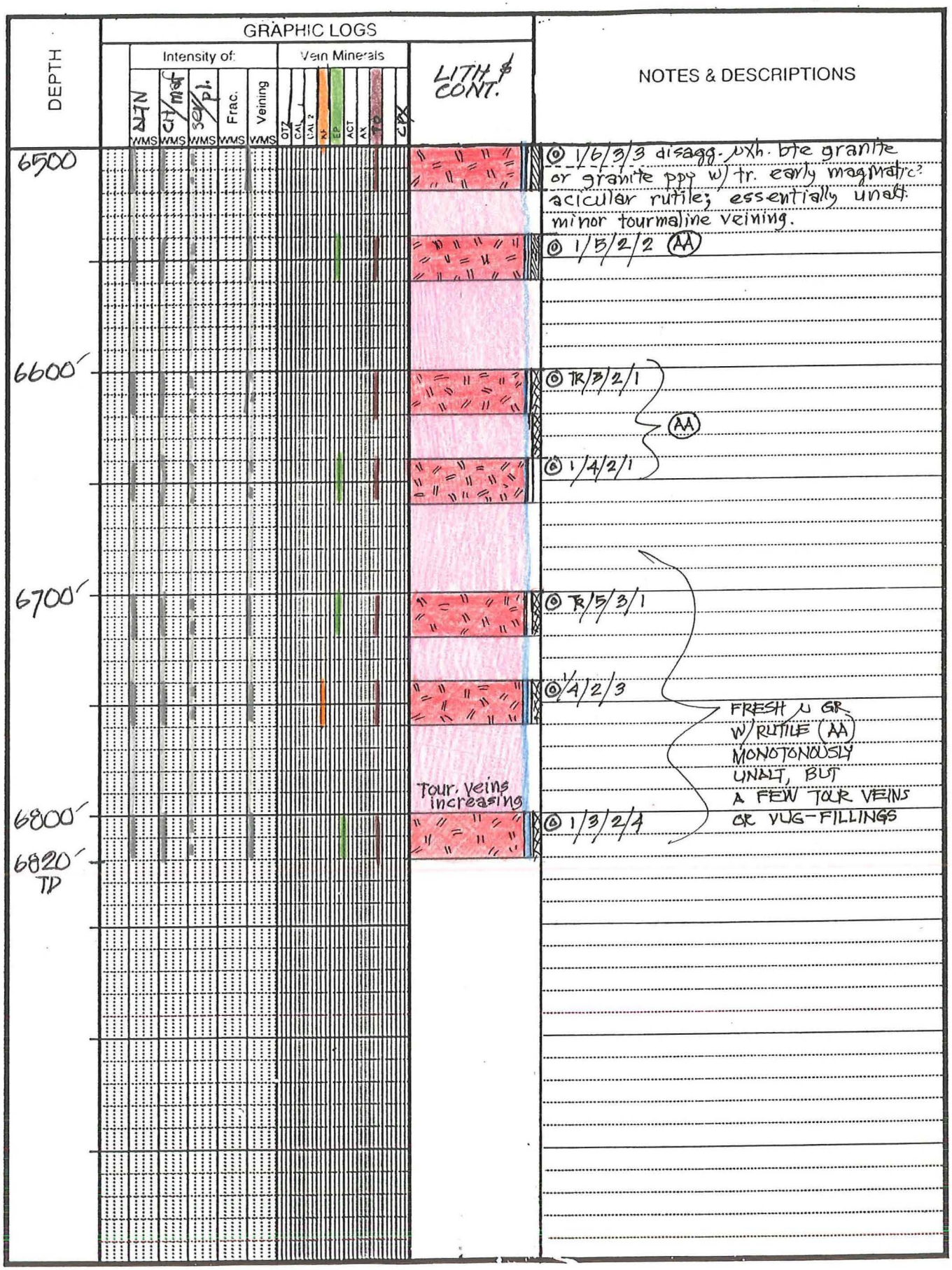


Borehole No. DV-25 ST1

Logged By JH

Depth Interval _____

Date _____



Borehole No. DV-25, ST-1

Depth Interval 6500-6820'

Logged By JBH

Date

D&V-25 ST2
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
1	0	0	0.00	N21E	0	0	0
2	109	109	1.00	N21E	1	0	1
3	240	240	1.00	S53W	2	-1	0
4	287	287	1.50	N05W	3	-2	0
5	313	313	1.25	N05E	3	-2	0
6	373	373	1.25	N78E	4	-2	2
7	532	532	1.75	N78E	5	3	5
8	594	594	1.75	N80E	6	4	7
9	658	658	1.50	S80E	6	6	8
10	689	689	1.25	N85E	5	7	9
11	720	720	1.50	N88E	6	8	9
12	809	809	2.75	S77E	5	11	12
13	903	903	2.75	S78E	4	15	14
14	966	966	2.75	S75E	4	18	16
15	1037	1036	3.75	S78E	3	22	19
16	1100	1099	3.75	S74E	2	26	21
17	1272	1271	5.00	S85E	-1	39	29
18	1367	1365	6.50	S89E	-1	49	36
19	1494	1491	7.75	S88E	-2	64	48
20	1621	1617	9.00	S89E	-2	83	62
21	1744	1738	11.75	N89E	-2	105	79
22	1895	1886	12.00	N84E	0	136	104
23	1989	1978	12.00	N86E	1	155	120
24	2114	2100	12.75	N85E	4	182	142
25	2207	2191	12.75	N86E	5	203	159
26	2249	2231	14.25	N83E	6	212	167
27	2316	2296	14.00	N67E	10	228	181
28	2348	2327	15.00	N63E	14	235	189
29	2380	2358	16.50	N60E	18	243	198
30	2450	2425	19.50	N53E	30	261	219
31	2514	2485	20.50	N52E	43	279	241
32	2615	2580	20.00	N51E	65	306	276
33	2711	2669	21.00	N51E	86	332	310
34	2835	2785	21.45	N51E	114	367	354
35	2997	2935	23.00	N52E	152	415	416

APR 27,1988 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N50E

D&V-25 ST2
STANDARD SURVEY TABLE

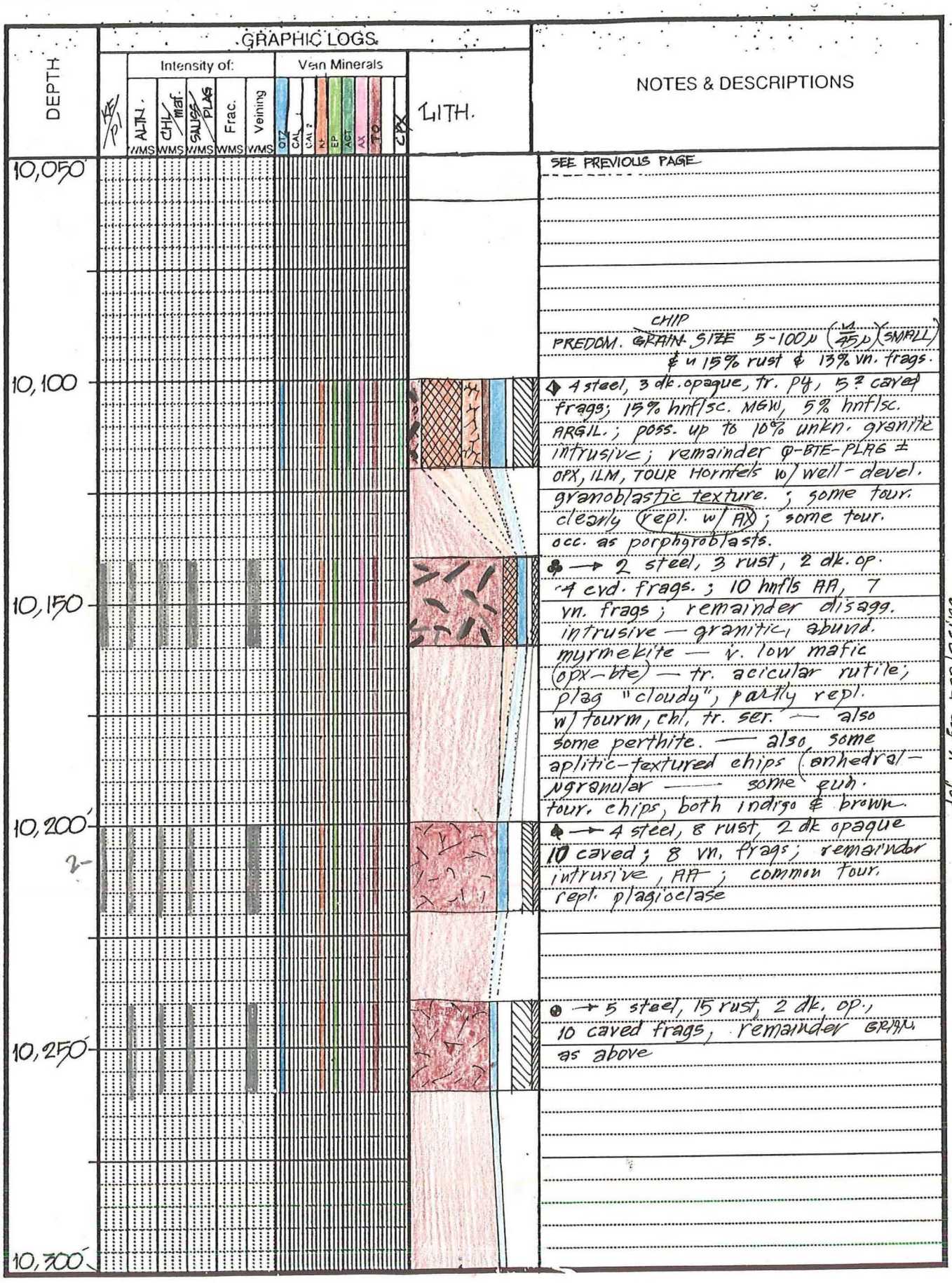
STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
36	3220	3139	25.00	N53E	208	487	506
37	3411	3311	26.50	N51E	259	552	589
38	3511	3400	26.75	N49E	288	587	634
39	3670	3542	26.50	N49E	334	640	705
40	3894	3743	26.00	N48E	400	714	804
41	4117	3944	25.50	N47E	465	786	901
42	4307	4116	25.00	N45E	522	844	982
43	4537	4325	24.25	N44E	590	911	1077
44	4760	4529	23.25	N46E	654	975	1167
45	4919	4676	22.50	N48E	696	1020	1229
46	5046	4793	22.50	N48E	728	1056	1277
47	5174	4911	23.25	N46E	762	1093	1327
48	5397	5116	23.50	N49E	822	1158	1415
49	5556	5261	24.00	N51E	863	1207	1479
50	5721	5410	26.75	N53E	907	1263	1550
51	5816	5494	28.25	N54E	933	1298	1594
52	5942	5605	29.00	N53E	969	1346	1654
53	6070	5717	28.25	N55E	1005	1396	1715
54	6197	5830	27.25	N56E	1038	1445	1774
55	6419	6028	26.25	N54E	1095	1527	1874
56	6611	6201	25.00	N53E	1145	1593	1956
57	6768	6344	24.25	N50E	1186	1645	2022
58	6849	6418	24.75	N50E	1207	1670	2055

APR 27, 1988 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N50E

D&V-25 ST2
MARKER COORDINATE REPORT

E-LOG MARKER NAME	DEPTHS MEAS	VERT	SUBSEA	COORDINATES NS	EW	LAMBERT COORDS X	Y
10#	2995	2933	1133	152	414	414	152
60#	5453	5109	-2103	837	1176	1176	837

FEB 22,1983 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N50E



Borehole No. DX-84

Logged By JH

Depth Interval _____

Date _____

GRAPHIC LOGS

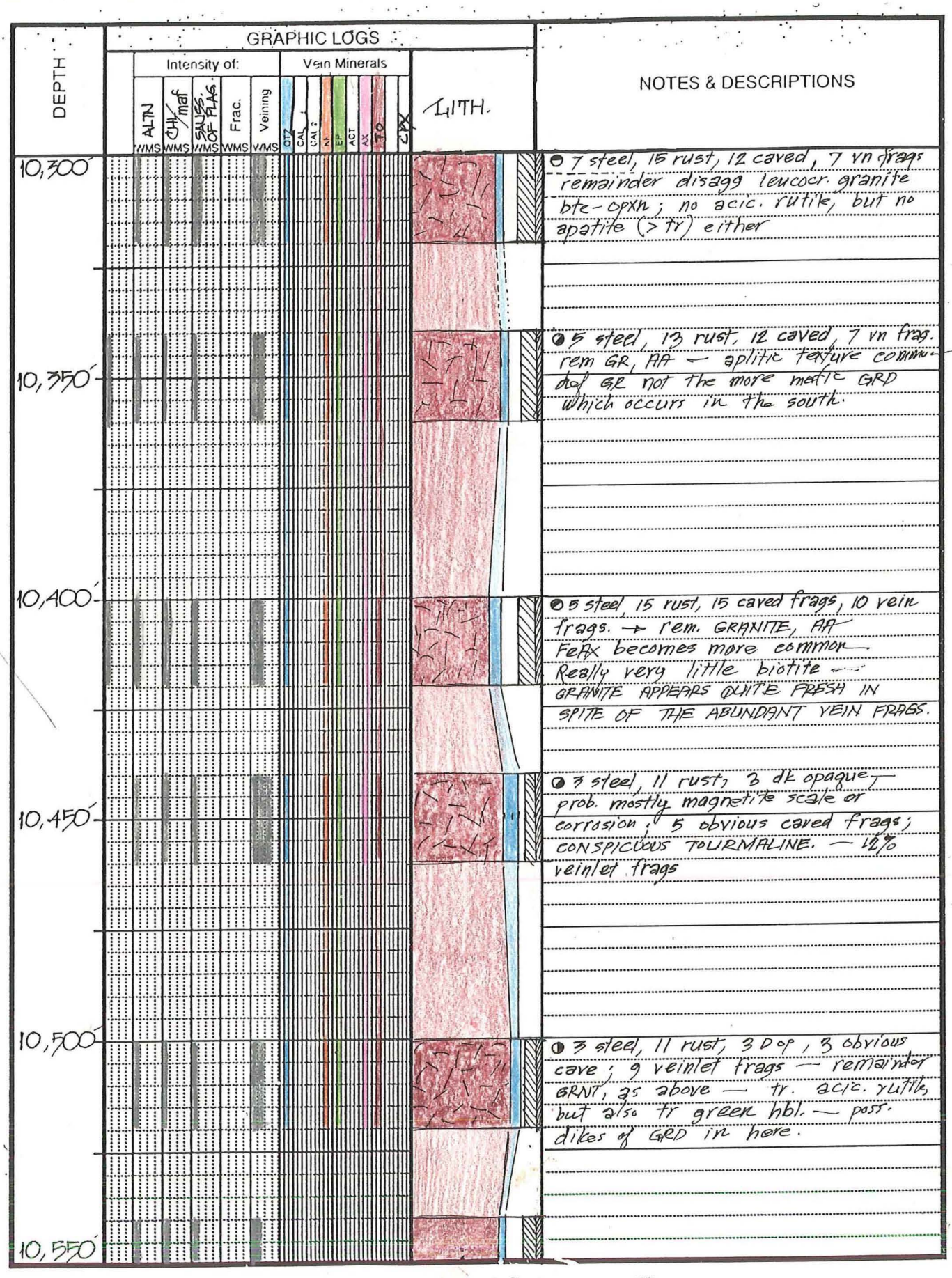
DEPTH	Intensity of: ALTN WMS	CHL/mat WMS	SAUSS-PLAG. WMS	Frac. WMS	Veining WMS	Vein Minerals: QTZ	CAL 1	CAL 2	KF	EP	ANH	AX	TO	CPX	LITH	NOTES & DESCRIPTIONS
9800																
9850																◆ 9 rust, 6 steel, 3 crd., 2 VB rep. mixture of hnfls arg., lt MGW & bte-qtz-plag-kf opxn — hornfels (± tour) — VFs are tour ± qtz kf, chl, act, ep & act ± qtz, kf, chl, ep & FeOx ± ep. — poss. some vbx. This sample, RX is either a bx or is heavily stockwork veined.
9900																♣ (AA) supgx-absent vnlt frags
9950																● AA
10,000																●
10,050																◪

Borehole No. DX-84

Depth Interval _____

Logged By HH

Date _____

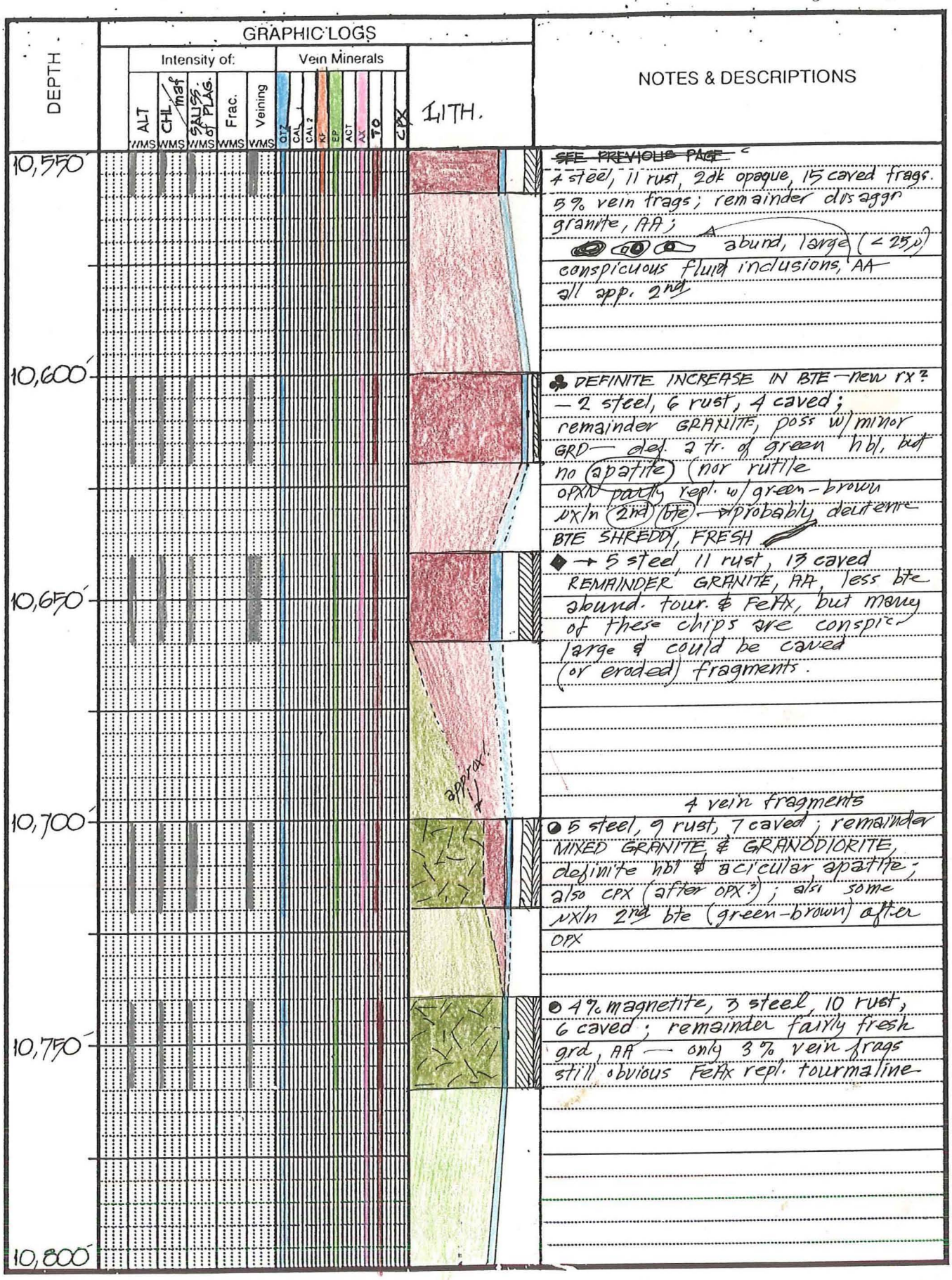


Borehole No. DX-84

Logged By JH

Depth Interval _____

Date _____



~~SEE PREVIOUS PAGE~~

4 steel, 11 rust, 2dk opaque, 15 caved frags. 5% vein frags; remainder disaggr granite, AA;

abund, large (< 25μ) conspicuous fluid inclusions, AA — all app. 2nd

♣ DEFINITE INCREASE IN BTE — new rx? — 2 steel, 6 rust, 4 caved; remainder GRANITE, poss w/ minor GRD — det. 2 fr. of green hbl, but no apatite (nor rutile OPX'n partly repl. w/ green-brown vx'n (2nd) bte) → probably deuteric BTE SHREDDY, FRESH

◆ → 5 steel, 11 rust, 13 caved REMAINDER GRANITE, AA, less bte abound. tour. & FeOx, but many of these chips are conspic. large & could be caved (or eroded) fragments.

4 vein fragments

● 5 steel, 9 rust, 7 caved; remainder MIXED GRANITE & GRANODIORITE, definite hbl & acicular apatite; also CPX (after OPX?); also some vx'n 2nd bte (green-brown) after OPX

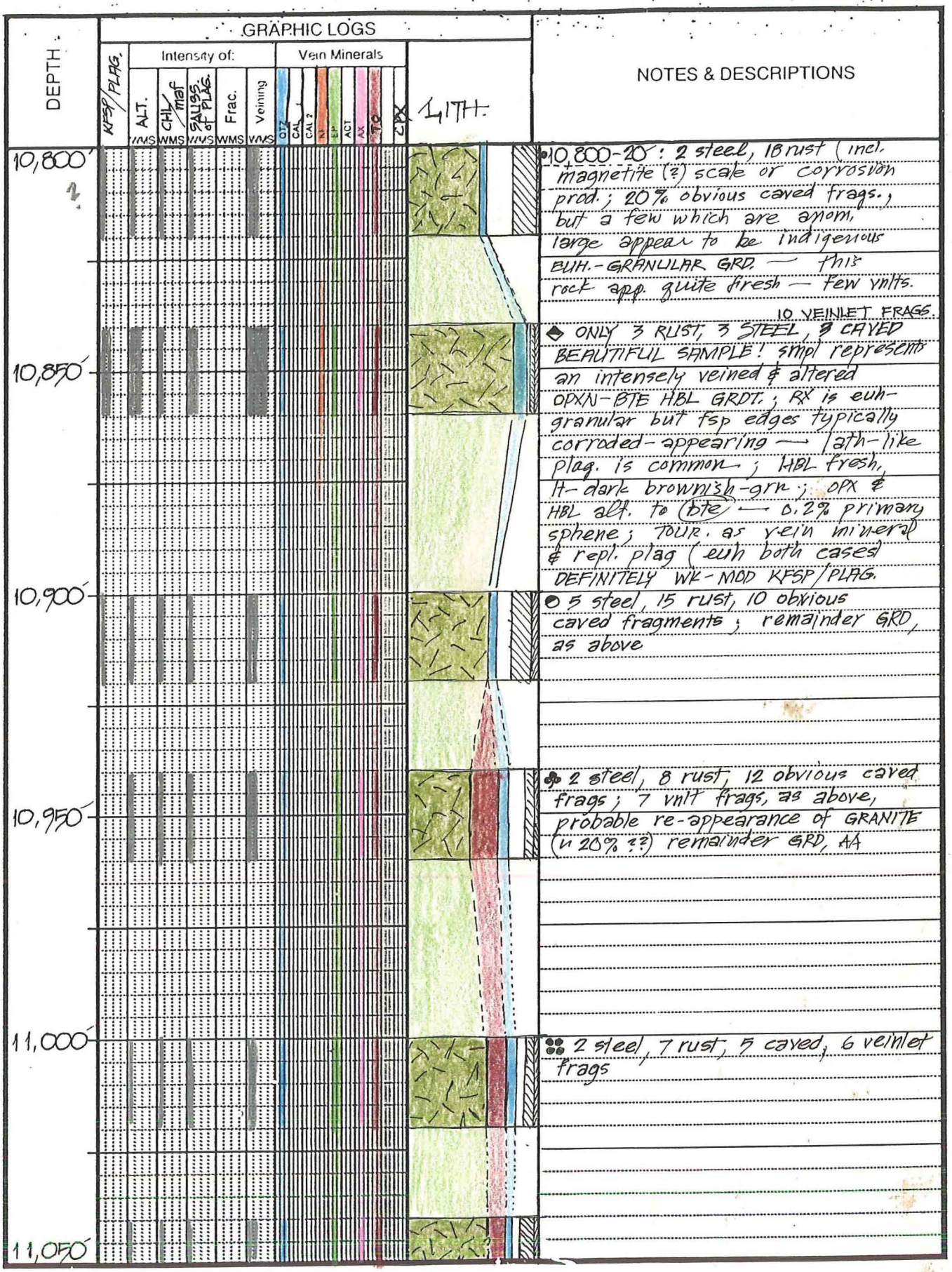
● 4% magnetite, 3 steel, 10 rust, 6 caved; remainder fairly fresh grd, AA — only 3% vein frags still obvious FeOx repl. tourmaline

Borehole No. DX-84

Logged By JH

Depth Interval

Date

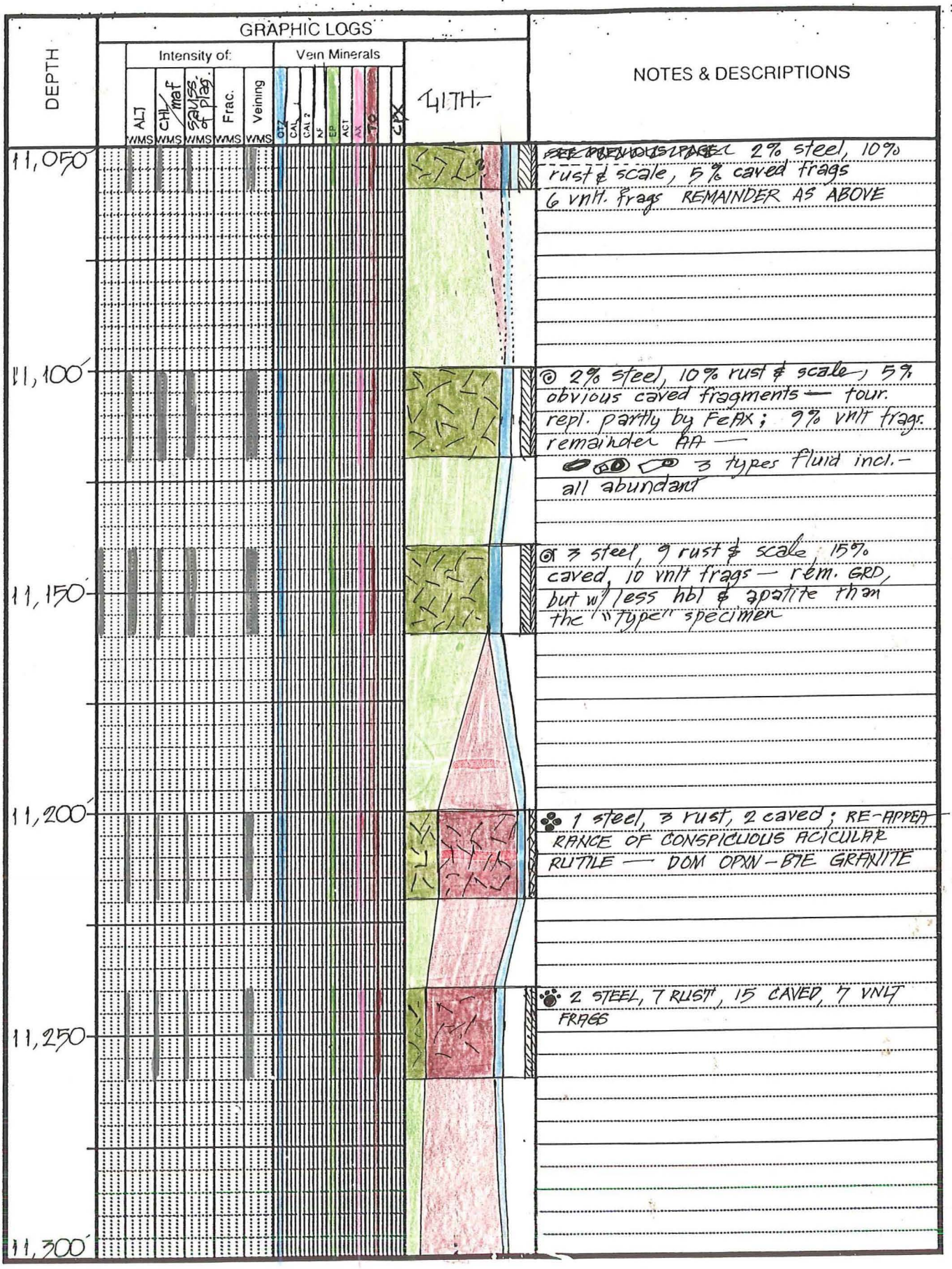


Borehole No. DX-84

Logged By JH

Depth Interval _____

Date _____

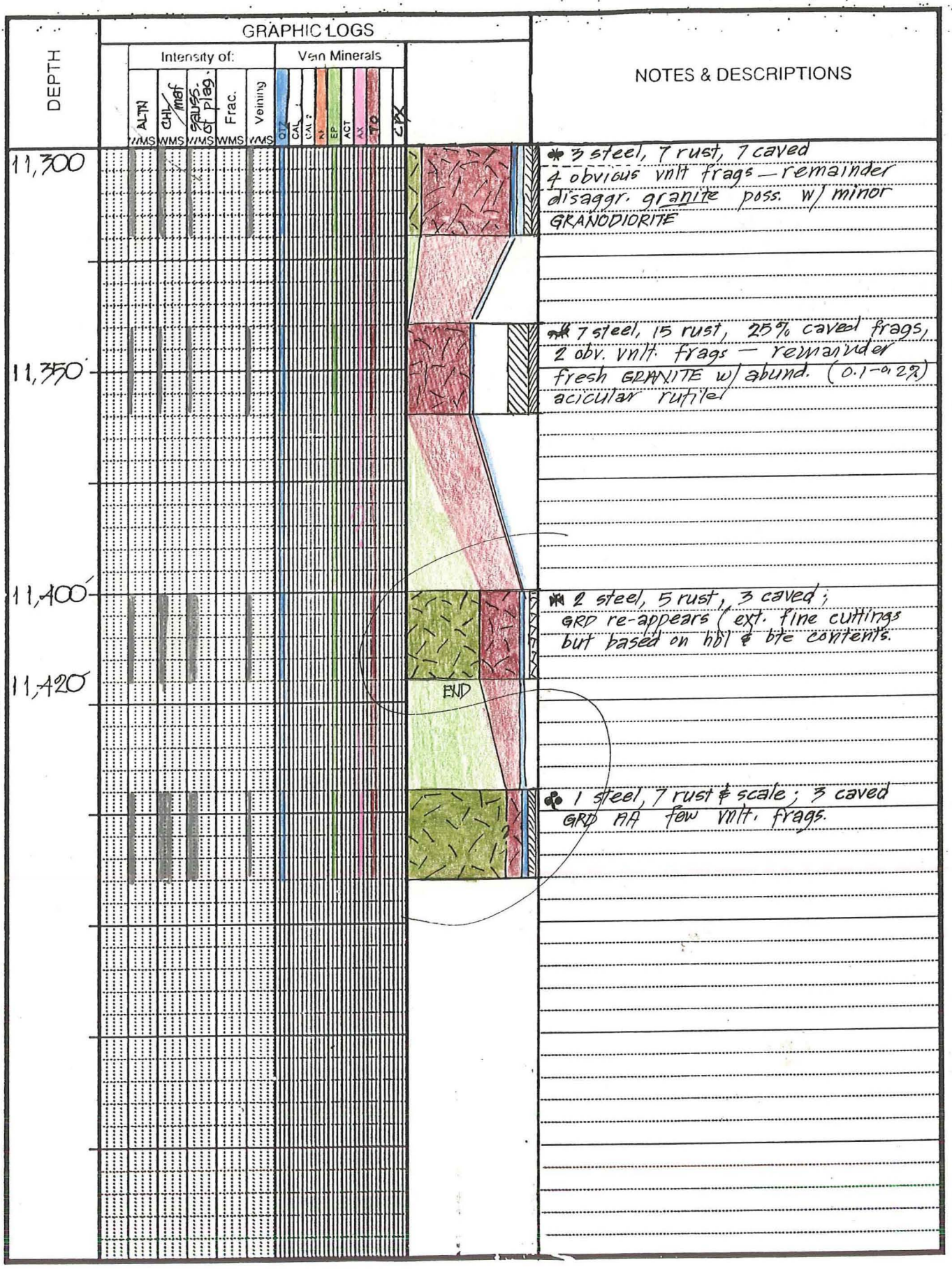


Borehole No. DX-84

Logged By JH

Depth Interval _____

Date _____



REVERSE THESE

Borehole No. DX-84

Depth Interval _____

Logged By JH

Date _____

DX-84 ST1
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
1	0	0	0.00	S32W	0	0	0
2	155	155	1.00	S32W	-1	-1	-1
3	228	228	1.00	S15W	-2	-1	-1
4	320	320	1.25	S13E	-4	-1	-3
5	380	380	1.00	S03E	-5	-1	-4
6	481	481	0.00	S03E	-6	-1	-4
7	575	575	0.75	S77W	-7	-1	-5
8	637	637	0.75	N80W	-7	-2	-4
9	793	793	0.25	N12E	-6	-3	-3
10	886	886	0.75	S88E	-5	-2	-3
11	980	980	0.75	S33E	-6	-1	-4
12	1075	1075	0.75	S02W	-7	-1	-5
13	1169	1169	0.75	N57E	-7	0	-6
14	1263	1263	1.00	N40E	-7	1	-6
15	1357	1357	1.00	N35E	-5	2	-6
16	1451	1451	1.25	N54E	-4	3	-5
17	1513	1513	1.25	N42E	-3	4	-5
18	1606	1606	1.25	N48E	-2	6	-5
19	1732	1732	2.00	N45E	1	9	-4
20	1825	1825	2.25	N56E	3	11	-4
21	1921	1921	2.00	N58E	5	14	-4
22	2015	2015	1.75	N72E	6	17	-5
23	2110	2110	1.75	N81E	7	20	-6
24	2267	2267	1.00	S63E	6	23	-8
25	2425	2424	1.00	S15E	4	25	-11
26	2580	2579	1.00	S23W	2	25	-13
27	2735	2734	1.00	S24W	-1	24	-14
28	2891	2890	1.00	S62W	-3	22	-15
29	3047	3046	1.50	S57W	-5	19	-15
30	3204	3203	1.75	S62W	-7	15	-14
31	3360	3359	2.00	S63W	-9	11	-14
32	3516	3515	2.00	S64W	-12	6	-13
33	3535	3534	2.25	S85W	-12	5	-13
34	3563	3562	3.00	N75W	-12	4	-12
35	3595	3594	4.00	N69W	-11	2	-10

FEB 27,1987 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N35W

DX-64 ST1
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
36	3627	3626	4.75	N51W	-10	0	-8
37	3658	3657	6.00	N42W	-8	-2	-5
38	3718	3716	7.50	N37W	-2	-7	2
39	3807	3804	9.00	N32W	8	-14	15
40	3901	3897	10.25	N32W	21	-22	30
41	3994	3988	12.00	N32W	37	-32	48
42	4087	4079	13.50	N34W	54	-43	69
43	4198	4187	14.25	N32W	76	-57	95
44	4323	4308	14.00	N31W	102	-73	126
45	4448	4429	13.75	N30W	128	-88	156
46	4574	4552	14.25	N30W	154	-104	186
47	4698	4672	14.25	N32W	181	-119	216
48	4823	4793	14.75	N31W	207	-136	248
49	4949	4915	14.75	N30W	235	-152	280
50	5074	5036	14.25	N30W	262	-168	311
51	5168	5127	14.00	N32W	282	-180	334
52	5244	5201	12.00	N52W	294	-191	351
53	5276	5232	12.00	N58W	298	-196	357
54	5375	5329	14.00	N44W	312	-214	378
55	5430	5382	14.00	N39W	322	-223	392
56	5461	5412	13.50	N38W	328	-227	399
57	5546	5495	14.25	N43W	343	-240	419
58	5703	5646	15.50	N39W	374	-267	459
59	5859	5797	15.25	N37W	406	-292	501
60	6046	5976	17.25	N33W	449	-322	553
61	6140	6066	18.00	N39W	472	-339	581
62	6235	6156	18.00	N38W	495	-357	611
63	6360	6275	18.25	N38W	526	-381	649
64	6485	6394	18.00	N37W	557	-405	688
65	6610	6513	18.00	N37W	588	-428	727
66	6793	6692	17.50	N38W	633	-463	784
67	6889	6779	17.50	N39W	655	-480	811
68	7013	6897	17.75	N38W	684	-503	849
69	7168	7044	18.25	N38W	722	-533	897
70	7328	7194	18.50	N39W	761	-564	947

FEB 27,1987 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N35W

DX-84 ST1
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
71	7482	7342	19.75	N39W	800	-596	998
72	7577	7431	19.25	N39W	825	-616	1029
73	7672	7521	19.00	N40W	849	-636	1060
74	7797	7639	19.75	N38W	881	-662	1102
75	7923	7757	19.50	N37W	915	-688	1144
76	8057	7884	19.50	N37W	951	-715	1189
77	8173	7993	19.75	N40W	981	-739	1227
78	8330	8141	20.00	N40W	1022	-773	1281
79	8486	8287	20.00	N41W	1062	-808	1334
80	8705	8494	19.00	N43W	1117	-857	1406
81	8863	8643	18.50	N45W	1153	-892	1456
82	9019	8791	18.75	N47W	1188	-928	1505
83	9143	8909	18.75	N47W	1215	-957	1544
84	9365	9119	18.50	N47W	1263	-1009	1614
85	9567	9311	17.50	N41W	1308	-1052	1675
86	9795	9528	19.00	N39W	1363	-1098	1746
87	9952	9677	16.50	N37W	1401	-1128	1794
88	10449	10156	14.25	N32W	1509	-1202	1926
89	10606	10309	13.50	N32W	1541	-1222	1964

FEB 27,1987 WEIGHTING FACTOR: 0.50
SECTION PROJECTED TO AZIMUTH N35W

FF52-32, ST2

MINERALOGY, APPROX. WT.% [✓] (or) RELATIVE ABUNDANCE [ ]

SAMPLE NO.	QUARTZ	PLAG.	KFSP.	CALCITE	CPXN/OPXN	ACT./HBL	PYRITE	MAGNETITE	SPHENE/LEUCOXENE	ILLITE	BIOTITE	CHLORITE	TALC	PYROPH	EPIDOTE	PREHNITE	TOURMALINE	FeAX	~~SERP~~ CAVE	RUST/STEEL	OPAQUES	TL CONT	
8600-8620'	18	20	10		2/5	3	2		3	4	17	10			2		1	—	(33)	(3/1)	5	(7)	✓ for sulfides (Cu?)
8640-8660'	23	25	11		3/4	5			3	(3)	12	7	Tr		1		Tr		(10)	(3/1)	5	/k	
8700-8720'	21	24	8		8/11	6			2	2	15	(5)	2		1		Tr				3		1 tremolite
8740-8760'	22	24	8		8/4	(7)			2	3	13	(4)	(1)		1		Tr	Tr			3		Tr "
hnfls 8800-8820' HHH	11	29	3		1/10	4/2			3	3	17	(2)	3		1		Tr				5-1		tr/op/
8840-8860'	(13)	30	14		5/8	3/1			2	2	14	(2)	(3)		1		Tr		(3)	(3/1)	2	(7)	1 tremolite Tr gnt
8900-8920'	31	23	22		2/3	2			1	1	8	1	1		(3)	(4)	1	X	(10)	(3/2)	1	(15)	
8940-8960'	31	26	19		1/2	3/1		(7)	1	1	5	1	—		(●)	(6)	—	—	(5)	(3/1)	4	(9)	Tr. garnet ABUNDANT MAG.
some GBD dikes → 9000-9020'								(4)						ply? →	(6)	(7)	—	—	(23)	(3/2)		(28)	
9040-9060'								(3)							(2)		—	—	(5)	3/Tr		(8)	
(GR) 9100-9120' (35/2)								(2)							(2)		—		(3)	2/Tr		(5)	
								(2)							(2)				(A)	2/Tr		(6)	

MM = PREDOMINANT M = MAJOR m = MINOR Tr = TRACE ? = TENTATIVE IDENTIFICATION

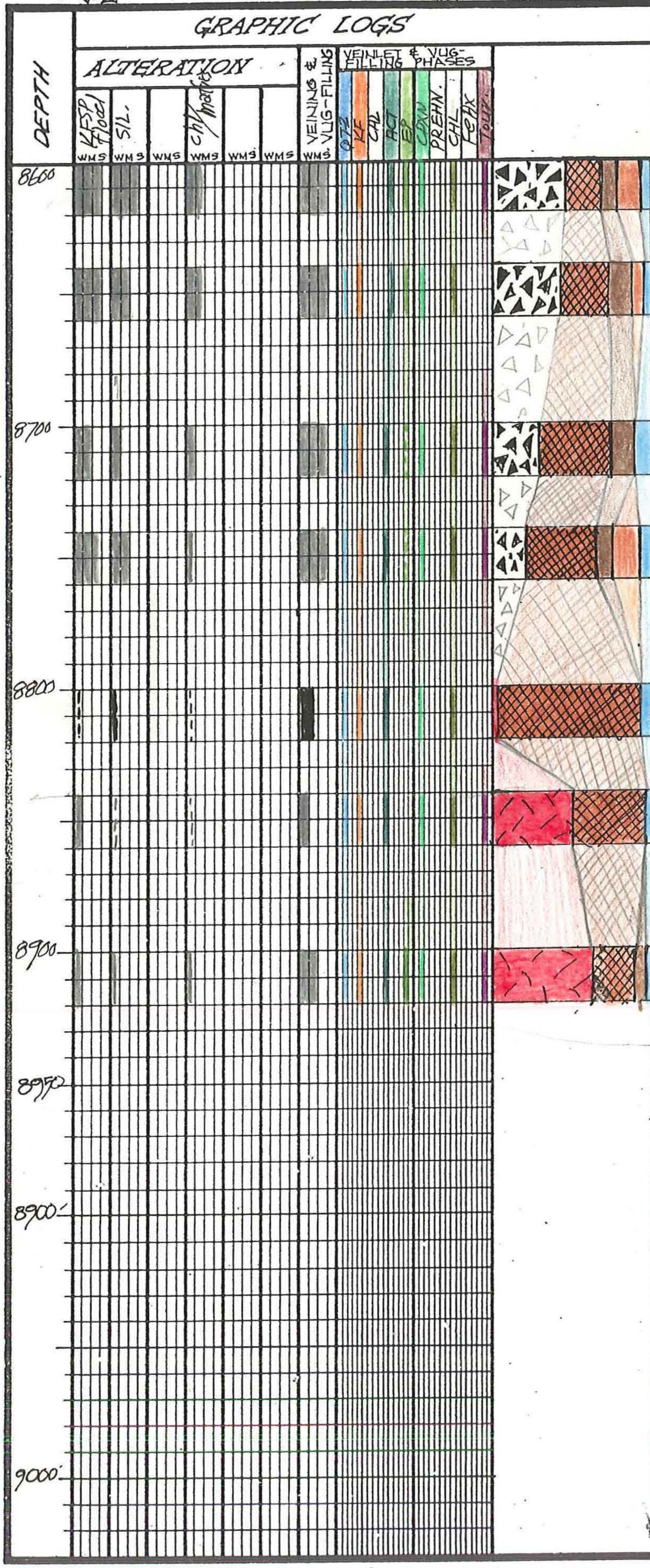
SUMMARY OF X-RAY DIFFRACTION ANALYSIS

UNIVERSITY OF UTAH RESEARCH INSTITUTE, EARTH SCIENCE LABORATORY

FF52-32, ST-2

XRD

▲▲▲ = HYDROTHERMAL BX | BTE-Q-PLAG-CPXN HNFLS | HNFLSC MGW | HNFLSC ARGILLITE | VEIN FRAGS.



LEUC. (UNITS) | PLAG(VNLT) | DESCRIPTIONS

(NOTES)

abund. hydroth. ubx; hnfls.
↳ this contains clasts of orth., microperthite from intrusive below

—garnet veinlet frag.
—cpxn repl. Franc. calcite
— hnfls has some tourm. porphyroblasts

cpxn dramatically increasing. — talc/trem. vnlts. present.

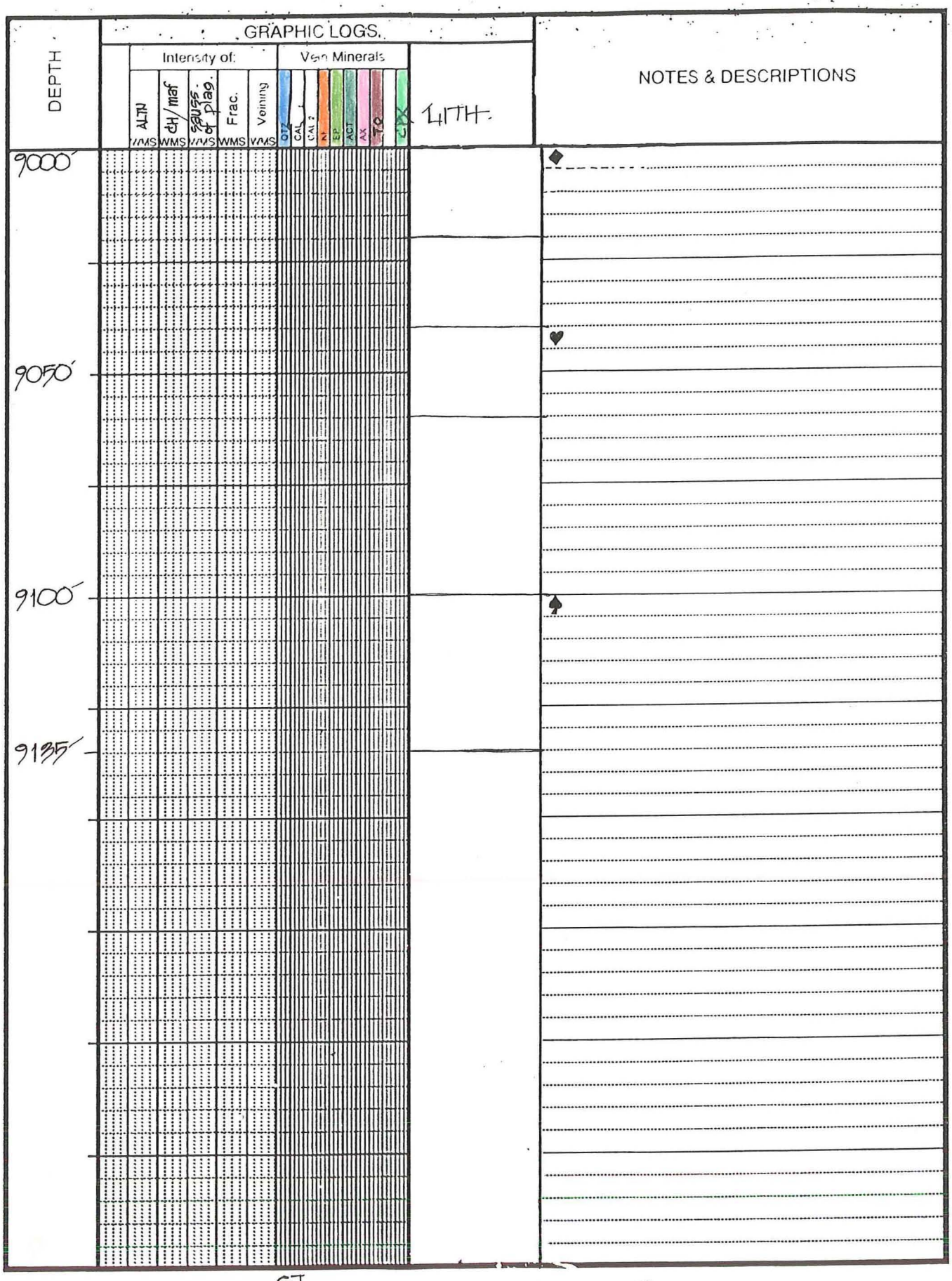
hyd. bx disappears; also dramatically diminished KFsp flooding. OPXN

need pix

intrusive begins to dominate → ppytic — distinctive, subh.—euh. & granular subgraphic groundmass — phenos of qtz & plagioclase
INTRUSIVE APPEARS RELATIVELY UNALTERED.

DRILL HOLE FF 52 RD
LOCATION GEYSERS

LOGGED BY JBH

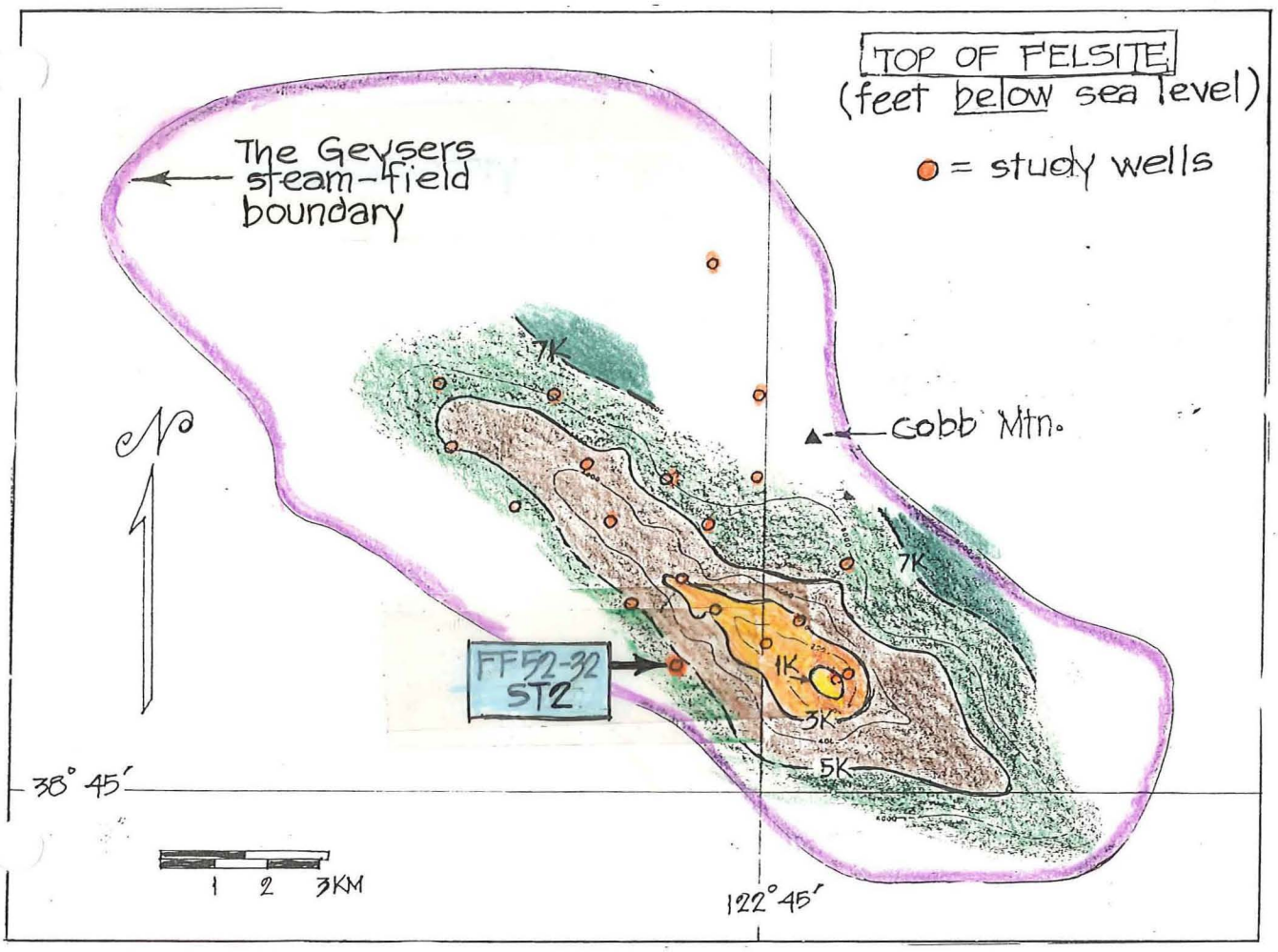


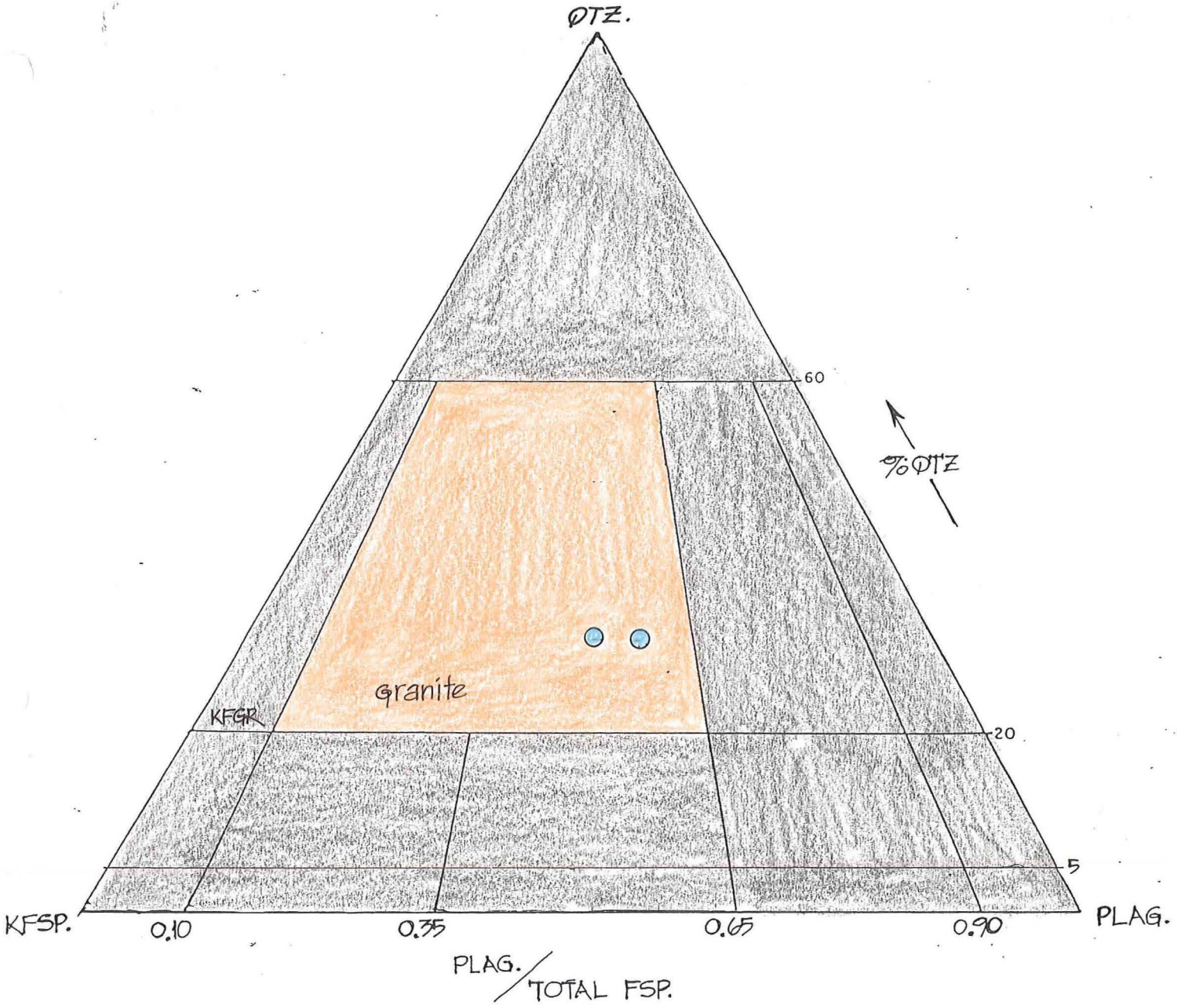
Borehole No. FF 52-32, ST RD-2

Depth Interval _____

Logged By JH

Date _____

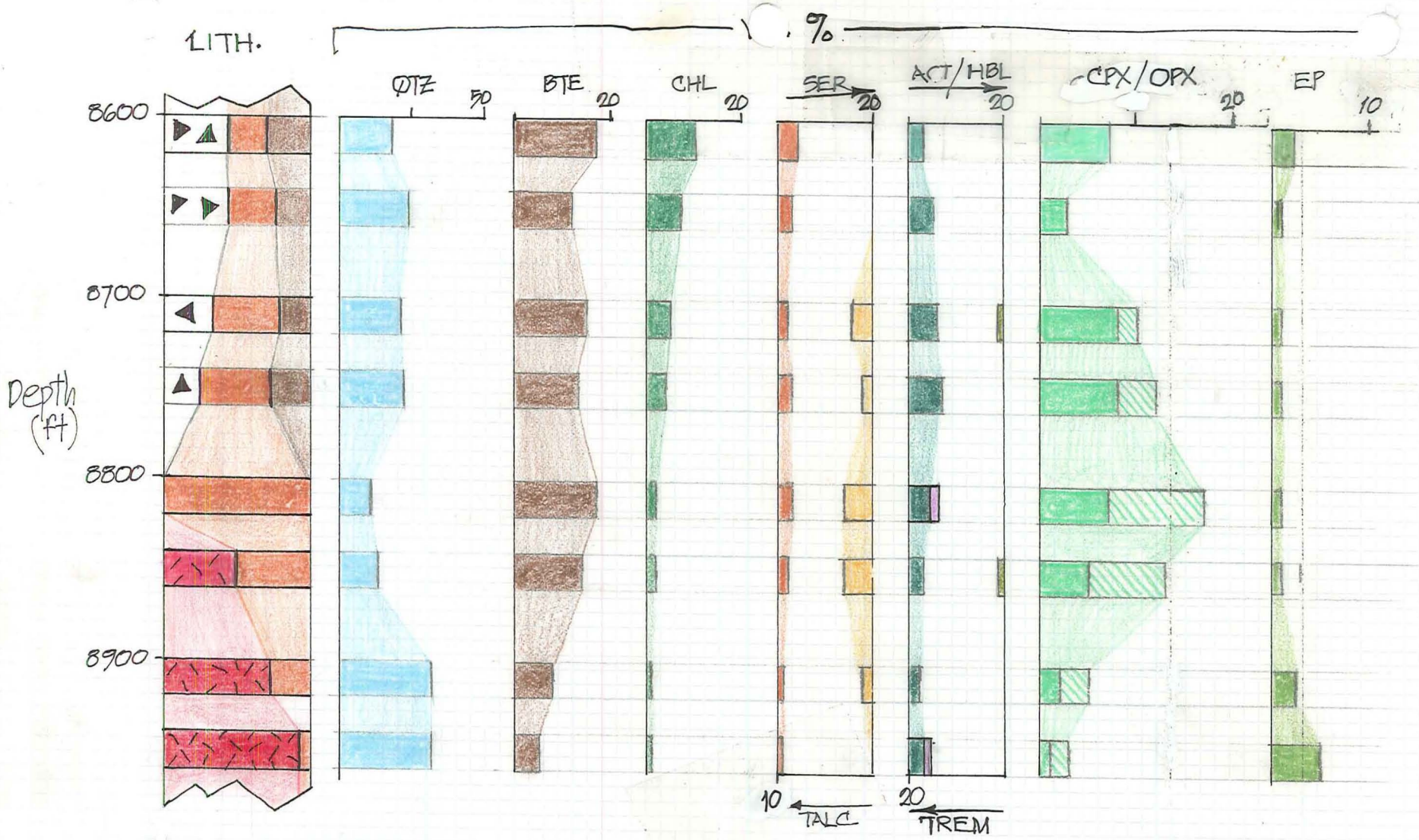

TOP OF FELSITE
(feet below sea level)
= study wells
The Geysers steam-field boundary
Cobb Mtn.
7K
7K
1K
3K
5K
FF52-32 ST2
N
38° 45'
122° 45'
1 2 3KM



FF52-32-RD2 FELSITE COMPOSITIONS

FF52-32, ST2

FELSITE CONTACT: MINERALOGY



FF52-32, ST2

FELSITE CONTACT: MINERALOGY

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
Geysers FF 52-32 RD 8600'	JH

Rock Type

① vBX, probably hydrothermal bx. — ~~60~~ 45% (over)
vnlt. fragments — 5

② bte - qtz - olrg. - cpxn - hnfls — 25%
hornfelsic ARGILLITE → ~~15~~ 10% (could include some vXln. rock flour)
hnflsc. MGW — 10%
2% — hnflsc. metabasalt or meta-andesite.

Mineralization

Alteration/Metamorphism

K-spar flooding locally intense - some pcs. adj. to Kfsp vnlts. (early & late)
bte ptly replaces some orthopyroxn.
wk. sericitization of bte ("bleaching"):
silicification - rx flour, matrix also selvages of veins.

Fluid Inclusions

Porosity Summary

NA

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

[vXln green bte, post-dates brown bte.]

CHL - KFSP.

Ø / PL / [ACT] / bte / chl - leuc

QTZ / SPHENE / chl / kfsp

CHL
PLAG / qtz / bte - chl
EP - CHL qtz - leuc
ACT.
Ø BTE / qtz / kf / tour.
BTE / qtz / kf / allanite

Notes, Miscellaneous

some of the hydroth. bx shows great fluid-streaming textures.

there are a few obvious relict Franciscan veins consisting almost entirely of quartz which has been granoblyrically rexlzd.

SUMMARY

Sample Identification	Petrographer/Date of Examination
FF5233 RD 8600' (Geysers)	JBH

Rock Type see other sheet for this smpl.

Fracturing/Brecciation/Veining and Vug-Filling

hyd. bxtn.!!

Porosity Summary

Alteration/~~Metamorphism~~

minrl. %.

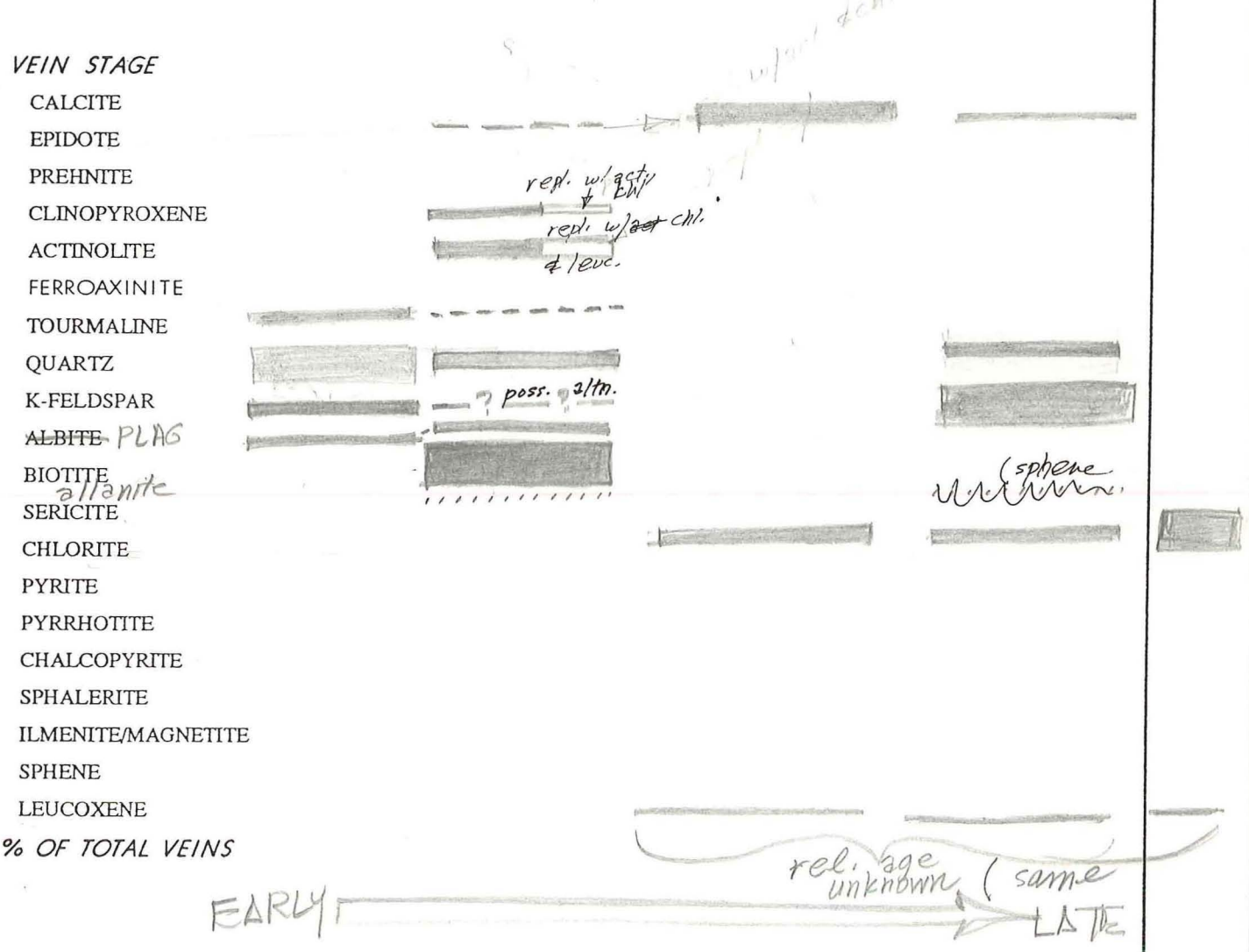
bte — ~~89~~
plag. —
leuc. -2
sulf.
tourm. -1
cpx n. — ~~6~~
act. -3
all. - tr.

KFSp - 12
ser. - 5
chl. - 5
ep. — 2

Fluid Inclusions

M

Interpreted Paragenesis of Vein- and Vug-Filling Minerals



Explanation *(MINERALS AS EST. % OF EACH VEIN STAGE AND (BTM., HORIZ.) VEINS OF EACH STAGE AS EST. % OF TOTAL VEINS)*

..... trace	— — — — > 1-5%	▬▬ > 15-50%	
- - - - - - - - < 1% (vol.)	——— > 5-15%	▬▬ > 50%	

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
FF52-33 RD-2 8640	

Rock Type

30% HNFS. — (tr. ANDALUSITE in one chunk)
7% VNLT. FRAGS.
15% Hnf/sc arg.
7% " mbtagrw.
41% hydrothermal vbx

see descrip for 8600'

QTz
BTE — 11
CPXN — 6
ACT — 3
EP. — 2
LEUC — 3
CHL. — 4
TOURM — Tr

SER. — 6
Ccl. — tr.

Mineralization

Alteration/Metamorphism

bte selvages on Q/bte vnlts & Q/BTE/CPXN vnlts.
wk - locally MOD. sericitization, post-dating the K-spar flooding PIX

Fluid Inclusions	Porosity Summary

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

1. EP/chl.
2. QTz/bte
3. KF/ACT sav.
4. SER - [bte]
5. QTZ/BTE/CPXN
6. ACT/qtz/plag.
7. CHL/leucoxene
8. CPXN.
9. GREEN BTE (or phengite)
10. CHL
11. CHL/EP/qtz/sphn.

[ ] = replaced or relict

Notes, Miscellaneous

Q-bte vnlts X-cut hyd. BX.
good examples of GRANOBLASTIC rplzn. of Franciscan quartz
also complete replacement of Franciscan calcite by CLINOPYROXENE

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
FF 52-33 RD3 Geysers 8700'	JBH JBH

Rock Type

HNFLS — 45%
HYDROTH. MICROBRECCIA — 30%
ARGILLITE — 15% — some could be ultra-uxln rock flour.
MGW →
UNLT. FRAGM's. → 10%
tr. metabasalt

see descriptions for 8600'

Mineralization

Alteration/Metamorphism

Fluid Inclusions

CPX — 15
BTE — 7
ACT. — 6
Q —
KFSP. — 7

~~Porosity Summary~~

TALC — ~~trace~~ 1%
TOURM - 2%
ANDALUSITE - 1%
cal — trace

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

① TOUR/[act]/EP/CHL/PLAG/sphene
② SER (post-dates host-rock BTE)
③ TREM - TALC - CPXN
④ TREM - TALC
[cal]
⑤ QTZ./ACT/CPXN — cal — latest?
⑥ Q/BTE — chl

Notes, Miscellaneous

actinolite needles encapsulated in tourmaline

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
GEYSERS FF-58-33RD 8740'	JBH

Rock Type

VOLT. FRAGS — 7 volt. frags
HNFLS. — 45%
HNFLSC. argillite 10%
HYDROTH. MBX — ~~30%~~ 20
mafisc LITHIC MGW — 18

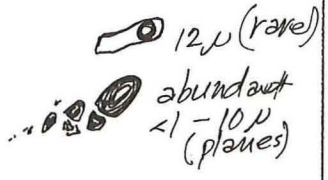
Mineralization

Alteration/Metamorphism

sericitization / BTE (mx/v)(local)

SER - 6
CHL - 2
BTE - 9
CPXV - 11
ACT - 5
EP - 1
talc - 1
tour - 1
KFSP - 10

Fluid Inclusions



~~Porosity Summary~~

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

① QTZ/BTE/PLAG. ← Post-dates matrix CPXN.
② CPXV/Φ/PL
③ QTZ/SPHN/chl
④ CHL/qtz.
⑤ ACT? — EPIDOTE — needles
⑥ TOUR/QTZ/pl.

Notes, Miscellaneous

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
FF52-33RD 8800-8820'	JBH

Rock Type

HNFLS — bte - cpxn - opxn - olig. - (sphn) minor - qtz.
VOLC. fragments. — 7%
ARGILLITE — none
∅ GRANITE — 1% (or qtz. ∅ MONZONITE)

super-metamorphic

Mineralization

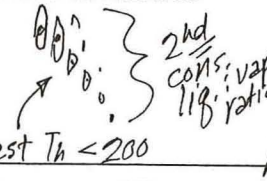
tr py / magnetite

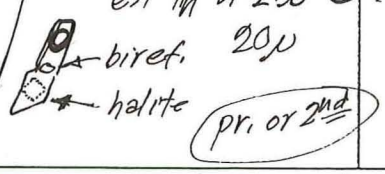
Alteration/Metamorphism

Tr. - garnet
11% bte
12% cpxn
6 - act
2 - leuc.
2 - chl
1 - epidote

Tr. - OLIVINE
tour. — 1
opxn - 5
KFSP - 1%
4% - magn - ilm.
ser. - 5%
tr - pyrite

Fluid Inclusions





Porosity Summary

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

1. SERICITE ✓
2. ACT / CPXN / sphn
3. KF / qtz.
4. [CHL] (repl. actinolite)
5. ACT
6. KFSP

Notes, Miscellaneous

hnfls ~~cpxn~~ has abundant orthopyroxene as well as cpxn.

note that KFSP has really tailed off

Petrographic Summary

Sample Identification	Petrographer/Date of Examination
FF 52-32 RD 8840	

Rock Type

± sphene

* HNFLS (bte-qtz-cpxn-opxn-plag.-mag.) ≈ 45%
* VULT. FRAGS. — 5% (diff. to estimate well)

50% ~GRANITE or ~~GRDIORIT~~ QTZ MONZONITE (?) -
subhedral to locally euhedral granular aggregate of qtz, K-fspar, perthite, minor plagioclase — x/s avg. abt. 0.15-0.20 mm. dia — verging on graphic texts locally

string perthite

(BTE microgranite)

local rare myrmekite

Mineralization

none

Alteration/Metamorphism

minor KFSP flood of hornfels.

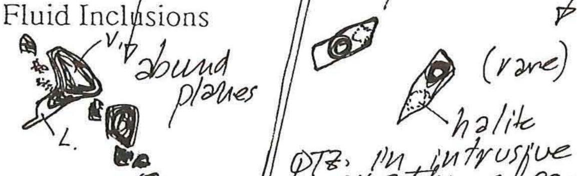
some Kspar altn. of oligoclase or albite in the intrusive.

weak < ser/bte, chl/bte

no obvious primaries

27% KFSP.	tr ANDALUSITE	
~~Porosity Summary~~	tr. SILLIMANITE	
2 act	tr. MUSCOVITE	
10 cpxn	tr. FeAx	3 ser.
7 opxn	~~tr.~~ 1 epidote	2 chl.
7 bte	tr. rutile	

Fluid Inclusions



QTZ. in intrusive pretty clear

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

① [act] / EP-FeAx-PR
② [ACT] / CHL / leucx.
③ ⌊ACT⌋ / mag - [Chl]
④ CPXN / mag / KF / act.

[ACT]

{ } = replaces something else
[X] = replaced by another mineral or minerals
⌊X⌋ = partly replaced by another phase.

Notes, Miscellaneous

"SUB-~GRAPHIC" texture for intrusive rx.

Petrographic Summary

Sample Identification
FF 52-32 RD 8900-8920'

Petrographer/Date of Examination
JH

Rock Type

1 chip TREMOLITE SCHIST – (prob. caved) (hnfls avg. – 5)

27% HORNFELS –
talc-cpxn-plag rock = tr.
OPXN/bte/qtz. hornfels (or "rock") – 1% (vnlt frags – 5)

(67) porphyritic µgranite (OR) µ granite ppy
tr. lithic MGW

BTE-CPXN µGRANITE ppy

bte up to 0.6 x 0.2 mm
0.8 dia.

avg. intrusive grain size = 0.25-0.30 mm.

Mineralization

none

Alteration/Metamorphism

common in intr. qtz

all vapor

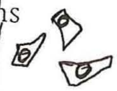
diss. ep. sparse/plag. epidote repl. allanite

[BTE]/{Chl}   [cpxn]/{bte}   [ep]{allanite}

bte ptly repl. by chl.   {Chl}/[BTE]

Fluid Inclusions


mod. abund intr. qtz


> comm. L+V [P] in qtz w/ ep.
[also [S] in intrusive qtz]

~~Porosity Summary~~

25%	KFSP.	Tr.	ALLANITE
2	act.	1	magnetite
4	epidote	5	cpxn
1	leuc/sphn.	7	bte

1 tourm.

~~Interpreted Paragenesis of~~ Vein- and Vug-Filling Minerals

(1) EP/qtz/kfs !
(2) Ep
(3) BTE/qtz
(4) ~~ALLAN~~ [allanite] – {EPIDOTE}
(5) TOUR/[ACT]/KF, rutile – {CHL}
(6) CPXN
(7) SER (on Hnfls)

Notes, Miscellaneous

(tourm. partly porphyroblastic)

intrusive quite fresh – appearing. overall.

FRANDSEN FEDERAL #52-32 SIDETRACK #2
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
1				N66E			
2	117	117	0.50	N66E	0.21	0.47	-0.42
3	350	350	1.25	S15E	-1.32	3.68	-3.86
4	482	482	2.00	S20W	-5.06	3.51	-4.42
5	730	730	1.25	S38W	-11.21	0.11	-2.24
6	1013	1012	5.50	N86W	-17.99	-15.11	11.40
7	1107	1106	7.75	N86W	-17.23	-25.93	22.17
8	1202	1200	9.75	N84W	-15.98	-40.33	36.54
9	1295	1291	12.50	N81W	-13.63	-58.12	54.45
10	1458	1450	13.50	N83W	-8.53	-94.43	91.07
11	1615	1602	13.50	N82W	-3.75	-130.77	127.65
12	1772	1755	13.25	N84W	0.68	-166.82	163.88
13	1867	1848	13.25	N83W	3.15	-188.45	185.59
14	2029	2005	14.25	N83W	7.84	-226.67	224.00
15	2187	2158	14.50	N83W	12.62	-265.60	263.13
16	2344	2310	15.00	N83W	17.49	-305.28	303.00
17	2438	2401	15.25	N84W	20.27	-329.64	327.46
18	2565	2523	16.00	N86W	23.25	-363.72	361.47
19	2644	2599	16.50	N86W	24.79	-385.77	383.42
20	2735	2686	17.25	N87W	26.40	-412.14	409.61
21	2830	2776	17.75	N86W	28.15	-440.65	437.93
22	2938	2879	18.25	N86W	30.47	-473.95	471.05
23	3033	2969	18.25	N86W	32.55	-503.62	500.58
24	3127	3059	18.25	N86W	34.60	-532.99	529.80
25	3281	3204	19.00	N88W	37.18	-582.11	578.50
26	3408	3325	19.00	S88W	37.18	-623.45	619.09
27	3503	3414	19.50	S87W	35.81	-654.74	649.55
28	3597	3503	20.00	S86W	33.87	-686.45	680.30
29	3597	3503	20.00	S86W	33.87	-686.45	680.30
30	3691	3591	20.00	S85W	31.35	-718.50	711.28
31	3784	3678	20.00	S85W	28.58	-750.19	741.85
32	3827	3719	20.00	S89W	27.81	-764.87	756.12
33	3858	3748	19.50	N88W	27.90	-775.35	766.42
34	3890	3778	19.25	N85W	28.55	-785.94	776.95
35	3921	3808	19.00	N79W	29.96	-796.00	787.09

OCT 08,1980 WEIGHTING FACTOR: 0.50

FRANDSEN FEDERAL #52-32 SIDETRACK #2
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
36	3993	3876	17.25	N74W	35.19	-817.78	809.47
37	4163	4043	16.75	N71W	50.58	-866.58	860.30
38	4325	4194	16.25	N72W	64.73	-905.86	904.51
39	4480	4343	15.50	N73W	77.47	-949.30	946.64
40	4638	4496	13.75	N73W	89.14	-987.45	986.31
41	4733	4588	13.75	N76W	95.17	-1009.21	1008.82
42	4891	4742	12.00	N86W	100.68	-1043.98	1044.01
43	5046	4894	12.00	N88W	102.37	-1076.16	1075.92
44	5204	5048	11.50	N87W	103.77	-1108.31	1107.74
45	5349	5190	13.00	N82W	106.72	-1138.93	1138.37
46	5442	5281	13.00	N85W	109.09	-1159.72	1159.22
47	5560	5395	14.00	N84W	111.73	-1187.14	1186.64
48	5691	5523	13.25	N87W	114.15	-1217.90	1217.30
49	5754	5534	14.00	N88W	114.80	-1232.73	1231.98
50	5877	5703	15.00	S87W	114.53	-1263.52	1262.16
51	6004	5826	15.25	S88W	113.08	-1296.63	1294.33
52	6131	5948	14.75	N88W	113.08	-1329.50	1326.65
53	6257	6070	14.75	S86W	112.52	-1361.57	1358.02
54	6383	6192	15.75	S84W	109.63	-1394.59	1389.88
55	6538	6341	16.00	S83W	104.83	-1436.71	1430.32
56	6601	6401	16.25	S82W	102.55	-1454.06	1446.91
57	6822	6613	17.00	S80W	92.66	-1516.51	1506.33
58	7012	6794	18.50	S80W	82.60	-1573.56	1560.40
59	7139	6914	18.75	S79W	75.21	-1613.44	1598.14
60	7329	7094	19.25	S75W	61.29	-1673.71	1654.65
61	7514	7268	20.75	S82W	48.68	-1735.71	1713.11
62	7639	7385	21.00	S82W	42.48	-1779.82	1755.22
63	7829	7562	21.00	S83W	33.59	-1847.33	1819.79
64	8019	7739	21.00	S82W	24.71	-1914.84	1884.36
65	8174	7885	20.25	S86W	19.00	-1969.14	1936.58
66	8363	8062	20.50	N77W	24.16	-2034.74	2001.96
67	8552	8238	21.25	N69W	43.85	-2099.14	2068.93
68	8742	8416	21.00	N67W	69.50	-2162.63	2136.15
69	8925	8587	20.75	N87W	84.17	-2226.17	2201.32
70	9155 T.D.	8803	19.00	N64W	103.75	-2301.87	2279.37

D., B&M.

OCT 16, 1980 WEIGHTING FACTOR: 0.50

GEYSERS DEVELOPMENT CORP. #5
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	CUMULATIVE COORDINATES E W(-)	TOTAL SEC
1				S00E			
2	162	162	0.75	S02E	-1.06	0.02	1.06
3	295	295	1.50	S59W	-3.35	-1.23	3.67
4	385	385	1.75	S78W	-4.29	-3.50	6.22
5	478	478	2.25	S83W	-4.33	-6.80	9.47
6	572	572	1.50	S81W	-5.25	-9.65	12.55
7	667	667	2.00	S83W	-5.66	-12.72	15.45
8	761	761	2.75	S83W	-5.96	-16.61	19.34
9	856	856	2.00	N72W	-5.42	-20.50	23.23
10	950	950	2.50	N73W	-4.31	-24.02	26.97
11	1045	1044	3.00	N64W	-2.64	-28.26	31.53
12	1139	1138	2.50	N76W	-1.09	-32.50	36.04
13	1234	1233	2.00	N72W	-0.06	-36.09	39.77
14	1328	1327	2.00	N68W	1.06	-39.17	43.05
15	1428	1427	2.25	N80W	2.59	-42.50	46.75
16	1517	1516	1.50	N37W	4.61	-44.68	49.67
17	1675	1674	2.50	N43W	8.34	-48.23	55.13
18	1799	1798	2.25	N48W	12.44	-51.89	60.32
19	1924	1923	1.75	N67W	14.73	-55.97	64.66
20	1981	1980	1.00	N77W	15.20	-56.87	66.05
21	2075	2074	0.75	N76W	15.54	-58.27	67.49
22	2144	2143	1.50	N79W	15.54	-59.59	69.04
23	2176	2175	1.75	S63W	15.73	-60.49	69.73
24	2207	2206	3.00	S20W	14.76	-61.54	71.03
25	2288	2286	7.75	S09W	7.42	-63.24	78.42
26	2382	2379	10.00	S05W	-3.35	-66.01	93.12
27	2500	2496	9.50	S11W	-26.75	-67.79	113.10
28	2594	2593	9.75	S11W	-42.19	-70.79	129.82
29	2688	2681	9.75	S13W	-57.78	-74.10	144.74
30	2814	2805	10.00	S16W	-78.53	-79.51	166.35
31	2932	2921	9.75	S19W	-93.04	-88.42	186.54
32	3010	2998	11.00	S19W	-111.48	-93.76	200.62
33	3104	3090	11.00	S13W	-127.45	-98.31	219.57
34	3229	3213	11.00	S17W	-151.20	-104.47	242.42
35	3355	3335	11.50	S17W	-174.21	-109.95	266.61

NOV 19,1980 WEIGHTING FACTOR: 0.50

GEYSERS DEVELOPMENT CORP. #5
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT ANGLE	DRIFT BEARING	CUMULATIVE COORDINATES N S(-)	E W(-)	TOTAL SEC
36	3477	3456	12.00	S20W	-196.01	-118.38	291.86
37	3602	3578	11.50	S25W	-221.53	-128.13	317.32
38	3729	3703	10.75	S28W	-243.46	-139.06	341.82
39	3854	3826	11.25	S24W	-264.90	-149.51	365.67
40	3979	3948	11.25	S18W	-287.66	-158.25	390.06
41	4106	4073	12.00	S16W	-312.14	-165.74	415.65
42	4227	4191	11.50	S26W	-335.14	-174.57	440.29
43	4355	4317	11.50	S28W	-357.88	-186.15	465.81
44	4481	4440	11.75	S28W	-380.30	-198.07	491.20
45	4608	4564	12.50	S28W	-403.85	-210.60	517.88
46	4859	4809	12.75	S28W	-452.29	-236.35	572.74
47	4984	4931	13.00	S28W	-476.38	-249.43	600.59
48	5077	5021	13.50	S26W	-495.37	-259.10	621.90
49	5172	5114	13.50	S23W	-516.05	-268.30	644.08
50	5236	5176	14.00	S20W	-530.21	-273.88	659.29
51	5330	5267	14.00	S12W	-551.71	-281.28	682.03
52	5456	5389	14.25	S20W	-580.78	-291.29	712.73
53	5549	5479	14.50	S16W	-602.74	-299.43	735.87
54	5686	5612	14.75	S17W	-635.91	-309.25	770.46
55	5920	5838	15.00	S04W	-694.97	-319.20	830.53
56	6030	5945	14.50	S06W	-722.37	-321.64	858.54
57	6154	6065	14.75	S03W	-752.95	-325.45	889.39
58	6279	6186	14.00	S03W	-784.34	-328.43	920.88
59	6425	6327	13.25	S05W	-819.15	-330.83	955.27
60	6518	6418	13.50	S07W	-840.54	-333.08	976.79
61	6957	6847	11.25	S21W	-931.63	-355.84	1070.87
62	7405	7267	8.25	S42W	-1008.07	-402.56	1160.29
63	8075	7952	6.25	S72W	-1048.62	-465.09	1234.74
64	8359	8235	5.75	N64W	-1046.55	-494.61	1264.43
65	8553	8433	5.50	N61W	-1037.54	-511.92	1283.93
66	8667	8541	5.50	N61W	-1032.48	-521.05	1294.38

NOV 19,1980 WEIGHTING FACTOR: 0.50