B Cotton Valley supplements

B.1 Receiver orientation

The receiver orientations obtained from the Rotoscan analysis for the receivers in GCU 21-9 and GCU 22-9 are given in Table B.1and B.2. The latter is complimented with receiver orientations from ESG as well as from Jim Rutledge. These values were obtained analysing azimuths of test shots[1] as described in section 3.5. The H1 component is defined 90 degrees clockwise of H2. The vertical component was assumed to point positive downward since the sensors were installed in vertical monitoring wells. The azimuths in the rotoscan orientation list are measured from the bottom of geophones, so they differ by 180° from the H2 azimuths given by Jim Rutledge (pers. comm, Jim Rutledge, 2004).

The raw data u_1 and u_2 were rotated into the geographical coordinate system with

$$\begin{aligned} u_e &= \cos(\phi(tool)) \cdot u_1 + \sin(\phi(tool)) \cdot u_2 \\ u_n &= -\sin(\phi(tool)) \cdot u_1 + \cos(\phi(tool)) \cdot u_2 \end{aligned}$$

where $\phi(tool)$ denotes the azimuth of the H2-component at the rotated tool. The azimuth given by Jim Rutledge and ESG were prefered (in that order). If only values from the Rotoscan analysis were given, the values were subtracted by 180° in order to obtain measures from the top of the geophone.

[1] Jim Rutledge also used the azimuths of located microearthquakes (pers. comm., 2004)

Tool	Depth (m)	H2	H1	Tool	Depth (m)	H2	H1
1	2048,56	54	144	25	2414,32	290	20
2	2063,88	34	124	26	2429,56	309	39
3	2079,04	345	75	27	2444,80	331	61
4	2094,28	28	118	28	2460,04	267	357
5	2109,52	30	120	29	2475,28	234	324
6	2124,76	19	109	30	2490,44	309	39
7	2140,08	28	118	31	2505,76	297	27
8	2155,47	29	119	32	2521,00	319	49
9	2170,48	25	115	33	2536,24	318	48
10	2185,87	32	122	34	2551,40	290	20
11	2201,11	48	138	35	2566,49	267	357
12	2216,43	40	130	36	2582,04	276	6
13	2231,67	33	123	37	2596,52	295	25
14	2246,76	347	77	38	2611,98	290	20
15	2262,15	8	98	39	2627,22	324	54
16	2277,31	16	106	40	2642,31	358	88
17	2292,63	13	103	41	2657,55	335	65
18	2307,87	358	88	42	2672,79	331	61
19	2323,11	355	85	43	2688,34	321	51
20	2338,27	3	93	44	2703,27	323	53
21	2353,44	0	90	45	2718,59	282	12
22	2368,68	342	72	46	2730,78	339	69
23	2384,07	279	9	47	2746,02	unknown	unknown
24	2399,31	308	38	48	2761,26	unknown	unknown

Table B.1: Rotoscan Analysis CGU 21-9

Tool	Depth (m)	H2	H1	H2 by ESG	H2 by Jim Rutledge
1	2235,48	148	238		
2	2250,72	242	332		
3	2266,04	226	316		
4	2280,97	252	342	257	
5	2296,52	250	340	253	
6	2311,60	259	349	259	
7	2327,00	240	330		
8	2342,08	244	334	249	
9	2357,48	276	6	282	
10	2372,72	268	358		
11	2387,88	263	353	281	
12	2403,12	280	10	273	
13	2418,44	247	337	256	
14	2433,52	259	349		
15	2448,84	264	354		
16	2464,08	243	333		
17	2479,32	254	344		
18	2494,64	260	350		
19	2509,88	229	319		
20	2525,19	259	349	258	76 $(+180 = 256)$
21	2540,36	257	347		
22	2555,44	261	351		
23	2570,91	251	341	250	
24	2586,30	237	327	244	61 $(+180 = 241)$
25	2601,39	259	349		
26	2616,71	250	340		
27	2631,87	268	358		
28	2646,96	249	339		
29	2662,35	231	321		
30	2677,52	240	330	232	53 $(+180 = 233)$
31	2692,98	225	315		
32	2708,07	256	346		
33	2723,39	264	354	268	86 $(+180 = 266)$
34	2738,70	248	338	231	
35	2753,94	245	335		
36	2769,11	236	326		
37	2784,35	247	337		
38	2799,66	253	343	245	63 $(+180 = 243)$
39	2814,83	212	302		
40	2829,92	245	335		
41	2845,38	227	317		
42	2860,70	253	343		
43	2875,86	262	352		
44	2891,10	253	343		
45	2906,42	245	335		
46	2921,66	unknown	unknown		
47	2936,90	unknown	unknown		
48	2952,14	unknown	unknown		

Table B.2: Rotoscan Analysis CGU 22-9. Orientation angles assigned to ESG are taken from Urbancic (1998). Angles given by Jim Rutledge are the shot determined azimuths of the positive H2 axis (clockwise from North), i.e., the top of H2 geophone.