

Appendix 5. Plots and interpretations of borehole geophysical logs collected by Hager-Richter Geoscience, Inc., for boreholes near Machiasport, Maine

Explanation Information for Appendixes

Abbreviations on log plots:

Acou Caliper, in inch	caliper measured by acoustic televiewer, in inches
ATV	acoustic televiewer traveltime
ATV Amp	acoustic televiewer amplitude
ATV Amp, in mV	acoustic televiewer amplitude, in millivolts
Azi	azimuth
Caliper, in inch	3-arm mechanical caliper, in inches
deg	degrees
dev	deviation
DO	dissolved oxygen
Eh, in mV	electromotive potential, in millivolts
EMI Cond, in mmho/m	electromagnetic induction conductivity, in millimhos per meter
Frax	fracture
FRX	fracture
gal/min	gallon(s) per minute
gpm	gallon(s) per minute
Fl Cond, in $\mu\text{S}/\text{cm}$	fluid conductivity, in microsiemens per centimeter
Gamma, in CPS	natural gamma radiation, in counts per second
HPFM Amb, in gal/min	heat-pulse flowmeter, under ambient conditions, in gallons per minute
HPFM Pump, in gal/min	heat-pulse flowmeter, under pumped conditions, in gallons per minute
LH	lower hemisphere
Lith	lithologic feature
ls	land surface
Max	maximum
Min	minimum
Mtn	Mountain
O2 ppm	dissolved oxygen, in parts per million
OTV	optical televiewer image
pH	pH
R8, in Ohm-m	normal resistivity with electrode spacing of 8 inches, in ohm-meters
R16, in Ohm-m	normal resistivity with electrode spacing of 16 inches, in ohm-meters
R32, in Ohm-m	normal resistivity with electrode spacing of 32 inches, in ohm-meters
R64, in Ohm-m	normal resistivity with electrode spacing of 64 inches, in ohm-meters
SP, in mV	spontaneous potential, in millivolts
SP Cond, in $\mu\text{S}/\text{cm}$	specific conductivity, in microsiemens per centimeter
SPR, in Ohm	single point resistance, in ohms
Std. Dev.	standard deviation
T-Frax	transmissive fracture
tad	tadpole
Temp, in deg F	temperature, in degrees Fahrenheit
TN	true north
toc	top of casing
tt	travel time
Tx	transmissive

Image log interpretation:

Interpretations of structure from the image logs are shown in three forms, including projection, stereo, and tadpole plots. A consistent color code was used for all three plots. In addition, lithologic features are shown in the tadpole and stereoplots with squares, so as to distinguish them from interpreted fractures. Fractures interpreted as transmissive and shown with blue dots, were determined to be transmissive using the heat-pulse flowmeter. Transmissive fractures coded with blue squares were inferred to be transmissive from fluid conductivity, temperature, or other water-quality parameter logs.

- Transmissive fracture
- Large fracture
- Minor fracture
- Partial fracture
- Sealed fracture
- Possible fracture
- Lithologic feature
- Transmissive fracture,
inferred from fluid logs

Example of interpretation of borehole imaging data:

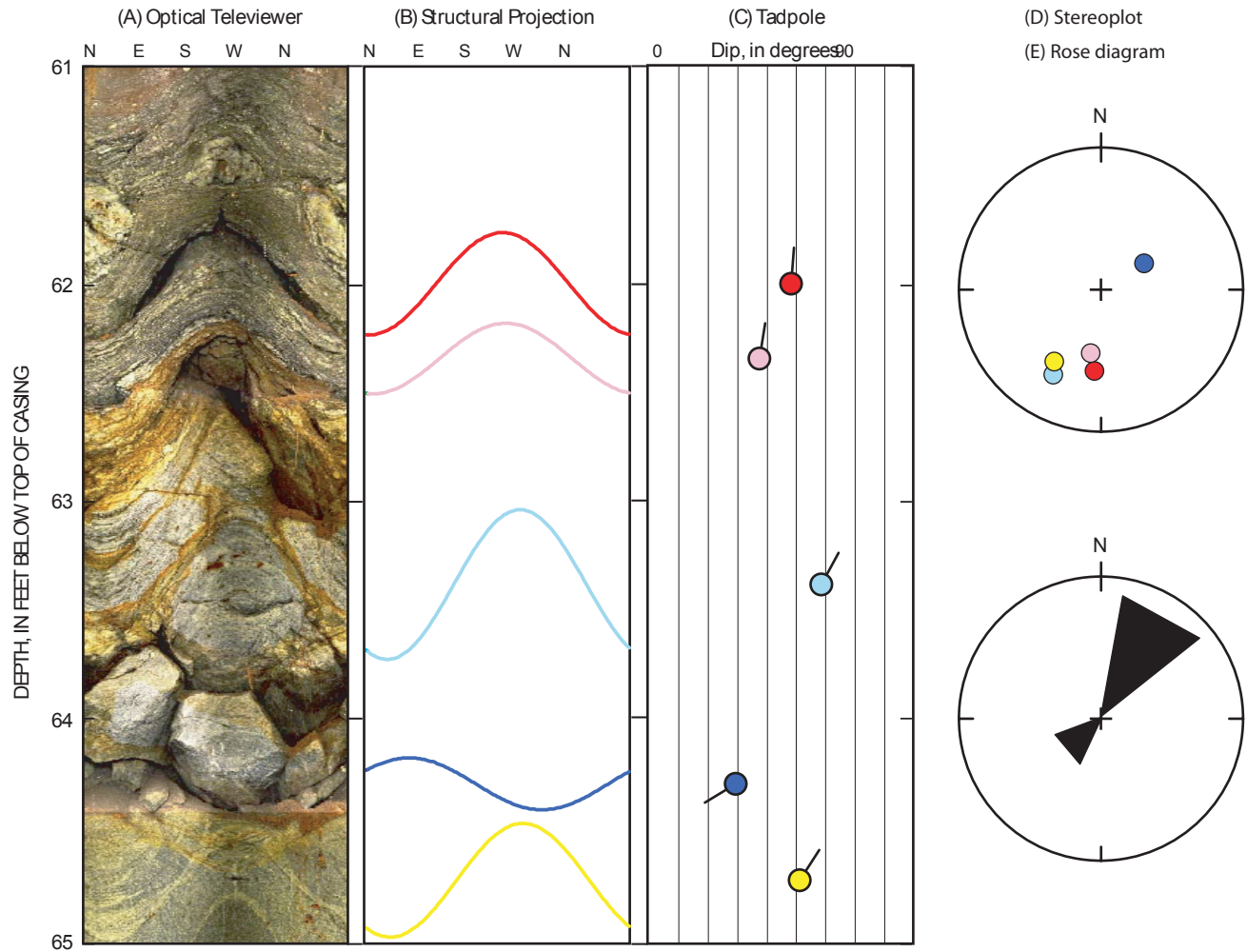


Figure. Example of interpretation of borehole imaging data.

(A) Optical televiewer image and the corresponding interpretation of planar data in (B) structural, (C) tadpole, and (D) stereographic projection plots. The trace of the features on the structural projection (B) directly overlays on the image (A). In the tadpole plot (C), depth is plotted along the y axis, and the magnitude of dip is plotted on the x axis. The tail of the tadpole points in the direction of dip relative to True North, which is at the top of the page. The poles to the planar features are shown in a lower-hemisphere equal-area stereonet (stereonet) (D), which reduces the plane to a point. (E) Rose diagram, which shows frequency of dip direction.

Appendix 5.

Plots and interpretations of borehole geophysical logs collected by Hager-Richter Geoscience, Inc., for boreholes near Machiasport, Maine

- A. Borehole DW-29** (near the Ground-to-Air Transmitter/Receiver Site on Miller Mountain)
 - Figure 5A-1.** Borehole deviation logs for borehole DW-29, near Machiasport, Maine.
 - Table 5A-1.** Interpretation of acoustic televiwer logs for borehole DW-29, near Machiasport, Maine.
 - Table 5A-2.** Interpretation of optical televiwer logs for borehole DW-29, near Machiasport, Maine.
 - Figure 5A-2.** Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole DW-29, near Machiasport, Maine.
 - Figure 5A-3.** Interpretation and modeling of heat-pulse flowmeter logs for borehole DW-29, near Machiasport, Maine.
- B. Borehole MW-15** (in the Air Force Radar Tracking Station area on Howard Mountain)
 - Figure 5B-1.** Borehole deviation logs for borehole MW-15, near Machiasport, Maine.
 - Table 5B-1.** Interpretation of acoustic televiwer logs for borehole MW-15, near Machiasport, Maine.
 - Table 5B-2.** Interpretation of optical televiwer logs for borehole MW-15, near Machiasport, Maine.
 - Figure 5B-2.** Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-15, near Machiasport, Maine.
 - Figure 5B-3.** Interpretation and modeling of heat-pulse flowmeter logs for borehole MW-15, near Machiasport, Maine.
- C. Borehole MW-16** (in the Air Force Radar Tracking Station area on Howard Mountain)
 - Figure 5C-1.** Borehole deviation logs for borehole MW-16, near Machiasport, Maine.
 - Table 5C-1.** Interpretation of acoustic televiwer logs for borehole MW-16, near Machiasport, Maine.
 - Table 5C-2.** Interpretation of optical televiwer logs for borehole MW-16, near Machiasport, Maine.
 - Figure 5C-2.** Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-16, near Machiasport, Maine.
 - Figure 5C-3.** Interpretation and modeling of heat-pulse flowmeter logs for borehole MW-16, near Machiasport, Maine.
- D. Borehole MW-17** (in the Air Force Radar Tracking Station area on Howard Mountain)
 - Figure 5D-1.** Borehole deviation logs for borehole MW-17, near Machiasport, Maine.
 - Table 5D-1.** Interpretation of acoustic televiwer logs for borehole MW-17, near Machiasport, Maine.
 - Table 5D-2.** Interpretation of optical televiwer logs for borehole MW-17, near Machiasport, Maine.
 - Figure 5D-2.** Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-17, near Machiasport, Maine.
 - Figure 5D-3.** Interpretation and modeling of heat-pulse flowmeter logs for borehole MW-17, near Machiasport, Maine.
- E. Borehole WY-3C** (in the Air Force Radar Tracking Station area on Howard Mountain)
 - Figure 5E-1.** Borehole deviation logs for borehole WY-3C, near Machiasport, Maine.
 - Table 5E-1.** Interpretation of acoustic televiwer logs for borehole WY-3C, near Machiasport, Maine.
 - Figure 5E-2.** Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole WY-3C, near Machiasport, Maine.
 - Figure 5E-3.** Interpretation and modeling of heat-pulse flowmeter logs for borehole WY-3C, near Machiasport, Maine.

F. Borehole C-114 (in the Air Force Radar Tracking Station area on Howard Mountain)

Figure 5F-1. Borehole deviation logs for borehole C-114, near Machiasport, Maine.

Table 5F-1. Interpretation of acoustic televiwer logs for borehole C-114, near Machiasport, Maine.

Table 5F-2. Interpretation of optical televiwer logs for borehole C-114, near Machiasport, Maine.

Figure 5F-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole C-114, near Machiasport, Maine.

G. Borehole C-501 (in the Air Force Radar Tracking Station area on Howard Mountain)

Figure 5G-1. Borehole deviation logs for borehole C-501, near Machiasport, Maine.

Table 5G-1. Interpretation of acoustic televiwer logs for borehole C-501, near Machiasport, Maine.

Table 5G-2. Interpretation of optical televiwer logs for borehole C-501, near Machiasport, Maine.

Figure 5G-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole C-501, near Machiasport, Maine.

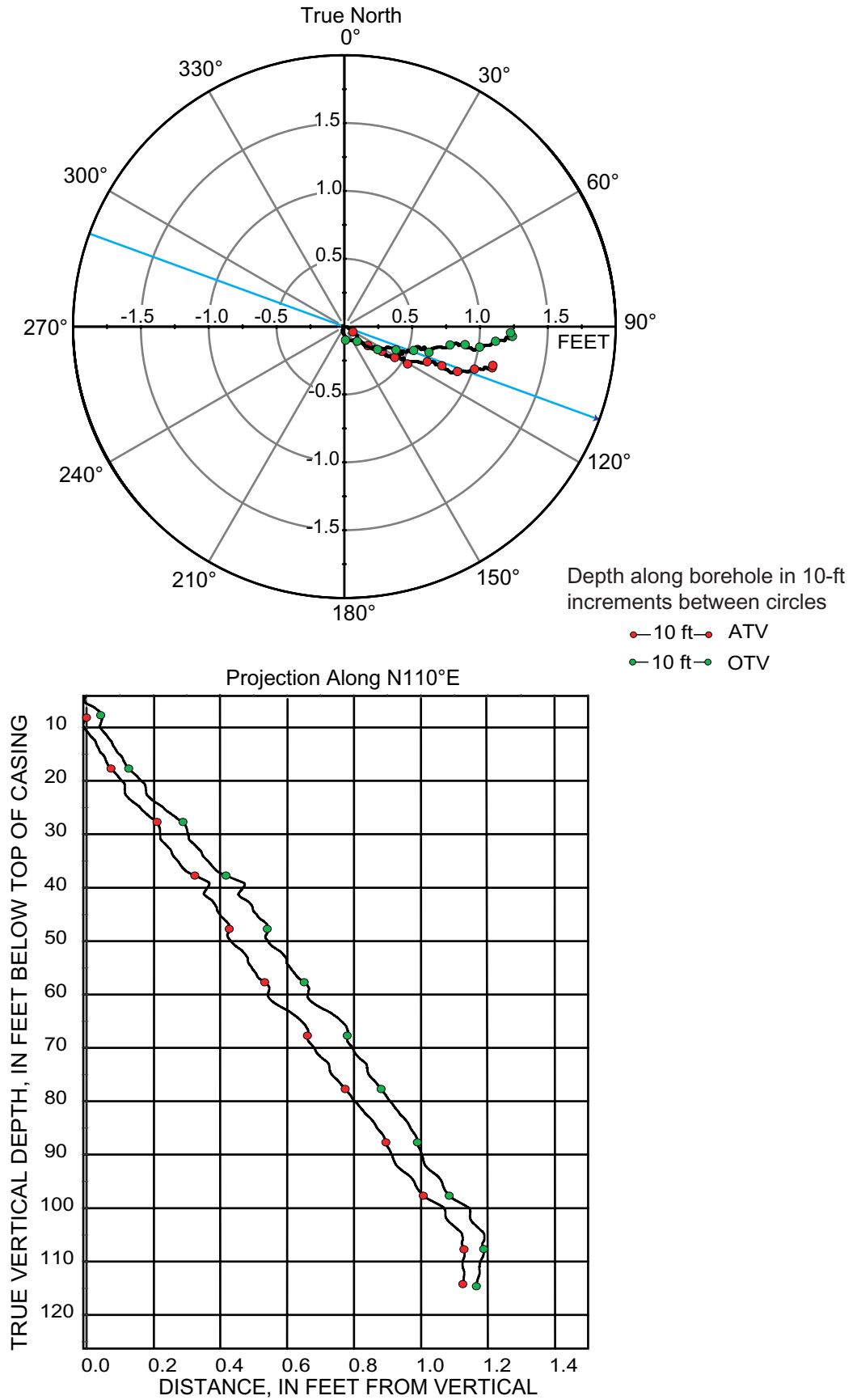


Figure 5A-1. Borehole deviation logs for borehole DW-29, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).
 [ft, foot; ATV, acoustic televiwer; OTV, optical televiwer]

Table 5A-1. Interpretation of acoustic televiewer logs for borehole DW-29, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.54 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
13.37	4.07	222.79	133	57.66	SW	Steep	Minor fracture
16.70	5.09	241.12	151	69.48	SW	Steep	Minor fracture
17.14	5.22	41.83	312	57.61	NE	Steep	Minor fracture
18.48	5.63	219.69	130	73.96	SW	Nearly vertical	Minor fracture
21.39	6.52	312.84	223	72.02	NW	Nearly vertical	Transmissive fracture
22.73	6.93	204.68	115	56.92	SW	Steep	Transmissive fracture
22.96	7.00	202.87	113	36	SW	Moderate	Lithologic feature
24.83	7.57	91.3	1	24.68	E	Shallow	Minor fracture
26.43	8.06	256.31	166	33.61	W	Moderate	Minor fracture
29.21	8.90	326.78	237	81.3	NW	Nearly vertical	Minor fracture
30.75	9.37	61.09	331	56.87	NE	Steep	Minor fracture
31.55	9.62	318.38	228	74.52	NW	Nearly vertical	Minor fracture
32.29	9.84	164.46	74	72.31	S	Nearly vertical	Minor fracture
33.20	10.12	258.51	169	72.35	W	Nearly vertical	Minor fracture
36.37	11.09	237.96	148	84.08	SW	Nearly vertical	Minor fracture
38.01	11.58	8.46	278	70.96	N	Nearly vertical	Minor fracture
38.03	11.59	90.12	0	81.47	E	Nearly vertical	Minor fracture
39.17	11.94	329.52	240	80.69	NW	Nearly vertical	Minor fracture
40.41	12.32	329.94	240	82.85	NW	Nearly vertical	Transmissive fracture
42.78	13.04	170.39	80	27.33	S	Shallow	Minor fracture
43.38	13.22	330.18	240	79.36	NW	Nearly vertical	Minor fracture
43.88	13.37	190.47	100	71.69	S	Nearly vertical	Minor fracture
45.62	13.90	150.68	61	39.37	SE	Moderate	Minor fracture
48.54	14.79	221.25	131	75.78	SW	Nearly vertical	Minor fracture
49.28	15.02	194.79	105	65.51	S	Steep	Minor fracture
51.73	15.77	157.22	67	78.97	SE	Nearly vertical	Fracture
55.39	16.88	261.16	171	81.08	W	Nearly vertical	Minor fracture
56.18	17.12	160.57	71	31.95	S	Moderate	Minor fracture
57.76	17.60	172.65	83	45.58	S	Moderate	Minor fracture
57.78	17.61	356.64	267	82.57	N	Nearly vertical	Minor fracture
59.72	18.20	326.3	236	73.13	NW	Nearly vertical	Minor fracture
60.31	18.38	282.31	192	78.41	W	Nearly vertical	Minor fracture
66.42	20.24	259.72	170	85.54	W	Nearly vertical	Minor fracture
67.35	20.53	227.91	138	25.53	SW	Shallow	Minor fracture
69.34	21.13	256.03	166	82.91	W	Nearly vertical	Minor fracture
76.96	23.46	191.47	101	14.14	S	Shallow	Lithologic feature
77.67	23.67	217.74	128	27.93	SW	Shallow	Lithologic feature
78.86	24.04	219.27	129	49.54	SW	Moderate	Minor fracture
81.66	24.89	204.36	114	44.26	SW	Moderate	Minor fracture
83.22	25.36	203.45	113	9.63	SW	Nearly horizontal	Minor fracture
87.23	26.59	239.37	149	73.5	SW	Nearly vertical	Lithologic feature
95.37	29.07	346.69	257	76.56	N	Nearly vertical	Transmissive fracture
98.50	30.02	7.98	278	12.7	N	Shallow	Minor fracture
99.78	30.41	308.13	218	67.47	NW	Steep	Minor fracture
101.06	30.80	327.7	238	72.85	NW	Nearly vertical	Minor fracture
106.27	32.39	252.93	163	79.62	W	Nearly vertical	Transmissive fracture
106.62	32.50	86.07	356	21.45	E	Shallow	Transmissive fracture
107.98	32.91	338.18	248	68.02	N	Steep	Minor fracture
108.64	33.11	353.85	264	70.67	N	Nearly vertical	Transmissive fracture
115.93	35.33	212.05	122	14.41	SW	Shallow	Minor fracture

Table 5A-2. Interpretation of optical televiewer logs for borehole DW-29, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.54 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
7.87	2.40	293	203	3	NW	Nearly horizontal	Bottom of casing
8.08	2.46	56	326	4	NE	Nearly horizontal	Minor fracture
10.26	3.13	263	173	59	W	Steep	Minor fracture
10.26	3.13	290	200	1	W	Nearly horizontal	Water level
11.16	3.40	221	131	38	SW	Moderate	Minor fracture
11.59	3.53	225	135	59	SW	Steep	Minor fracture
12.76	3.89	232	142	69	SW	Steep	Transmissive fracture
13.09	3.99	219	129	68	SW	Steep	Minor fracture
13.27	4.04	30	300	14	NE	Shallow	Lithologic feature
13.55	4.13	259	169	87	W	Nearly vertical	Partial fracture
14.75	4.50	270	180	76	W	Nearly vertical	Sealed feature
16.21	4.94	231	141	74	SW	Nearly vertical	Minor fracture
16.55	5.04	226	136	76	SW	Nearly vertical	Minor fracture
17.16	5.23	22	292	55	N	Steep	Minor fracture
18.33	5.59	208	118	71	SW	Nearly vertical	Sealed feature
18.55	5.65	40	310	75	NE	Nearly vertical	Partial fracture
18.93	5.77	329	239	27	NW	Shallow	Minor fracture
19.22	5.86	226	136	72	SW	Nearly vertical	Sealed feature
20.40	6.22	236	146	53	SW	Steep	Minor fracture
22.00	6.71	318	228	78	NW	Nearly vertical	Sealed feature
22.08	6.73	327	237	18	NW	Shallow	Sealed feature
22.17	6.76	216	126	45	SW	Moderate	Transmissive fracture
22.88	6.97	275	185	23	W	Shallow	Lithologic feature
23.73	7.23	35	305	34	NE	Moderate	Sealed feature
24.62	7.50	7	277	55	N	Steep	Minor fracture
25.71	7.84	35	305	61	NE	Steep	Minor fracture
26.25	8.00	336	246	25	NW	Shallow	Minor fracture
26.66	8.13	156	66	6	SE	Nearly horizontal	Minor fracture
26.77	8.16	50	320	69	NE	Steep	Sealed feature
27.10	8.26	100	10	20	E	Shallow	Lithologic feature
27.50	8.38	80	350	79	E	Nearly vertical	Partial fracture
28.98	8.83	12	282	30	N	Moderate	Lithologic feature
29.29	8.93	324	234	81	NW	Nearly vertical	Minor fracture
29.38	8.95	69	339	16	E	Shallow	Lithologic feature
30.51	9.30	272	182	80	W	Nearly vertical	Minor fracture
30.64	9.34	81	351	46	E	Moderate	Minor fracture
30.77	9.38	88	358	24	E	Shallow	Minor fracture
32.01	9.76	144	54	53	SE	Steep	Minor fracture
32.06	9.77	360	270	25	N	Shallow	Minor fracture
33.50	10.21	313	223	73	NW	Nearly vertical	Minor fracture
34.57	10.54	122	32	10	SE	Nearly horizontal	Minor fracture
35.46	10.81	77	347	15	E	Shallow	Minor fracture
36.40	11.09	234	144	84	SW	Nearly vertical	Minor fracture
37.52	11.44	334	244	75	NW	Nearly vertical	Minor fracture
38.22	11.65	76	346	82	E	Nearly vertical	Minor fracture
39.52	12.05	326	236	81	NW	Nearly vertical	Fracture
41.06	12.51	325	235	78	NW	Nearly vertical	Transmissive fracture
42.64	13.00	171	81	31	S	Moderate	Partial fracture
42.74	13.03	358	268	73	N	Nearly vertical	Partial fracture
43.58	13.28	328	238	80	NW	Nearly vertical	Minor fracture
43.84	13.36	189	99	71	S	Nearly vertical	Minor fracture
44.19	13.47	47	317	26	NE	Shallow	Sealed feature
45.41	13.84	131	41	45	SE	Moderate	Minor fracture
46.64	14.22	253	163	77	W	Nearly vertical	Minor fracture
49.06	14.95	68	338	64	E	Steep	Minor fracture
49.24	15.01	233	143	83	SW	Nearly vertical	Minor fracture
49.28	15.02	264	174	77	W	Nearly vertical	Partial fracture

Table 5A–2. Interpretation of optical televiewer logs for borehole DW-29, near Machiasport, Maine.—Continued
 [Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.54 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
50.18	15.29	67	337	78	NE	Nearly vertical	Fracture
51.88	15.81	152	62	77	SE	Nearly vertical	Fracture
53.45	16.29	150	60	71	SE	Nearly vertical	Minor fracture
53.68	16.36	135	45	25	SE	Shallow	Minor fracture
54.20	16.52	145	55	21	SE	Shallow	Sealed feature
54.93	16.74	116	26	49	SE	Moderate	Sealed feature
55.53	16.92	256	166	81	W	Nearly vertical	Minor fracture
56.18	17.12	114	24	19	SE	Shallow	Minor fracture
56.75	17.30	151	61	52	SE	Steep	Minor fracture
57.04	17.38	148	58	46	SE	Moderate	Lithologic feature
57.75	17.60	166	76	47	S	Moderate	Minor fracture
58.31	17.77	329	239	81	NW	Nearly vertical	Minor fracture
59.41	18.11	226	136	69	SW	Steep	Fracture
59.76	18.21	316	226	73	NW	Nearly vertical	Fracture
60.91	18.56	176	86	15	S	Shallow	Minor fracture
61.15	18.64	352	262	77	N	Nearly vertical	Minor fracture
61.60	18.77	82	352	69	E	Steep	Minor fracture
62.83	19.15	76	346	62	E	Steep	Sealed feature
62.84	19.15	211	121	30	SW	Moderate	Lithologic feature
63.18	19.26	243	153	31	SW	Moderate	Lithologic feature
64.71	19.72	169	79	24	S	Shallow	Lithologic feature
66.40	20.24	257	167	85	W	Nearly vertical	Minor fracture
66.51	20.27	107	17	21	E	Shallow	Minor fracture
66.79	20.36	257	167	83	W	Nearly vertical	Minor fracture
67.36	20.53	215	125	20	SW	Shallow	Minor fracture
69.45	21.17	252	162	83	W	Nearly vertical	Minor fracture
71.40	21.76	301	211	76	NW	Nearly vertical	Lithologic feature
74.95	22.84	351	261	73	N	Nearly vertical	Sealed feature
77.01	23.47	237	147	25	SW	Shallow	Lithologic feature
77.38	23.58	263	173	83	W	Nearly vertical	Sealed feature
77.69	23.68	224	134	24	SW	Shallow	Lithologic feature
78.75	24.00	256	166	85	W	Nearly vertical	Sealed feature
78.86	24.04	215	125	50	SW	Moderate	Sealed feature
81.38	24.80	234	144	21	SW	Shallow	Lithologic feature
81.95	24.98	73	343	69	E	Steep	Minor fracture
82.04	25.00	251	161	64	W	Steep	Minor fracture
83.21	25.36	197	107	9	S	Nearly horizontal	Sealed feature
84.23	25.67	153	63	55	SE	Steep	Minor fracture
84.59	25.78	246	156	70	SW	Nearly vertical	Sealed feature
85.14	25.95	206	116	8	SW	Nearly horizontal	Minor fracture
87.28	26.60	227	137	71	SW	Nearly vertical	Fracture
88.90	27.10	234	144	69	SW	Steep	Partial fracture
91.49	27.88	315	225	73	NW	Nearly vertical	Sealed feature
93.83	28.60	310	220	75	NW	Nearly vertical	Minor fracture
95.10	28.99	334	244	74	NW	Nearly vertical	Transmissive fracture
98.50	30.02	344	254	14	N	Shallow	Transmissive fracture
99.64	30.37	298	208	69	NW	Steep	Lithologic feature
101.79	31.02	258	168	82	W	Nearly vertical	Lithologic feature
105.17	32.05	319	229	64	NW	Steep	Sealed feature
106.46	32.45	87	357	37	E	Moderate	Transmissive fracture
106.64	32.50	252	162	83	W	Nearly vertical	Lithologic feature
108.18	32.97	310	220	73	NW	Nearly vertical	Minor fracture
108.65	33.11	58	328	54	NE	Steep	Transmissive fracture
109.08	33.25	315	225	68	NW	Steep	Sealed feature
110.98	33.83	321	231	68	NW	Steep	Sealed feature
115.90	35.32	242	152	11	SW	Shallow	Minor fracture
115.93	35.33	96	6	75	E	Nearly vertical	Sealed feature
116.88	35.62	205	115	8	SW	Nearly horizontal	Sealed feature

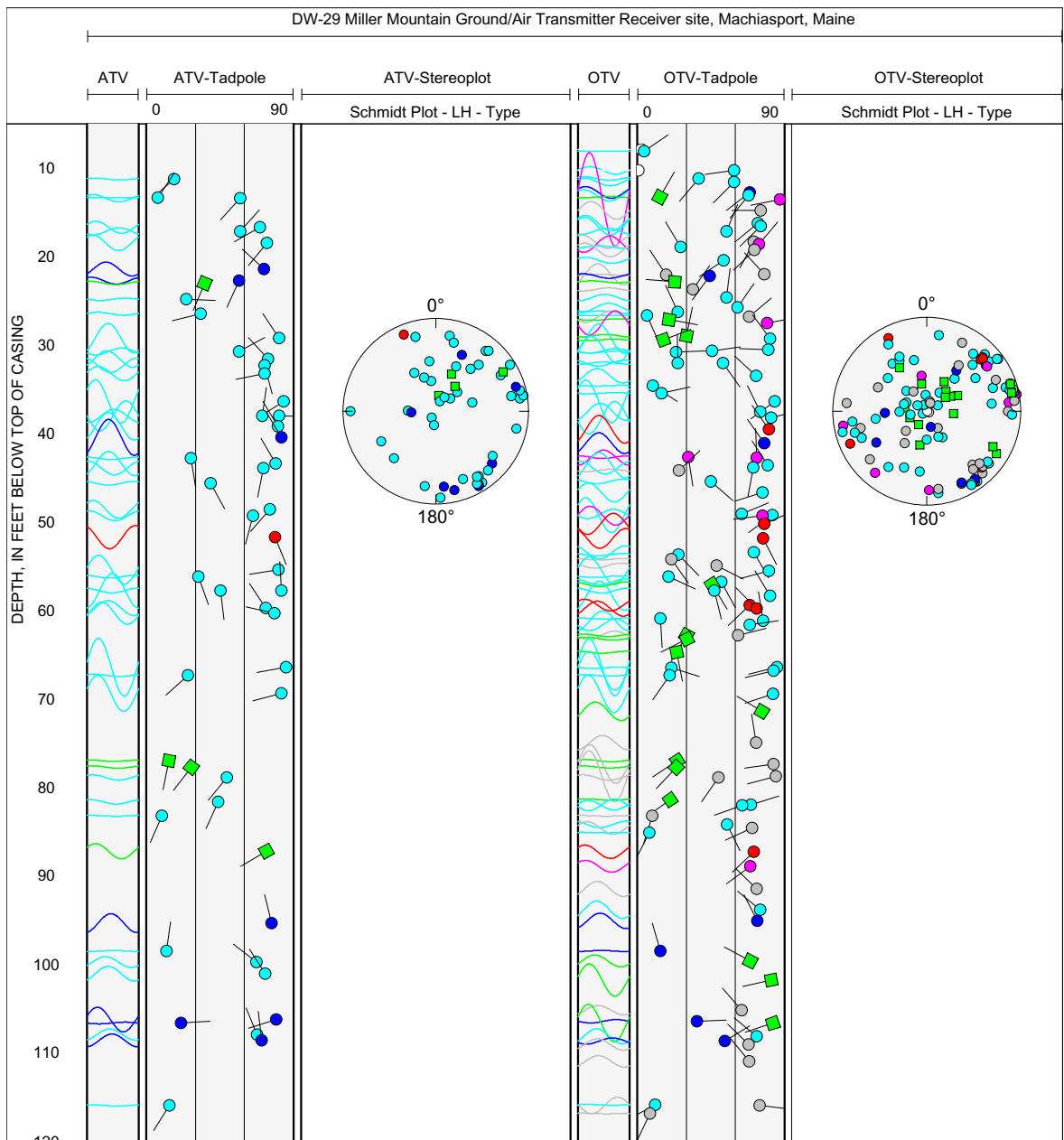


Figure 5A-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole DW-29, near Machiasport, Maine.

INTERPRETATION OF FLOWMETER DATA AND INPUT VALUES FOR FWRAP

Elevation of measuring point	99.86	feet
Number of fractures	4	
Well diameter	6	inches
Drawdown	4.72	feet
Depth to ambient water level	10.72	feet

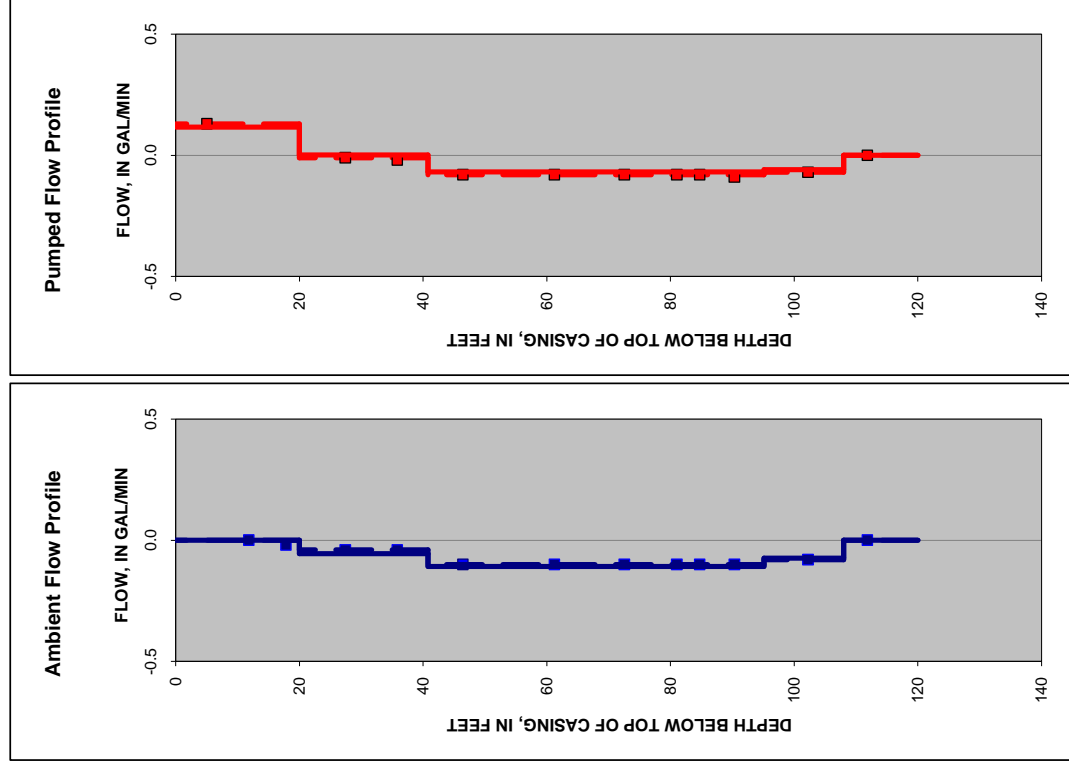
Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Pumped flow above fracture (gal/min)
4	20.0	0.000	0.13
3	40.8	-0.04	-0.01
2	95.1	-0.10	-0.08
1	108.0	-0.08	-0.07

MODELED OUTPUT RESULTS FROM FWRAP

Elevation, ambient water level	89.14	feet
Elevation, pumped water level	84.42	feet

Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Pumped flow above fracture (gal/min)	Zone transmissivity (ft ² /d)	Water level (ft)	Elevation of water level (ft)	Percent transmissivity
4	20.0	0.000	0.116	2.75	7.04	92.82	56
3	40.8	-0.055	0.002	0.60	-3.96	103.82	12
2	95.1	-0.109	-0.068	1.05	17.04	82.82	21
1	108.0	-0.073	-0.059	0.55	33.04	66.82	11

Total borehole transmissivity	4.9	(ft ² /d)
Sum of squares error	0.00094	(gal/min) ²
Root mean square error	0.01529687	(gal/min)



Dashed line indicates measured flow.
 Solid line indicates modeled flow.
 Points indicate measured heat-pulse flowmeter data.

Figure 5A-3. Interpretation and modeling of heat-pulse flowmeter logs for borehole DW-29, near Machiasport, Maine. [gal/min, gallon per minute; ft, feet; ft²/d, feet squared per day; positive values of flow are upward flow, negative values of flow are downward flow]

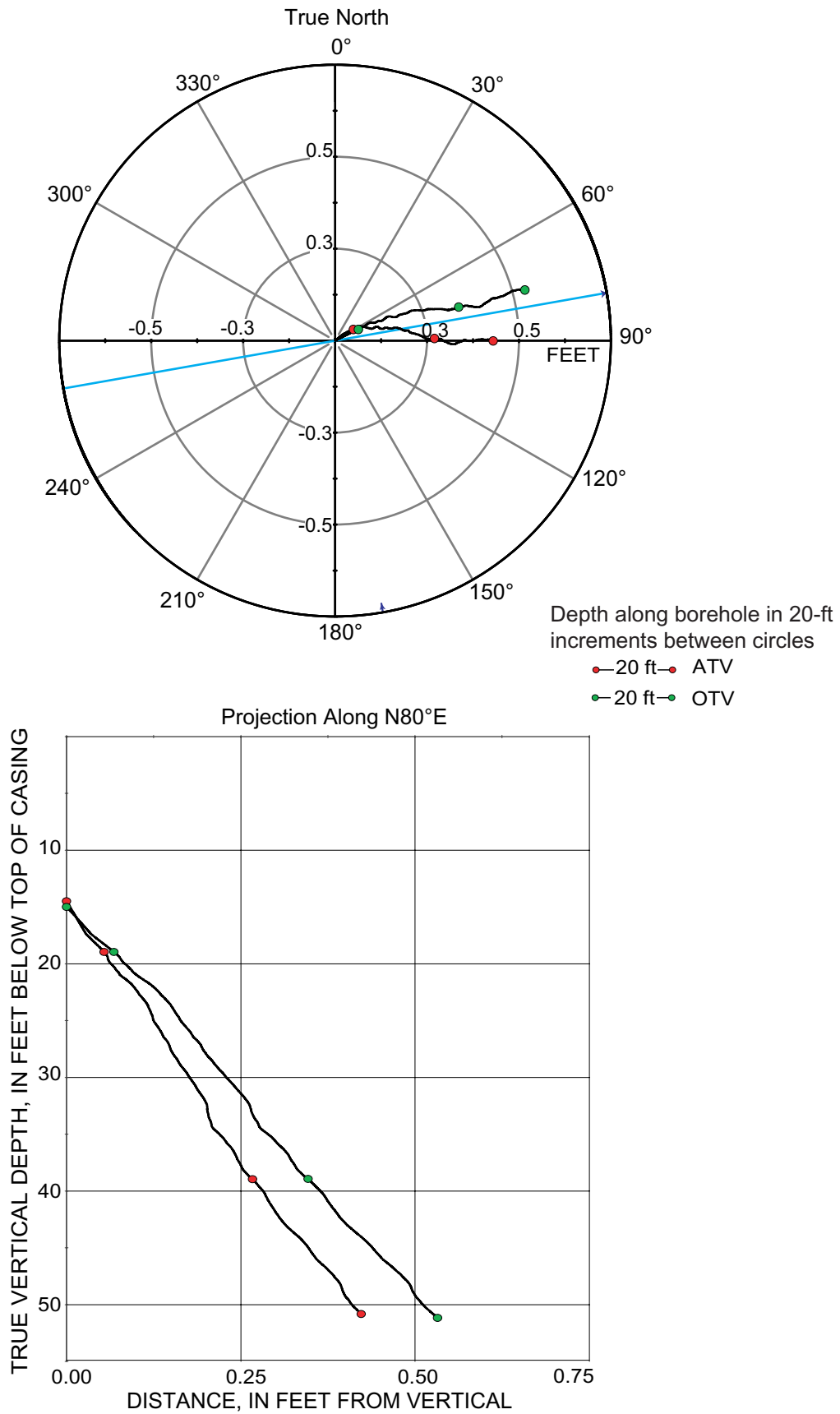


Figure 5B-1. Borehole deviation logs for borehole MW-15, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).
 [ft, foot; ATV, acoustic televiewer; OTV, optical televiewer]

Table 5B-1. Interpretation of acoustic televiewer logs for borehole MW-15, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.8 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
17.75	5.41	235.7	146	0.6	N	Nearly horizontal	Bottom of casing
18.44	5.62	230.49	140	24.44	NE	Shallow	Minor fracture
19.28	5.88	42.14	312	54.48	NE	Steep	Transmissive fracture
20.23	6.17	63.59	334	32.75	NE	Moderate	Transmissive fracture
23.25	7.09	25.06	295	46.18	NE	Moderate	Minor fracture
26.85	8.18	40.42	310	88.09	E	Nearly vertical	Minor fracture
28.46	8.67	46.65	317	82.83	E	Nearly vertical	Minor fracture
29.03	8.85	39.5	310	80.09	E	Nearly vertical	Minor fracture
32.79	9.99	208.76	119	44.52	NE	Moderate	Minor fracture
33.39	10.18	215.94	126	42.49	NE	Moderate	Minor fracture
34.63	10.55	109.53	20	23.41	NE	Shallow	Minor fracture
50.69	15.45	149.92	60	57.78	NE	Steep	Minor fracture

Table 5B-2. Interpretation of optical televiewer logs for borehole MW-15, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.8 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
17.68	5.39	245	155	1	SW	Nearly horizontal	Bottom of casing
19.37	5.90	16	286	31	N	Moderate	Transmissive fracture
20.11	6.13	70	340	24	E	Shallow	Transmissive fracture
21.41	6.53	159	69	56	S	Steep	Minor fracture
22.95	6.99	60	330	18	NE	Shallow	Minor fracture
24.45	7.45	249	159	83	W	Nearly vertical	Minor fracture
24.86	7.58	270	180	48	W	Moderate	Minor fracture
26.34	8.03	160	70	51	S	Steep	Minor fracture
26.86	8.19	151	61	57	SE	Steep	Minor fracture
28.28	8.62	172	82	74	S	Nearly vertical	Minor fracture
28.92	8.81	36	306	80	NE	Nearly vertical	Partial fracture
32.86	10.02	234	144	39	SW	Moderate	Lithologic feature
33.50	10.21	234	144	41	SW	Moderate	Lithologic feature
34.15	10.41	182	92	60	S	Steep	Minor fracture
38.30	11.67	160	70	51	S	Steep	Minor fracture
40.52	12.35	137	47	34	SE	Moderate	Minor fracture
40.67	12.40	142	52	39	SE	Moderate	Minor fracture
41.25	12.57	115	25	50	SE	Steep	Minor fracture
42.64	13.00	142	52	29	SE	Shallow	Lithologic feature
44.85	13.67	142	52	66	SE	Steep	Minor fracture
50.86	15.50	158	68	55	S	Steep	Minor fracture

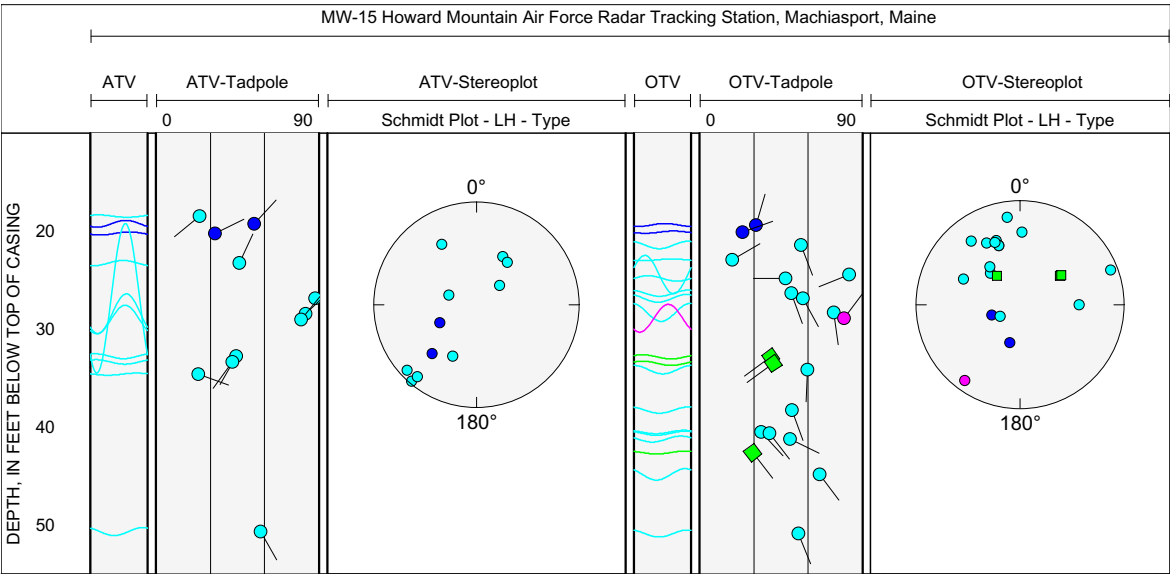


Figure 5B-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-15, near Machiasport, Maine.

INTERPRETATION OF FLOWMETER DATA AND INPUT VALUES FOR FWRAP

Elevation of measuring point	243.7	feet
Number of fractures	1	
Well diameter	6	inches
Drawdown	-0.23	feet
Depth to ambient water level	14.57	feet

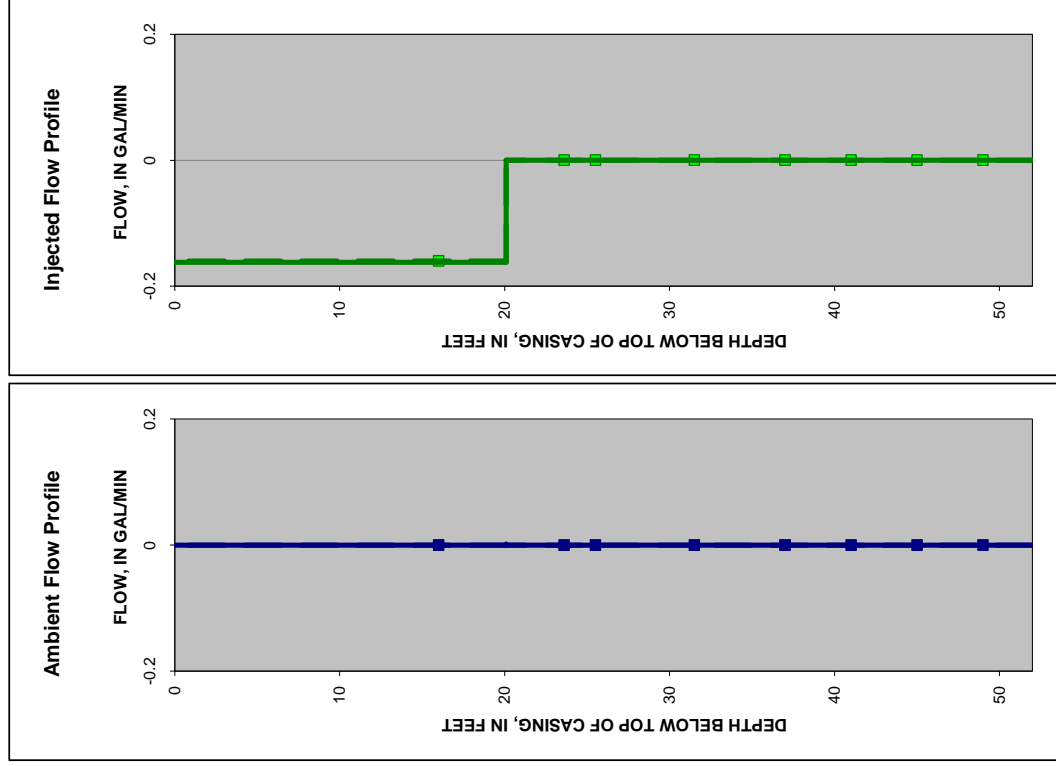
Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)
1	20.1	0.00001	-0.16

MODELED OUTPUT RESULTS FROM FWRAP

Elevation, ambient water level	229.13	feet
Elevation, injected water level	229.36	feet

Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)	Zone transmissivity (ft ² /d)	Water level (ft)	Elevation of water level (ft)	Percent transmissivity
1	20.1	0.000	-0.162	140	14.57	229.13	100

Total borehole transmissivity	140.0	(ft ² /d)
Sum of squares error	0.00000	(gal/min) ²
Root mean square error	0.00209	(gal/min)



Dashed line indicates measured flow.
 Solid line indicates modeled flow.
 Points indicate measured heat-pulse flowmeter data.

Figure 5B-3. Interpretation and modeling of heat-pulse flowmeter logs for borehole MW-15, near Machiasport, Maine. [gal/min, gallon per minute; ft, feet; ft²/d, feet squared per day; positive values of flow are upward flow; negative values of flow are downward flow]

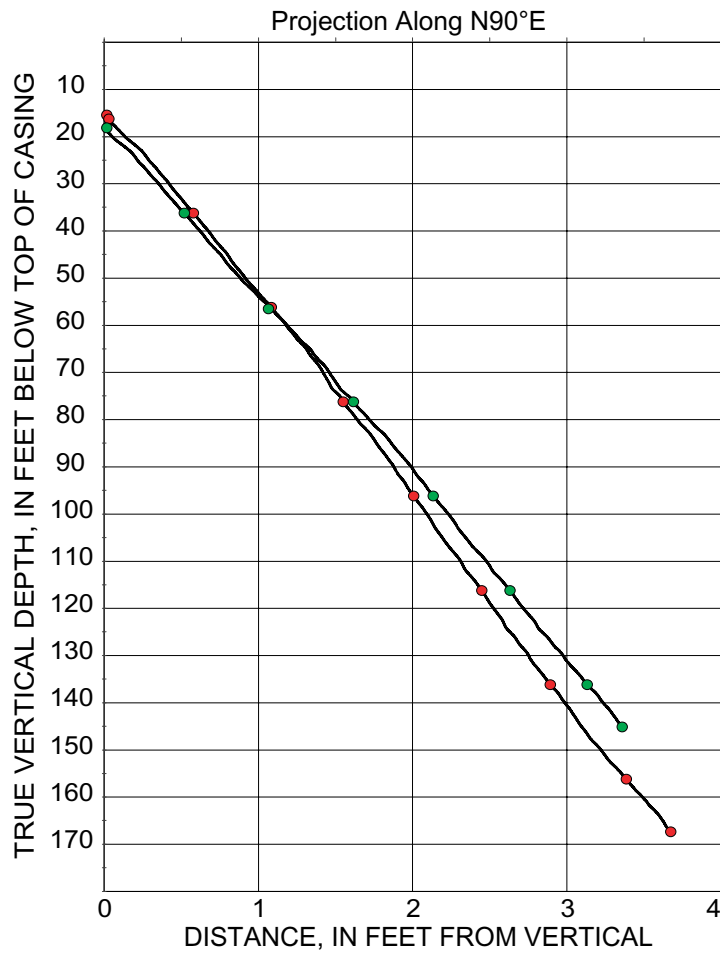
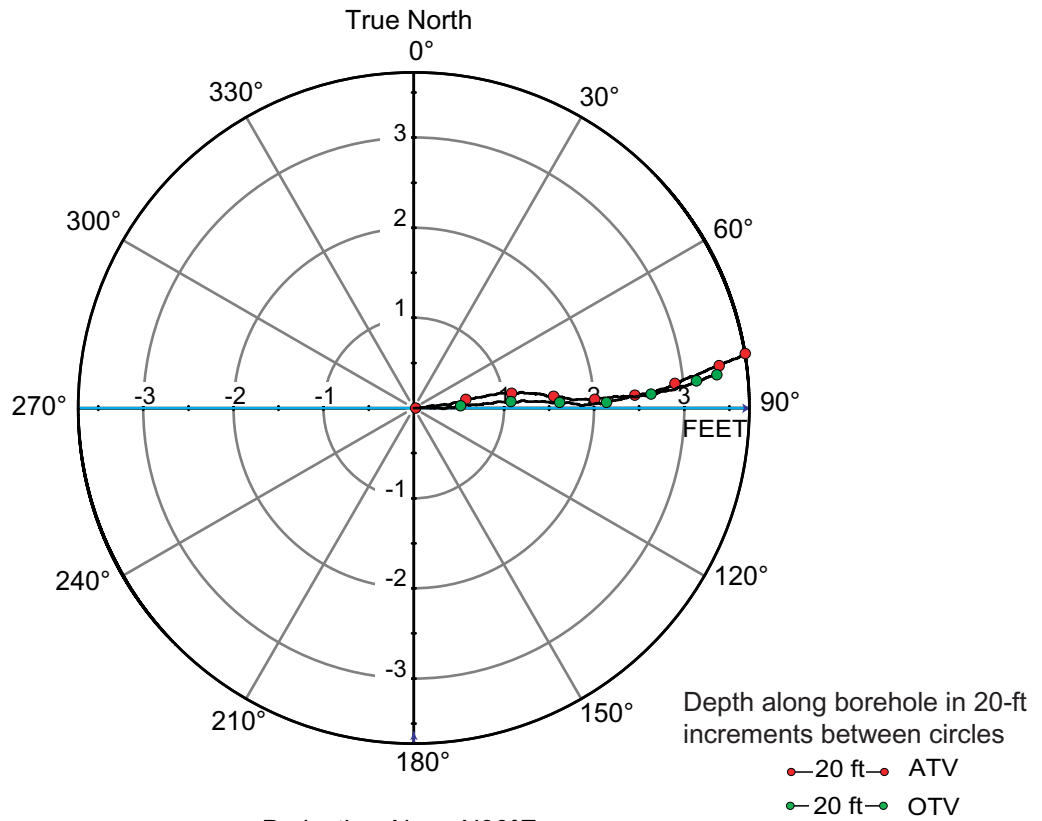


Figure 5C-1. Borehole deviation logs for borehole MW-16, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).
[ft, foot; ATV, acoustic televiewer; OTV, optical televiewer]

Table 5C-1. Interpretation of acoustic televiewer logs for borehole MW-16, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.5 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
22.82	6.96	264	174	2	W	Nearly horizontal	Water level
23.05	7.03	216	126	2	SW	Nearly horizontal	Minor fracture
23.86	7.27	195	105	23	S	Shallow	Minor fracture
30.08	9.17	172	82	15	S	Shallow	Minor fracture
30.86	9.41	246	156	57	SW	Steep	Minor fracture
32.76	9.98	357	267	31	N	Moderate	Minor fracture
34.25	10.44	18	288	54	N	Steep	Minor fracture
35.27	10.75	346	256	50	N	Moderate	Minor fracture
35.53	10.83	280	190	81	W	Nearly vertical	Minor fracture
37.94	11.56	257	167	81	W	Nearly vertical	Partial fracture
38.05	11.60	276	186	63	W	Steep	Minor fracture
39.12	11.92	241	151	78	SW	Nearly vertical	Partial fracture
39.83	12.14	2	272	55	N	Steep	Minor fracture
42.59	12.98	286	196	66	W	Steep	Minor fracture
43.16	13.15	283	193	56	W	Steep	Minor fracture
43.82	13.36	276	186	73	W	Nearly vertical	Minor fracture
45.69	13.93	349	259	56	N	Steep	Minor fracture
47.67	14.53	328	238	81	NW	Nearly vertical	Partial fracture
54.86	16.72	314	224	74	NW	Nearly vertical	Partial fracture
61.67	18.80	143	53	78	SE	Nearly vertical	Partial fracture
65.23	19.88	272	182	76	W	Nearly vertical	Minor fracture
76.11	23.20	71	341	73	E	Nearly vertical	Minor fracture
83.51	25.45	338	248	75	N	Nearly vertical	Minor fracture
85.71	26.12	341	251	85	N	Nearly vertical	Partial fracture
85.95	26.20	355	265	82	N	Nearly vertical	Minor fracture
86.84	26.47	7	277	83	N	Nearly vertical	Minor fracture
92.54	28.20	340	250	74	N	Nearly vertical	Minor fracture
107.50	32.76	358	268	87	N	Nearly vertical	Minor fracture
114.46	34.89	0	270	84	N	Nearly vertical	Minor fracture
114.62	34.93	254	164	29	W	Shallow	Minor fracture
117.69	35.87	360	270	76	N	Nearly vertical	Partial fracture
119.83	36.52	351	261	48	N	Moderate	Minor fracture
130.41	39.75	0	270	78	N	Nearly vertical	Minor fracture
131.80	40.17	0	270	77	N	Nearly vertical	Minor fracture
131.91	40.20	7	277	82	N	Nearly vertical	Partial fracture
132.37	40.34	8	278	65	N	Steep	Minor fracture
133.00	40.54	7	277	83	N	Nearly vertical	Partial fracture
134.33	40.94	355	265	84	N	Nearly vertical	Partial fracture
136.46	41.59	355	265	78	N	Nearly vertical	Minor fracture
142.50	43.43	358	268	78	N	Nearly vertical	Minor fracture
143.89	43.86	5	275	75	N	Nearly vertical	Partial fracture
146.77	44.73	351	261	73	N	Nearly vertical	Minor fracture
147.37	44.92	166	76	24	S	Shallow	Transmissive fracture
153.39	46.75	355	265	77	N	Nearly vertical	Minor fracture
155.18	47.30	1	271	74	N	Nearly vertical	Partial fracture
159.83	48.71	351	261	76	N	Nearly vertical	Minor fracture
160.85	49.02	7	277	71	N	Nearly vertical	Minor fracture
162.38	49.49	359	269	72	N	Nearly vertical	Minor fracture
167.89	51.17	347	257	69	N	Steep	Minor fracture

Table 5C-2. Interpretation of optical televiewer logs for borehole MW-16, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.5 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
22.77	6.94	268	178	2	W	Nearly horizontal	Water level
26.30	8.02	146	56	32	SE	Moderate	Lithologic feature
30.03	9.15	168	78	15	S	Shallow	Minor fracture
30.61	9.33	155	65	61	SE	Steep	Lithologic feature
32.14	9.80	152	62	53	SE	Steep	Minor fracture
34.60	10.55	151	61	51	SE	Steep	Minor fracture
37.89	11.55	261	171	81	W	Nearly vertical	Minor fracture
38.80	11.83	151	61	56	SE	Steep	Minor fracture
39.81	12.13	358	268	56	N	Steep	Minor fracture
42.31	12.90	171	81	63	S	Steep	Minor fracture
50.85	15.50	154	64	68	SE	Steep	Minor fracture
52.11	15.88	264	174	68	W	Steep	Lithologic feature
55.78	17.00	137	47	68	SE	Steep	Minor fracture
61.17	18.64	161	71	55	S	Steep	Minor fracture
62.01	18.90	177	87	60	S	Steep	Minor fracture
66.07	20.14	151	61	44	SE	Moderate	Minor fracture
69.94	21.32	152	62	50	SE	Steep	Minor fracture
72.50	22.10	193	103	23	S	Shallow	Minor fracture
72.93	22.23	173	83	17	S	Shallow	Minor fracture
74.11	22.59	178	88	19	S	Shallow	Minor fracture
75.82	23.11	73	343	79	E	Nearly vertical	Minor fracture
76.31	23.26	65	335	68	NE	Steep	Minor fracture
79.13	24.12	141	51	21	SE	Shallow	Minor fracture
83.49	25.45	358	268	13	N	Shallow	Sealed feature
83.59	25.48	234	144	11	SW	Shallow	Sealed feature
85.23	25.98	347	257	78	N	Nearly vertical	Minor fracture
89.48	27.27	164	74	55	S	Steep	Lithologic feature
89.87	27.39	168	78	18	S	Shallow	Minor fracture
99.14	30.22	7	277	69	N	Steep	Minor fracture
101.12	30.82	188	98	47	S	Moderate	Minor fracture
103.58	31.57	244	154	35	SW	Moderate	Minor fracture
104.16	31.75	293	203	48	NW	Moderate	Minor fracture
105.53	32.16	360	270	36	N	Moderate	Minor fracture
108.13	32.96	161	71	72	S	Nearly vertical	Minor fracture
114.12	34.78	258	168	55	W	Steep	Minor fracture
114.87	35.01	254	164	55	W	Steep	Minor fracture
117.43	35.79	193	103	56	S	Steep	Minor fracture
119.84	36.53	342	252	49	N	Moderate	Sealed feature
121.78	37.12	208	118	45	SW	Moderate	Minor fracture
122.52	37.34	192	102	61	S	Steep	Minor fracture
123.64	37.68	188	98	69	S	Steep	Sealed feature
126.11	38.44	167	77	41	S	Moderate	Lithologic feature
130.71	39.84	181	91	64	S	Steep	Lithologic feature
132.33	40.33	182	92	60	S	Steep	Minor fracture
132.68	40.44	355	265	75	N	Nearly vertical	Minor fracture
134.39	40.96	175	85	52	S	Steep	Minor fracture
136.32	41.55	355	265	77	N	Nearly vertical	Minor fracture
141.51	43.13	177	87	66	S	Steep	Lithologic feature
144.82	44.14	241	151	65	SW	Steep	Lithologic feature
146.53	44.66	203	113	34	SW	Moderate	Minor fracture
147.39	44.92	136	46	17	SE	Shallow	Minor fracture

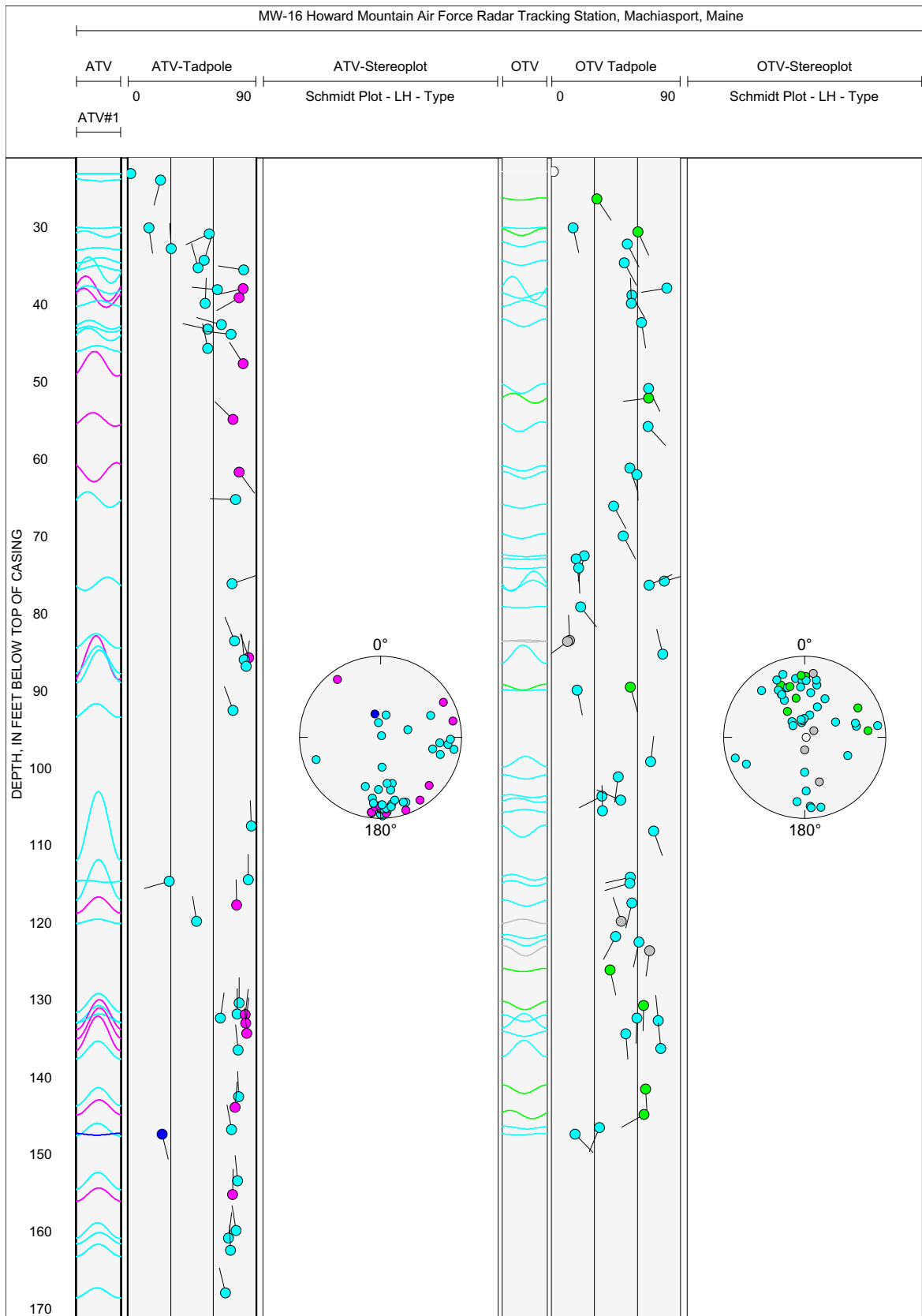


Figure 5C-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-16, near Machiasport, Maine.

INTERPRETATION OF FLOWMETER DATA AND INPUT VALUES FOR FWRAP

Elevation of measuring point	240.4	feet
Number of fractures	1	
Well diameter	6	inches
Drawdown	-4	feet
Depth to ambient water level	117	feet

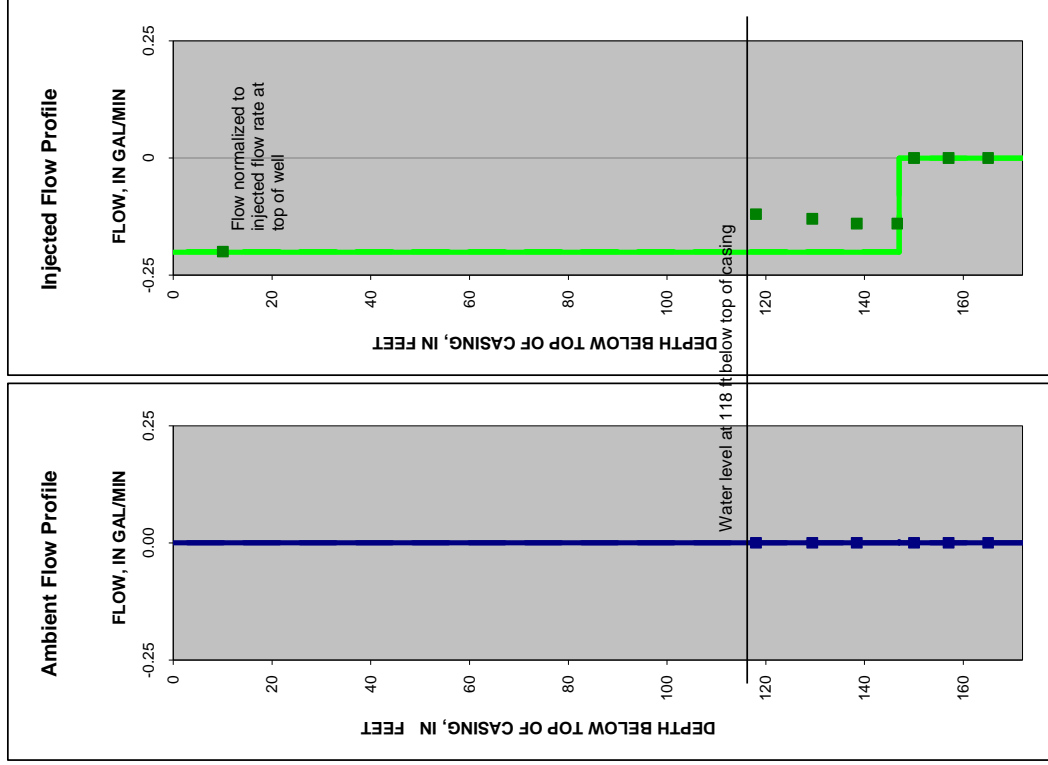
Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)
1	147	0.00001	-0.2

MODELED OUTPUT RESULTS FROM FWRAP

Elevation, ambient water level	123.40	feet
Elevation, injected water level	127.40	feet

Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)	Zone transmissivity (ft ² /d)	Water level (ft)	Elevation of water level (ft)	Percent transmissivity
1	147	0	-0.201	10	117.00	123.40	100

Total borehole transmissivity	10.0	(ft ² /d)
Sum of squares error	0.00000	(gal/min) ²
Root mean square error	0.00135	(gal/min)



Dashed line indicates measured flow.
 Solid line indicates modeled flow.
 Points indicate measured heat-pulse flowmeter data.

Figure 5C-3. Interpretation and modeling of heat-pulse flowmeter logs for borehole MW-16, near Machiasport, Maine. [gal/min, gallon per minute; ft, feet; ft²/d, feet squared per day; positive values of flow are upward flow, negative values of flow are downward flow]

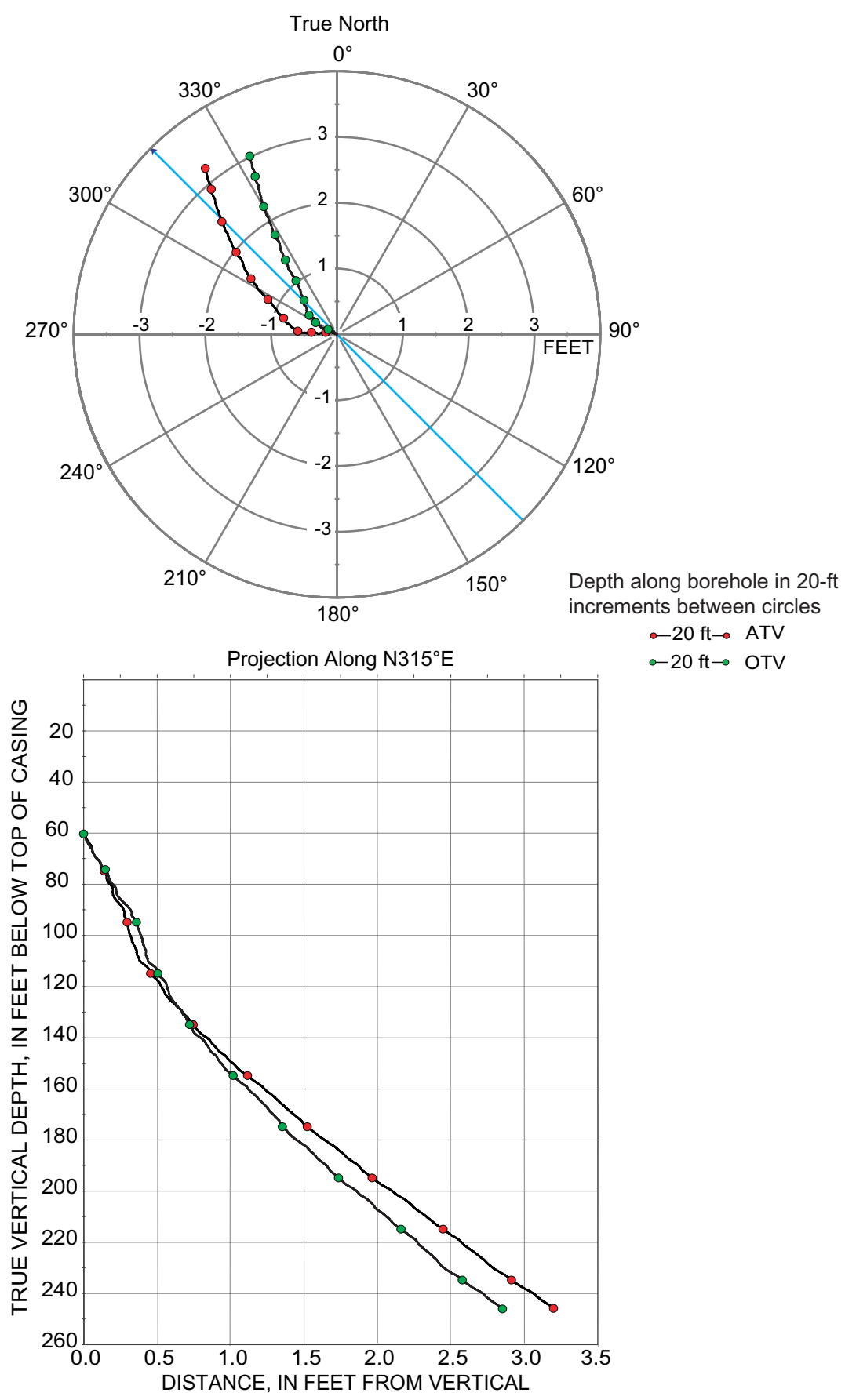


Figure 5D-1. Borehole deviation logs for borehole MW-17, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).
[ft, foot; ATV, acoustic televiewer; OTV, optical televiewer]

Table 5D-1. Interpretation of acoustic televiewer logs for borehole MW-17, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
66.78	20.35	101	11	1	E	Nearly horizontal	Bottom of casing
72.16	21.99	270	180	78	W	Nearly vertical	Minor fracture
75.29	22.95	323	233	78	NW	Nearly vertical	Minor fracture
77.62	23.66	279	189	63	W	Steep	Minor fracture
89.19	27.18	317	227	82	NW	Nearly vertical	Minor fracture
91.16	27.78	322	232	78	NW	Nearly vertical	Minor fracture
93.99	28.65	319	229	72	NW	Nearly vertical	Minor fracture
96.28	29.34	321	231	54	NW	Steep	Minor fracture
100.17	30.53	164	74	67	S	Steep	Transmissive fracture
105.24	32.08	349	259	77	N	Nearly vertical	Lithologic feature
105.88	32.27	101	11	84	E	Nearly vertical	Minor fracture
109.12	33.26	320	230	67	NW	Steep	Lithologic feature
110.17	33.58	87	357	70	E	Nearly vertical	Transmissive fracture
114.91	35.02	282	192	74	W	Nearly vertical	Transmissive fracture
116.59	35.53	295	205	66	NW	Steep	Minor fracture
143.17	43.64	92	2	72	E	Nearly vertical	Minor fracture
144.59	44.07	108	18	81	E	Nearly vertical	Minor fracture
177.04	53.96	230	140	80	SW	Nearly vertical	Partial fracture
179.76	54.79	277	187	76	W	Nearly vertical	Transmissive fracture
198.94	60.63	244	154	82	SW	Nearly vertical	Minor fracture
209.17	63.75	52	322	71	NE	Nearly vertical	Minor fracture
223.06	67.99	76	346	60	E	Steep	Minor fracture
225.77	68.81	304	214	42	NW	Moderate	Minor fracture
230.84	70.36	47	317	65	NE	Steep	Minor fracture
237.81	72.48	67	337	83	NE	Nearly vertical	Minor fracture
243.99	74.36	115	25	76	SE	Nearly vertical	Minor fracture

Table 5D–2. Interpretation of optical televiewer logs for borehole MW-17, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
66.55	20.28	247	157	76	SW	Nearly vertical	Fracture intersects boc
66.56	20.29	248	158	61	W	Steep	Fracture intersects boc
66.81	20.36	133	43	1	SE	Nearly horizontal	Bottom of casing
68.00	20.73	242	152	77	SW	Nearly vertical	Minor fracture
68.30	20.82	49	319	74	NE	Nearly vertical	Minor fracture
70.27	21.42	57	327	79	NE	Nearly vertical	Transmissive fracture
71.65	21.84	134	44	39	SE	Moderate	Transmissive fracture
73.04	22.26	306	216	80	NW	Nearly vertical	Transmissive fracture
79.71	24.29	244	154	86	SW	Nearly vertical	Partial fracture
80.65	24.58	262	172	70	W	Nearly vertical	Lithologic feature
85.50	26.06	75	345	73	E	Nearly vertical	Sealed feature
85.54	26.07	153	63	69	SE	Steep	Sealed feature
88.88	27.09	307	217	82	NW	Nearly vertical	Minor fracture
89.17	27.18	305	215	82	NW	Nearly vertical	Minor fracture
90.97	27.73	315	225	76	NW	Nearly vertical	Minor fracture
92.15	28.09	159	69	66	S	Steep	Sealed feature
93.90	28.62	321	231	67	NW	Steep	Minor fracture
95.71	29.17	325	235	65	NW	Steep	Lithologic feature
96.11	29.29	312	222	57	NW	Steep	Minor fracture
97.53	29.73	345	255	48	N	Moderate	Minor fracture
100.28	30.56	146	56	65	SE	Steep	Transmissive fracture
105.52	32.16	140	50	77	SE	Nearly vertical	Partial fracture
105.60	32.19	2	272	75	N	Nearly vertical	Lithologic feature
105.71	32.22	78	348	83	E	Nearly vertical	Minor fracture
109.91	33.50	82	352	64	E	Steep	Lithologic feature
110.36	33.64	82	352	66	E	Steep	Transmissive fracture
114.94	35.03	276	186	80	W	Nearly vertical	Transmissive fracture
116.40	35.48	279	189	69	W	Steep	Lithologic feature
116.50	35.51	280	190	70	W	Steep	Fracture
118.25	36.04	62	332	77	NE	Nearly vertical	Sealed feature
120.72	36.79	59	329	65	NE	Steep	Sealed feature
124.73	38.02	114	24	53	SE	Steep	Sealed feature
128.68	39.22	147	57	31	SE	Moderate	Minor fracture
132.32	40.33	178	88	50	S	Steep	Minor fracture
132.59	40.41	44	314	67	NE	Steep	Sealed feature
135.19	41.20	48	318	72	NE	Nearly vertical	Sealed feature
137.59	41.94	39	309	72	NE	Nearly vertical	Sealed feature
142.78	43.52	64	334	84	NE	Nearly vertical	Lithologic feature
146.54	44.66	222	132	73	SW	Nearly vertical	Lithologic feature
147.27	44.89	174	84	55	S	Steep	Lithologic feature
149.68	45.62	50	320	72	NE	Nearly vertical	Sealed feature
154.38	47.05	89	359	79	E	Nearly vertical	Lithologic feature
155.86	47.50	87	357	75	E	Nearly vertical	Sealed feature
163.33	49.78	81	351	66	E	Steep	Minor fracture
163.40	49.80	82	352	67	E	Steep	Lithologic feature
165.77	50.52	280	190	52	W	Steep	Lithologic feature
167.79	51.14	69	339	59	E	Steep	Transmissive fracture
169.35	51.62	63	333	74	NE	Nearly vertical	Minor fracture
170.21	51.88	54	324	77	NE	Nearly vertical	Minor fracture
179.66	54.76	255	165	75	W	Nearly vertical	Transmissive fracture
180.62	55.05	93	3	28	E	Shallow	Minor fracture
189.96	57.90	40	310	67	NE	Steep	Minor fracture
193.96	59.12	69	339	74	E	Nearly vertical	Sealed feature
195.22	59.50	63	333	56	NE	Steep	Minor fracture
195.42	59.56	38	308	58	NE	Steep	Minor fracture

Table 5D-2. Interpretation of optical televiewer logs for borehole MW-17, near Machiasport, Maine.—Continued
 [Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
196.58	59.91	57	327	69	NE	Steep	Minor fracture
205.54	62.65	283	193	63	W	Steep	Sealed feature
206.88	63.05	181	91	26	S	Shallow	Sealed feature
208.98	63.69	58	328	70	NE	Steep	Minor fracture
211.04	64.32	335	245	74	NW	Nearly vertical	Sealed feature
222.99	67.96	59	329	61	NE	Steep	Lithologic feature
225.73	68.80	317	227	55	NW	Steep	Sealed feature
230.85	70.36	47	317	68	NE	Steep	Lithologic feature
237.28	72.32	60	330	75	NE	Nearly vertical	Lithologic feature
243.79	74.30	125	35	75	SE	Nearly vertical	Sealed feature
246.83	75.23	221	131	30	SW	Shallow	Sealed feature

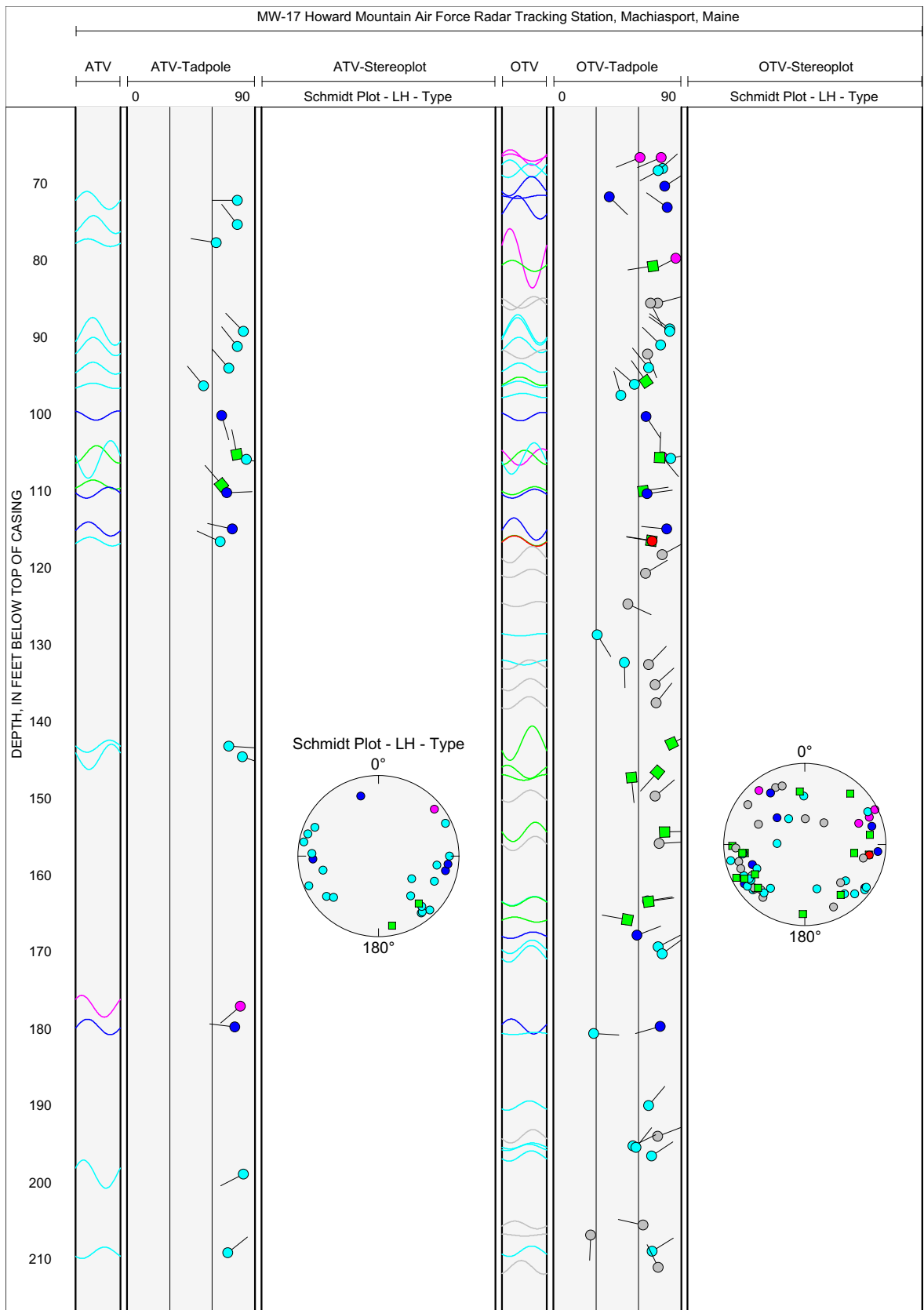


Figure 5D-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-17, near Machiasport, Maine.

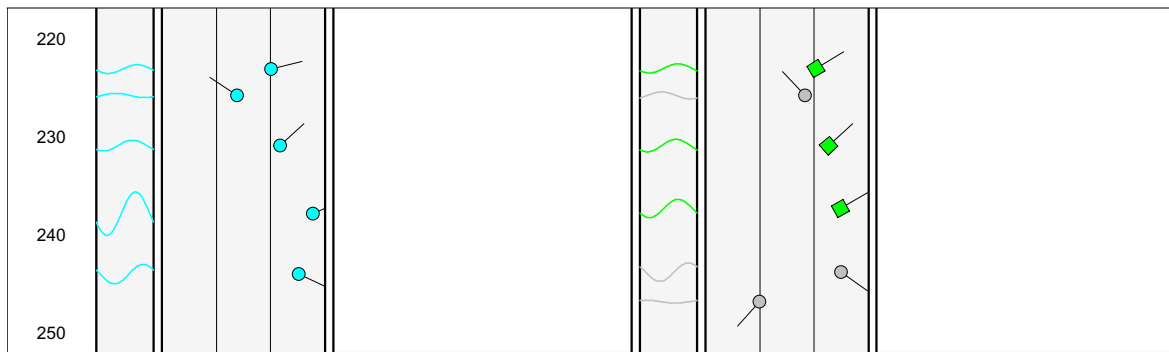


Figure 5D-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole MW-17, near Machiasport, Maine.—Continued

INTERPRETATION OF FLOWMETER DATA AND INPUT VALUES FOR FWRAP

Elevation of measuring point	74.93	feet
Number of fractures	4	
Well diameter	6	inches
Drawdown	-9.26	feet
Depth to ambient water level	14.57	feet

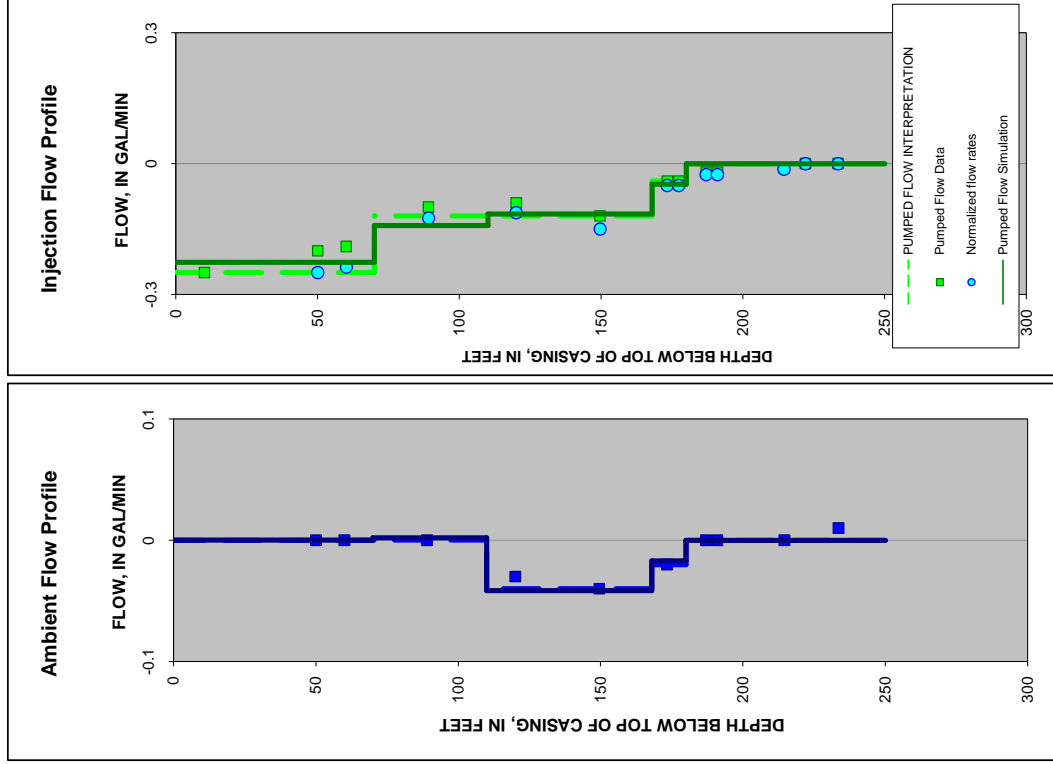
Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)
4	70	0.00	-0.25
3	110	0.00	-0.12
2	168	-0.04	-0.12
1	180	-0.02	-0.04

MODELED OUTPUT RESULTS FROM FWRAP

Elevation, ambient water level	36.67	feet
Elevation, injected water level	45.93	feet

Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)	Zone transmissivity (ft ² /d)	Water level (ft)	Elevation of water level (ft)	Percent transmissivity
4	70	0.000	-0.226	1.5	38.57	36.36	38
3	110	0.002	-0.142	1.25	32.57	42.36	31
2	168	-0.041	-0.115	0.75	43.57	31.36	19
1	180	-0.017	-0.047	0.5	43.57	31.36	0

Total borehole transmissivity	4.0	(ft ² /d)
Sum of squares error	0.00112	(gal/min) ²
Root mean square error	0.01676	(gal/min)



Dashed line indicates measured flow.
 Solid line indicates modeled flow.
 Points indicate measured heat-pulse flowmeter data.

Figure 5D-3. Interpretation and modeling of heat-pulse flowmeter logs for borehole MW-17, near Machiasport, Maine. [gal/min, gallon per minute; ft, feet; ft²/d, feet squared per day; positive values of flow are upward flow, negative values of flow are downward flow]

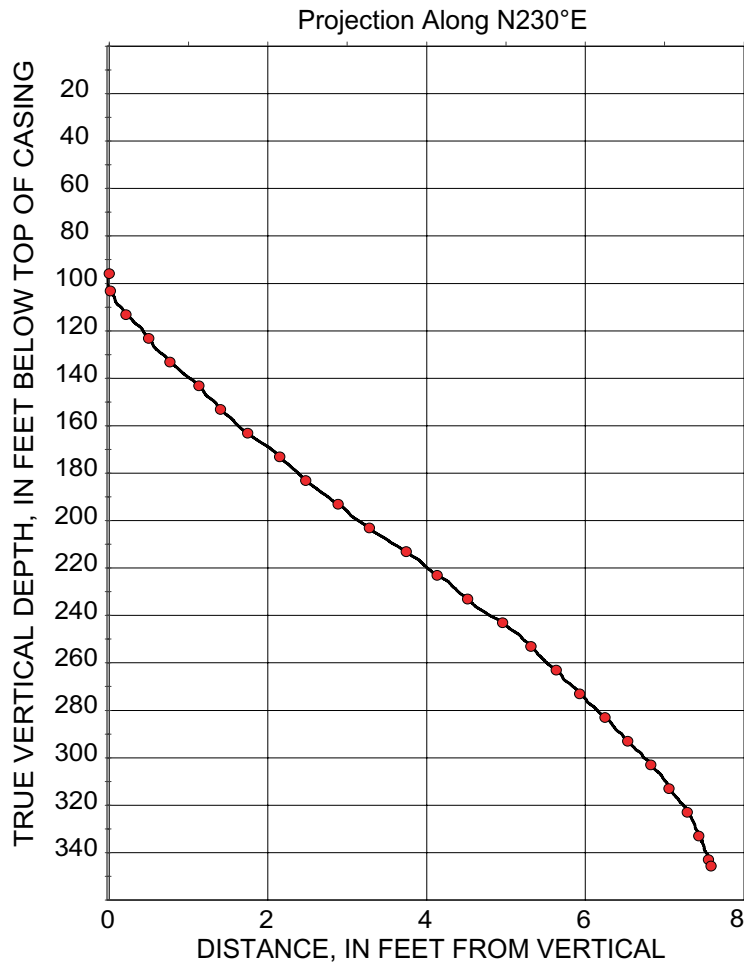
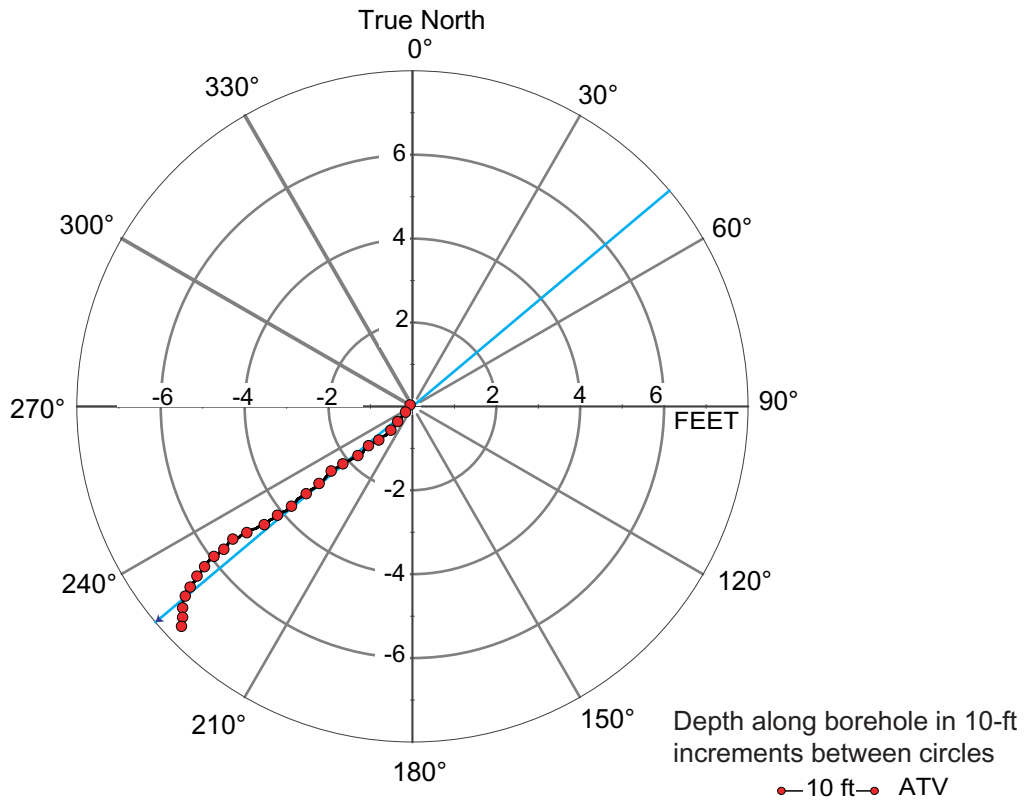


Figure 5E-1. Borehole deviation logs for borehole WY-3C, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).
[ft, foot; ATV, acoustic televiewer]

Table 5E-1. Interpretation of acoustic televiewer logs for borehole WY-3C, near Machiasport, Maine.

[Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 1.5 feet above land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
104.40	31.82	157	67	1	SE	Nearly horizontal	Bottom of casing
105.67	32.21	137	47	30	SE	Shallow	Transmissive fracture
107.26	32.69	351	261	38	N	Moderate	Minor fracture
108.11	32.95	333	243	20	NW	Shallow	Transmissive fracture
109.87	33.49	273	183	46	W	Moderate	Minor fracture
116.74	35.58	267	177	71	W	Nearly vertical	Minor fracture
117.45	35.80	286	196	41	W	Moderate	Minor fracture
123.31	37.58	41	311	71	NE	Nearly vertical	Minor fracture
154.18	46.99	103	13	81	E	Nearly vertical	Minor fracture
154.68	47.14	164	74	16	S	Shallow	Minor fracture
164.44	50.12	212	122	60	SW	Steep	Transmissive fracture
165.28	50.37	98	8	73	E	Nearly vertical	Partial fracture
166.88	50.86	90	360	82	E	Nearly vertical	Minor fracture
179.94	54.84	322	232	45	NW	Moderate	Lithologic feature
183.86	56.04	337	247	71	NW	Nearly vertical	Minor fracture
194.83	59.38	347	257	75	N	Nearly vertical	Minor fracture
207.36	63.20	280	190	42	W	Moderate	Minor fracture
208.29	63.48	158	68	64	S	Steep	Minor fracture
219.70	66.96	240	150	49	SW	Moderate	Minor fracture
231.13	70.44	275	185	40	W	Moderate	Minor fracture
247.93	75.57	303	213	75	NW	Nearly vertical	Minor fracture
261.80	79.79	121	31	67	SE	Steep	Minor fracture
270.27	82.37	89	359	82	E	Nearly vertical	Minor fracture
274.09	83.54	138	48	57	SE	Steep	Minor fracture
277.18	84.48	318	228	77	NW	Nearly vertical	Minor fracture
280.49	85.49	300	210	79	NW	Nearly vertical	Minor fracture
284.30	86.65	107	17	30	E	Moderate	Sealed feature
286.90	87.44	307	217	57	NW	Steep	Minor fracture
293.37	89.41	9	279	67	N	Steep	Minor fracture
297.64	90.72	28	298	47	NE	Moderate	Minor fracture
299.67	91.33	33	303	53	NE	Steep	Minor fracture
305.35	93.07	109	19	59	E	Steep	Partial fracture
307.79	93.81	321	231	80	NW	Nearly vertical	Partial fracture
311.57	94.96	326	236	82	NW	Nearly vertical	Minor fracture
316.94	96.60	328	238	83	NW	Nearly vertical	Minor fracture
317.25	96.69	317	227	88	NW	Nearly vertical	Partial fracture
321.13	97.88	354	264	71	N	Nearly vertical	Minor fracture
325.58	99.23	111	21	51	E	Steep	Lithologic feature
327.47	99.81	113	23	64	SE	Steep	Minor fracture
350.29	106.76	93	3	47	E	Moderate	Lithologic feature
352.79	107.53	30	300	72	NE	Nearly vertical	Partial fracture

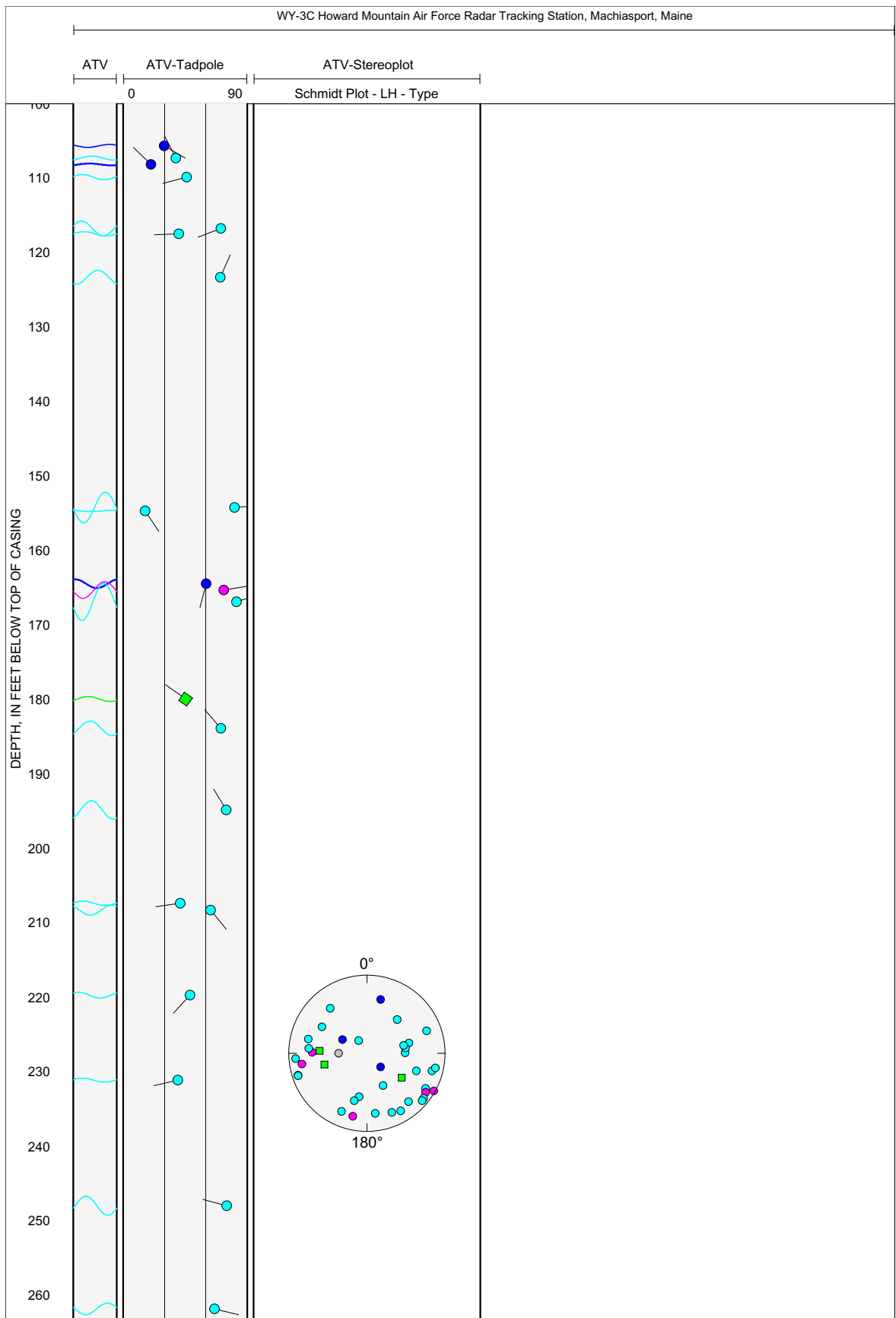


Figure 5E-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole WY-3C, near Machiasport, Maine.

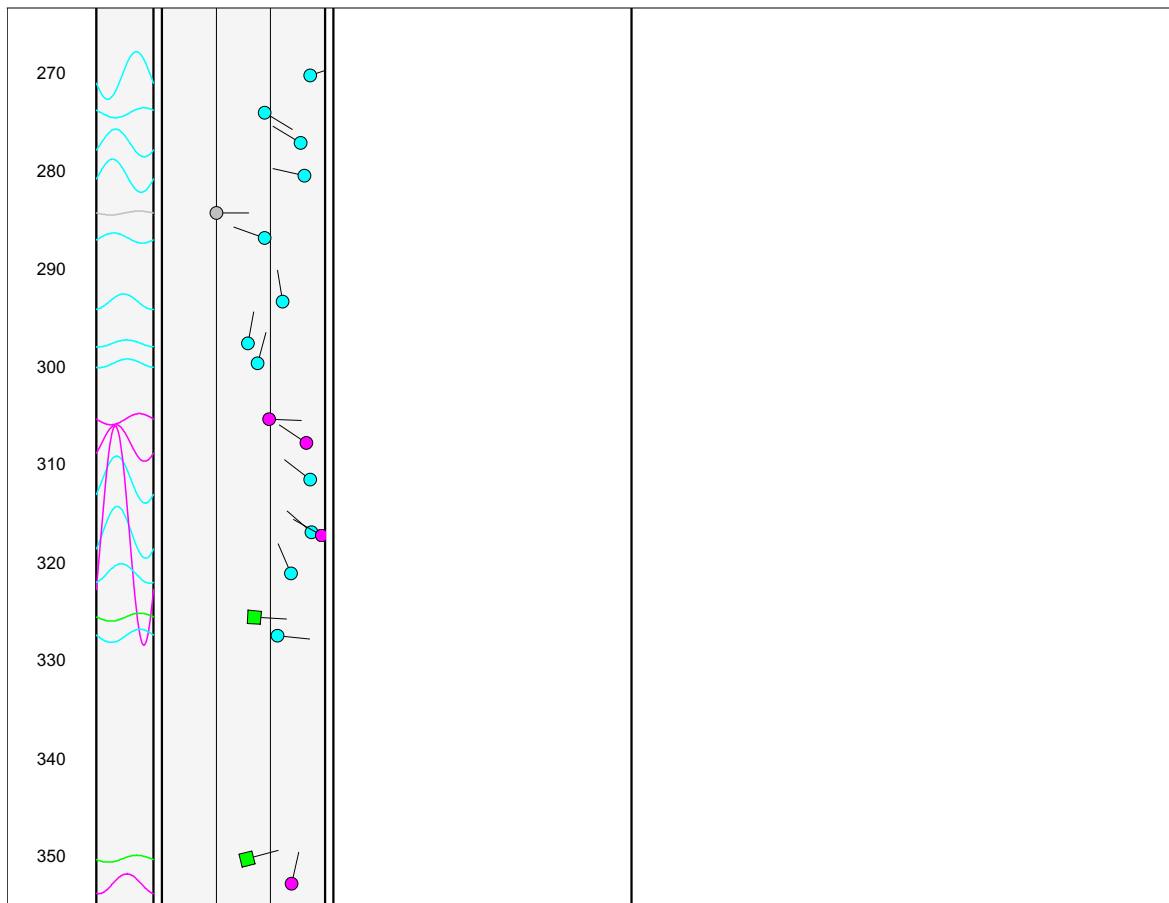


Figure 5E-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole WY-3C, near Machiasport, Maine.—Continued

INTERPRETATION OF FLOWMETER DATA AND INPUT VALUES FOR FWRAP

Elevation of measuring point	69.8	feet
Number of fractures	4	
Well diameter	8	inches
Drawdown	-7.55	feet
Depth to ambient water level	65.5	feet

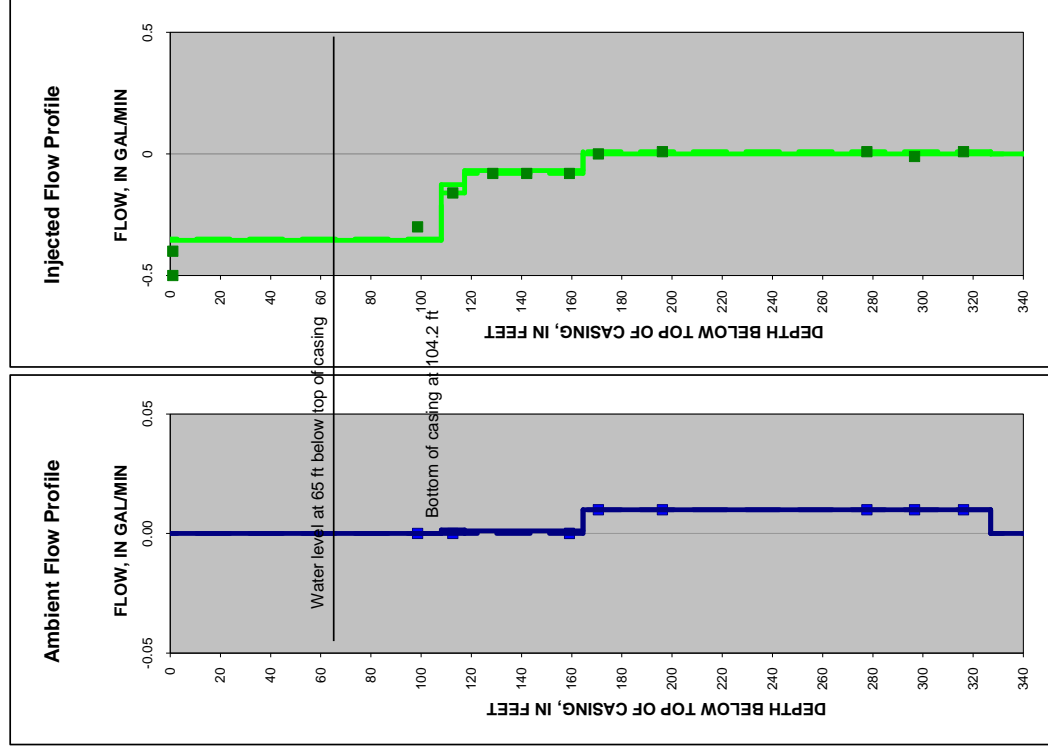
Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)
4	108	0.00	-0.35
3	117.4	0.00	-0.16
2	164.5	0.00	-0.08
1	327	0.01	0.01

MODELED OUTPUT RESULTS FROM FWRAP

Elevation, ambient water level	4.30	feet
Elevation, injected water level	11.85	feet

Fracture number	Depth (ft)	Ambient flow above fracture (gal/min)	Injected flow above fracture (gal/min)	Zone transmissivity (ft ² /d)	Water level (ft)	Elevation of water level (ft)	Percent transmissivity
4	108.0	0.000	-0.355	5.28	65.48	4.32	67
3	117.4	0.002	-0.127	1.20	65.48	4.32	15
2	164.5	0.001	-0.068	1.20	66.68	3.12	15
1	327.0	0.010	0.001	0.16	57.48	12.32	2

Total borehole transmissivity	7.8	(ft ² /d)
Sum of squares error	0.00139	(gal/min) ²
Root mean square error	0.01864	(gal/min)



Dashed line indicates measured flow.
 Solid line indicates modeled flow.
 Points indicate measured heat-pulse flowmeter data.

Figure 5E-3. Interpretation and modeling of heat-pulse flowmeter logs for borehole WY-3C, near Machiasport, Maine. [gal/min, gallon per minute; ft, feet; ft²/d, feet squared per day; positive values of flow are upward flow, negative values of flow are downward flow]

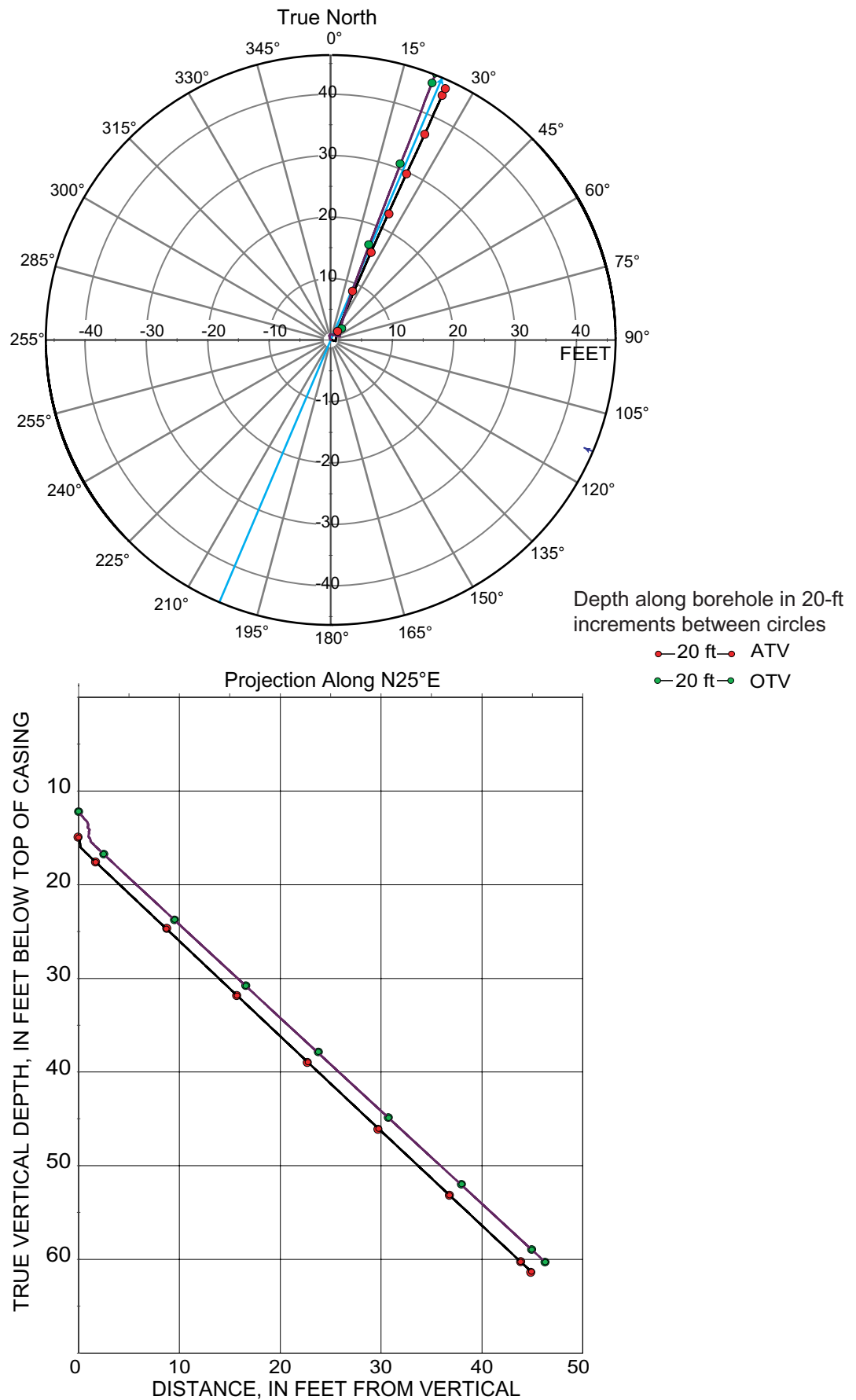


Figure 5F-1. Borehole deviation logs for borehole C-114, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).

[ft, foot; ATV, acoustic televiewer; OTV, optical televiewer]

Table 5F-1. Interpretation of acoustic televiewer logs for borehole C-114, near Machiasport, Maine.

[The borehole is inclined at 45° from vertical in a direction of N25°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
15.43	4.70	9.44	64	334	65	NE	Steep	Minor fracture
16.22	4.94	10.01	191	101	16	S	Shallow	Water level-should have 0 dip
16.35	4.98	10.11	162	72	89	S	Nearly vertical	Minor fracture
16.90	5.15	10.50	111	21	33	E	Moderate	Minor fracture
17.55	5.35	10.97	67	337	5	NE	Nearly horizontal	Minor fracture
17.63	5.37	11.03	36	306	70	NE	Steep	Minor fracture
17.92	5.46	11.24	104	14	19	E	Shallow	Minor fracture
17.94	5.47	11.25	277	187	76	W	Nearly vertical	Minor fracture
18.44	5.62	11.61	39	309	79	NE	Nearly vertical	Minor fracture
19.48	5.94	12.36	60	330	73	NE	Nearly vertical	Minor fracture
19.57	5.96	12.42	239	149	57	SW	Steep	Minor fracture
19.60	5.97	12.44	49	319	33	NE	Moderate	Minor fracture
19.75	6.02	12.55	259	169	70	W	Nearly vertical	Minor fracture
19.89	6.06	12.65	265	175	64	W	Steep	Minor fracture
20.03	6.10	12.75	258	168	74	W	Nearly vertical	Minor fracture
20.24	6.17	12.90	237	147	65	SW	Steep	Fracture
20.36	6.21	12.99	234	144	64	SW	Steep	Fracture
20.48	6.24	13.08	239	149	61	SW	Steep	Minor fracture
20.82	6.35	13.32	240	150	65	SW	Steep	Minor fracture
21.20	6.46	13.60	243	153	61	SW	Steep	Minor fracture
21.50	6.55	13.81	251	161	62	W	Steep	Minor fracture
21.64	6.60	13.91	251	161	71	W	Nearly vertical	Minor fracture
21.66	6.60	13.93	8	278	78	N	Nearly vertical	Minor fracture
21.93	6.68	14.12	246	156	59	SW	Steep	Minor fracture
22.15	6.75	14.28	184	94	89	S	Nearly vertical	Minor fracture
22.55	6.87	14.57	353	263	89	N	Nearly vertical	Minor fracture
22.57	6.88	14.58	250	160	69	W	Steep	Minor fracture
22.91	6.98	14.83	4	274	83	N	Nearly vertical	Minor fracture
23.04	7.02	14.92	267	177	62	W	Steep	Minor fracture
23.24	7.08	15.06	7	277	87	N	Nearly vertical	Minor fracture
23.67	7.21	15.37	1	271	89	N	Nearly vertical	Minor fracture
23.91	7.29	15.54	301	211	47	NW	Moderate	Partial fracture
24.04	7.33	15.64	352	262	87	N	Nearly vertical	Minor fracture
24.08	7.34	15.67	185	95	90	S	Nearly vertical	Minor fracture
24.47	7.46	15.95	359	269	80	N	Nearly vertical	Minor fracture
24.71	7.53	16.12	260	170	75	W	Nearly vertical	Minor fracture
24.76	7.55	16.16	352	262	77	N	Nearly vertical	Minor fracture
24.92	7.60	16.27	261	171	72	W	Nearly vertical	Minor fracture
24.97	7.61	16.31	1	271	82	N	Nearly vertical	Partial fracture
25.24	7.69	16.50	186	96	90	S	Nearly vertical	Minor fracture
25.34	7.72	16.57	6	276	84	N	Nearly vertical	Minor fracture
25.45	7.76	16.65	356	266	84	N	Nearly vertical	Minor fracture
25.70	7.83	16.83	8	278	83	N	Nearly vertical	Minor fracture
25.98	7.92	17.03	1	271	84	N	Nearly vertical	Minor fracture
26.15	7.97	17.16	4	274	89	N	Nearly vertical	Minor fracture
26.41	8.05	17.34	351	261	85	N	Nearly vertical	Minor fracture
26.78	8.16	17.61	353	263	85	N	Nearly vertical	Minor fracture
27.38	8.35	18.04	227	137	76	SW	Nearly vertical	Minor fracture
27.44	8.36	18.08	166	76	87	S	Nearly vertical	Minor fracture
27.49	8.38	18.12	116	26	21	SE	Shallow	Minor fracture
27.57	8.40	18.18	134	44	34	SE	Moderate	Minor fracture
28.10	8.56	18.56	316	226	87	NW	Nearly vertical	Partial fracture
28.20	8.59	18.63	4	274	85	N	Nearly vertical	Minor fracture
28.50	8.69	18.85	185	95	89	S	Nearly vertical	Minor fracture
28.97	8.83	19.18	185	95	11	S	Shallow	Fracture
29.04	8.85	19.24	155	65	21	SE	Shallow	Minor fracture
29.16	8.89	19.32	156	66	89	SE	Nearly vertical	Partial fracture

Table 5F-1. Interpretation of acoustic televiewer logs for borehole C-114, near Machiasport, Maine.—Continued

[The borehole is inclined at 45° from vertical in a direction of N25°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
29.36	8.95	19.47	49	319	65	NE	Steep	Partial fracture
29.56	9.01	19.61	227	137	74	SW	Nearly vertical	Minor fracture
29.62	9.03	19.65	1	271	85	N	Nearly vertical	Minor fracture
29.86	9.10	19.83	183	93	90	S	Nearly vertical	Minor fracture
30.19	9.20	20.06	356	266	82	N	Nearly vertical	Minor fracture
30.40	9.27	20.21	4	274	84	N	Nearly vertical	Minor fracture
30.71	9.36	20.44	360	270	84	N	Nearly vertical	Minor fracture
30.88	9.41	20.56	231	141	66	SW	Steep	Minor fracture
31.05	9.46	20.68	358	268	83	N	Nearly vertical	Minor fracture
31.50	9.60	21.00	1	271	83	N	Nearly vertical	Minor fracture
31.51	9.60	21.01	240	150	61	SW	Steep	Minor fracture
31.87	9.71	21.27	8	278	85	N	Nearly vertical	Minor fracture
32.08	9.78	21.42	141	51	29	SE	Shallow	Minor fracture
32.09	9.78	21.43	182	92	87	S	Nearly vertical	Minor fracture
32.55	9.92	21.76	179	89	87	S	Nearly vertical	Minor fracture
32.64	9.95	21.82	352	262	88	N	Nearly vertical	Minor fracture
32.81	10.00	21.95	301	211	65	NW	Steep	Minor fracture
32.81	10.00	21.95	91	1	13	E	Shallow	Minor fracture
33.09	10.09	22.15	359	269	84	N	Nearly vertical	Minor fracture
33.17	10.11	22.21	350	260	86	N	Nearly vertical	Minor fracture
33.36	10.17	22.34	183	93	90	S	Nearly vertical	Minor fracture
33.58	10.23	22.50	172	82	88	S	Nearly vertical	Minor fracture
34.23	10.43	22.97	262	172	34	W	Moderate	Fracture
34.33	10.46	23.04	358	268	86	N	Nearly vertical	Minor fracture
34.42	10.49	23.11	353	263	87	N	Nearly vertical	Fracture
34.86	10.62	23.42	355	265	87	N	Nearly vertical	Minor fracture
35.13	10.71	23.62	2	272	83	N	Nearly vertical	Minor fracture
35.25	10.74	23.70	225	135	67	SW	Steep	Minor fracture
35.36	10.78	23.78	358	268	86	N	Nearly vertical	Minor fracture
36.90	11.25	24.89	140	50	18	SE	Shallow	Minor fracture
37.10	11.31	25.03	1	271	86	N	Nearly vertical	Minor fracture
37.28	11.36	25.16	355	265	87	N	Nearly vertical	Minor fracture
37.75	11.51	25.50	359	269	83	N	Nearly vertical	Minor fracture
37.84	11.53	25.57	352	262	88	N	Nearly vertical	Minor fracture
38.00	11.58	25.68	107	17	27	E	Shallow	Partial fracture
38.05	11.60	25.72	172	82	89	S	Nearly vertical	Minor fracture
38.19	11.64	25.82	248	158	49	W	Moderate	Minor fracture
38.24	11.65	25.85	1	271	86	N	Nearly vertical	Minor fracture
38.36	11.69	25.94	0	270	86	N	Nearly vertical	Minor fracture
38.52	11.74	26.05	171	81	90	S	Nearly vertical	Minor fracture
38.84	11.84	26.28	5	275	88	N	Nearly vertical	Minor fracture
39.04	11.90	26.43	2	272	87	N	Nearly vertical	Minor fracture
39.21	11.95	26.55	277	187	60	W	Steep	Minor fracture
39.23	11.96	26.57	356	266	88	N	Nearly vertical	Minor fracture
40.03	12.20	27.14	242	152	76	SW	Nearly vertical	Minor fracture
40.31	12.29	27.34	239	149	69	SW	Steep	Minor fracture
40.43	12.32	27.43	185	95	89	S	Nearly vertical	Minor fracture
40.75	12.42	27.66	358	268	89	N	Nearly vertical	Minor fracture
40.85	12.45	27.73	243	153	48	SW	Moderate	Minor fracture
41.53	12.66	28.22	355	265	86	N	Nearly vertical	Fracture
41.84	12.75	28.44	1	271	85	N	Nearly vertical	Minor fracture
42.28	12.89	28.76	178	88	83	S	Nearly vertical	Minor fracture
42.35	12.91	28.81	80	350	89	E	Nearly vertical	Minor fracture
42.49	12.95	28.91	12	282	87	N	Nearly vertical	Minor fracture
42.50	12.95	28.92	325	235	88	NW	Nearly vertical	Partial fracture
42.75	13.03	29.10	5	275	87	N	Nearly vertical	Minor fracture
43.02	13.11	29.29	190	100	88	S	Nearly vertical	Minor fracture

Table 5F-1. Interpretation of acoustic televiewer logs for borehole C-114, near Machiasport, Maine.—Continued

[The borehole is inclined at 45° from vertical in a direction of N25°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
43.11	13.14	29.36	112	22	18	E	Shallow	Partial fracture
43.11	13.14	29.36	7	277	90	N	Nearly vertical	Minor fracture
43.33	13.21	29.51	187	97	84	S	Nearly vertical	Minor fracture
43.54	13.27	29.67	44	314	72	NE	Nearly vertical	Minor fracture
43.58	13.28	29.69	105	15	16	E	Shallow	Minor fracture
43.61	13.29	29.72	194	104	81	S	Nearly vertical	Minor fracture
43.70	13.32	29.78	112	22	22	E	Shallow	Minor fracture
43.91	13.38	29.93	121	31	21	SE	Shallow	Partial fracture
44.17	13.46	30.12	197	107	78	S	Nearly vertical	Fracture
44.24	13.48	30.17	244	154	54	SW	Steep	Minor fracture
44.27	13.49	30.19	161	71	14	S	Shallow	Fracture
44.47	13.55	30.33	141	51	11	SE	Shallow	Minor fracture
44.62	13.60	30.44	203	113	75	SW	Nearly vertical	Minor fracture
45.16	13.76	30.83	178	88	88	S	Nearly vertical	Minor fracture
45.31	13.81	30.94	182	92	87	S	Nearly vertical	Minor fracture
45.39	13.83	31.00	340	250	18	N	Shallow	Partial fracture
45.67	13.92	31.20	176	86	87	S	Nearly vertical	Minor fracture
46.14	14.06	31.54	114	24	16	SE	Shallow	Partial fracture
46.50	14.17	31.79	66	336	86	NE	Nearly vertical	Fracture
46.53	14.18	31.82	351	261	72	N	Nearly vertical	Minor fracture
46.83	14.27	32.03	27	297	36	NE	Moderate	Partial fracture
46.88	14.29	32.07	263	173	82	W	Nearly vertical	Minor fracture
48.00	14.63	32.87	185	95	90	S	Nearly vertical	Minor fracture
48.28	14.72	33.08	294	204	35	NW	Moderate	Partial fracture
48.34	14.73	33.12	14	284	73	N	Nearly vertical	Minor fracture
48.39	14.75	33.15	251	161	86	W	Nearly vertical	Fracture
48.44	14.76	33.19	358	268	90	N	Nearly vertical	Minor fracture
48.51	14.79	33.24	240	150	77	SW	Nearly vertical	Fracture
48.53	14.79	33.26	103	13	16	E	Shallow	Minor fracture
48.95	14.92	33.56	121	31	22	SE	Shallow	Minor fracture
49.03	14.94	33.61	5	275	86	N	Nearly vertical	Minor fracture
49.16	14.98	33.71	102	12	20	E	Shallow	Fracture
49.25	15.01	33.77	185	95	79	S	Nearly vertical	Minor fracture
49.31	15.03	33.82	1	271	86	N	Nearly vertical	Minor fracture
49.56	15.11	34.00	165	75	48	S	Moderate	Partial fracture
49.57	15.11	34.00	14	284	79	N	Nearly vertical	Minor fracture
49.65	15.13	34.06	93	3	15	E	Shallow	Minor fracture
50.25	15.32	34.49	66	336	88	NE	Nearly vertical	Minor fracture
50.37	15.35	34.58	185	95	89	S	Nearly vertical	Minor fracture
50.91	15.52	34.97	231	141	89	SW	Nearly vertical	Minor fracture
51.45	15.68	35.36	187	97	87	S	Nearly vertical	Minor fracture
51.71	15.76	35.54	279	189	65	W	Steep	Minor fracture
51.74	15.77	35.56	192	102	88	S	Nearly vertical	Minor fracture
51.85	15.80	35.64	120	30	15	SE	Shallow	Partial fracture
51.92	15.82	35.69	216	126	83	SW	Nearly vertical	Minor fracture
51.97	15.84	35.73	123	33	13	SE	Shallow	Minor fracture
52.09	15.88	35.82	204	114	72	SW	Nearly vertical	Minor fracture
52.55	16.02	36.15	216	126	83	SW	Nearly vertical	Minor fracture
52.66	16.05	36.23	41	311	87	NE	Nearly vertical	Minor fracture
52.70	16.06	36.25	17	287	90	N	Nearly vertical	Minor fracture
52.89	16.12	36.39	39	309	84	NE	Nearly vertical	Minor fracture
53.19	16.21	36.61	233	143	76	SW	Nearly vertical	Minor fracture
53.37	16.27	36.74	224	134	72	SW	Nearly vertical	Minor fracture
53.76	16.39	37.02	255	165	71	W	Nearly vertical	Minor fracture
54.34	16.56	37.43	7	277	89	N	Nearly vertical	Minor fracture
54.45	16.60	37.51	182	92	90	S	Nearly vertical	Minor fracture
54.52	16.62	37.56	279	189	66	W	Steep	Fracture

Table 5F-1. Interpretation of acoustic televiewer logs for borehole C-114, near Machiasport, Maine.—Continued
 [The borehole is inclined at 45° from vertical in a direction of N25°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
55.25	16.84	38.09	13	283	89	N	Nearly vertical	Minor fracture
55.30	16.85	38.13	178	88	90	S	Nearly vertical	Minor fracture
55.62	16.95	38.36	232	142	76	SW	Nearly vertical	Minor fracture
56.18	17.12	38.76	75	345	85	E	Nearly vertical	Minor fracture
56.27	17.15	38.82	1	271	85	N	Nearly vertical	Minor fracture
56.54	17.23	39.02	232	142	67	SW	Steep	Minor fracture
56.66	17.27	39.10	232	142	80	SW	Nearly vertical	Partial fracture
56.75	17.30	39.17	152	62	15	SE	Shallow	Minor fracture
56.89	17.34	39.27	238	148	83	SW	Nearly vertical	Minor fracture
57.32	17.47	39.58	164	74	74	S	Nearly vertical	Lithologic feature
57.94	17.66	40.02	238	148	72	SW	Nearly vertical	Minor fracture
58.11	17.71	40.15	248	158	86	W	Nearly vertical	Minor fracture
58.83	17.93	40.66	183	93	90	S	Nearly vertical	Minor fracture
58.93	17.96	40.74	183	93	89	S	Nearly vertical	Minor fracture
59.22	18.05	40.94	242	152	66	SW	Steep	Minor fracture
59.28	18.07	40.99	262	172	74	W	Nearly vertical	Partial fracture
59.66	18.18	41.26	3	273	87	N	Nearly vertical	Minor fracture
60.39	18.41	41.79	246	156	63	SW	Steep	Minor fracture
60.67	18.49	41.99	247	157	64	SW	Steep	Minor fracture
60.82	18.54	42.10	229	139	49	SW	Moderate	Minor fracture
61.14	18.63	42.33	5	275	81	N	Nearly vertical	Minor fracture
61.42	18.72	42.53	3	273	86	N	Nearly vertical	Minor fracture
61.60	18.77	42.66	255	165	74	W	Nearly vertical	Minor fracture
61.68	18.80	42.71	360	270	84	N	Nearly vertical	Minor fracture
61.83	18.84	42.82	3	273	89	N	Nearly vertical	Minor fracture
62.05	18.91	42.98	1	271	89	N	Nearly vertical	Minor fracture
62.40	19.02	43.23	264	174	67	W	Steep	Minor fracture
62.54	19.06	43.33	258	168	61	W	Steep	Minor fracture
62.59	19.08	43.37	9	279	88	N	Nearly vertical	Minor fracture
62.80	19.14	43.52	357	267	86	N	Nearly vertical	Minor fracture
63.01	19.20	43.67	6	276	86	N	Nearly vertical	Minor fracture
63.06	19.22	43.71	192	102	86	S	Nearly vertical	Minor fracture
63.35	19.31	43.92	7	277	86	N	Nearly vertical	Minor fracture
63.64	19.40	44.12	1	271	89	N	Nearly vertical	Minor fracture
63.72	19.42	44.18	8	278	90	N	Nearly vertical	Minor fracture
63.85	19.46	44.28	263	173	59	W	Steep	Minor fracture
64.00	19.51	44.38	6	276	85	N	Nearly vertical	Minor fracture
64.18	19.56	44.51	7	277	88	N	Nearly vertical	Minor fracture
64.33	19.61	44.62	7	277	86	N	Nearly vertical	Minor fracture
64.80	19.75	44.96	7	277	85	N	Nearly vertical	Minor fracture
65.30	19.90	45.32	120	30	19	SE	Shallow	Partial fracture
65.57	19.98	45.51	340	250	6	N	Nearly horizontal	Minor fracture
65.62	20.00	45.55	183	93	88	S	Nearly vertical	Minor fracture
65.92	20.09	45.76	359	269	85	N	Nearly vertical	Minor fracture
66.35	20.22	46.07	1	271	85	N	Nearly vertical	Minor fracture
66.51	20.27	46.19	247	157	63	SW	Steep	Minor fracture
66.70	20.33	46.33	279	189	25	W	Shallow	Minor fracture
66.99	20.42	46.53	102	12	15	E	Shallow	Minor fracture
67.11	20.45	46.62	1	271	79	N	Nearly vertical	Minor fracture
67.12	20.46	46.63	253	163	64	W	Steep	Minor fracture
67.27	20.50	46.74	349	259	82	N	Nearly vertical	Minor fracture
67.36	20.53	46.80	89	359	14	E	Shallow	Partial fracture
67.58	20.60	46.96	261	171	88	W	Nearly vertical	Minor fracture
68.11	20.76	47.34	244	154	68	SW	Steep	Minor fracture
68.11	20.76	47.34	275	185	62	W	Steep	Partial fracture
68.12	20.76	47.35	355	265	81	N	Nearly vertical	Minor fracture
68.19	20.78	47.40	147	57	16	SE	Shallow	Minor fracture

Table 5F-1. Interpretation of acoustic televiewer logs for borehole C-114, near Machiasport, Maine.—Continued

[The borehole is inclined at 45° from vertical in a direction of N25°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
68.74	20.95	47.79	358	268	80	N	Nearly vertical	Minor fracture
68.95	21.01	47.94	256	166	64	W	Steep	Minor fracture
68.95	21.01	47.94	102	12	21	E	Shallow	Minor fracture
69.00	21.03	47.98	356	266	79	N	Nearly vertical	Minor fracture
69.09	21.06	48.04	274	184	59	W	Steep	Minor fracture
69.11	21.06	48.06	35	305	63	NE	Steep	Partial fracture
69.79	21.27	48.55	265	175	74	W	Nearly vertical	Minor fracture
69.89	21.30	48.62	335	245	82	NW	Nearly vertical	Minor fracture
69.97	21.33	48.68	85	355	19	E	Shallow	Minor fracture
70.02	21.34	48.71	275	185	72	W	Nearly vertical	Minor fracture
70.17	21.39	48.82	280	190	88	W	Nearly vertical	Partial fracture
70.59	21.51	49.12	233	143	52	SW	Steep	Fracture
70.63	21.53	49.15	0	270	85	N	Nearly vertical	Minor fracture
71.08	21.66	49.48	86	356	20	E	Shallow	Minor fracture
71.79	21.88	49.99	144	54	25	SE	Shallow	Fracture
72.28	22.03	50.34	200	110	62	S	Steep	Minor fracture
72.49	22.09	50.49	359	269	82	N	Nearly vertical	Minor fracture
72.54	22.11	50.53	153	63	72	SE	Nearly vertical	Minor fracture
73.34	22.35	51.10	168	78	82	S	Nearly vertical	Minor fracture
74.00	22.55	51.58	138	48	87	SE	Nearly vertical	Minor fracture
74.62	22.74	52.02	145	55	86	SE	Nearly vertical	Minor fracture
74.98	22.85	52.28	208	118	43	SW	Moderate	Minor fracture
75.17	22.91	52.42	165	75	89	S	Nearly vertical	Minor fracture
75.29	22.95	52.50	207	117	40	SW	Moderate	Minor fracture
75.38	22.97	52.57	3	273	84	N	Nearly vertical	Minor fracture
76.53	23.33	53.40	358	268	85	N	Nearly vertical	Minor fracture
76.89	23.43	53.66	179	89	21	S	Shallow	Minor fracture
78.55	23.94	54.85	210	120	43	SW	Moderate	Minor fracture
78.74	24.00	54.99	203	113	46	SW	Moderate	Minor fracture
78.95	24.06	55.14	276	186	87	W	Nearly vertical	Minor fracture
79.27	24.16	55.37	61	331	76	NE	Nearly vertical	Minor fracture
80.66	24.58	56.37	91	1	87	E	Nearly vertical	Minor fracture

Table 5F-2. Interpretation of optical televiewer logs for borehole C-114, near Machiasport, Maine.

[The borehole is inclined at 45° from vertical in a direction of N25°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 2.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
13.46	4.10	8.01	343	253	0	N	Horizontal	Minor fracture
14.12	4.30	8.53	335	245	90	NW	Vertical	Lithologic feature
15.69	4.78	9.76	149	59	82	SE	Nearly vertical	Minor fracture
16.00	4.88	10.01	207	117	20	SW	Shallow	water level
16.43	5.01	10.35	105	15	58	E	Steep	Minor fracture
16.90	5.15	10.72	105	15	24	E	Shallow	Minor fracture
19.61	5.98	12.85	226	136	55	SW	Steep	Minor fracture
19.78	6.03	12.99	245	155	61	SW	Steep	Minor fracture
20.46	6.24	13.52	236	146	47	SW	Moderate	Minor fracture
20.62	6.28	13.65	136	46	78	SE	Nearly vertical	Minor fracture
21.26	6.48	14.15	157	67	61	SE	Steep	Lithologic feature
21.67	6.60	14.48	241	151	74	SW	Nearly vertical	Minor fracture
27.58	8.41	19.13	135	45	39	SE	Moderate	Fracture
29.00	8.84	20.25	178	88	12	S	Shallow	Fracture
30.87	9.41	21.73	214	124	81	SW	Nearly vertical	Minor fracture
34.24	10.44	24.38	256	166	35	W	Moderate	Fracture
35.26	10.75	25.18	231	141	61	SW	Steep	Minor fracture
37.12	11.31	26.65	355	265	87	N	Nearly vertical	Minor fracture
37.46	11.42	26.92	158	68	79	S	Nearly vertical	Minor fracture
37.82	11.53	27.20	155	65	75	SE	Nearly vertical	Minor fracture
38.06	11.60	27.39	349	259	88	N	Nearly vertical	Minor fracture
44.16	13.46	32.20	197	107	38	S	Moderate	Minor fracture
44.29	13.50	32.30	132	42	16	SE	Shallow	Minor fracture
45.31	13.81	33.10	181	91	86	S	Nearly vertical	Minor fracture
46.52	14.18	34.06	59	329	82	NE	Nearly vertical	Minor fracture
46.76	14.25	34.25	27	297	36	NE	Moderate	Minor fracture
48.30	14.72	35.46	290	200	36	W	Moderate	Minor fracture
48.88	14.90	35.92	85	355	22	E	Shallow	Minor fracture
49.15	14.98	36.13	112	22	16	E	Shallow	Minor fracture
55.24	16.84	40.93	174	84	85	S	Nearly vertical	Minor fracture
61.07	18.61	45.52	57	327	24	NE	Shallow	Lithologic feature
70.19	21.39	52.71	142	52	35	SE	Moderate	Lithologic feature
70.92	21.62	53.29	243	153	24	SW	Shallow	Lithologic feature
71.76	21.87	53.95	123	33	22	SE	Shallow	Minor fracture
72.10	21.98	54.22	163	73	74	S	Nearly vertical	Minor fracture
79.96	24.37	60.41	190	100	51	S	Steep	Lithologic feature
80.36	24.49	60.72	209	119	74	SW	Nearly vertical	Lithologic feature

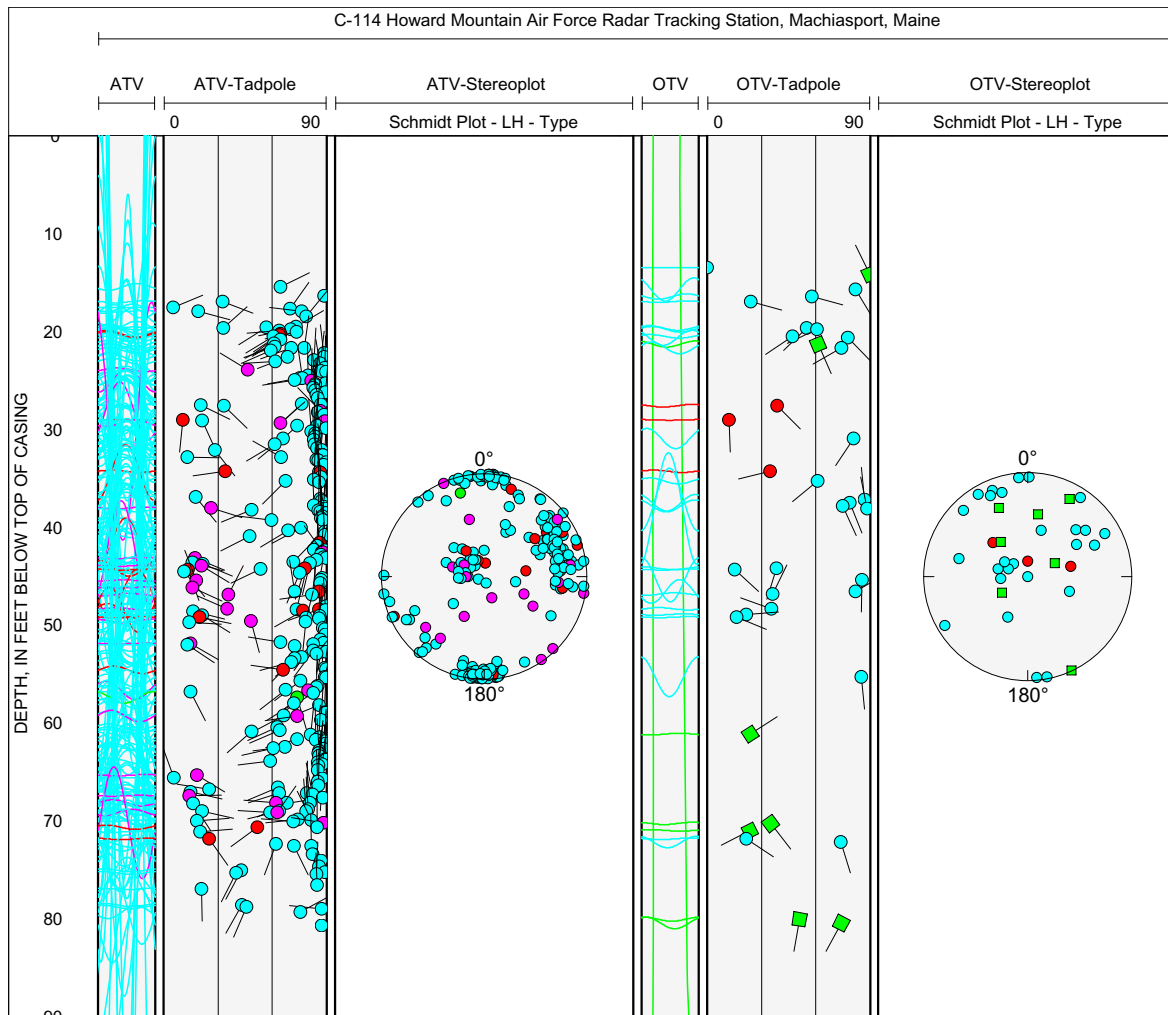


Figure 5F-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole C-114, near Machiasport, Maine.

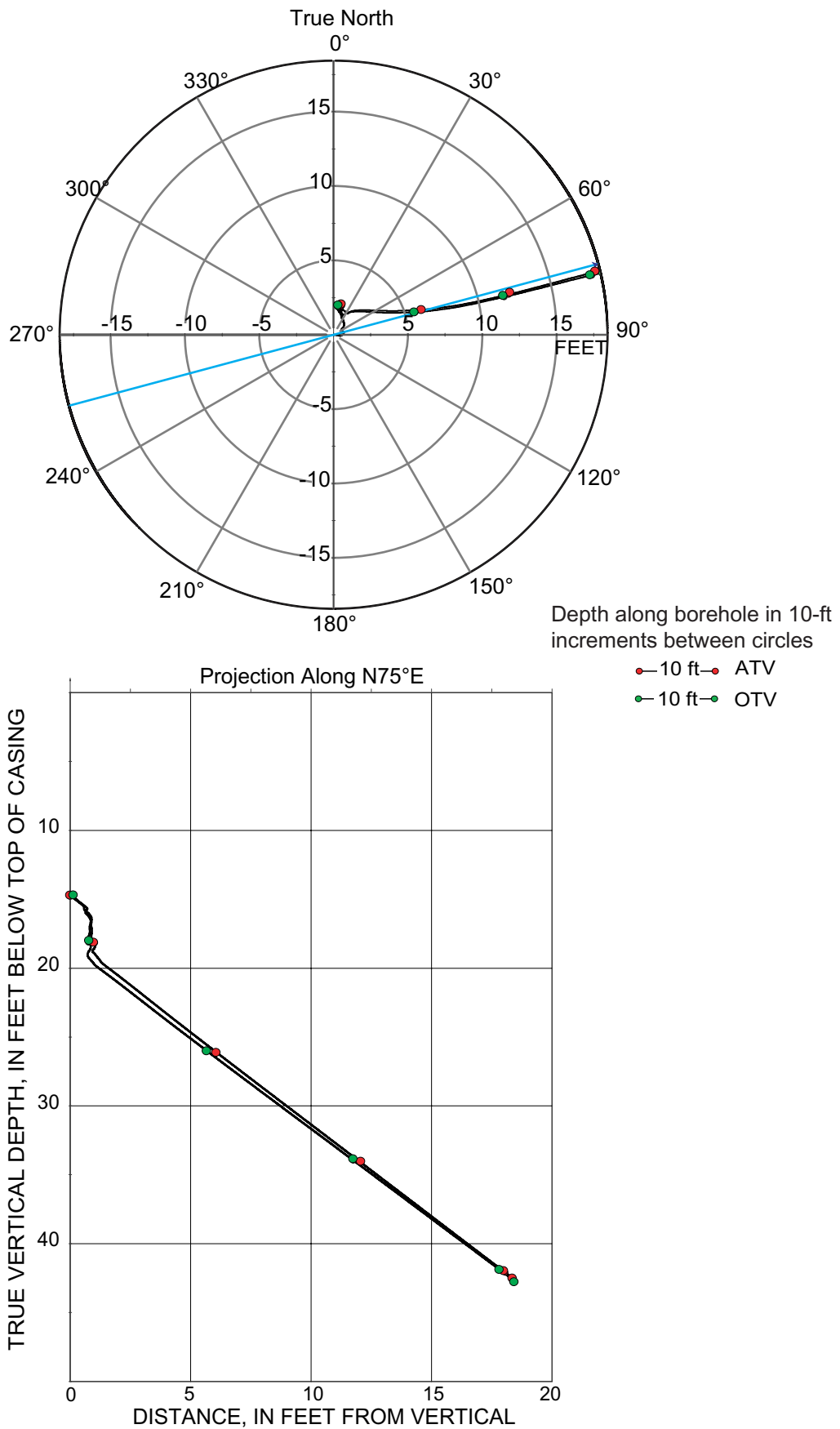


Figure 5G-1. Borehole deviation logs for borehole C-501, near Machiasport, Maine. Blue line on radial plot (top) is line of projection for vertical plot (bottom).

[ft, foot; ATV, acoustic televiewer; OTV, optical televiewer]

Table 5G–1. Interpretation of acoustic televiewer logs for borehole C-501, near Machiasport, Maine.

[The borehole is inclined at 38° from vertical in a direction of N77°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 3.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
17.02	5.19	10.81	253	163	38	W	Moderate	Bottom of casing?
17.16	5.23	10.92	172	82	13	S	Shallow	Minor fracture
17.39	5.30	11.10	184	94	23	S	Shallow	Fracture
17.69	5.39	11.34	207	117	8	SW	Nearly horizontal	Minor fracture
18.55	5.65	12.02	178	88	44	S	Moderate	Minor fracture
18.86	5.75	12.26	126	36	81	SE	Nearly vertical	Minor fracture
20.85	6.35	13.83	332	242	86	NW	Nearly vertical	Minor fracture
21.30	6.49	14.18	331	241	82	NW	Nearly vertical	Partial fracture
21.70	6.61	14.50	31	301	88	NE	Nearly vertical	Minor fracture
22.19	6.76	14.89	192	102	18	S	Shallow	Minor fracture
23.41	7.14	15.85	337	247	6	NW	Nearly horizontal	Minor fracture
23.99	7.31	16.30	332	242	80	NW	Nearly vertical	Minor fracture
24.26	7.39	16.52	295	205	27	NW	Shallow	Minor fracture
24.89	7.59	17.01	326	236	90	NW	Nearly vertical	Minor fracture
25.15	7.67	17.22	147	57	87	SE	Nearly vertical	Minor fracture
25.76	7.85	17.70	149	59	90	SE	Nearly vertical	Minor fracture
26.63	8.12	18.38	67	337	10	NE	Shallow	Minor fracture
26.77	8.16	18.49	154	64	90	SE	Nearly vertical	Minor fracture
26.78	8.16	18.50	76	346	78	E	Nearly vertical	Minor fracture
26.94	8.21	18.63	197	107	33	S	Moderate	Minor fracture
27.08	8.25	18.74	149	59	88	SE	Nearly vertical	Partial fracture
27.35	8.34	18.95	218	128	21	SW	Shallow	Partial fracture
28.73	8.76	20.04	146	56	82	SE	Nearly vertical	Minor fracture
30.48	9.29	21.42	142	52	79	SE	Nearly vertical	Minor fracture
32.46	9.89	22.98	151	61	86	SE	Nearly vertical	Minor fracture
32.84	10.01	23.28	146	56	89	SE	Nearly vertical	Minor fracture
33.70	10.27	23.96	312	222	86	NW	Nearly vertical	Minor fracture
34.23	10.43	24.37	137	47	83	SE	Nearly vertical	Fracture
35.66	10.87	25.50	315	225	89	NW	Nearly vertical	Minor fracture
36.05	10.99	25.81	42	312	11	NE	Shallow	Minor fracture
36.67	11.18	26.30	236	146	6	SW	Nearly horizontal	Minor fracture
38.43	11.71	27.68	133	43	84	SE	Nearly vertical	Minor fracture
39.08	11.91	28.20	327	237	85	NW	Nearly vertical	Minor fracture
39.29	11.98	28.36	123	33	85	SE	Nearly vertical	Minor fracture
39.49	12.04	28.52	213	123	31	SW	Moderate	Minor fracture
43.13	13.15	31.39	124	34	82	SE	Nearly vertical	Minor fracture
44.08	13.43	32.14	133	43	86	SE	Nearly vertical	Minor fracture
44.46	13.55	32.43	313	223	86	NW	Nearly vertical	Fracture
44.52	13.57	32.48	255	165	37	W	Moderate	Minor fracture
45.42	13.84	33.19	114	24	26	SE	Shallow	Fracture
45.48	13.86	33.24	132	42	31	SE	Moderate	Minor fracture
46.37	14.13	33.94	186	96	26	S	Shallow	Minor fracture
46.43	14.15	33.99	124	34	16	SE	Shallow	Minor fracture
46.89	14.29	34.35	129	39	87	SE	Nearly vertical	Minor fracture
47.01	14.33	34.44	142	52	68	SE	Steep	Partial fracture
48.42	14.76	35.56	309	219	80	NW	Nearly vertical	Minor fracture
48.81	14.88	35.86	160	70	70	S	Nearly vertical	Minor fracture
49.48	15.08	36.39	313	223	76	NW	Nearly vertical	Minor fracture
49.67	15.14	36.54	316	226	88	NW	Nearly vertical	Minor fracture
49.91	15.21	36.73	312	222	87	NW	Nearly vertical	Minor fracture
50.36	15.35	37.08	313	223	87	NW	Nearly vertical	Partial fracture
50.62	15.43	37.29	319	229	61	NW	Steep	Partial fracture

Table 5G–2. Interpretation of optical televiewer logs for borehole C-501, near Machiasport, Maine.

[The borehole is inclined at 38° from vertical in a direction of N77°E. Televiewer data are corrected for deviation and magnetic declination, so orientations are relative to true north; depths are below top of casing, which is 3.3 feet above land surface; TVD, true vertical depth; LS, land surface; dip azimuth is given in degrees east of true north; strike is reported in right-hand-rule (RHR)-azimuthal degrees east of true north and where the direction of dip is 90 degrees to the right of strike]

Depth, in feet	Depth, in meters	TVD, in feet below LS	Dip azimuth	Strike, in RHR	Dip	Dip direction	Dip descriptor	Comment
17.02	5.19	10.81	254	164	38	W	Moderate	Bottom of casing?
17.21	5.25	10.96	16	286	10	N	Shallow	Fracture
17.45	5.32	11.15	175	85	6	S	Nearly horizontal	Lithologic feature
17.69	5.39	11.34	227	137	10	SW	Nearly horizontal	Lithologic feature
18.60	5.67	12.06	213	123	19	SW	Shallow	Minor fracture
18.96	5.78	12.34	252	162	87	W	Nearly vertical	Lithologic feature
20.83	6.35	13.81	146	56	87	SE	Nearly vertical	Minor fracture
22.18	6.76	14.88	236	146	8	SW	Nearly horizontal	Minor fracture
22.27	6.79	14.95	254	164	80	W	Nearly vertical	Sealed feature
22.94	6.99	15.48	102	12	89	E	Nearly vertical	Lithologic feature
23.41	7.14	15.85	332	242	6	NW	Nearly horizontal	Minor fracture
24.28	7.40	16.53	294	204	42	NW	Moderate	Minor fracture
24.60	7.50	16.78	343	253	88	N	Nearly vertical	Sealed feature
25.77	7.85	17.71	340	250	83	N	Nearly vertical	Minor fracture
26.62	8.11	18.38	45	315	12	NE	Shallow	Minor fracture
26.88	8.19	18.58	332	242	90	NW	Nearly vertical	Lithologic feature
26.88	8.19	18.58	324	234	11	NW	Shallow	Minor fracture
27.35	8.34	18.95	222	132	16	SW	Shallow	Minor fracture
28.77	8.77	20.07	132	42	74	SE	Nearly vertical	Minor fracture
30.40	9.27	21.36	342	252	86	N	Nearly vertical	Minor fracture
31.85	9.71	22.50	335	245	80	NW	Nearly vertical	Lithologic feature
33.36	10.17	23.69	224	134	80	SW	Nearly vertical	Minor fracture
33.83	10.31	24.06	309	219	88	NW	Nearly vertical	Minor fracture
34.11	10.40	24.28	295	205	17	NW	Shallow	Minor fracture
34.21	10.43	24.36	121	31	86	SE	Nearly vertical	Minor fracture
35.08	10.69	25.04	126	36	85	SE	Nearly vertical	Lithologic feature
35.82	10.92	25.63	116	26	75	SE	Nearly vertical	Minor fracture
36.07	10.99	25.82	13	283	16	N	Shallow	Sealed feature
36.58	11.15	26.22	140	50	87	SE	Nearly vertical	Lithologic feature
36.67	11.18	26.30	289	199	11	W	Shallow	Minor fracture
39.06	11.90	28.18	142	52	89	SE	Nearly vertical	Minor fracture
39.52	12.05	28.54	224	134	26	SW	Shallow	Minor fracture
41.92	12.78	30.43	300	210	78	NW	Nearly vertical	Lithologic feature
43.33	13.21	31.54	314	224	87	NW	Nearly vertical	Sealed feature
43.83	13.36	31.94	125	35	89	SE	Nearly vertical	Lithologic feature
44.23	13.48	32.25	121	31	89	SE	Nearly vertical	Minor fracture
44.45	13.55	32.43	125	35	89	SE	Nearly vertical	Minor fracture
45.42	13.84	33.19	115	25	26	SE	Shallow	Fracture
45.47	13.86	33.23	121	31	87	SE	Nearly vertical	Lithologic feature
46.39	14.14	33.96	153	63	16	SE	Shallow	Fracture
46.90	14.29	34.36	127	37	85	SE	Nearly vertical	Minor fracture
49.76	15.17	36.61	119	29	79	SE	Nearly vertical	Minor fracture
50.38	15.36	37.10	127	37	86	SE	Nearly vertical	Partial fracture
50.60	15.42	37.27	311	221	79	NW	Nearly vertical	Partial fracture

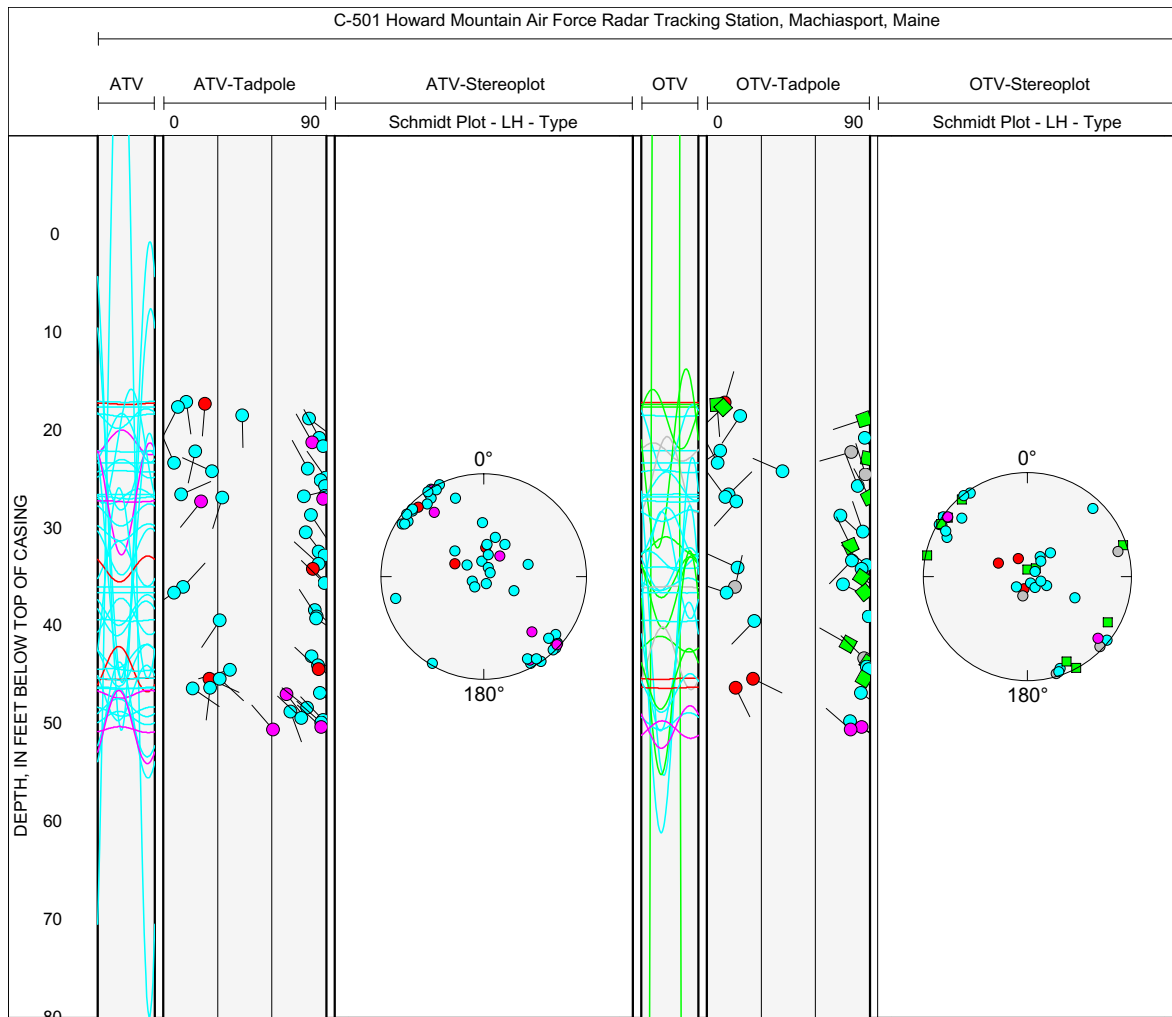


Figure 5G-2. Projection, tadpole, and stereoplots of interpretation of borehole image data for borehole C-501, near Machiasport, Maine.