Appendix B
Video Data

Seven monochrome video cameras (Table B1) were mounted on the Field Research Facility's (FRF's) 42-m-tall tower (Figure B1) and aimed at the minigrid area. These cameras were used to monitor wave run-up and incident wave dissipation. Runup cameras (R1, R2, and R3) used telephoto lenses for improved spatial resolution and viewed different regions of the beach. Two dissipation cameras used wider angle lenses for greater spatial coverage of the minigrid area. One dissipation camera (DS) measured wave breaking over the main cross-shore array of instruments. The other dissipation camera (HU), with a wider field of view, monitored wave dissipation over a larger region and provided images of bar morphology using Time Exposures. An infrared camera (IR) was used for testing nighttime measurements of runup and wave dissipation. A remotely controlled pan-tilt camera (DO) provided additional coverage for special purposes and served as a backup camera. The camera view angles are shown in Figure B2.

Table B1
DELILAH Video Cameras

Camera	Number	Purpose	ä(deg)	R_{max} (m)	r_x (m)	r_y (m)
R1	1	Runup	17	300	0.17	1.17
R2	2	Runup	10	410	0.14	1.32
R3	3	Runup	6	675	0.14	2.16
DS	4	Dissipation	25	475	0.40	4.40
HU	5	Time exposure	40	500	0.68	7.77
IR	6	Night uses				
DO	6	Remote Control				

Where: δ = horizontal view angle in degrees
Rmax = maximum range in meters
r_x = horizontal cross-shore resolution in meters
r_y = horizontal longshore resolution in meters

Fundamental to the video measurements is the transformation between two-dimensional video images and three dimensional world coordinates, which requires a determination of camera geometry. This was accomplished with visually identifiable *ground control points* (GCP's) in the cameras' field of view. The 38 GCP's established during the experiment consisted primarily of white square signs or highway safety cones painted black and placed on the beach. Coordinates of the GCP's are listed in Table B2 and shown graphically in Figures B3 and B4. Many of those GCP's were temporary, with a select number positioned on any particular day. A few instrument pipes and the north property fence posts served as permanent GCP's throughout the experiment.

All video data, with the exception of time exposures, were collected on 12 Super-VHS video cassette recorders. Each VHS tape recorded two continuous hours, with 4 or 5 runs (8 to 10 hours) collected each day. The collection schedule is listed in Table B3. Several duplicate tapes were made between 16 and 19 October, with times staggered approximately 15 minutes, to ensure data redundancy and to obtain data in the time gaps between video runs. Data runs are sequentially numbered and include the camera designation. For example, run R101 refers to the first run of camera R1. Video tapes for each run had near-synchronous start times and a common SMPTE *(Society of Motion Picture and Television Engineers*) time code recorded on one of the audio tracks. All DELILAH tapes are in the possession of Dr. Robert Holman, who can be contacted regarding obtaining copies (see Appendix G).

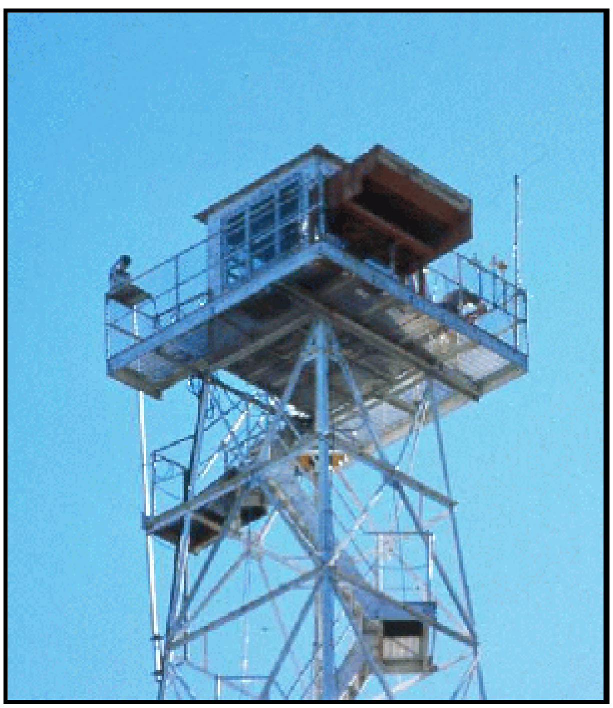

Figure B1. The FRF'S's 42-m-tall observation tower. The photo shows the housing for the fixed-look video cameras(the remote control camera is on the leftmost corner)

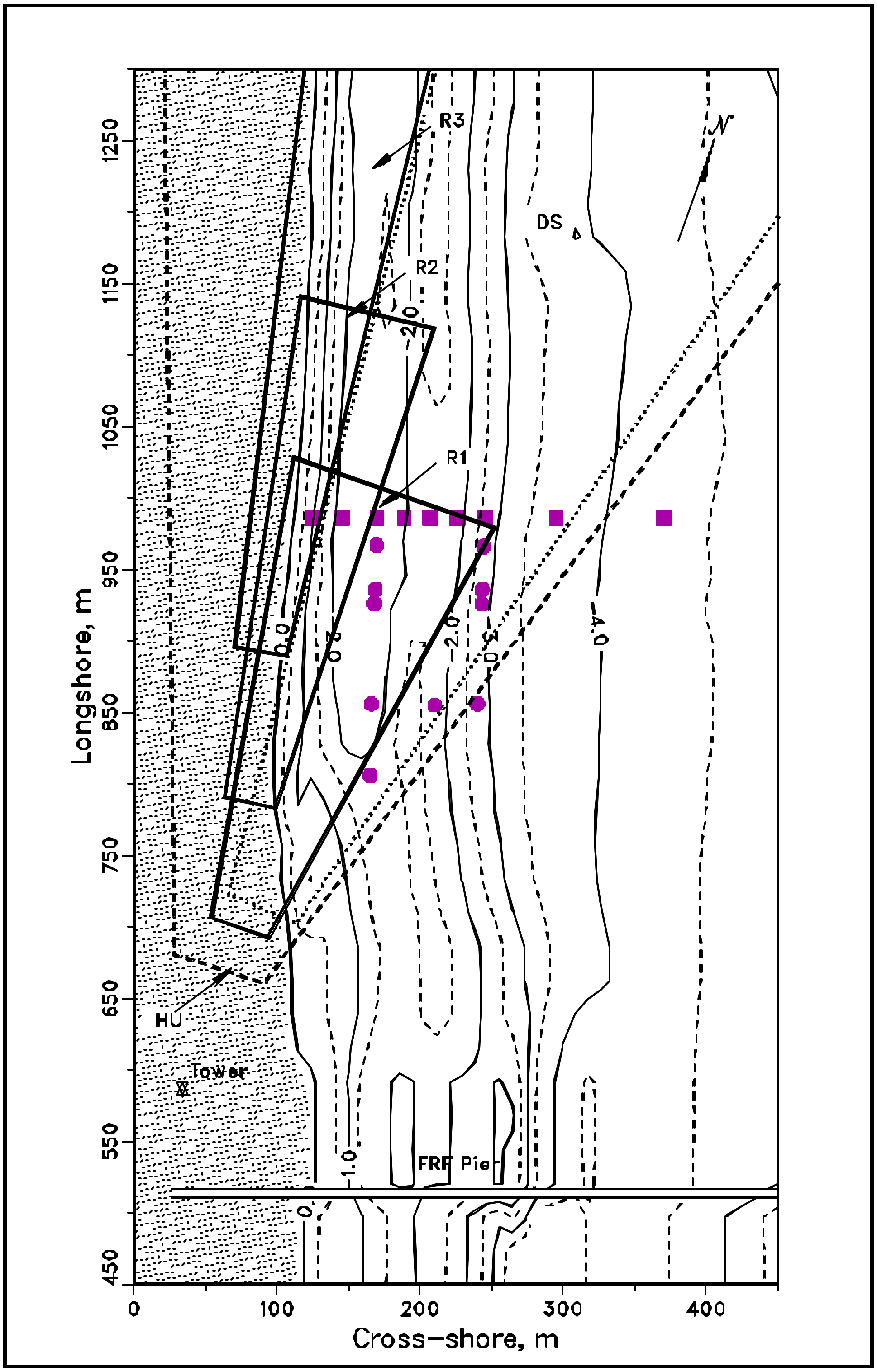

Figure B2. Video camera footprints

Table B2
DELILAH Cameras and Ground Control Points (GCPs)

Number	Description	Cross-shore,	Longshore,	Elevation, m
0	Camera R1	33.99	586.87	42.76
1	Camera R2	33.74	586.78	42.76
2	Camera R3	33.43	586.78	42.76
3	Camera DS	33.31	586.87	42.76
4	Camera HU	32.93	586.78	42.76
5	Cone #1 (southmost)	77.88	701.79	2.23
6	Top of temp cone, south	90.60	721.63	1.76
7	Cone #1A	78.42	724.99	2.03
8	Cone #2	78.30	743.28	2.05
9	Top of temp cone, north	94.39	787.78	1.80
10	Cone #3	77.47	812.04	2.52
11	Cone #4	78.80	879.01	2.88
12	Cone #5	79.64	933.90	2.96
13	Cone #6	83.56	988.57	2.92
14	Beach Sign #1 (center)	71.63	786.74	4.57
15	Beach Sign #2	88.67	962.57	4.63
16	Beach Sign #3	92.16	1002.42	4.36
17	Post #3	86.00	1008.07	4.76
18	Post #4	91.35	1005.92	4.58
19	Post #5	96.60	1004.01	4.91
20	Post #6	106.33	1001.92	4.33
21	Post #7	114.08	1001.03	3.50
22	Post #8	124.01	1000.08	2.69
23	CM10 pipe	124.65	985.80	1.02
24	Tom's W Sign	59.96	986.82	7.29
25	Tom's G Sign	58.29	987.27	6.99
26	Tom's B Sign	56.53	987.46	7.39
27	Tom's BWG Sign	55.77	813.29	7.97
28	Tom's BWG Sign	58.73	698.05	8.42
29	PVO Sign #7	52.48	914.19	8.91
30	PVO Sign #6	54.10	868.54	8.49
31	PVO Sign #5	50.38	822.61	8.28
32	PVO Sign #4	51.55	776.87	8.72
33	PVO Sign #3	49.88	731.13	8.31
34	PVO Sign #2	54.40	685.56	7.40
35	PVO Sign #1	62.09	662.55	8.44
36	Top of EP20.	144.99	984.65	0.16
37	Top of CM32	168.77	936.06	0.32
38	Water Sign #4	169.86	966.10	0.74
39	Water Sign #3	167.45	935.98	2.04
40	Water Sign #2	164.93	856.14	1.82
41	Water Sign #1	163.39	806.20	1.75

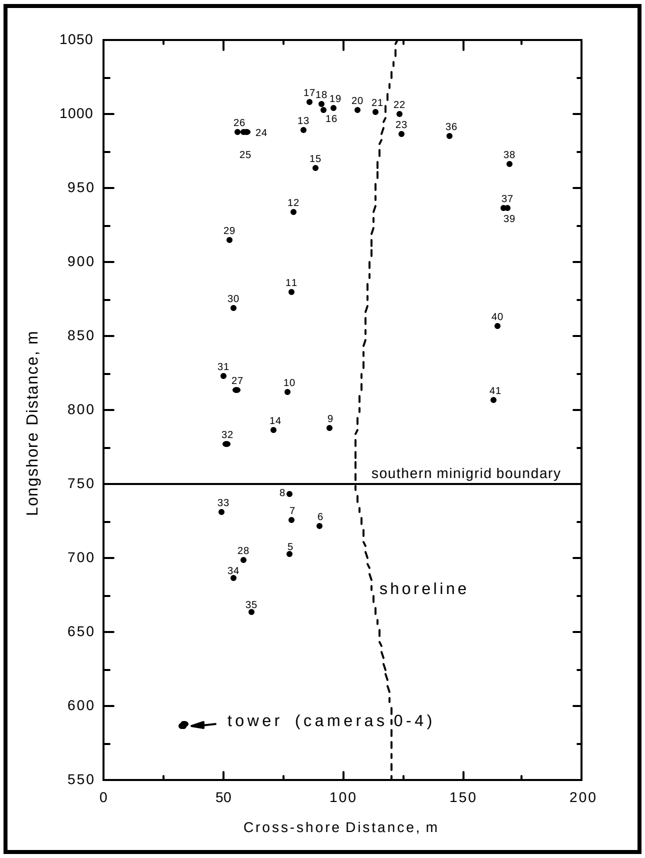

Figure B3. Plan view of ground control point (GCP) positions

Figure B3. Ground Control Points as viewed from the FRF Tower.

Table B3
DELILAH Video Log

Start Time	VCR #1	VCR #2	VCR #3	VCR #4	VCR #5	VCR #6	Tide, m NGVD	WAVES Hmo m	Tp s	θp deg	WIND speed m/s	Dir. true N
901003.1340	R101	R201	R301	DS01			-0.40	0.6	8.2	-36	5.1	173
901004.0820	R102	R202	R302	DS02			0.50	0.6	4.3	-48	9.1	73
901004.1132	R103	R203	R303	DS03			-0.47	0.7	5.0	-46	9.1	73
901004.1355	DS04						-0.59	0.8	5.0	-46	9.3	63
901004.1608	R104	R204	R304	DS05			-0.03	0.8	5.0	-46	9.3	63
901005.0823	R105	R205	R305	DS06			0.70	0.7	4.2	68	4.2	-149
901005.1300	R106	R206	R306	DS07			-0.54	0.5	6.2	-32	3.1	153
901005.1537	DS08						-0.35	0.5	6.2	-32	3.1	153
901006.0714	R107	R207	R307	DS09			0.68	0.6	12.0	-34	2.2	38
901006.0917	R108	R208	R308	DS10			0.62	0.5	12.0	-28	2.4	-177
901006.1235	R109	R209	R309	DS11			-0.34	0.5	12.0	-26	5.2	153
901006.1437	R110	R210	R310	DS12			-0.67	0.5	12.0	-26	6.4	129
901006.1635	DS13						-0.41	0.5	10.7	-36	6.4	129
901007.0728	R111	R211	R311	DS14			0.58	0.6	10.7	-38	5.3	66
901007.0930	R112	R212	R312	DS15			0.72	0.6	10.7	-40	3.5	47
901007.1143	DS16						0.24	0.6	9.7	-38	3.8	118
901007.1357	R113	R213	R313	DS17			-0.46	0.6	9.7	-38	3.8	118
901007.1604	R114	R214	R314	DS17			-0.59	0.6	9.7	-38	6.4	90
901008.0813	R115	R215	R315	DS18			0.51	0.8	10.7	-38	4.0	66
901008.1022	R116	R216	R316	DS19			0.65	0.7	10.7	-40	3.4	84
901008.1211	DS20						0.36	0.7	10.7	-38	4.0	146
901008.1330	R117	R217	R317	DS21			-0.02	0.7	10.7	-38	4.0	146
901008.1532	R118	R218	R318	DS22			-0.47	0.7	10.7	-38	6.1	113
901008.1940	IR01						-0.01	0.8	9.7	-42	4.8	112
901009.0426	IR02						-0.53	1.0	10.7	-38	2.4	93
901009.0900	R119	R219	R319	DS23			0.47	1.2	10.7	-40	6.9	112
901009.1107	R120	R220	R320	DS24			0.67	1.2	10.7	-40	6.9	112
901009.1330	R121	R221	R321	DS25	DO01		0.32	1.1	10.7	-42	7.2	115
901009.1537	R122	R222	R322	DS26	DO02		-0.22	1.0	10.7	-40	6.8	106
901009.2157	IR03						0.30	1.1	10.7	-40	5.3	93
901010.0723	R123	R223	R323	DS27	DO03		-0.19	1.2	10.7	-38	4.6	128
901010.0924	DS62	DO22	IR12	RD02			0.37			-10	5.0	120
901010.0954	R124	R224	R324	DS28	DO04		0.51	1.2	9.7	-40	5.9	119
901010.1213	R125	R225	R325	DS29	DO04		0.70	1.3	10.7	-40	9.5	105
901010.1523	RD01	DS30	O05	IR04			0.17	1.5	9.7	-38	9.1	114
901010.1725	IR05						-0.22	1.7	7.0	-40	9.1	114
901011.0630	R126	R226	R326	DS31	DO06		-0.37	1.8	8.2	-38	10.7	99
901011.0847	R127	R227	R327	DS32	DO07		-0.17	1.8	8.2	-38	10.3	100
901011.1055	R128	R228	R328	DS33	DO08		0.40	1.7	8.9	-40	10.3	100
901011.1305	R129	R229	R329	DS34	DO08		0.63	1.5	8.9	-40	10.1	110
901011.1514	R130	R230	R330	DS35	DO09		0.47	1.4	9.7	-40	7.1	110
901012.0718	R131	R231	R331	DS35	DO10		-0.17	1.3	8.2	-38	6.0	-168
901012.0930	R132	R232	R332	DS36	DO11		-0.02	1.3	8.2	-38	6.0	-168
901012.1226	R133	R233	R333	DS36	DO11		0.65	1.5	15.6	-20	4.3	140
901012.1538	R134	R234	R334	DS37	DO12		0.72	2.2	13.6	-16	6.7	142

(Continued)

Table B3 (Concluded)

Start Time	VCR #1	VCR #2	VCR #3	VCR #4	VCR #5	VCR #6	Tide, m NGVD	WAVES Hmo m	Tp s	θp deg	WIND speed m/s	Dir. true N
901013.0645	R135	R235	R335	DS38	DO13		0.09	2.4	12.0	-16	1.0	161
901013.0901	R136	R236	R336	DS39	DO14		-0.17	2.4	12.0	-16	1.0	161
901013.1116	R137	R237	R337	DS40	DO01		0.08	2.1	10.7	-38	2.1	-170
901013.1339	R138	R238	R338	DS41	DO02		0.67	2.1	10.7	-38	2.1	-170
901013.1553	R139	R239	R339	DS42	DO03		0.75	1.9	10.7	-22	1.6	161
901014.0800	R140	R240	R340	DS43	DO04		0.01	1.2	9.7	-32	3.3	-35
901014.1011	R141	R241	R341	DS44	DO05		-0.22	1.2	9.7	-34	3.0	-108
901014.1330	R142	R242	R342	DS45	DO06		0.37	1.1	9.7	-22	3.2	-156
901014.1545	R143	R243	R343	R443	DS46	DO07	0.72	1.1	10.7	-18	3.1	159
901015.0712	R144	R244	R344	R402	DS47	DO08	0.38	1.0	10.7	-22	5.5	28
901015.0929	R145	R245	R345	R403	DS48	DO09	-0.23	1.0	10.7	-20	1.6	-42
901015.1141	R146	R246	R346	R404	DS49	DO10	-0.29	1.0	10.7	-20	1.6	-42
901015.1351	R147	R247	R347	DS50	DO11		0.12	1.0	10.7	-20	3.8	-144
901015.1601	R148	R248	R348	DS51	DO11	DO15	0.58	1.0	10.7	-20	3.8	-144
901016.0728	R149	R249	R349	DS52	DO12		0.65	1.6	5.8	42	8.0	112
901016.0743	R149	R249	R349	DS52	DO12		0.65	1.6	5.8	42	8.0	112
901016.0937	R150	R250	R350	DS53	DO13		0.09	1.2	9.7	40	6.4	-104
901016.0952	R150	R250	R350	DS53	DO13		0.09	1.2	9.7	40	6.4	-104
901016.1148	R151	R251	R351	DS54	DO14		-0.25	1.2	9.7	40	6.4	-104
901016.1203	R151	R251	R351	DS54	DO14		-0.25	1.2	9.7	40	6.4	-104
901016.1358	R152	R252	R352	DS55	DO15		-0.02	1.2	9.7	22	6.1	-107
901016.1414	R152	R252	R352	DS55	DO15		-0.02	1.2	9.7	22	6.1	-107
901016.1606	R299						0.50	1.0	9.7	40	5.6	-130
901016.2111	IR06						0.08	0.8	9.7	-14	5.7	-163
901016.2312	IR07						-0.35	0.9	9.7	-16	5.8	-156
901017.0710	R153	R253	R353	DS56	DO16	IR08	0.65	1.0	9.7	0	6.5	-179
901017.0725	R153	R253	R353	DS56	DO16	IR08	0.65	1.0	9.7	0	6.5	-179
901017.0934	R154	R254	R354	DS57	DO17	IR09	0.21	1.0	9.7	-2	7.7	140
901017.0918	R154	R254	R354	DS57	DO17	IR09	0.21	1.0	9.7	-2	7.7	140
901017.1129	R155	R255	R355	DS58	DO18	IR10	-0.36	1.0	9.7	-2	7.7	140
901017.1145	R155	R255	R355	DS58	DO18	IR10	-0.36	1.0	9.7	-2	7.7	140
901017.1338	R156	R256	R356	DS59	DO19	IR11	-0.34	1.0	9.7	-28	7.0	139
901017.1354	R156	R256	R356	DS59	DO19	IR11	-0.34	1.0	9.7	-28	7.0	139
901017.1550	R157	R257	R357	DS60	DO20		0.09	1.0	9.7	-26	8.7	137
901017.1604	R157	R257	R357	DS60	DO20		0.09	1.0	9.7	-26	8.7	137
901018.0700	R158	R258	R358	DS61	DO21		0.62	1.0	5.2	-48	8.9	90
901018.0720	R158	R258	R358	DS61	DO21		0.62	1.0	5.2	-48	8.9	90
901018.1116	R159	R259	R359	DS63	DO23		-0.30	1.1	5.5	-44	11.5	80
901018.1311	R160	R260	R360	DS64	DO24		-0.56	1.1	5.8	-42	11.7	79
901018.1507	R161	R261	R362	DS65	DO25		-0.38	1.2	6.2	-46	11.2	76
901018.1544	R161	R261	R362	DS65	DO25		-0.38	1.2	6.2	-46	11.2	76
901019.0710	R162	R262	R362	DS66	DO26		0.83	1.2	6.6	44	8.2	-32
901019.0726	R162	R262	R362	DS66	DO26		0.83	1.2	6.6	44	8.2	-32
901019.0919	R163	R263	R363	DS67	DO27		0.56	1.3	7.6	38	8.6	-45
901019.0935	R163	R263	R363	DS67	DO27		0.56	1.3	7.6	38	8.6	-45
901019.1213	R164	R264	R364	DS68	DO28	IR13	-0.18	1.2	7.0	24	9.2	-51
901019.1229	R164	R264	R364	DS68	DO28	IR13	-0.18	1.2	7.0	24	9.2	-51
901019.1423	R165	R265	R365	DS69	DO29	IR14	-0.34	1.2	7.0	24	9.2	-51
901019.1438	R165	R265	R365	DS69	DO29	IR14	-0.34	1.2	7.0	24	9.2	-51
901019.1802	IR15						0.27	1.3	5.5	36	6.6	-89

Video Time Exposures

Table B4 summarizes the video tape data collected and used to compute the video time exposures. These data were recorded on a Video-8 format VCR. Copies of daily time exposures are shown in Figures B5 to B24. These were taken with the HU camera and are the result of averaging 10 min of video images at a rate 1 frame per second.

Table B4
Time Exposure Video Log

Date.time	Tape #	Min.	Tide
901000.1504	T006		
901002.1630	vtest1	15	high
901003.1523	T001	12	low
901004.1157	T001	10	low
901004.1550	T001	11.5	rising
901004.1622	T001	11	rising
901004.1636	T001	10	rising
901004.1702	T001	13	rising
901004.1742	T001	10	high
901005.0847	T001	10	high
901005.1200	T001	12	mid
901005.1330	T001	12	low
901005.1552	T002	10	rising
901005.1703	T002	10:15	rising
901006.0705	T002	30	
901006.0800	T002	11	high
901006.1115	T002	11	mid
901006.1400	T002	11	low
901006.1652	T002	10.5	rising
901007.0645	T002	20+	mid
901007.0855	T003	13	high
901007.1155	T003	10	mid
901007.1525	T003	10	low
901007.1705	T003	11.5	mid
901008.0820	T003	20	high
901008.0820	T003	12	falling
901008.1312	T003	14	mid
901008.1623	T003	10	low
901009.0853	T003	10	mid
901009.1105	T003	11	high
901009.1235	T004	11	falling
901009.1314	T004	10	falling
901009.1405	T004	11	mid
901009.1515	T004	10	falling
901009.1720	T004	10	low

(Sheet 1 of 3)

Table B4 (Continued)

Date.time	Tape #	Min.	Tide
901010.0729	T004	12	rising
901010.0916	T004	11	mid
901010.1213	T004	12	high
901010.1501	T004	13	mid
901010.1650	T004		falling
901011.0630	T005	10	low
901011.0921	T005	13	mid
901011.1245	T005	10	high
901011.1424	T005	10	falling
901011.1648	T005		mid
901012.0854	T006		mid
901012.0856	T005	10	low
901012.1027	T005	10	rising
901012.1100			mid
901012.1151	T007		rising
901012.1200			rising
901012.1300			rising
901012.1400			high
901012.1500			falling
901012.1600			falling
901013.0710	T008	10	falling
901013.0710	T009	4 hr	low
901013.0800	T008	10	rising
901013.0900	T008	10	rising
901013.1000	T008	10	rising
901013.1100	T008	10	rising
901013.1154	T010	4 hr	mid
901013.1203	T008	10	rising
901013.1216	T008	10	rising
901013.1300	T008	10	rising
901013.1400	T008	10	rising
901013.1500	T008	10	high
901013.1600	T008	10	falling
901013.1700	T008	10	falling
901014.0600	T011	10	falling
901014.0700	T011	10	mid
901014.0800	T011	10	falling
901014.0900	T011	10	falling
901014.1000	T011	10	low
901014.1100	T011	10	rising
901014.1140	T012	6 hr	mid
901014.1202	T011	10	rising
901014.1404	T011	10	rising
901014.1500	T011	10	rising
901015.0700	T011	10	falling
901015.0711	T013	6 hr	falling
901015.0800	T014	10	mid
901015.0900	T014	10	falling
901015.1000	T014	10	falling
901015.1100	T014	10	low
901015.1200	T014	10	rising
901015.1300	T014	10	rising
901015.1400	T014	10	mid
901015.1500	T014	10	rising
901015.1600	T014	10	rising

(Sheet 2 of 3)

Table B4 (Continued)			
Date.time	**Tape #**	**Min.**	**Tide**
901016.0638	T015		falling
901016.0800	T016	10	falling
901016.0900	T016	10	falling
901016.1000	T016	10	falling
901016.1100	T016	10	low
901016.1200	T016	10	rising
901016.1300	T016	10	rising
901016.1400	T016	10	mid
901016.1429	T017		rising
901017.0709	T018	6 hr	
901017.1513	T019	10	
901018.0600	T019	10	
901018.0700			
901018.0703	T020	6 hr	
901018.0800			
901018.0900			
901018.1000			
901018.1100			
901018.1200			
901018.1300			
901018.1326	T021	6 hr	
901018.1400			
901018.1500			
901018.1600			
901018.1700			
901019.0600	T023	10	
901019.0634	T022	6hr	
901019.0700			
901019.0800			
901019.0900			
901019.1000			
901019.1100			
901019.1200			
901019.1200			
901019.1300			
901019.1345	T024	6hr	
901019.1400			
901019.1500			
901019.1600			
901019.1700			
901020.0600	T025	10	
			(Sheet 3 of 3)

Figure B5. 1 October 1990 at 1504 EST

Figure B6. 2 October 1990 at 1630 EST

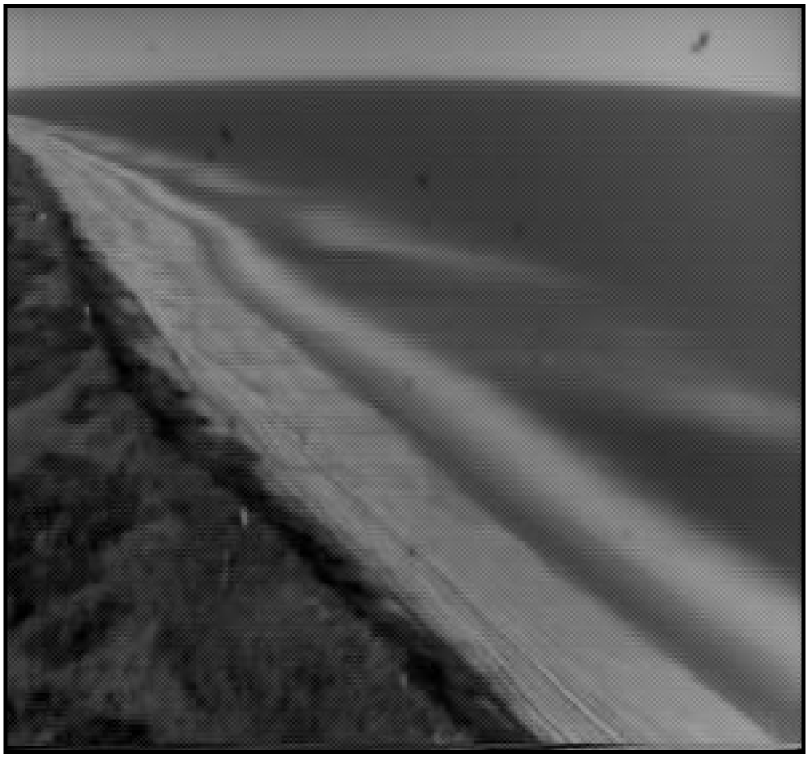

Figure B7. 3 October 1990 at 1523 EST

Figure B8. 4 October 1990 at 1157 EST

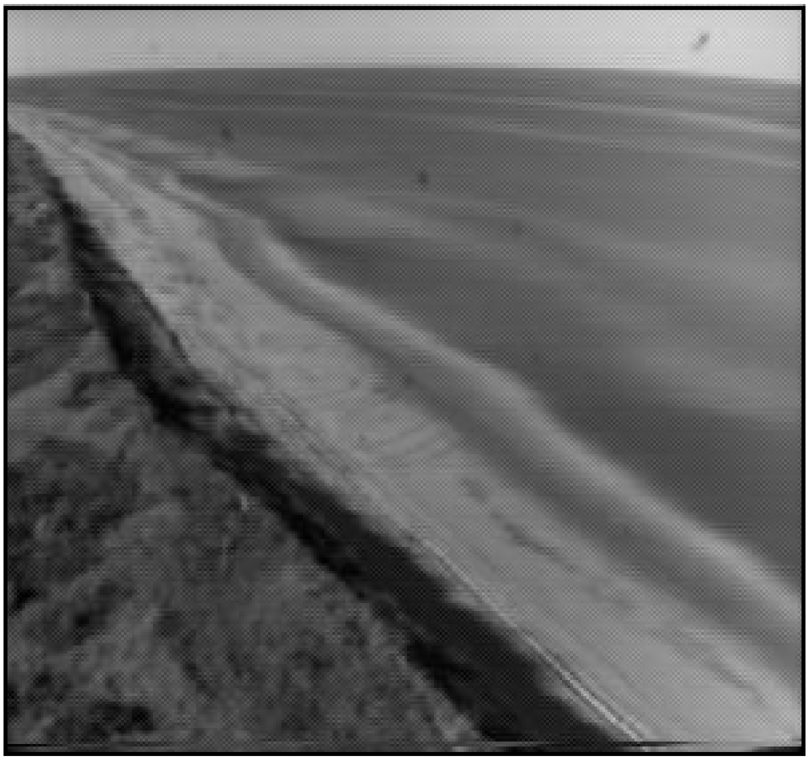

Figure B9. 5 October 1990 at 1330 EST

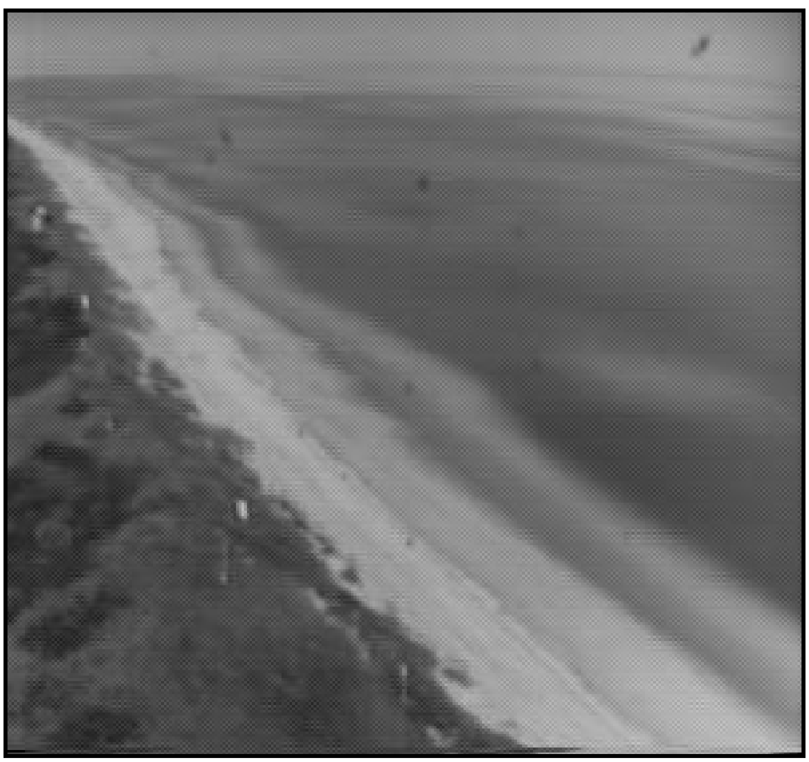

Figure B10. 6 October 1990 at 1990 EST

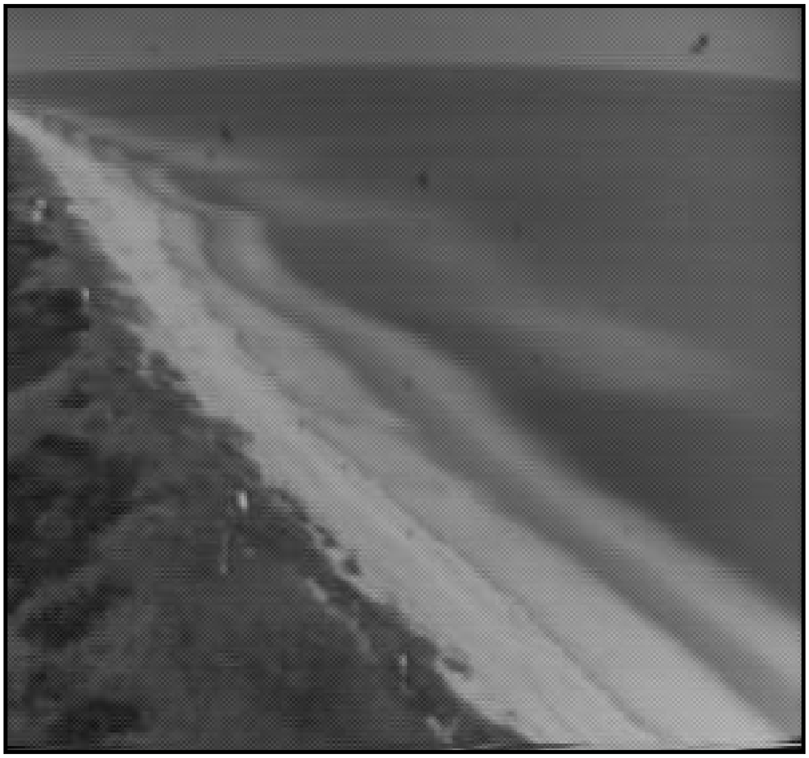

Figure B11. 7 October 1990 at 1400 EST

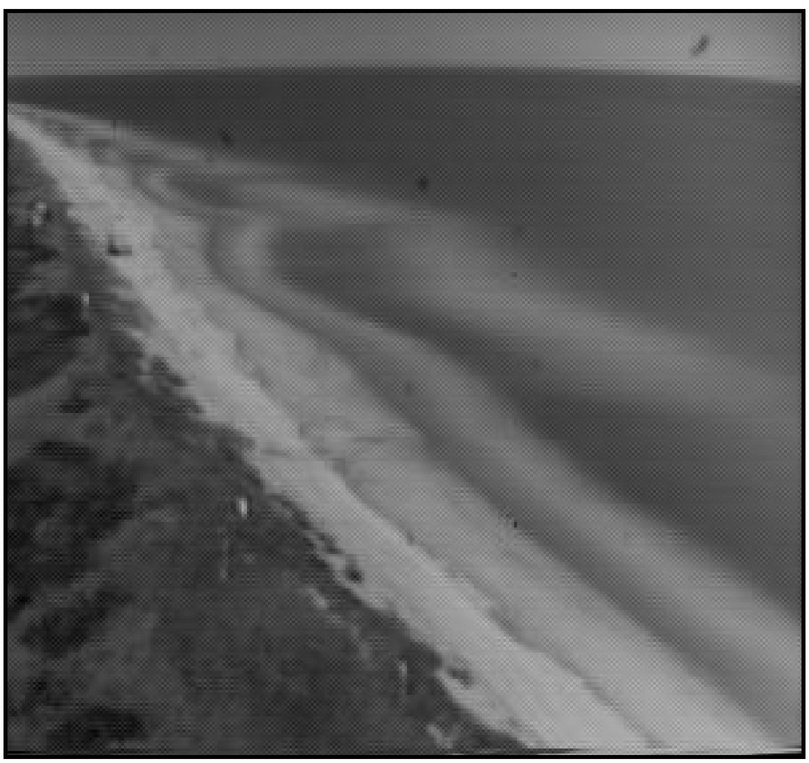

Figure B12. 8 October 1990 at 1525 EST

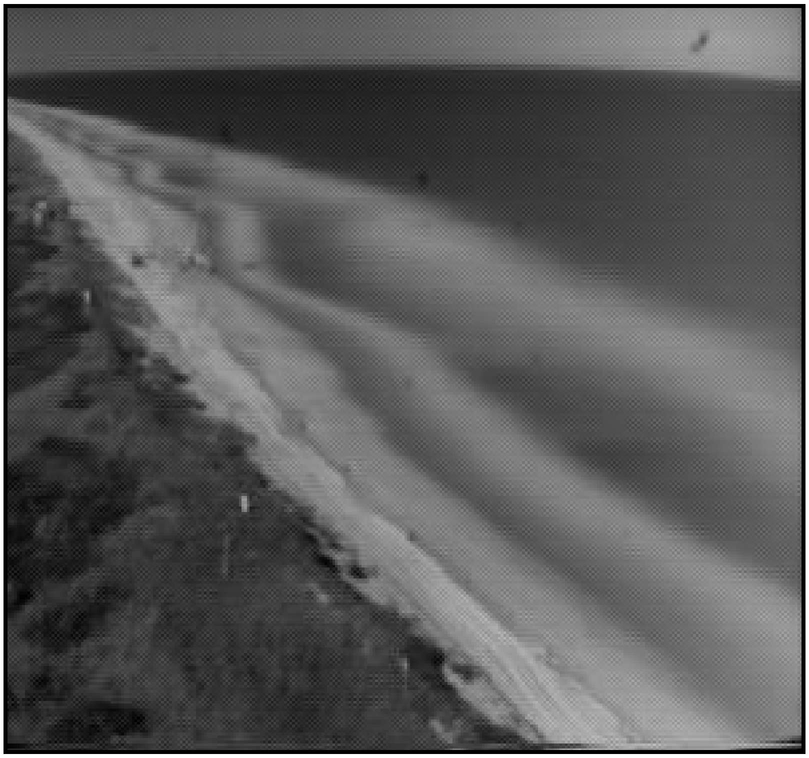

Figure B13. 9 October 1990 at 1720 EST

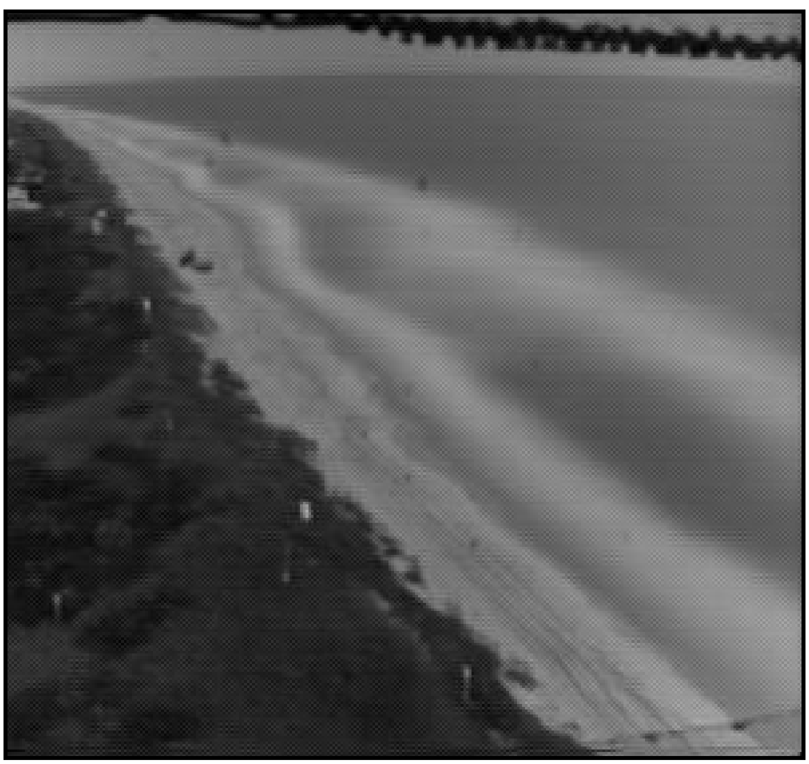

Figure B14. 10 October 1990 at 1650 EST

Figure B15. 11 October 1990 at 0630 EST

Figure B16. 12 October 1990 at 0921 EST

Figure B17. 13 October 1990 at 0900 EST

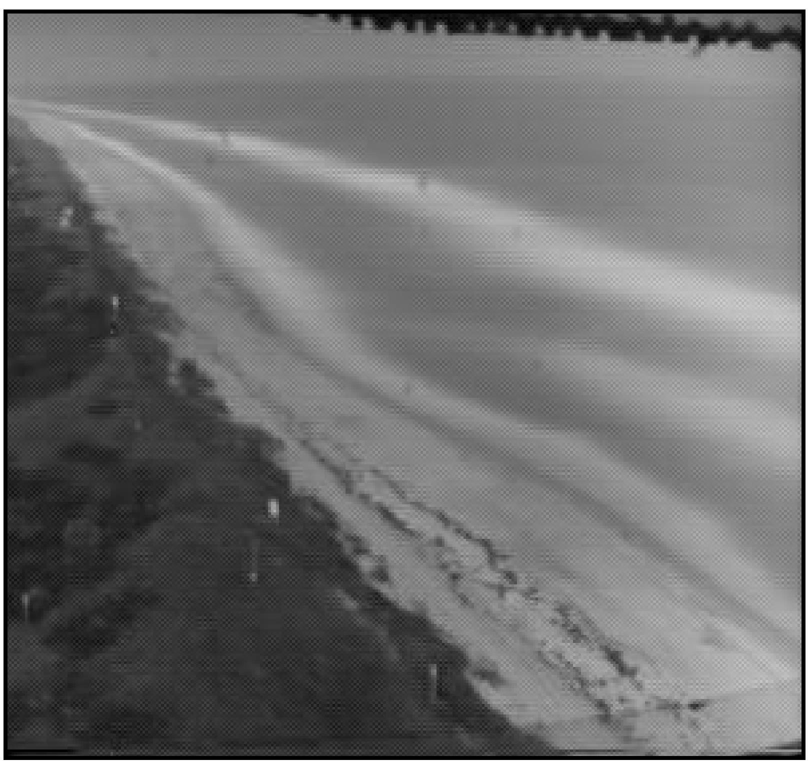

Figure B18. 14 October 1990 at 1000 EST

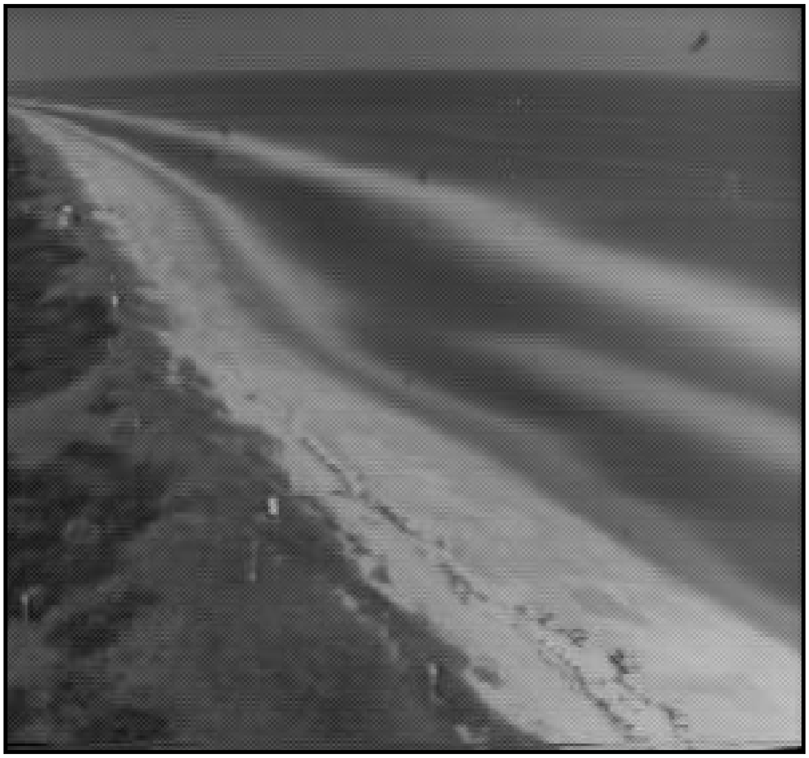

Figure B19. 15 October 1990 at 1000 EST

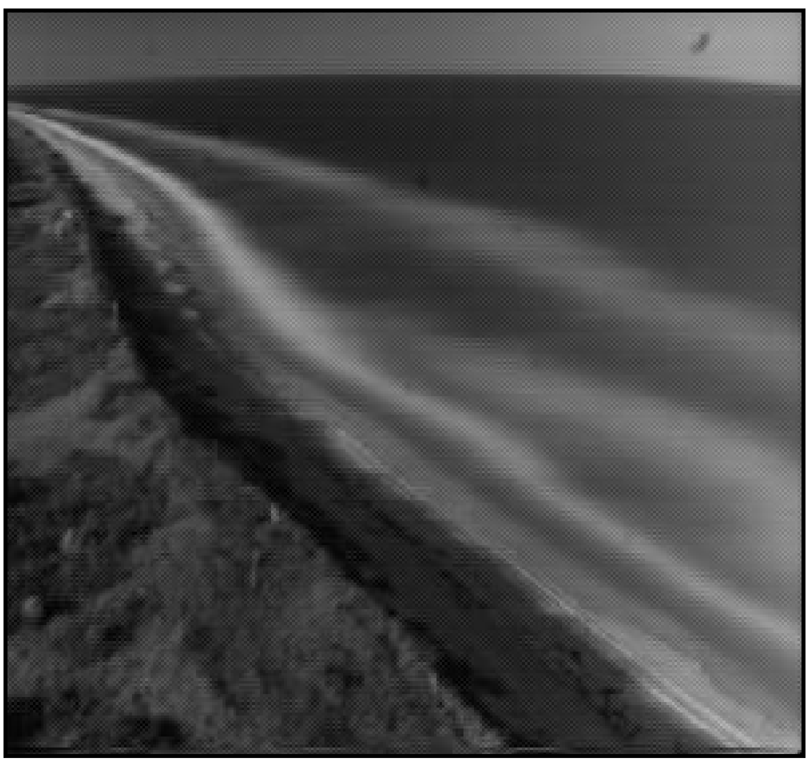

Figure B20. 16 October 1990 at 1000 EST

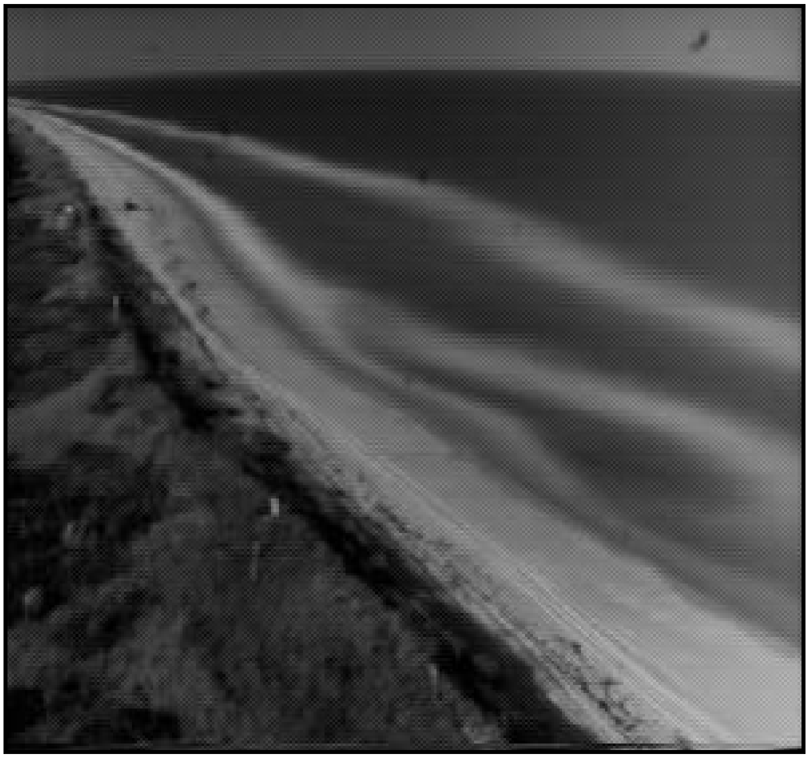

Figure B21. 17 October 1990 at 1300 EST

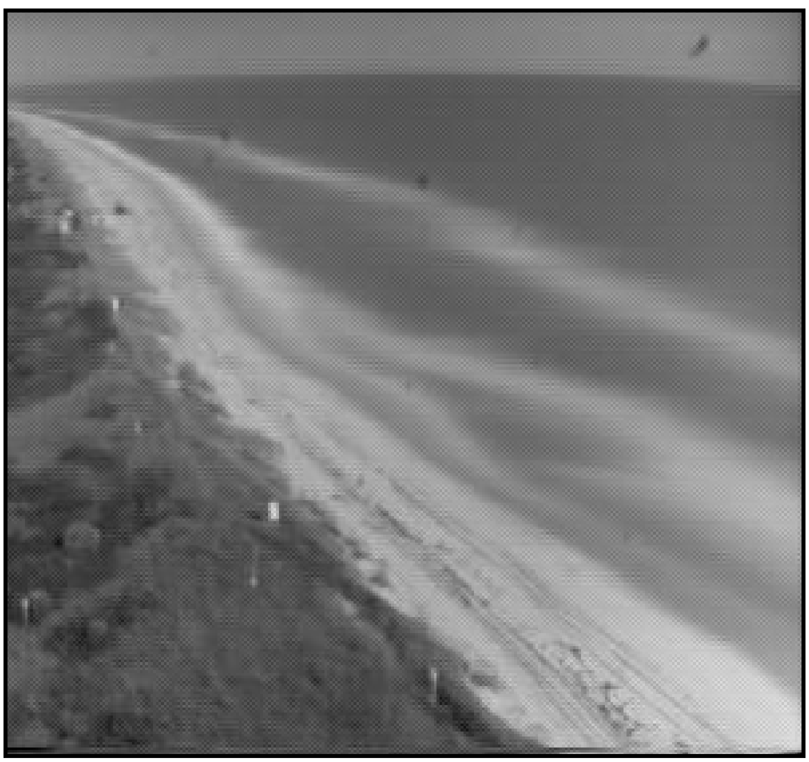

Figure B22. 18 October 1990 at 1300 EST

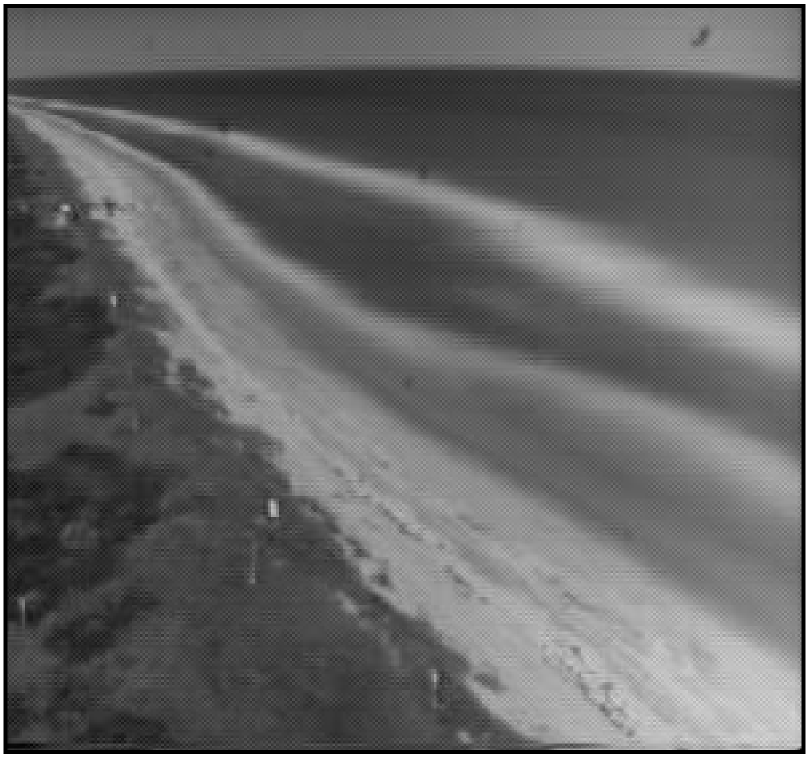

Figure B23. 19 October 1990 at 1400 EST

Figure B24. 20 October 1994 at 0600 EST

Video Analysis of Runup

Wave runup data were obtained using an Imaging Technology Incorporated video image processing system (model ITI-151) interfaced to a Sun host computer. By using the GCP's as control and knowing the profile coordinates, time series of wave runup were generated from the video. Runup was measured along one beach profile line located near the primary cross-shore array, at longshore coordinate 986 m. Beach profiles were surveyed once per day near low tide. Camera geometries were computed for each runup collection.

Runup time series was performed by the Coastal Imaging Laboratory at the Oregon State University, Corvallis, OR. The runup analysis technique is based on the "timestack" method described by Aagaard and Holm (1989).[1] A timestack is created by digitizing every fifth video frame (6 Hz) and recording the pixel intensities in the image that correspond to the profile line location. These pixel values are then "stacked" in a matrix and saved on disk. This results in a matrix of pixel intensities with one axis being the pixel position, directly related to the distance across the structure, and the other axis being time. In a typical timestack (Figure B25) the runup is clearly visible as a sharp change in pixel intensity, between the darker beach on the left, and the whiter foam of the runup on the right.

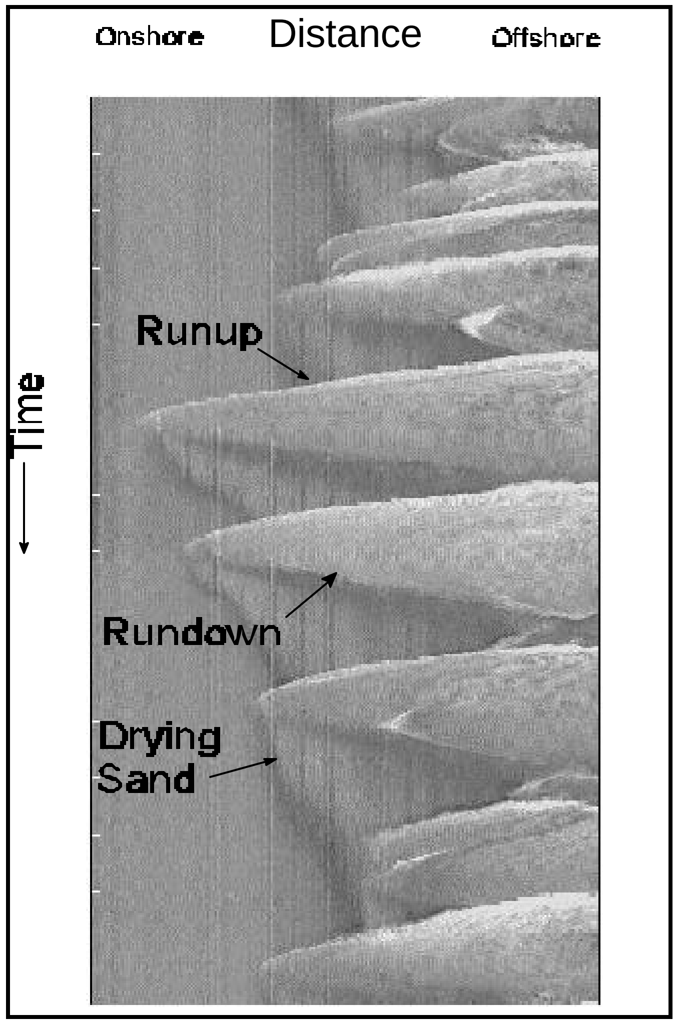

Figure B25. Example segment of a runup timestack

The cross-shore position of the runup is determined from the runup edge position in the timestack image. Image coordinates of the edge are

[1] Aagaard, T., and Holm, J. (1989). "Digitization of wave run-up using video records," *Journal of Coastal Research* 5, 547-551.

directly related to a time series of vertical runup excursion. Runup position in the timestack is found using edge detection algorithms combined with manual refinements when edge detection fails. After the edge detection is completed, image coordinates of the runup edge are transformed to a time series of vertical runup elevations. The 6-Hz timestack was decimated and saved as a 2-Hz time series. Standard Fourier wave analysis techniques were used to compute vertical runup spectra, runup wave height (R_{mo}), and peak period. Total record lengths were typically 119 min and processed in 4096-point (2,048-s) segments that overlapped 50 percent. The resulting spectra were smoothed in frequency with a 7-point band average, resulting in spectra with frequency resolution of 0.0034 Hz. Runup spectra were analyzed at the FRF.

The wave runup spectra were divided into three wave frequency classifications; infragravity (0.005 to 0.04 Hz), swell (0.04 to 0.15 Hz), and sea (0.15 to 0.5 Hz). These divisions are not necessarily definitive. Infragravity waves, for example, can sometimes fall within the swell frequency range. Total significant runup wave height (R_{mo}) is computed from the sum of energy from all three wave bands (0.005 to 0.5 Hz). Record length, runup wave height, period, and percentage distribution of wave energy in the three categories is presented in Table B5 and plotted in Figure B26.

The cross-shore range of runup was determined from each time series and is shown in Figure B27 superimposed on the daily beach profile. Mean runup position, mean water level recorded at the end of the FRF pier, and incident wave H_{mo} measured at the 8-m array are also listed in the figure. Beach slopes (â) in Figure B27 were computed between the two cross-shore positions on the profile that were ±20 cm vertically from the mean runup position. This beach slope and incident wave conditions were used to determine a dimensionless surf-similarity parameter, the Irribaren number $\hat{\imath}_o$, as a measure of the dissipative/reflective nature of the beach. The Irribaren numbers shown in Figure B27 were computed as:

$$\hat{\imath}_o \; ' \; \frac{\hat{a}}{\left(\frac{H_o}{L_o}\right)^{1/2}}$$

where

H_o = incident deepwater significant wave height

L_o = deepwater wavelength

Table B5
Video Runup Data

Date & time	Rec length(s)	R_{mO} (m)	Tp (s)	% IG energy	%Swell energy	% Sea energy
901005 0824	7200	1.0	13.6	15	82	3
901005 1300	7200	0.4	16.7	24	71	5
901006 0713	7020	1.1	11.9	12	85	3
901006 0917	7200	0.8	11.9	28	70	2
901006 1235	6900	0.5	11.9	32	65	3
901007 0728	6902	0.8	10.6	29	67	4
901007 0930	7200	0.9	13.6	39	58	3
901008 0813	7200	0.7	23.3	45	53	2
901008 1023	7200	0.7	21.6	47	50	3
901008 1330	6900	0.4	23.3	62	37	1
901009 0900	7200	0.9	20.1	48	50	2
901009 1107	7200	0.9	21.6	47	50	3
901009 1330	7200	0.7	23.3	53	46	1
901010 0954	7200	1.0	23.3	51	47	2
901011 0630	7200	0.8	20.1	39	59	2
901011 0847	7200	1.1	17.7	37	61	2
901011 1055	7200	1.3	20.1	39	58	3
901011 1305	7200	1.4	15.8	29	67	4
901012 0719	7200	1.3	21.6	28	69	3
901012 1226	7200	2.2	16.7	16	82	2
901012 1538	7200	2.4	14.9	28	71	2
901013 0645	7200	1.7	12.4	35	63	2
901013 0901	7200	1.7	13.0	32	66	2
901013 1116	7200	2.3	11.4	22	76	3
901013 1339	7199	2.6	11.9	17	80	3
901013 1554	5400	2.6	11.9	19	78	3
901014 0800	7200	1.2	10.2	22	73	6
901014 1011	7200	1.2	10.6	26	70	4
901014 1330	7200	2.1	13.0	22	75	3
901014 1545	6000	2.5	14.2	16	82	2
901015 1141	7200	1.5	11.4	18	79	3
901015 1351	7200	2.2	11.9	17	80	4
901016 0728	7200	1.4	12.4	23	75	3
901016 0937	7200	1.0	9.9	30	67	3
901016 1148	7200	1.0	14.2	27	70	4
901016 1606	5400	1.8	10.6	20	78	2
901017 0710	7200	1.4	13.6	20	77	3
901017 0919	7200	1.0	16.7	22	75	3
901017 1129	7200	0.8	14.2	20	77	3
901017 1338	7200	0.9	14.9	20	77	3
901017 1550	6000	1.2	14.9	19	78	3
901018 0700	7200	1.6	13.6	11	85	4
901018 1116	6824	1.2	16.7	12	83	5
901018 1311	6840	1.2	16.7	16	79	5
901019 0710	7200	1.3	14.2	13	82	5
901019 0919	7200	1.4	14.2	14	81	4
901019 1213	7200	1.1	14.9	21	76	3
901019 1423	7200	1.1	13.6	19	79	3

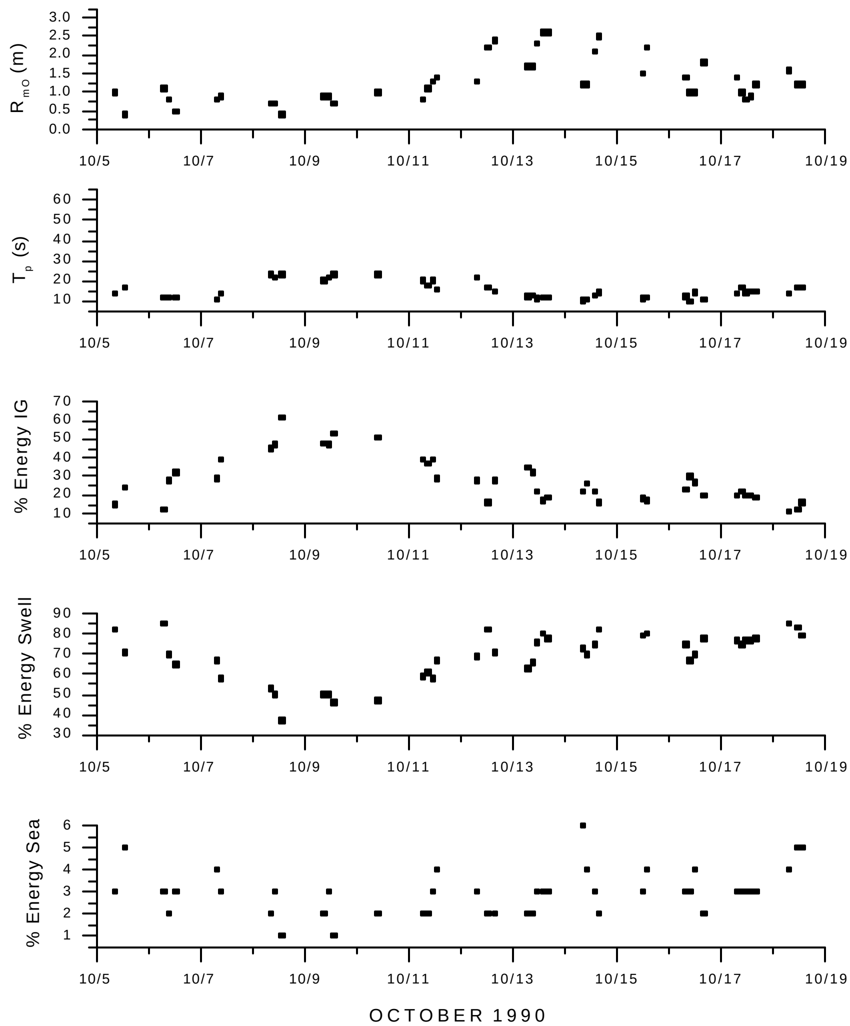

Figure B26. Time series of wave height, period and energy derived from DELILAH runup videos

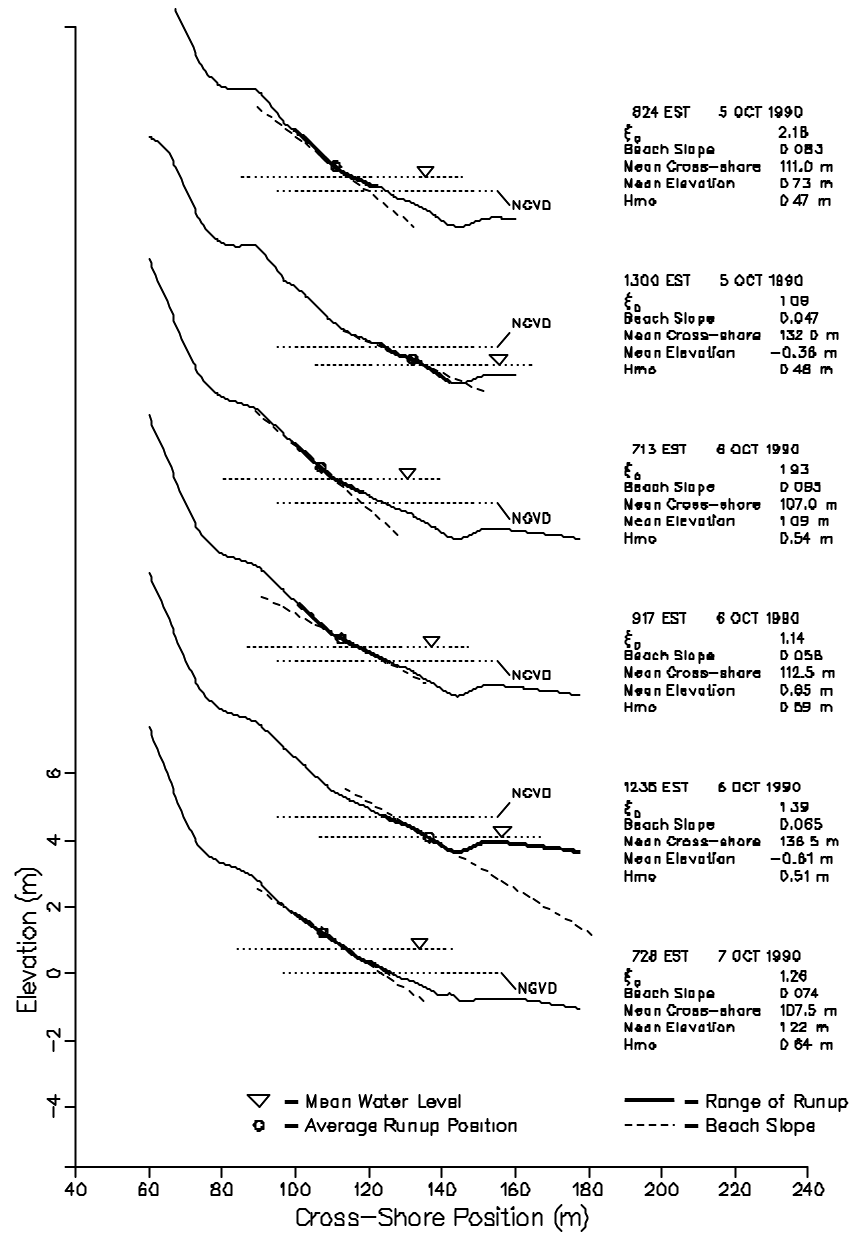

Figure B27. Runup excursion on beach profiles (Sheet 1 of 8)

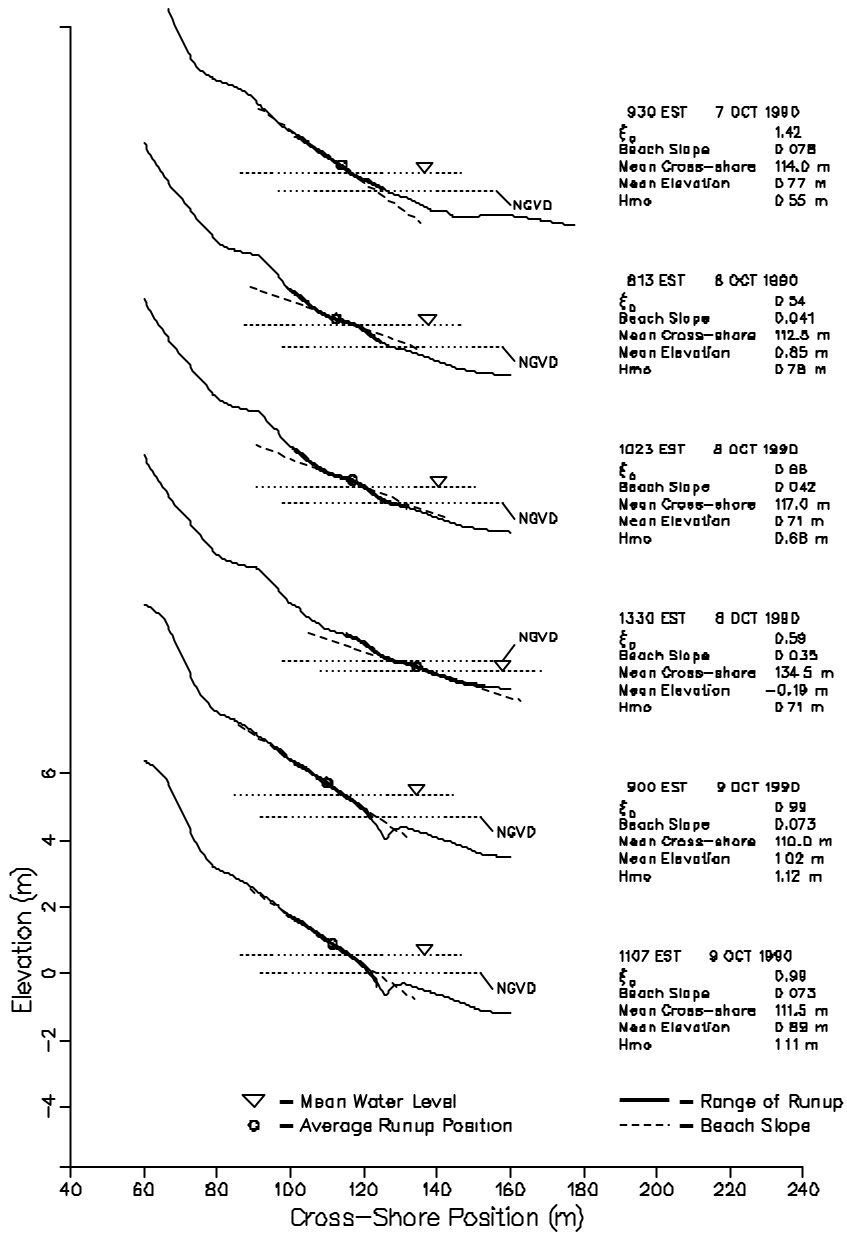

Figure B27. (Sheet 2 of 8)

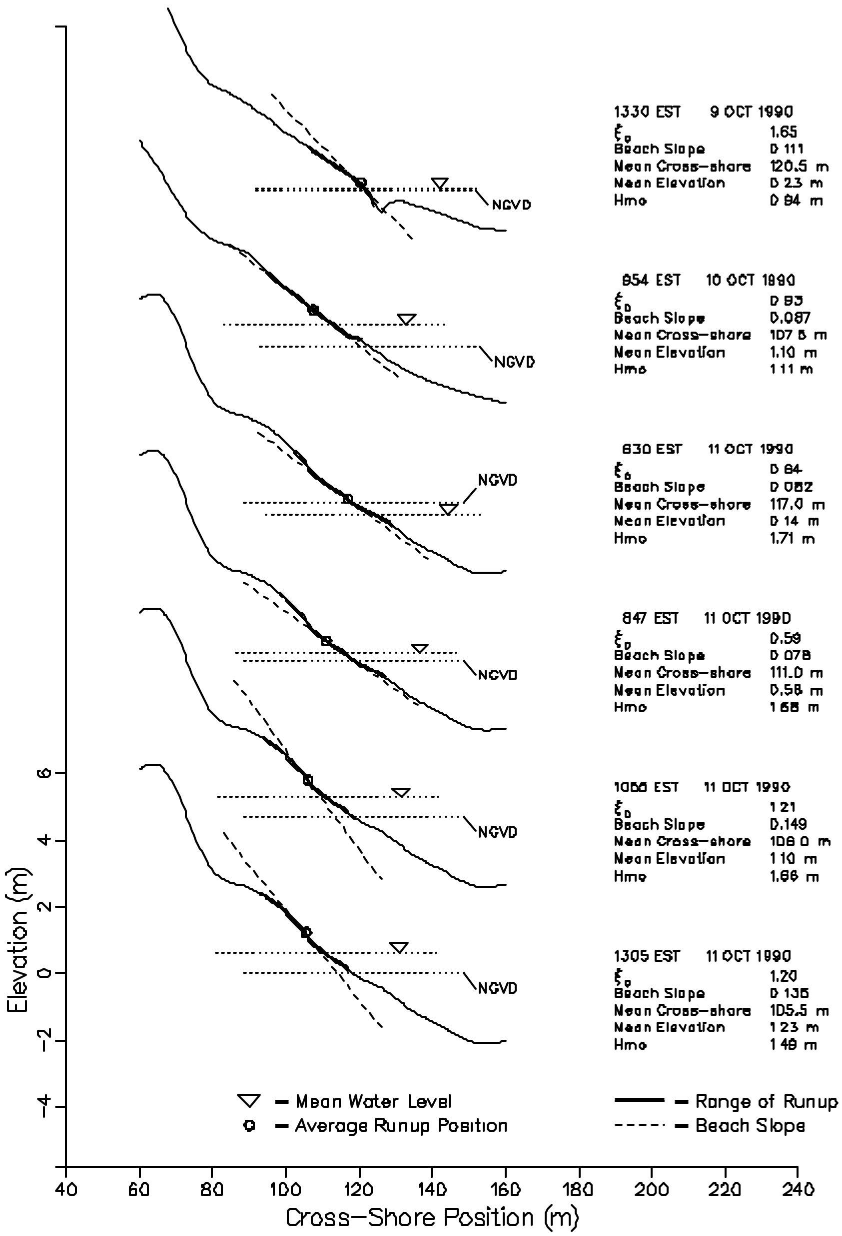

Figure B27. (Sheet 3 of 8)

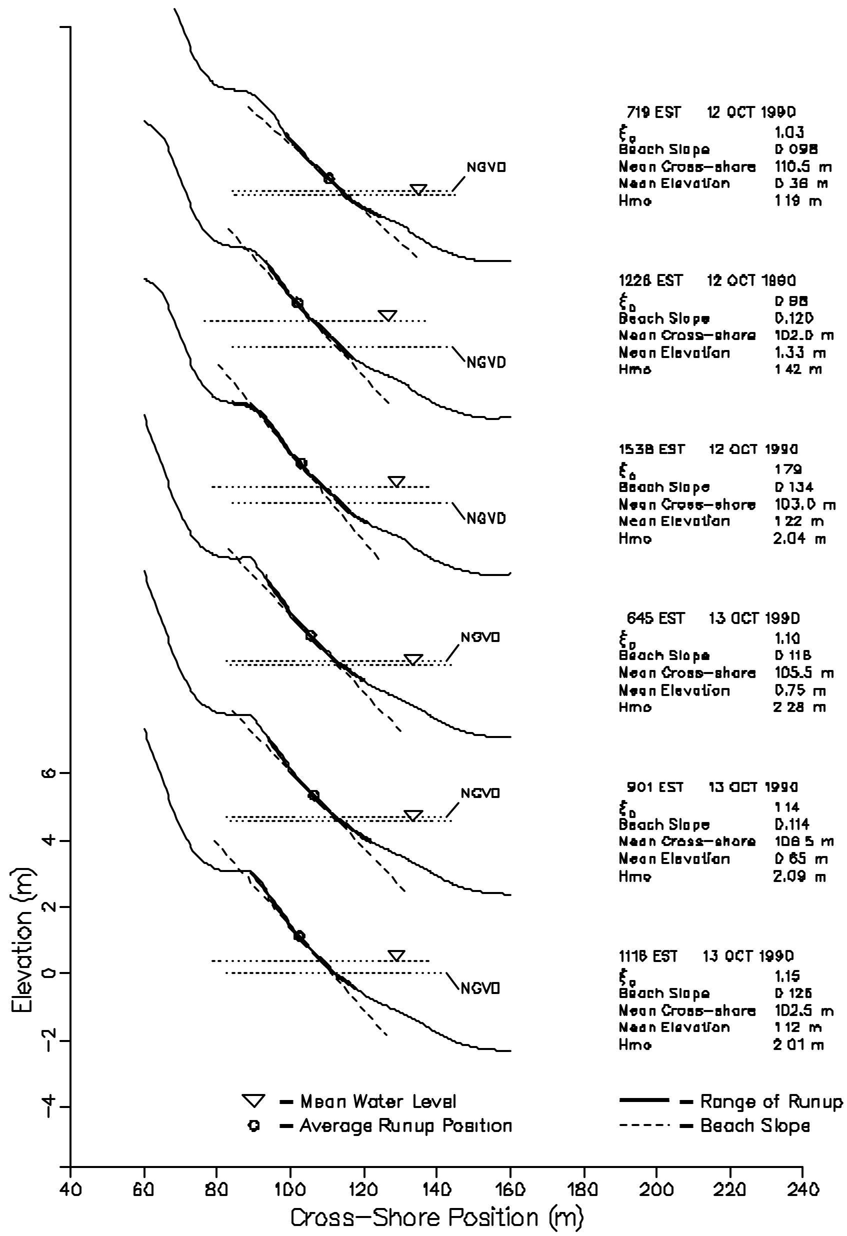

Figure B27. (Sheet 4 of 8)

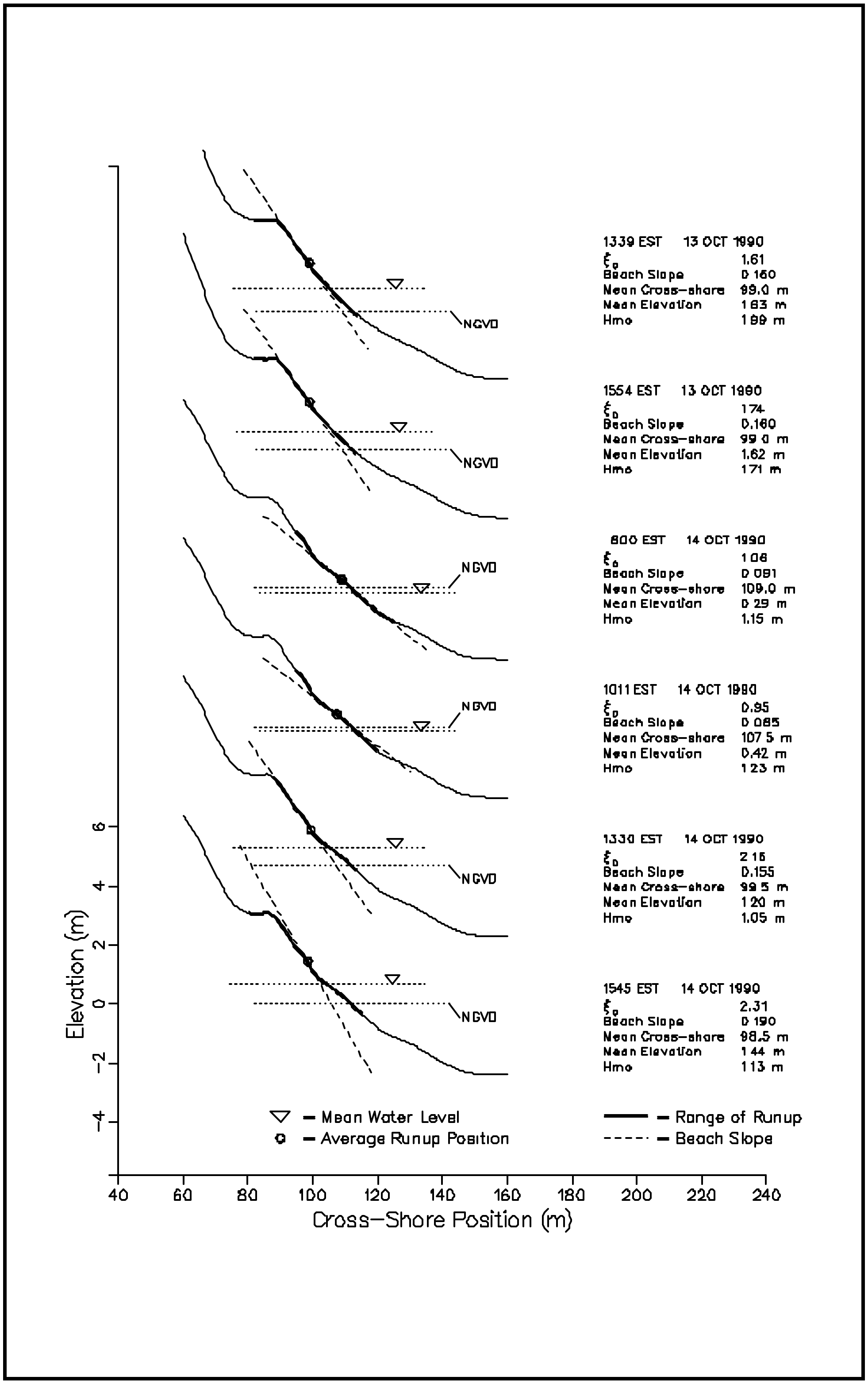

Figure B27. (Sheet 5 of 8)

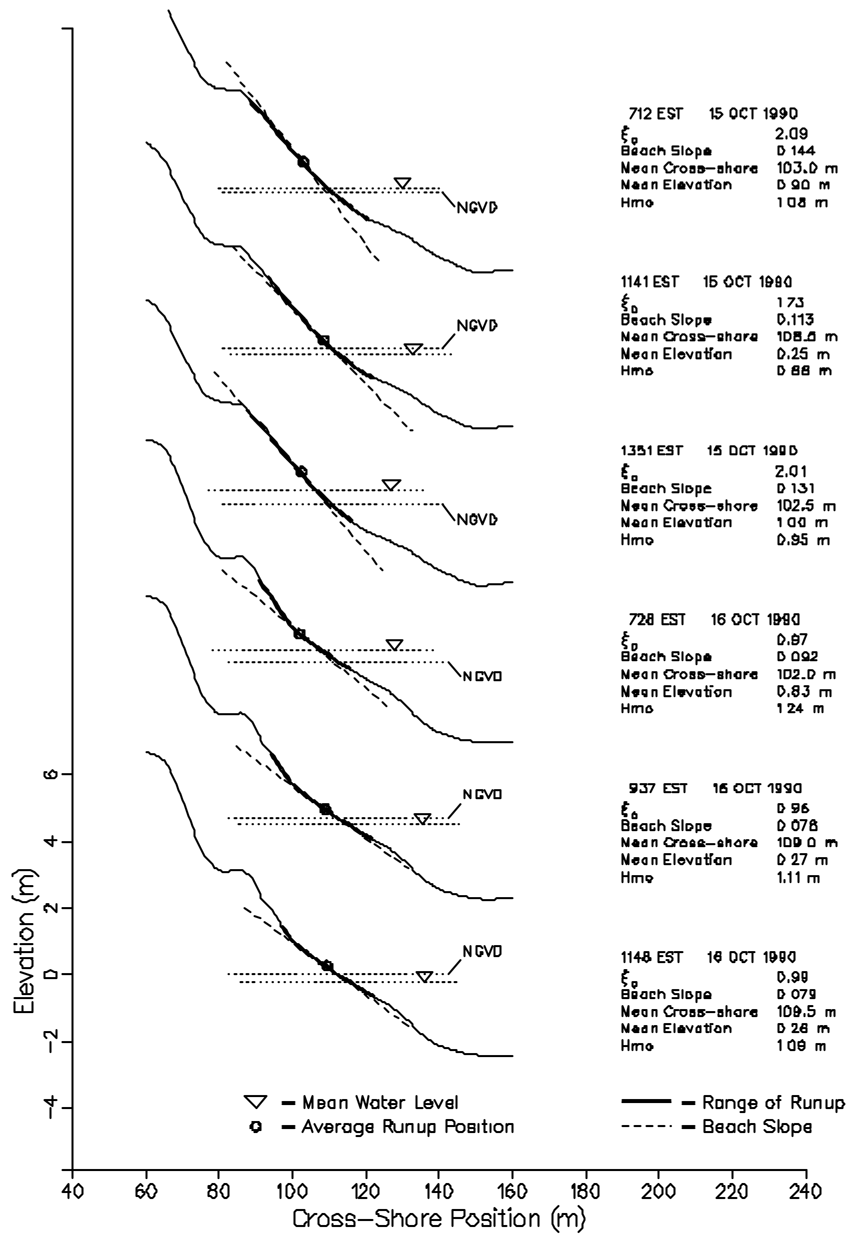

Figure B27. (Sheet 6 of 8)

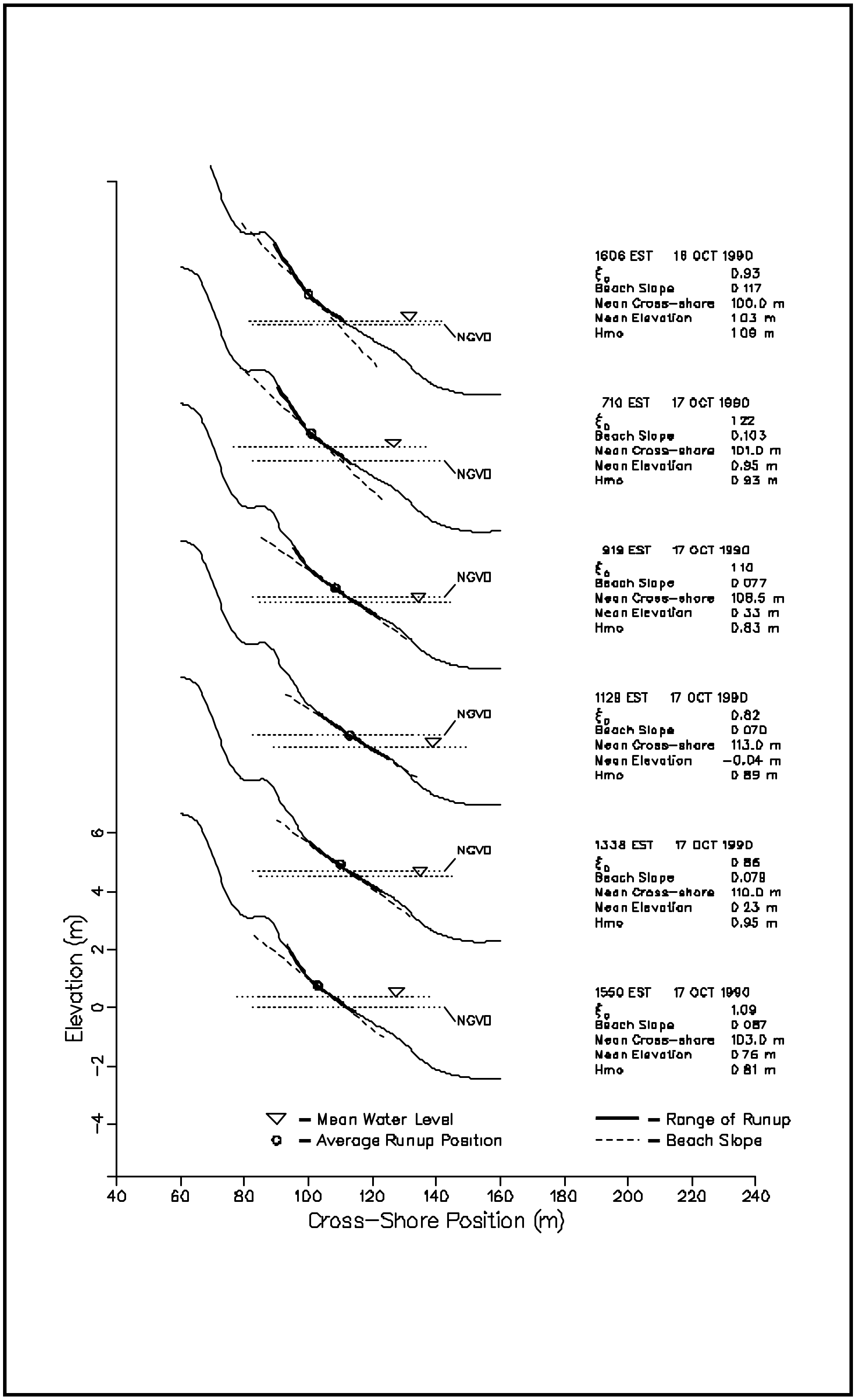

Figure B27. (Sheet 7 of 8)

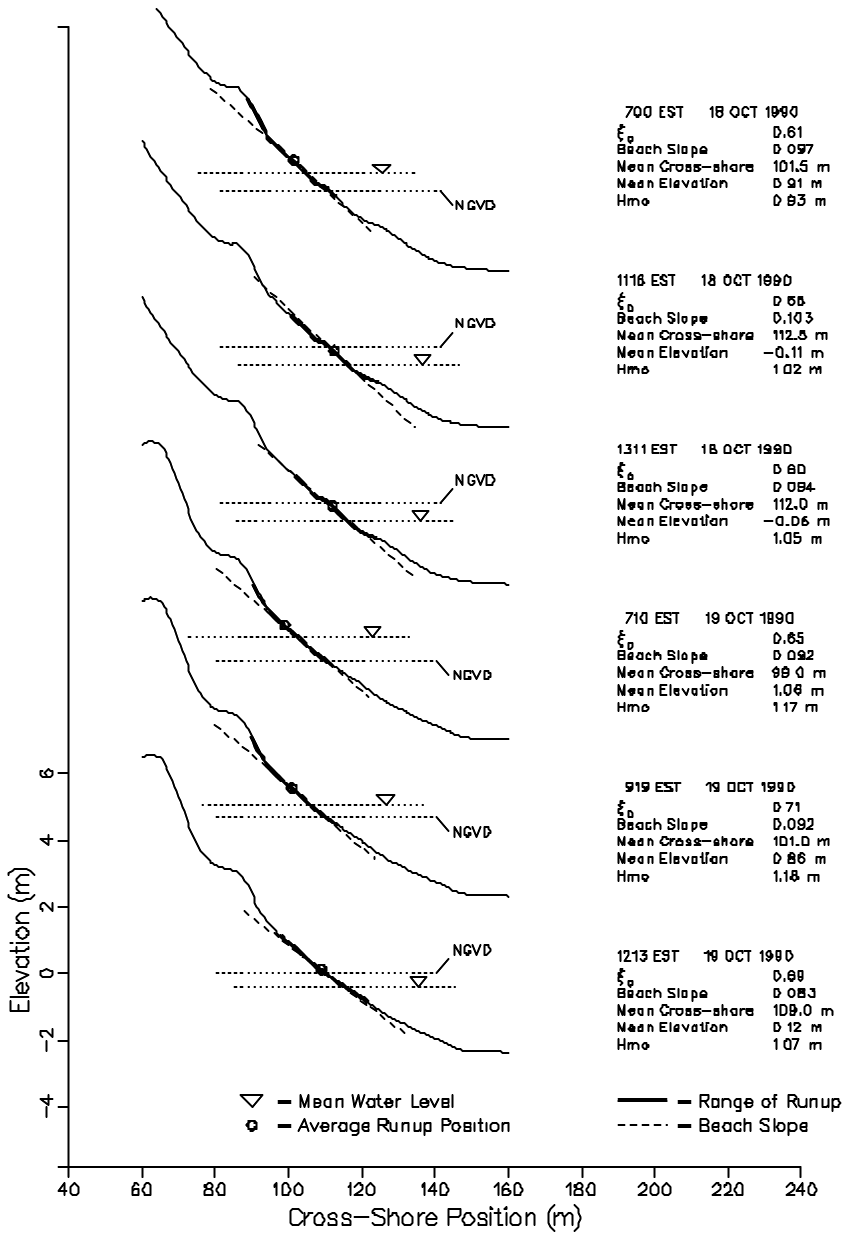

Figure B27. (Sheet 8 of 8)