

Post-Loss Signal Statistics for Source at Gardner
Gardner Sunset: 0538Z Sunrise: 1747Z

This table supplements PLSigStats.pdf, showing the computed tide heights at Gardner when signals were heard. Tides were computed with the UK Hydrographic Office EasyTide model, using Hull Island (140 miles east of Gardner) as a proxy since the tidal constants needed for direct prediction of Gardner tides do not exist. Empirical data collected during TIGHAR expeditions to Gardner support using Hull as proxy. It is assumed that the aircraft landed north of the Norwich City wreck, 75 feet from the seaward edge of the reef. Available evidence suggests that the reef edge there is 8 inches higher than the Hull Island tidal datum. Calculations based on photogrammetry show that the reef slope in that area is 2.8 degrees. Hence the reef surface at the aircraft's location is 44 inches higher than the reef edge, and 52 inches higher than the Hull tidal datum. Since radio transmission required running the starboard engine to operate the generator, the 24-inch ground clearance of the Electra 10E propeller defined the highest water level that would permit operation, corresponding to a maximum tide level of 76 inches, which never was approached for any reported signal.

Day	GMT	Tide (inches)	Signal	Freq	Receiver	Rcvr Sun			Reception Probability
						Set	Rise	Path	
2	2100-2130	10	Betty (Provisional date)	24840	St. Pete FL	0031	1039	DD	0.001595613870358
2	2130-2230	17	Betty (Provisional date)	24840	St. Pete FL	0031	1039	DD	0.000003618472907
2	2230-2315	24	Betty (Provisional date)	24840	St. Pete FL	0031	1039	DD	0.000023781547406
3	0200	40	Weak, heard "L-a-t", fol by unreadable figs	6210	L.A.	0308	1246	DD	0.000000000000000
3	0400	27	Weak sigs, erratic and unreadable	3105	L.A.	0308	1246	DN	0.000000000000000
3	0517	18	Tests, steady carrier, no modulation	3105	Mokapu	0518	1555	NN	0.047502709060928
3	0555	14	Steady carrier, no modulation, weak	3105	Mokapu	0518	1555	NN	0.167012649592750
3	0555	14	We hear her" very weak and unreadable, A3	3105	Itasca	0554	1741	NN	0.991206335584211
3	0600		Itasca: requesting AE send dashes	3105	Gardner	0538	1747	NN	0.999648280544202
3	0600		Itasca: requesting AE send dashes	3105	Achilles	0434	1701	NN	0.640157009650749
3	0600		Itasca: requesting AE send dashes	3105	CG Hono	0518	1555	NN	0.500000000000000
3	0600	14	dashes heard immed following Itasca request	3105	Achilles	0434	1701	NN	0.941483189049501
3	0604-0606	14	Heard something like generator start then stop	3105	Itasca	0554	1741	NN	0.993383184357302
3	0607	14	Sigs on/off, heard "Earhart", guess it isn't her.	3105	Itasca	0554	1741	NN	0.988425534528094
3	0700	11	Weak, unreadable	6210	L.A.	0308	1246	NN	0.000044575384689
3	0700		Itasca heard	3105	L.A.	0308	1246	NN	0.000000036591139
3	0700	11	Distinct sigs AE & Itasca, not hearing each other	3105	L.A.	0308	1246	NN	0.000000288416217
3	0727	12	Heard series of long dashes	3105	Ft. Shafter	0518	1555	NN	0.064156012027948
3	0800-0845	13 to 16	Heard AE SOS loud & clear. No freq. (3105?)	3105	Amarillo	0206	1137	NN	0.000000000129948
3	0800-0845	13 to 16	Heard AE SOS loud & clear. No freq. (6210?)	6210	Amarillo	0206	1137	NN	0.000022028313283
3	0800	13	Long dashes and weak voice	6210	CG Hono A1	0518	1555	NN	0.280344577965855
3	0831-0854	14 to 16	strong A3, unintel; but sim to sig fm AE last night	6210	Nauru	0659	1854	NN	0.875043721214655
3	0831-0854	14 to 16	(Same as above. Testing 2 X 3105)	6210	Nauru	0659	1854	NN	0.314541169656031
3	0833-0900	14 to 16	weak A3 unreadable	3105	Itasca	0554	1741	NN	0.885841567051138
3	0920	21	4 hams hrd AE voice. "KHAQQ" distinct & verified	3105	L.A.	0308	1246	NN	0.000019041543860
3	1057	35	Series long dashes, duration 22 seconds	3105	CG Hono	0518	1555	NN	0.007599837068300
3	1115	37	McMenamy heard "KHAQQ SOS"	3105	L.A.	0308	1246	NN	0.000026486720430
3	1330	47	4 hams hrd woman distress call SW Howland	3105	L. A.	0308	1246	NN	0.000000000000000
3	1455	42	Ham heard SOS ~ 3488 kHz	3105	Oakland	0335	1253	NN	0.000000000000000
3	1920	8	Heard AE between 9 -10 MHz and near 13 MHz	9315	Ashland KY	0050	1007	DD	0.000000000000000
3	1920	8	same as above, testing 4 x 3105	12420	Ashland KY	0050	1007	DD	0.000000000000000
3	1920	8	same as above, resting 2 x 6210	12420	Ashland KY	0050	1007	DD	0.000000000000000
3	2100-2130	10 to 13	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.005386145982534
3	2130-2230	13 to 22	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000020158072588
3	2230-2315	22 to 26	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000077056083691
3	unk		SS New Zealand hrd dashes, 1200 nmi Howland	3105	mership				

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						Set	Rise		
4	0620-0846	16 to 8	wk carrier, PAA Mokapu also hears	3105	CG Hono	0518	1555	NN	0.023886538461734
4	0645	12	A3 weak, unintelligible	3105	Itasca	0554	1741	NN	0.869240267645028
4	0650	12	Ham heard AE "S4" "R7".	3105	Baker	0556	1746	NN	0.956761866209432
4	0653	12	A3 weak, unintelligible	3105	Itasca	0554	1741	NN	0.962756189383172
4	0833	T4	KGU requesting AE xmit 500, 3105, or 6210						
4	0833	8	Faint carrier	3105	Mokapu	0518	1555	NN	0.039470604842626
4	0850	9	A3 weak, unintelligible	3105	Itasca	0554	1741	NN	0.907271379533410
4	0850-1300	9 to 45	weak carrier	3105	Howland	0556	1746	NN	0.956057985964057
4	0851-0929	9 to 13	A3 weak, unintelligible	3105	Itasca	0554	1741	NN	0.922519125058560
4	0936-0954	13 to 16	weak carrier	3105	Itasca	0554	1741	NN	0.911069196518663
4	1000	T5	KGMB requesting AE xmit on 3105						
4	1005-1029	19	weak carrier	3105	Itasca	0554	1741	NN	0.911069196518663
4	1012-1020	15 to 17	Intermittent carrier, no voice distinguishable	3105	Mokapu	0518	1555	NN	0.008197535970697
4	1022-1100	17 to 26	2 long dashes, possibly A3 transmissions	3105	Mokapu	0518	1555	NN	0.005575497851859
4	1031	21	brief carrier, no A3. Wailupe heard male say "31"	3105	Mokapu	0518	1555	NN	0.004045173914568
4	1031-1100	21 to 26	carrier comes and goes, QRN prevents bearing	3105	Mokapu	0518	1555	NN	0.007599837068300
4	1035	21	voice & dashes hrd at end of KGMB broadcast	3105	CG Hono	0518	1555	NN	0.004045173914568
4	1037-1055	21 to 26	weak carrier	3105	Itasca	0554	1741	NN	0.435642958810006
4	1057	26	weak CW	3105	Itasca	0554	1741	NN	0.741540272330922
4	1059	26	carrier but no CW	3105	Itasca	0554	1741	NN	0.741540272330922
4	1110	28	Someone trying to send code, nothing readable	3105	Mokapu	0518	1555	NN	0.007599837068300
4	1114-1115	29	CW almost on top of carrier, weak, unreadable	3105		0554	1741	NN	0.686543340869668
4	1127-1137	31	carrier	3105		0554	1741	NN	0.680212349857467
4	1137	31	carrier	3105	Itasca	0554	1741	NN	0.680212349857467
4	1153-1353	36 to 50	weak carrier, no mod, apparently from west	6210	CGSF	0335	1253	NN	0.139695117833502
4	1200	36	carrier, one minute duration, plus man's voice	3105	CG Hono	0518	1555	NN	0.002137366981710
4	1200	36	strong carrier, 15 minutes, apparently from west	6210	CGSF	0335	1253	NN	0.139695117833502
4	1200-1230	36 to 41	man's voice "31.05", 31.07", "KHAQQ"	3105	Wahiawa	0518	1555	NN	0.002137366981710
4	1200-1230	36 to 41	same as above	6210	Wahiawa	0518	1555	NN	0.177404626206254
4	1215	36 to 28	Intermittent A3, male voice, unreadable in QRN	3105	Wake	0518	1555	NN	0.000078714659636
4	1330	48	Earhart's voice.	6210	L. A.	0308	1246	ND	0.000213397381044
4	1437	51	Possible A3, too weak to I.D. Also heard at Wake	3105	Midway	0650	1657	NN	0.001241298589422
4	1500	50	AE plane on reef SE Howland, hrd "near 16 MHz"	15525	Rock Sp.	0254	1147	ND	0.016448695960829
4	1512	48	Very faint A3, too weak for bearing	3105	Midway	0650	1657	NN	0.001241298589422
4	1512	48	Very faint A3, brg approx 175, per Midway	3105	Mokapu	0518	1555		0.022562989625099
4	1523-1530	47	weak swinging carrier, brg approx 213	3105	Mokapu	0518	1555	NN	0.029233906954715
4	1553	45	weak A3, apparently same as 1512Z, no bearing	3105	Midway	0650	1657	NN	0.017267822945404
4	2100-2130	7 to 9	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.001588869654571
4	2130-2230	9 to 15	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000077056083691
4	2230-2315	15 to 21	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000180399020228

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						<u>Set</u>	<u>Rise</u>		
5	0500	T3a	KGMB asks AE to listen for call at 0630Z						
5	0600	T3b	KGMB asks AE to listen for call at 0630Z						
5	0630	T3c	KGMB asks AE to send 4 long dashes						
5	0630	19	answering sigs heard, carrier broken	3105	CG Hono	0518	1555	NN	0.204456947193127
5	0630	19	4 dashes, KGMB repeats, 2 dashes, brg 215	3105	Mokapu	0518	1555	NN	0.204456947193127
5	0638	19	faint wobbly A3, brg 201	3105	Midway	0650	1657	NN	0.132844878571308
5	0700		KGMB requests dash groups ???						
5	0700-0704	14	4 dashes	3105	Tutuilla	0506	1748	NN	0.861435727936572
5	0714-0716	12	4 dashes	3105	Tutuilla	0506	1748	NN	0.861435727936572
5	0727-0731	9	8 dashes	3105	Tutuilla	0506	1748	NN	0.861435727936572
5	0730		KGMB requests dash groups ???						
5	0730		Itasca calls AE, A1	3105					
5	0730	9	Itasca call to AE hrd, plus carrier hrd shortly after	3105	CGSF	0335	1253	NN	0.000000747024313
5	0745		Itasca calls AE, A1	6210					
5	0800		Itasca calls AE, A1	7500					
5	0812	5	weak A3 unreadable	3105	Howland	0556	1746	NN	0.961989709288604
5	0815		Itasca calls AE. Mode not specified in log.	3105					
5	0815-0820	4	carrier hrd, seemingly on prearranged schedule	3105	CGSF	0335	1253	NN	0.003230647069361
5	0907-0923	3 to 4	carrier heard and man's voice, unintelligible	3105	Itasca	0554	1741	NN	0.842970510342407
5	0908	3	man's voice, very weak	3105	Howland	0556	1746	NN	0.877714295448039
5	0910	3	KHAQQ calling NRUI, A3; Howland hrd weak A3	3105	Baker	0556	1746	NN	0.845704220282964
5	0915-0920	4	carrier hrd, seemingly on prearranged schedule	3105	CGSF	0335	1253	NN	0.000502032043991
5	0916	4	Ham heard AE calling Itasca	3105	Howland	0556	1746	NN	0.845704220282964
5	0925	5	weak carrier, no modulation	3105	Howland	0556	1746	NN	0.927102429274619
5	0948-0952	7	strong A3, strength wavering badly	3105	PAA Wake	0736	1820	NN	0.007865567356591
5	1015-1020	9	carrier hrd, seemingly on prearranged schedule	3105	CGSF	0335	1253	NN	0.001728612843322
5	1105	15	A1, bearing SSE or NNW on magnetic compass	3105	Howland	0556	1746	NN	0.782448098406136
5	1115-1120	15	carrier hrd, seemingly on prearranged schedule	3105	CGSF	0335	1253	NN	0.003771778041963
5	1130-1230	18 to 33	"281" message.	3105	Wailupe	0518	1555	NN	0.001902367563672
5	1130-1230	18 to 33	"281" message, with rcvr BW set for CW reception	3105	Wailupe	0518	1555	NN	0.059585711555453
5	1215-1220	30	carrier hrd, seemingly on prearranged schedule	3105	CGSF	0335	1253	NN	0.002431283338257
5	1223		Itasca requests AE send 4 long dashes	3105	Gardner	0538	1747	NN	0.953149554844355
5	1223-1236	33	unsteady A3, approx brg 144, believed to be AE	3105	Wake	0736	1820	NN	0.000596588119237
5	1223-1236	33	Itasca source ?	3105	Wake	0736	1820	NN	0.313456659130332
5	1230-1251	33 to 40	2 groups of 3 dashes responding to Itasca rqst	3105	L. A. (0 dB)	0308	1246	NND	0.000000000000129
5	1230-1251	33 to 40	2 groups of 3 dashes responding to Itasca rqst	3105	L. A. (10 dB)	0308	1246	NND	0.000000001734666
5	1305	40	carrier hrd, seemingly on prearranged schedule	3105	CGSF	0335	1253	NN	0.000515274306749
5	1350	49	carrier, too short for DF	3105	Mokapu	0518	1555	NN	0.009681659412445
5	1417-1419	51	hrd "NRUI" on CW, followed immed by 4 dashes	3105	CGSF	0335	1253	ND	0.000089716156059
5	2100-2130	5 to 3	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.002224447171793
5	2130-2230	3 to 7	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000003618472907
5	2230-2315	7 to 13	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000023781547406
5	unk		AE calling Itasca	unk	Maui	0518	1555		

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						Set	Rise		
6	0831	5	A3 distress signal (no frq)	3105	Dennison	0058	1002	NN	0.0000000000000000
6	0831	5	A3 distress signal (no frq)	6210	Dennison	0058	1002	NN	0.000000000077689
6	1130	9	weak A1 message, slow, fragmented (no frq)	3105	L.A.	0308	1246	NN	0.000021017496348
6	1130	9	weak A1 message, slow, fragmented (no frq)	6210	L.A.	0308	1246	NN	0.013004178845401
6	1435	43	A3 SOS from KHAQQ to NRUI	3105	Oakland	0518	1555	NN	0.0000000000000000
6	1625		CGSF informs Itasca of ML3 above						
6	2100-2130	5 to 2	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000554813478788
6	2130-2230	2 to 0	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000009574868
6	2230-2315	0 to 1	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000793328147
7	0330-0340	47	carrier	3105	El Paso	0215	1206	DN	0.0000000000000000
7	0700	30	woman A3, weak unreadable	3105	El Paso	0215	1206	NN	0.000000219969317
7	0747-0907	26 to 5	rippling carrier	3105	Hawaii	0518	1555	NN	0.002121049037490
7	0747-0907	26 to 5	rippling carrier	3105	L.A.	0308	1246	NN	0.000039249638900
7	0922	3	rippling carrier, similar to ML 37b above	3105	L.A.	0308	1246	NN	0.000162764485016
7	1230	14	AE A3 loud & clear. Near Japanese sta. No freq.	15525	St. Stephen	0019	0850	ND	0.000009920763838
7	1230	14	Nazaki, Japan 20 KW, music to USA	15620	St. Stephen	0019	0850	ND	0.665188933665127
7	1717-1837	57 to 47	rippling carrier, hams, no freq given	3105	Honolulu	0518	1555	NDDD	0.000687137937013
7	1747-1837	57 to 47	rippling carrier, hams, no freq given	6210	Honolulu	0518	1555	NDDD	0.115797229054792
7	2100-2130	13 to 8	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000000077689
7	2130-2230	8 to 1	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000000008093
7	2230-2315	1 to 0	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000001312433
8	1210	2	"We are on a coral reef", no freq given	3105	Oakland	0518	1555	NN	0.000000000000010
8	2100-2130	21 to 15	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000000000004
8	2130-2230	15 to 5	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000000000004
8	2230-2315	5 to 0	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.0000000000000301
9	0245	T1	KHBC "March of Time"	1420	Honolulu	0518	1555		
9	unk		AE msg heard by ham in Peru	1400	Callao				
9	unk		Ham hrd sig with lat 5 south, long 173 west	unk	Winnipeg				
9	0800-1400	42 to 10	A3 sigs from AE, hrd btwn midnight & dawn.	3105	Yreka	0349	1241	NNND	0.0000000000000000
9	0800-1400	42 to 10	A3 sigs from AE, hrd btwn midnight & dawn.	6210	Yreka	0349	1241	NNND	0.000000001162271
9	unk		dupe of item #39	unk	Yreka	0349	1241		
9	2100-2130	9 to 5	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000000000014
9	2130-2230	5 to 0	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.000000000000004
9	2230-2315	0 to 5	Betty (Prov date)	24840	St. Pete FL	0031	1039	DD	0.0000000000000301
unk	unk		A3, "all's well", "posit 5 S, 173 W" , no freq	unk	Great Falls				
unk	unk		A3, "SOS KHAQQ"	6250	San Fran	0518	1555		
unk	unk		A3 AE distress call, ruled out by COM 9 NavDist	unk	Wilmette				

4.1