

**HOWLAND** Known possible A3 signal sources within 15 kHz of 3105 kHz  
 Minimum noise level: -163.6 dBw (ITU-R P.372-8 Quiet Rural Man-made noise)  
 Sunset 0556Z  
 Sunrise 1746Z

Name	Quarry Hts	Melbourne	Navarin	Stalino	Gardner	Oust-Kiakhta	San Diego	L.A.	SanFran	Seattle	Billings
Call Sign	(Army Air)	3AR	UGU1	RW26	KHAQQ	UTC	SAN	LAX	SFO	SEA	UQP1
Freq, kHz	3100	3100	3100	3104	3105	3105	3105	3105	3105	3105	3110
Latitude	8-57N	38-47S	62-17N	47-59N	4-40S	50-13N	32-48N	34-06N	37-48N	47-48N	69-53N
Longitude	79-33W	144-58E	179-04E	37-48E	174-32W	106-17E	117-06W	118-24W	122-24W	122-18W	176-05E
Sunset	2341Z	0712Z	0954Z	1731Z	0538Z	1307Z	0300Z	0309Z	0335Z	0408Z	SSSSS
Sunrise	1104Z	2136Z	1420Z	0134Z	1747Z	2051Z	1245Z	1247Z	1253Z	1219Z	SSSSS
Bearing	81	218	358	333	157	321	54	52	47	37	357
Distance, nmi	5709	3133	3704	7369	350	4883	3853	3848	3697	3954	4179
Power, W	75	70	40	600	50	60	50	50	50	50	40
Power, dBw	18.8	18.5	16.0	27.8	17.0	17.8	17	17	17	17	16.0
Rcvr Sel Loss, dB	23	23	23	0	0	0	0	0	0	0	23
Min Loss (FS) db	122.7	117.5	119.0	125.0	112.8	121.4	119.3	119.3	119.0	119.6	120.1
Max SNR (FS) dB	36.7	41.5	37.7	66.4	67.8	60.0	61.3	61.3	61.6	61.0	36.7

July 4 0650Z	Baker Island "heard Earhart plane QSA 4 R7". Reported to Itasca by ham K6GNW on Howland, at 0946Z July 5.										
Required SNR dB	43	43	43	43	43	43	43	43	43	43	43
Mean SNR dB	-3	13	-2	-460	57	-136	-1	0	2	-3	-19
Adj Mean SNR dB	-26	-10	-25	-460	57	-136	-1	0	2	-3	-42
90th Pctile incr dB	11.2	11.4	11.5	11.2	11.5	11.1	13.9	14.1	12.2	18.5	11.9
Sigma SNR dB	8.8	8.9	9.0	8.8	9.0	8.7	10.9	11.0	9.5	14.5	9.3
Std Devs Rqrd	7.9	6.0	7.6	57.5	-1.6	20.6	4.1	3.9	4.3	3.2	9.1
Reception case	2	2	2	2	2	2	2	2	2	2	2
Reception Prob	1.71E-15	1.33E-09	2.05E-14	0.00E+00	9.45E-01	5.83E-95	2.54E-05	4.73E-05	8.47E-06	7.25E-04	3.36E-20

July 5 0812Z	No Bearing. "Weak radiophone signal, unreadable"										
Required SNR dB	42	42	42	42	42	42	42	42	42	42	42
Mean SNR dB	-8	15	5	-420	53	-102	-5	-2	-1	-5	-11
Adj Mean SNR dB	-31	-8	-18	-420	53	-102	-5	-2	-1	-5	-34
90th Pctile incr dB	9.9	10.6	10.2	10.6	10.1	9.8	13.5	10.6	11.8	17.5	10.7
Sigma SNR dB	7.7	8.3	8.0	8.3	7.9	7.7	10.5	8.3	9.2	13.7	8.4
Std Devs Rqrd	9.4	6.0	7.5	55.8	-1.4	18.8	4.5	5.3	4.7	3.4	9.1
Reception case	2	2	2	2	2	2	2	2	2	2	2
Reception Prob	2.14E-21	7.81E-10	2.80E-14	0.00E+00	8.27E-02	3.24E-79	4.17E-06	5.38E-08	1.55E-06	2.92E-04	5.45E-20

HOWLAND	Quarry Hts	Melbourne	Navarin	Stalino	Gardner	Oust-Kiakhta	San Diego	L.A.	SanFran	Seattle	Billings
July 5 0908Z-0916Z	No Bearing. 0908Z: A3 signal "man's voice, very weak"; Baker heard KHAQQ call NRUI voice. 0916Z: Howland heard Earhart call Itasca										
Required SNR dB	43	43	43	43	43	43	43	43	43	43	43
Mean SNR dB	-16	9	-1	-384	48	-65	-8	-7	-6	-11	-11
Adj Mean SNR dB	-39	-14	-24	-384	48	-65	-8	-7	-6	-11	-34
90th Pctile incr dB	8.5	11.5	9.7	8.7	8.7	8.6	9.9	9.9	10.3	17.7	9.4
Sigma SNR dB	6.6	9.0	7.6	6.8	6.8	6.7	7.7	7.7	8.0	13.8	7.3
Std Devs Rqrd	12.3	6.3	8.8	62.8	-0.7	16.1	6.6	6.5	6.1	3.9	10.5
Reception case	2	2	2	1	2	2	2	2	2	2	2
Reception Prob	3.00E-35	1.12E-10	5.33E-19	0.00E+00	7.58E-01	1.93E-58	2.14E-11	5.08E-11	5.67E-10	4.70E-05	5.84E-26

July 5 0925Z	No Bearing. "Weak carrier, no modulation"										
Required SNR dB	41	41	41	41	41	41	41	41	41	41	41
Mean SNR dB	-16	9	-1	-384	48	-65	-8	-7	-6	-11	-11
Adj Mean SNR dB	-39	-14	-24	-384	48	-65	-8	-7	-6	-11	-34
90th Pctile incr dB	8.5	11.5	9.7	11.5	8.7	8.6	9.9	9.9	10.3	17.7	9.4
Sigma SNR dB	6.6	9.0	7.6	9.0	6.8	6.7	7.7	7.7	8.0	13.8	7.3
Std Devs Rqrd	12.0	6.1	8.6	47.3	-1.0	15.8	6.3	6.2	5.8	3.8	10.2
Reception case	2	2	2	2	2	2	2	2	2	2	2
Reception Prob	1.21E-33	4.63E-10	5.44E-18	0.00E+00	8.48E-01	2.25E-56	1.18E-10	2.72E-10	2.60E-09	8.46E-05	1.00E-24

July 5 1105Z	Bearing SSE or NNW on magnetic compass. Continuous wave of unknown origin. No call given. Frequency slightly above 3105.										
Required SNR dB	41	41	41	41	41	41	41	41	41	41	41
Mean SNR dB	-48	8	-15	-260	42	-68	-14	-14	-14	-16	-13
Adj Mean SNR dB	-71	-15	-38	-260	42	-68	-14	-14	-14	-16	-36
90th Pctile incr dB	7.9	7.9	15.9	8.2	7.9	7.9	15.8	16.6	14.9	17.9	9.6
Sigma SNR dB	6.2	6.2	12.4	6.4	6.2	6.2	12.3	13.0	11.6	14.0	7.5
Std Devs Rqrd	18.1	9.1	6.4	47.0	-0.2	17.7	4.5	4.2	4.7	4.1	10.3
Reception case	2	2	2	2	2	2	2	2	2	2	2
Reception Prob	9.13E-74	5.77E-20	1.06E-10	0.00E+00	5.79E-01	4.20E-70	4.18E-06	1.11E-05	1.15E-06	2.29E-05	5.72E-25