

Engine 5a1 aero 0.15552 R3 9.6 ref wind mph Premium charter, 90 mph limit													
Tare wt		350	diam	74 R4	0 DAW	60	3.5						
gross wt		375	R0	2.4 R5	0.00033 cyl factor	1	Area, sq ft						
Engine wt		160	R1	0.0384615 W5	0 Non couplec	6	96						
total wt		535	R2	0.0009091 W6	0 V denom	25.00	0						
Distance	Place	inst ihp	inst speed	time	log speed	setting	av speed	av ihp	av edhp	dhp	LR	height	av grad
158	Crewe	2	0.01	00:00:00			0					165.05	
160.85	Copenhagen Jn Box	3090	71.64	00:04:12			40.67	1960	1817	1339	143	165.07	890625
162.9	Minshull Vernon Box	2987	85.12	00:05:46			78.47	2997	2431	1957	566	157.37	-1405
165.5	Winsford	1671	91.76	00:07:31			89.32	2291	1524	1409	767	133.49	-575
166.8	Winsford Jn Box	1671	91.77	00:08:22			91.69	1683	885	983	798	125.79	-891
169.85	Hartford	1665	90.12	00:10:21			92.34	1672	874	981	798	117.05	-1841
172.5	Acton bridge	1665	90.24	00:12:07			90.24	1665	907	985	758	103.65	-1045
174.3	Weaver Jn Box	1672	91.86	00:13:18			91.39	1670	891	984	780	82.85	-457
179.25	Moore	1679	94.04	00:16:32			91.85	1669	880	981	789	38.22	-586
180.25	Acton Grange Box	1658	88.10	00:17:11			91.38	1661	882	978	780	71.46	159
182.15	Warrington	4	88.66	00:18:29			88.19	854	133	424	720	33.27	-263
185.65	Winwick Jn Box	2244	85.72	00:20:57			84.99	1556	908	940	648	44.52	1642
187.2	Golborne Jn Box	2218	82.44	00:22:04			83.48	2210	1573	1394	637	82.83	214
189.1	Golborne	2985	84.71	00:23:26			82.74	2929	2291	1891	638	119.92	270
191.3	Bamfurlong	4	90.24	00:24:56			88.66	2367	1613	1465	754	105.24	-791
192.55	Spring's Branch Jn Box	4	83.24	00:25:48			86.83	46	-665	-147	710	107.87	2513
193.9	Wigan	3014	75.33	00:26:49			78.69	570	39	281	531	130.14	320
196.15	Boar's Head Jn Box	3002	74.84	00:28:35			76.92	2922	2406	1928	515	210.10	149
197.15	Standish Jn Box	3065	78.73	00:29:22			76.84	3192	2630	2084	561	227.78	299
199.7	Coppull	3034	89.53	00:31:13			82.16	3030	2382	1950	648	236.32	1577
203.55	Euxton Jn Box	4	85.17	00:33:44			91.75	466	-347	120	814	155.52	-252
205	Ileyland	4	83.76	00:34:46			84.01	12	-612	-133	624	118.53	-207
206.7	Farington	4	79.85	00:36:01			81.76	222	-356	28	578	97.51	-427
209	Preston	3	28.66	00:38:22			58.79	-2826	-3115	-2049	290	67.47	-404
210.35	Oxheys Box	2798	54.90	00:40:19			41.51	2209	2117	1552	91	90.00	316
213.75	Barton	3124	83.04	00:43:15			69.73	2987	2536	1971	451	102.08	1486
216.45	Brock Box	1491	90.46	00:45:05			88.40	2382	1631	1476	751	81.85	-705
218.5	Garstang	2183	89.35	00:46:27			89.69	1856	1094	1111	762	86.90	2145
224.25	Bay Horse	2195	91.46	00:50:17			90.15	2181	1421	1344	760	100.22	2278
228.9	Lancaster#1	4	78.65	00:53:29			86.96	865	156	429	709	98.05	-11306
230	Lancaster	2966	83.33	00:54:18			80.92	410	-172	150	582	46.52	-113
233.1	Hest Bank	1849	92.29	00:56:24			88.75	2324	1619	1470	705	18.41	-582
236.25	Carnforth	1838	89.88	00:58:29			90.72	1850	1070	1104	780	27.78	1775
238.5	Yealand	2923	86.30	01:00:00			88.78	2537	1802	1599	735	79.02	232
239.5	mp 9.5	2899	84.65	01:00:42			85.88	2957	2260	1895	697	112.68	157
240.75	Burton	2974	92.14	01:01:33			88.51	2948	2197	1873	752	90.15	-293
241.7	Burton#2	1848	91.97	01:02:10			92.18	1929	1108	1144	821	89.25	-5570
243.55	Milnthorpe	2952	89.34	01:03:23			91.15	2054	1274	1250	780	109.09	492
245.45	Hincaster Jn Box	2923	86.40	01:04:41			87.80	2916	2195	1866	721	167.08	173
249.1	Oxenholme	2948	81.55	01:07:16			84.62	2927	2244	1873	683	284.80	164
252.55	Hay Fell	2957	76.51	01:09:54			78.86	2978	2386	1928	591	424.29	131
254.3	Lambrigg crossing Box	2922	74.24	01:11:17			75.60	2941	2396	1912	545	498.63	124
256.15	Grayrigg	2961	72.51	01:12:49			72.53	2962	2461	1936	502	581.66	118
257.9	Low Gill	2661	85.33	01:14:07			80.37	3058	2443	1979	615	564.47	-537
260.05	Dillicar	2721	92.54	01:15:35			88.44	2698	1946	1697	753	551.66	-886
262.1	Tebay	3329	93.49	01:16:53			94.12	2938	2084	1847	854	573.88	487
265.1	Scout Green Box	3149	78.59	01:18:57			87.27	3235	2506	2079	729	747.42	91
266.55	Shap Wells	3004	70.28	01:20:08			73.74	3026	2502	1973	524	849.50	75
267.3	top1/75	2927	66.55	01:20:47			69.30	3025	2563	1988	462	902.30	75
267.55	Shap Summit Box	2962	68.93	01:21:00			67.75	2958	2515	1945	443	902.30	1000000
267.7	Shap Summit sign	2990	70.27	01:21:08			69.60	2994	2529	1966	464	902.30	1500000
269.7	Shap	3308	91.61	01:22:36			81.49	3166	2532	2050	633	843.07	-178
272.9	Thrimby Grange	4	80.87	01:24:44			90.20	-1164	-1951	-1019	787	727.15	-146
277.95	Eden Valley Jn	3	94.40	01:28:03			91.21	520	-200	218	720	513.83	-125
281.25	Penrith	4	73.77	01:30:22			85.54	-815	-1466	-719	651	479.95	-514
286.15	Plumpton	1675	92.72	01:33:47			86.07	2290	1657	1474	633	423.75	-460
288.4	Calthwaite	4	91.32	01:35:15			91.93	773	-29	344	803	382.51	-288
291.8	Southwaite	4	86.99	01:37:32			89.52	17	-709	-155	727	293.97	-203
294.3	Wreay	4	83.77	01:39:18			84.83	3	-626	-137	629	234.16	-221
297.7	Carlisle #13	-6000	74.38	01:41:36			88.83	-1172	-1871	-975	699	98.28	-132
299.1	Carlisle	3	21.68	01:43:43			39.51	-3309	-3421	-2336	112	68.53	-248
Evaporation		Coal		HP									
galls	per mile	24.04	lbs/mile	16.47	av ihp	1753							
lbs	per hour	19625	lbs/hr	2849	av dhp	1115							
lbs	per dhp-hr	17.60	lbs total	4925									
gallons total		3392	lbs/dhp-hr	2.56	Av Speed	81.6							
Cylinder steam			lbs/ihp-hr	1.63									
lbs	per ihp-hr	11.78	lbs steam/lb coal	6.89									
tonnes	per 100 mile	10.94	tonnes/100 mile	0.75	av ikW	1308							
tonnes	per hour	8.90	tonne/hr	1.30	av dbkW	832							
kg	per dbkW-hr	10.72	Tonnes total	2.23									
tonnes	Total	15.44	kg/dbkW-hr	1.56									
Cylinder steam			kg/ikW-hr	0.99									
kg	per ikW-hr	7.18	kg steam/kg coal	7.21									

Engine 5at1 aero 0.15552 R3 9.6 ref wind mph Premium charter, 110 mph limit													
Tare wt		350	diam	74	R4	0 DAW	60	3.5					
gross wt		375	R0	2.4	R5	0.00033 cyl factor	1	Area, sq ft					
Engine wt		160	R1	0.0384615	W5	0 Non coupl	6	96					
total wt		535	R2	0.0009091	W6	0 V denom	25.00	0					
Distance	Place	inst ihp	inst speed	time	log speed	setting	av speed	av ihp	av edhp	dhp	LR	height	av grad
158	Crewe	2	0.01	00:00:00			0					165.05	
160.85	Coppenhall Jn Box	3090	71.64	00:04:12			40.67	1960	1817	1339	143	165.07	890625
162.9	Minshull Vernon Box	2987	85.12	00:05:46			78.47	2997	2431	1957	566	157.37	-1405
165.5	Winsford	3095	96.53	00:07:30			90.65	3047	2254	1933	792	133.49	-575
166.8	Winsford Jn Box	3118	99.90	00:08:17			98.19	3110	2165	1944	945	125.79	-891
169.85	Hartford	3142	104.10	00:10:03			103.42	3138	2074	1938	1064	117.05	-1841
172.5	Acton bridge	3155	107.52	00:11:33			105.95	3150	2026	1933	1125	103.65	-1045
174.3	Weaver Jn Box	3165	110.51	00:12:33			109.33	3163	1954	1924	1209	82.85	-457
179.25	Moore	3	106.26	00:15:14			110.57	2097	855	1170	1242	38.22	-586
180.25	Acton Grange Box	3	96.10	00:15:49			101.44	31	-966	-215	998	71.46	159
182.15	Warrington	4	91.68	00:17:03			92.60	2	-768	-168	770	33.27	-263
185.65	Winwick Jn Box	2259	87.78	00:19:27			87.63	1554	877	940	677	44.52	1642
187.2	Golborne Jn Box	2233	84.17	00:20:32			85.39	2224	1556	1397	669	82.83	214
189.1	Golborne	2999	85.96	00:21:54			84.23	2947	2284	1898	663	119.92	270
191.3	Bamfurlong	4	91.12	00:23:22			89.69	2374	1601	1466	773	105.24	-791
192.55	Spring's Branch Jn Box	4	84.10	00:24:13			87.70	46	-680	-150	726	107.87	2513
193.9	Wigan	3028	76.16	00:25:14			79.55	572	28	280	544	130.14	320
196.15	Boar's Head Jn Box	3012	75.41	00:26:59			77.59	2931	2406	1933	525	210.10	149
197.15	Standish Jn Box	3072	79.19	00:27:45			77.35	3201	2632	2089	569	227.78	299
199.7	Coppull	3037	89.79	00:29:36			82.52	3035	2381	1952	654	236.32	1577
203.55	Euxton Jn Box	3151	106.35	00:31:53			101.25	3129	2116	1943	1012	155.52	-252
205	leyland	3	103.11	00:32:43			104.35	63	-1023	-222	1086	118.53	-207
206.7	Farington	-6000	96.94	00:33:44			100.31	93	-839	-139	932	97.51	-427
209	Preston	4	29.99	00:35:59			61.49	-4638	-4952	-3323	314	67.47	-404
210.35	Oxheys Box	2814	55.38	00:37:54			42.41	2211	2150	1578	61	90.00	316
213.75	Barton	3127	83.20	00:40:48			70.03	2994	2539	1975	455	102.08	1486
216.45	Brock Box	2909	94.67	00:42:37			89.42	2981	2212	1892	769	81.85	-705
218.5	Garstang	2928	97.28	00:43:54			96.32	2924	2020	1824	904	86.90	2145
224.25	Bay Horse	2954	101.96	00:47:22			99.56	2941	1969	1821	972	100.22	2278
228.9	Lancaster#1	4	88.02	00:50:14			97.13	1076	156	525	920	98.05	-11306
230	Lancaster	4	90.18	00:50:58			89.61	26	-708	-153	734	46.52	-113
233.1	Hest Bank	2940	99.39	00:52:57			93.91	2718	1922	1731	796	18.41	-582
236.25	Carnforth	2951	101.39	00:54:50			100.21	2941	1959	1821	983	27.78	1775
238.5	Yealand	3012	96.70	00:56:11			100.16	2963	1977	1834	986	79.02	232
239.5	mp 9.5	2989	93.88	00:56:49			95.83	3067	2173	1926	894	112.68	157
240.75	Burton	3027	99.34	00:57:35			96.69	3017	2103	1885	914	90.15	-293
241.7	Burton#2	3035	100.67	00:58:09			100.08	3034	2048	1883	986	89.25	-5570
243.55	Milnthorpe	3033	99.98	00:59:15			101.20	3038	2026	1880	1011	109.09	492
245.45	Hincaster Jn Box	2999	94.88	01:00:25			97.32	3010	2084	1879	926	167.08	173
249.1	Oxenholme	3011	86.85	01:02:49			91.32	2991	2186	1891	805	284.80	164
252.55	Hay Fell	3005	79.76	01:05:19			83.05	3032	2374	1951	658	424.29	131
254.3	Lambrigg crossing Box	2961	76.73	01:06:39			78.45	2983	2396	1932	587	498.63	124
256.15	Grayrigg	2994	74.35	01:08:08			74.70	2999	2467	1955	532	581.66	118
257.9	Low Gill	2839	86.54	01:09:25			81.84	3083	2444	1991	639	564.47	-537
260.05	Dillicar	2905	94.20	01:10:51			89.90	2877	2098	1816	780	551.66	-886
262.1	Tebay	3342	94.90	01:12:08			95.81	3000	2108	1880	892	573.88	487
265.1	Scout Green Box	3165	79.65	01:14:11			88.47	3249	2497	2084	752	747.42	91
266.55	Shap Wells	3021	71.19	01:15:20			74.72	3042	2504	1981	538	849.50	75
267.3	top1/75	2945	67.38	01:15:59			70.18	3044	2571	1999	473	902.30	75
267.55	Shap Summit Box	2978	69.70	01:16:12			68.55	2975	2521	1954	453	902.30	1000000
267.7	Shap Summit sign	3004	71.00	01:16:20			70.35	3008	2534	1974	474	902.30	1500000
269.7	Shap	3312	92.01	01:17:47			82.04	3174	2532	2054	642	843.07	-178
272.9	Thrimby Grange	4	81.28	01:19:55			90.57	-1163	-1958	-1020	794	727.15	-146
277.95	Eden Valley Jn	3	102.49	01:23:01			97.37	1394	551	804	843	513.83	-125
281.25	Penrith	4	82.31	01:25:08			93.68	-800	-1618	-753	819	479.95	-514
286.15	Plumpton	3044	102.25	01:28:18			92.89	2888	2128	1866	759	423.75	-460
288.4	Calthwaite	3	108.17	01:29:35			104.65	2859	1771	1740	1088	382.51	-288
291.8	Southwaite	3	100.70	01:31:32			104.66	55	-1033	-225	1088	293.97	-203
294.3	Wreay	3	95.52	01:33:05			97.60	1	-871	-190	873	234.16	-221
297.7	Carlisle #13	-6000	77.84	01:35:13			95.60	-2026	-2856	-1601	830	98.28	-132
299.1	Carlisle	3	19.67	01:37:07			43.91	-4075	-4198	-2867	123	68.53	-248
Evaporation		Coal			HP								
galls	per mile	27.13	lbs/mile	19.44	av ihp	2065							
lbs	per hour	23652	lbs/hr	3591	av dhp	1348							
lbs	per dhp-hr	17.55	lbs total	5813									
gallons total		3829	lbs/dhp-hr	2.66	Av Speed	87.2							
Cylinder steam			lbs/ihp-hr	1.74									
lbs	per ihp-hr	12.06	lbs steam/lb coal	6.59									
tonnes	per 100 mile	12.35	tonnes/100 mile	0.88	av ikW	1541							
tonnes	per hour	10.73	tonne/hr	1.63	av dbkW	1006							
kg	per dbkW-hr	10.69	Tonnes total	2.64									
tonnes	Total	17.42	kg/dbkW-hr	1.62									
Cylinder steam			kg/ikW-hr	1.06									
kg	per ikW-hr	7.34	kg steam/kg coal	7.21									

Engine	5at1	aero	0.15552 R3	9.6 ref	wind mph	Fan trip 90mph limit							
Tare wt	460	diam	74 R4	0 DAW	60	3.5							
gross wt	500	R0	2.4 R5	0.00033 cyl factor	1	Area, sq ft							
Engine wt	160	R1	0.038462 W5	0 Non coupl	6	96							
total wt	660	R2	0.000909 W6	0 V denom	25.00	0							
Distance	Place	inst ihp	inst speed	time	log speed	setting	av speed	av ihp	av edhp	dhp	LR	height	av grad
158	Crewe	2	0.01	00:00:00			0					165.05	
160.85	Coppenhall Jn Box	3104	65.69	00:04:41			36.50	1843	1724	1363	119	165.07	890625
162.9	Minshull Vernon Box	3062	78.63	00:06:24			72.08	2956	2483	2103	474	157.37	-1405
165.5	Winsford	3037	89.70	00:08:15			84.03	3018	2344	2091	674	133.49	-575
166.8	Winsford Jn Box	2103	90.52	00:09:07			90.14	2191	1408	1438	783	125.79	-891
169.85	Hartford	2101	89.96	00:11:07			91.68	2110	1314	1382	796	117.05	-1841
172.5	Acton bridge	2105	90.76	00:12:52			90.43	2103	1332	1383	770	103.65	-1045
174.3	Weaver Jn Box	2115	92.72	00:14:02			92.08	2112	1310	1383	802	82.85	-457
179.25	Moore	1831	88.38	00:17:21			89.62	1278	523	762	755	38.22	-586
180.25	Acton Grange Box	3073	84.97	00:18:03			86.84	2866	2178	1990	688	71.46	159
182.15	Warrington	4	89.21	00:19:21			87.52	1761	1028	1125	732	33.27	-263
185.65	Winwick Jn Box	2229	83.79	00:21:50			84.70	1576	915	1014	661	44.52	1642
187.2	Golborne Jn Box	2930	80.15	00:22:59			80.99	2446	1849	1690	597	82.83	214
189.1	Golborne	2930	80.29	00:24:25			79.36	2909	2320	2033	589	119.92	270
191.3	Bamfurlong	3026	88.52	00:25:59			83.95	2976	2304	2060	672	105.24	-791
192.55	Spring's Branch Jn Box	4	83.82	00:26:51			87.08	757	30	365	727	107.87	2513
193.9	Wigan	3019	75.56	00:27:52			79.34	585	30	298	555	130.14	320
196.15	Boar's Head Jn Box	2935	70.95	00:29:40			74.98	2873	2385	2049	488	210.10	149
197.15	Standish Jn Box	2984	73.66	00:30:30			72.34	3140	2642	2225	498	227.78	299
199.7	Coppull	2961	82.91	00:32:31			76.02	2939	2385	2057	554	236.32	1577
203.55	Euxton Jn Box	3032	89.18	00:35:06			89.09	1527	765	940	762	155.52	-252
205	Ieyland	4	90.14	00:36:04			90.24	859	104	451	755	118.53	-207
206.7	Farington	4	85.97	00:37:14			88.01	311	-390	55	701	97.51	-427
209	Preston	3	28.11	00:39:34			58.97	-4245	-4538	-3294	293	67.47	-404
210.35	Oxheys Box	2627	49.61	00:41:41			38.28	2053	2010	1585	44	90.00	316
213.75	Barton	3013	75.54	00:44:55			63.00	2840	2470	2037	370	102.08	1486
216.45	Brock Box	3013	87.35	00:46:54			81.76	2964	2329	2060	634	81.85	-705
218.5	Garstang	2870	89.73	00:48:17			88.96	2899	2139	1980	760	86.90	2145
224.25	Bay Horse	2544	91.74	00:52:05			90.96	2672	1876	1800	796	100.22	2278
228.9	Lancaster#1	4	83.39	00:55:12			89.57	1484	718	909	766	98.05	-11306
230	Lancaster	4	86.23	00:55:58			85.35	35	-632	-152	667	46.52	-113
233.1	Hest Bank	2372	91.97	00:58:04			88.53	2347	1653	1608	694	18.41	-582
236.25	Carnforth	2363	90.65	01:00:09			90.99	2365	1579	1575	786	27.78	1775
238.5	Yealand	2911	85.11	01:01:40			88.95	2707	1959	1844	748	79.02	232
239.5	mp 9.5	2870	82.13	01:02:23			83.98	2946	2278	2040	668	112.68	157
240.75	Burton	2942	88.55	01:03:15			85.43	2917	2220	2009	697	90.15	-293
241.7	Burton#2	2959	90.20	01:03:53			89.46	2954	2186	2020	768	89.25	-5570
243.55	Milnthorpe	2956	89.69	01:05:07			90.93	2965	2168	2021	797	109.09	492
245.45	Hincaster Jn Box	2984	84.40	01:06:25			86.89	2972	2249	2044	723	167.08	173
249.1	Oxenholme	3031	76.34	01:09:08			80.84	2984	2362	2077	623	284.80	164
252.55	Hay Fell	2892	68.47	01:12:00			72.16	2954	2456	2083	498	424.29	131
254.3	Lambrigg crossing Box	2974	65.55	01:13:34			67.19	2946	2511	2093	435	498.63	124
256.15	Grayrigg	2907	63.12	01:15:19			63.35	2918	2527	2082	391	581.66	118
257.9	Low Gill	2882	76.89	01:16:47			71.63	2993	2504	2116	489	564.47	-537
260.05	Dillicar	2997	85.91	01:18:23			80.89	2940	2317	2043	624	551.66	-886
262.1	Tebay	3258	86.77	01:19:47			87.82	3060	2321	2107	739	573.88	487
265.1	Scout Green Box	2971	68.49	01:22:03			78.92	3117	2522	2183	595	747.42	91
266.55	Shap Wells	3007	58.81	01:23:26			62.92	2938	2548	2096	390	849.50	75
267.3	top1/75	2888	54.87	01:24:13			57.56	2997	2665	2156	332	902.30	75
267.55	Shap Summit Box	2955	57.89	01:24:29			56.39	2939	2617	2114	322	902.30	1000000
267.7	Shap Summit sign	3005	59.57	01:24:38			58.74	3006	2662	2160	343	902.30	1500000
269.7	Shap	3205	82.94	01:26:19			71.92	3042	2547	2150	495	843.07	-178
272.9	Thrimby Grange	4	81.37	01:28:35			84.54	-469	-1153	-554	684	727.15	-146
277.95	Eden Valley Jn	3	94.19	01:31:55			90.63	502	-221	208	723	513.83	-125
281.25	Penrith	4	78.88	01:34:11			87.63	-448	-1135	-513	687	479.95	-514
286.15	Plumpton	2277	90.54	01:37:35			86.67	2246	1595	1546	651	423.75	-460
288.4	Calthwaite	4	90.32	01:39:04			90.52	1039	264	574	775	382.51	-288
291.8	Southwaite	4	86.71	01:41:22			88.90	23	-698	-170	721	293.97	-203
294.3	Wreay	4	83.91	01:43:08			84.77	3	-625	-152	628	234.16	-221
297.7	Carlisle #13	-6000	70.95	01:45:30			85.93	-1916	-2563	-1610	647	98.28	-132
299.1	Carlisle	3	18.27	01:47:41			38.71	-3760	-3852	-2855	93	68.53	-248
Evaporation		Coal		HP									
galls	per mile	28.00	lbs/mile	19.62	av ihp	1970							
lbs	per hour	22014	lbs/hr	3270	av dhp	1350							
lbs	per dhp-hr	16.31	lbs total	5869									
gallons total		3951	lbs/dhp-hr	2.42	Av Speed	78.6							
Cylinder steam			lbs/ihp-hr	1.66									
lbs	per ihp-hr	11.76	lbs steam/lb coal	6.73									
tonnes	per 100 mile	12.74	tonnes/100 mile	0.89	av ikW	1470							
tonnes	per hour	9.99	tonne/hr	1.49	av dbkW	1008							
kg	per dbkW-hr	9.93	Tonnes total	2.66									
tonnes	Total	17.98	kg/dbkW-hr	1.48									
Cylinder steam			kg/ikW-hr	1.01									
kg	per ikW-hr	7.16	kg steam/kg coal	7.21									

Distance	Place	inst	ihp	speed	time	log speed	setting	av speed	av ihp	av edhp	dhp	LR	height	av grad	
158	Crewe	2		0.01	00:00:00			0					165.05		
160.85	Coppenhall Jn Box	3104		65.69	00:04:41			36.50	1843	1724	1363	119	165.07	890625	
162.9	Minshull Vernon Box	3062		78.63	00:06:24			72.08	2956	2483	2103	474	157.37	-1405	
165.5	Winsford	3037		89.70	00:08:15			84.03	3018	2344	2091	674	133.49	-575	
166.8	Winsford Jn Box	3066		92.83	00:09:06			91.24	3056	2252	2088	804	125.79	-891	
169.85	Hartford	3098		96.62	00:11:00			96.22	3094	2190	2092	904	117.05	-1841	
172.5	Acton bridge	3119		99.90	00:12:37			98.39	3110	2159	2093	950	103.65	-1045	
174.3	Weaver Jn Box	3047		102.70	00:13:41			101.64	3049	2026	2029	1023	82.85	-457	
179.25	Moore	3		101.54	00:16:33			103.38	2357	1296	1497	1061	38.22	-586	
180.25	Acton Grange Box	4		91.44	00:17:11			96.77	35	-866	-217	901	71.46	159	
182.15	Warrington	4		87.79	00:18:28			88.27	2	-687	-167	689	33.27	-263	
185.65	Winwick Jn Box	2221		82.77	00:20:59			83.44	1534	928	1013	605	44.52	1642	
187.2	Golborne Jn Box	2918		79.30	00:22:09			80.04	2435	1854	1686	581	82.83	214	
189.1	Golborne	2922		79.64	00:23:36			78.60	2899	2321	2028	578	119.92	270	
191.3	Bamfurlong	3022		88.08	00:25:11			83.41	2969	2307	2057	663	105.24	-791	
192.55	Spring's Branch Jn Box	4		83.42	00:26:03			86.67	756	37	366	719	107.87	2513	
193.9	Wigan	3013		75.16	00:27:04			78.93	584	35	299	549	130.14	320	
196.15	Boar's Head Jn Box	2929		70.65	00:28:53			74.65	2868	2384	2047	483	210.10	149	
197.15	Standish Jn Box	2980		73.41	00:29:43			72.07	3134	2640	2222	494	227.78	299	
199.7	Coppull	2959		82.76	00:31:44			75.82	2936	2385	2056	551	236.32	1577	
203.55	Euxton Jn Box	3115		99.32	00:34:11			94.36	3081	2218	2093	863	155.52	-252	
205	Ieyland	3		96.89	00:35:04			97.71	63	-873	-212	936	118.53	-207	
206.7	Farington	-6000		91.54	00:36:09			94.48	138	-671	-93	808	97.51	-427	
209	Preston	4		31.72	00:38:23			61.55	-4949	-5265	-3831	316	67.47	-404	
210.35	Oxheys Box	2680		51.13	00:40:22			40.87	2154	2109	1668	45	90.00	316	
213.75	Barton	3022		76.08	00:43:34			63.97	2866	2484	2053	382	102.08	1486	
216.45	Brock Box	3017		87.66	00:45:32			82.17	2970	2328	2063	642	81.85	-705	
218.5	Garstang	2872		89.96	00:46:55			89.23	2902	2136	1981	765	86.90	2145	
224.25	Bay Horse	2905		93.98	00:50:40			91.83	2889	2076	1960	813	100.22	2278	
228.9	Lancaster#1	4		85.67	00:53:42			92.16	1602	783	984	819	98.05	-11306	
230	Lancaster	4		88.25	00:54:27			87.48	37	-669	-161	706	46.52	-113	
233.1	Hest Bank	3002		95.55	00:56:30			90.94	2744	2006	1898	739	18.41	-582	
236.25	Carnforth	3008		96.40	00:58:28			95.74	2999	2112	2028	888	27.78	1775	
238.5	Yealand	2964		90.50	00:59:54			94.71	2953	2081	1994	872	79.02	232	
239.5	mp 9.5	2926		87.01	01:00:34			89.19	3013	2249	2065	764	112.68	157	
240.75	Burton	2977		92.42	01:01:24			89.79	2961	2185	2023	777	90.15	-293	
241.7	Burton#2	2988		93.57	01:02:01			93.07	2985	2147	2027	838	89.25	-5570	
243.55	Milnthorpe	2980		92.37	01:03:12			93.91	2989	2134	2026	855	109.09	492	
245.45	Hincaster Jn Box	3009		86.61	01:04:28			89.33	2996	2229	2051	768	167.08	173	
249.1	Oxenholme	3054		77.79	01:07:07			82.64	3007	2355	2087	652	284.80	164	
252.55	Hay Fell	2910		69.41	01:09:57			73.33	2974	2460	2094	514	424.29	131	
254.3	Lambrigg crossing Box	2990		66.27	01:11:29			68.01	2963	2518	2103	445	498.63	124	
256.15	Grayrigg	2920		63.66	01:13:13			63.99	2933	2534	2091	398	581.66	118	
257.9	Low Gill	2886		77.22	01:14:41			72.05	3002	2506	2121	495	564.47	-537	
260.05	Dillicar	3000		86.13	01:16:16			81.16	2944	2316	2045	628	551.66	-886	
262.1	Tebay	3260		86.93	01:17:40			88.00	3062	2320	2108	743	573.88	487	
265.1	Scout Green Box	2973		68.62	01:19:57			79.06	3119	2522	2184	597	747.42	91	
266.55	Shap Wells	3010		58.92	01:21:20			63.05	2941	2550	2097	391	849.50	75	
267.3	top1/75	2891		54.97	01:22:06			57.67	3000	2667	2158	333	902.30	75	
267.55	Shap Summit Box	2958		57.99	01:22:22			56.49	2942	2619	2116	323	902.30	1000000	
267.7	Shap Summit sign	3008		59.66	01:22:31			58.83	3009	2664	2162	344	902.30	1500000	
269.7	Shap	3206		82.98	01:24:11			71.99	3043	2547	2151	496	843.07	-178	
272.9	Thrimby Grange	4		81.41	01:26:28			84.58	-469	-1154	-554	685	727.15	-146	
277.95	Eden Valley Jn	3		101.02	01:29:37			95.82	1400	575	865	825	513.83	-125	
281.25	Penrith	4		82.80	01:31:45			93.15	-798	-1607	-816	808	479.95	-514	
286.15	Plumpton	3020		98.11	01:34:59			90.72	2876	2158	2011	718	423.75	-460	
288.4	Calthwaite	3		103.34	01:36:20			100.03	2837	1856	1881	982	382.51	-288	
291.8	Southwaite	3		97.27	01:38:22			100.59	56	-937	-228	993	293.97	-203	
294.3	Wreay	4		92.97	01:39:57			94.61	2	-809	-197	811	234.16	-221	
297.7	Carlisle #13	-6000		71.63	01:42:13			89.96	-2945	-3664	-2407	720	98.28	-132	
299.1	Carlisle	3		23.93	01:44:09			43.41	-4071	-4172	-3082	101	68.53	-248	
Evaporation				Coal		HP									
galls	per mile	29.88		lbs/mile	21.38	av ihp	2138								
lbs	per hour	24288		lbs/hr	3684	av dhp	1491								
lbs	per dhp-hr	16.29		lbs total	6395										
gallons total		4216		lbs/dhp-hr	2.47	Av Speed	81.3								
Cylinder steam				lbs/ihp-hr	1.72										
lbs	per ihp-hr	11.96		lbs steam/lb coal	6.59										
tonnes	per 100 mile	13.60		tonnes/100 mile	0.97	av ikW	1596								
tonnes	per hour	11.02		tonne/hr	1.67	av dbkW	1113								
kg	per dbkW-hr	9.92		Tonnes total	2.90										
tonnes	Total	19.18		kg/dbkW-hr	1.50										
Cylinder steam				kg/ikW-hr	1.05										
kg	per ikW-hr	7.28		kg steam/kg coal	7.21										

Engine		5at1	aero	0.16 R3	9.60 ref	wind mph	Premium charter, 110 mph limit							
Tare wt	350	diam	74.00 R4	0.00 DAW	60	3.5								
gross wt	375	R0	2.40 R5	0.00 cyl factor	1	Area, sq ft								
Engine wt	160	R1	0.05 W5	0.00 Non coupl	6	96								
total wt	535	R2	0.00091 W6	0.00 V denom	25.00	0								
miles	Place	inst ihp	inst speed	est time	mp/cut of	log speed	total time	av ihp	av edhp	av dhp	LR	height	av grad	
0	King's Cross	0	0.01	00:00:00			0					48.67		
1.4	Holloway S Dn	2718	47.46	00:02:54			28.98	1910	1828	1320	83	102.95	136	
2.5	Finsbury Park	2869	61.75	00:04:07			53.95	2906	2624	1961	282	121.32	316	
3.4	Harringay	3036	68.86	00:04:57			65.42	2972	2553	1972	419	131.99	445	
4.05	Hornsey	2930	75.38	00:05:29			71.98	2926	2423	1923	502	122.99	-381	
4.98	Wood Green	3003	79.77	00:06:12			78.57	2984	2388	1947	596	127.33	1133	
6.44	New Southgate	3015	80.57	00:07:18			80.19	3014	2392	1962	622	165.87	200	
8.38	Oakleigh Park	3025	81.34	00:08:44			80.97	3021	2385	1964	636	217.09	200	
9.15	New Barnet	3028	81.58	00:09:18			81.46	3025	2381	1965	644	237.41	200	
10.58	Hadley Wood	3033	81.95	00:10:21			81.77	3032	2383	1970	649	275.17	200	
12.71	Potter's Bar	3039	82.45	00:11:54			82.17	3036	2380	1971	655	330.87	202	
14.46	Brookman's Pa	2980	92.85	00:13:05			88.33	3040	2277	1953	763	300.57	-305	
17.7	Hatfield	3050	103.59	00:15:04			97.99	3024	2066	1904	958	254.05	-368	
18.4	18.4	3057	105.33	00:15:29			104.32	3057	1952	1898	1104	242.93	-332	
20.31	Welwyn	3036	100.54	00:16:35			103.23	3050	1971	1898	1078	286.00	234	
21	21	3025	98.69	00:17:00			99.59	3008	2014	1886	994	304.21	200	
22	Welwyn N	3034	100.44	00:17:36			99.88	3033	2034	1902	1000	298.94	-1001	
23.49	Woolmer Greer	3015	97.18	00:18:30			98.87	3057	2080	1924	977	335.18	217	
25.03	Knebworth	3035	100.57	00:19:27			98.61	2991	2019	1878	972	323.18	-678	
26.7	Langley Jn	3059	105.68	00:20:25			103.39	3051	1970	1899	1081	291.50	-278	
28.58	Stevenage	3052	104.10	00:21:30			104.38	3052	1946	1894	1106	308.59	581	
31.9	Hitchin	1523	110.13	00:23:20			108.54	2347	1136	1379	1211	220.94	-200	
35.7	Three Counties	2439	110.39	00:25:24			110.02	1940	705	1096	1236	144.14	-261	
37.04	Arlesey	2439	110.08	00:26:08			110.41	2423	1185	1438	1238	129.62	-487	
38.5	38.5	2433	106.62	00:26:56			108.01	2436	1252	1453	1185	141.62	642	
41.15	Biggleswade	2893	109.97	00:28:24			108.43	2729	1534	1656	1196	98.86	-327	
43.2	43.2	2893	110.15	00:29:31			110.14	2890	1644	1756	1246	85.90	-835	
44.13	Sandy	2890	108.77	00:30:02			109.44	2889	1658	1757	1231	92.15	786	
44.5	44.5	2889	108.26	00:30:14			108.51	2887	1680	1760	1207	94.64	786	
45.8	45.8	2894	110.73	00:30:57			109.53	2895	1661	1760	1233	68.64	-264	
47.51	Tempsford	2982	109.53	00:31:53			110.10	2897	1648	1758	1249	68.64	10058824	
49.6	49.6	2972	106.00	00:33:03			108.15	2972	1774	1821	1198	91.04	493	
50.5	50.5	2978	108.15	00:33:33			106.94	2978	1810	1831	1168	73.44	-270	
51.73	St Neots	2971	105.84	00:34:14			107.18	2972	1798	1825	1174	89.52	404	
54	54	2984	110.41	00:35:29			108.64	2981	1769	1824	1212	47.56	-286	
55.95	Offord	2984	110.03	00:36:33			110.69	2984	1718	1816	1266	41.11	-1595	
58.88	Huntingdon	2976	107.39	00:38:10			108.10	2976	1778	1823	1198	54.92	1120	
62	MP 62	2935	98.47	00:40:00			102.29	2947	1893	1832	1054	131.48	215	
63.53	Abbotts Ripton	2961	103.64	00:40:55			100.61	2950	1936	1842	1015	101.65	-271	
67.35	Conington S	2894	110.47	00:43:02			108.63	2405	1194	1421	1211	4.76	-208	
69.35	Holme	2891	109.13	00:44:07			109.78	2882	1651	1757	1230	4.76	10000000	
72.6	Yaxley	2875	103.95	00:45:56			107.55	2882	1700	1762	1182	34.36	580	
75	Fletton Junction	2878	105.14	00:47:19			104.20	2876	1778	1774	1098	25.79	-1478	
76.35	Peterborough	3	98.50	00:48:06			102.31	560	-493	160	1053	27.02	5776	
77.85	New England N	3020	98.16	00:49:02			97.49	2869	1972	1832	898	41.25	557	
79.5	Werrington J	3041	101.79	00:50:01			100.49	3034	2023	1902	1011	26.05	-573	
81.9	Helpston	3045	102.32	00:51:25			102.45	3045	1986	1899	1059	33.45	1713	
84.84	Tallington	3045	102.45	00:53:09			101.87	3043	1997	1900	1046	47.93	1072	
87.2	87.2	3040	101.41	00:54:32			101.84	3040	1994	1898	1045	67.94	623	
88.65	Essendine	3025	98.80	00:55:25			100.06	3029	2025	1898	1004	96.94	264	
89.8	89.8	3031	99.91	00:56:06			99.16	3028	2044	1902	984	98.10	5223	
92.23	Little Bytham	3006	95.84	00:57:36			98.10	3010	2049	1894	960	148.17	256	
95.5	95.5	3042	89.96	00:59:43			92.67	2986	2140	1899	846	234.50	200	
97.1	Corby Glen	3060	91.87	01:00:46			91.07	3052	2238	1952	814	249.71	555	
100.1	Stoke	3012	86.94	01:02:47			89.22	3031	2251	1943	780	338.70	178	
101.3	High Dyke	3082	94.95	01:03:34			91.06	3057	2242	1955	815	307.02	-200	
102.05	Great Ponton	3112	99.02	01:04:02			97.02	3106	2169	1965	937	287.22	-200	
105.45	Grantham	3	96.94	01:06:03			101.13	30	-24	475	54	209.34	-231	
Evaporation		Coal		HP										
galls	per mile	31.00	lbs/mile	46.31	av ihp	2761								
lbs	per hour	29691	lbs/hr	4436	av dhp	1675								
lbs	per dhp-hr	17.72	lbs total	4883										
Gallons	Total	3269	lbs/dhp-hr	2.65	Av Speed	95.8								
Cylinder steam			lbs/ihp-hr	1.61										
lbs	per ihp-hr	11.32	lbs steam/lb coal	6.69										
tonnes	per 100 mile	14.10	tonnes/100 mile	2.10	av ikW	2061								
tonnes	per hour	13.47	tonne/hr	2.02	av dbkW	1250								
kg	per dbkW-hr	10.80	Tonnes total	2.22										
tonnes	Total	14.87	kg/dbkW-hr	1.61										
Cylinder steam			kg/ikW-hr	0.98										
kg	per ikW-hr	6.89	kg steam/kg coal	7.21										

Engine		5at1	aero	0.16 R3	9.60 ref	wind mph	Premium charter, 90 mph limit						
Tare wt		350	diam	74.00 R4	0.00 DAW	60	3.5						
gross wt		375	R0	2.40 R5	0.00 cyl factor	1	Area, sq ft						
Engine wt		160	R1	0.05 W5	0.00 Non couple	6	96						
total wt		535	R2	0.000909 W6	0.00 V denom	25.00	0						
miles	Place	inst ihp	inst speed	est time	mp/cut of	log speed	total time	av ihp	av edhp	av dhp	LR	height	av grad
0	King's Cross	0	0.01	00:00:00			0					48.67	
1.4	Holloway S Dn	2718	47.46	00:02:54			28.98	1910	1828	1320	83	102.95	136
2.5	Finsbury Park	2869	61.75	00:04:07			53.95	2906	2624	1961	282	121.32	316
3.4	Harringay	3036	68.86	00:04:57			65.42	2972	2553	1972	419	131.99	445
4.05	Hornsey	2930	75.38	00:05:29			71.98	2926	2423	1923	502	122.99	-381
4.98	Wood Green	3003	79.77	00:06:12			78.57	2984	2388	1947	596	127.33	1133
6.44	New Southgate	3015	80.57	00:07:18			80.19	3014	2392	1962	622	165.87	200
8.38	Oakleigh Park	3025	81.34	00:08:44			80.97	3021	2385	1964	636	217.09	200
9.15	New Barnet	3028	81.58	00:09:18			81.46	3025	2381	1965	644	237.41	200
10.58	Hadley Wood	3033	81.95	00:10:21			81.77	3032	2383	1970	649	275.17	200
12.71	Potter's Bar	3039	82.45	00:11:54			82.17	3036	2380	1971	655	330.87	202
14.46	Brookman's Park	1668	91.00	00:13:06			88.05	2648	1890	1679	758	300.57	-305
17.7	Hatfield	1679	94.10	00:15:12			91.96	1693	868	1001	825	254.05	-368
18.4		18.4	1681	94.72	00:15:39		94.25	1681	829	997	852	242.93	-332
20.31	Welwyn	2958	89.99	00:16:54			91.92	2452	1647	1546	805	286.00	234
21		21	2949	89.01	00:17:22		89.48	2933	2160	1882	773	304.21	200
22	Welwyn N	2976	92.25	00:18:01			90.99	2970	2158	1895	811	298.94	-1001
23.49	Woolmer Green	2961	90.39	00:19:00			91.40	3004	2184	1917	820	335.18	217
25.03	Knebworth	1489	89.90	00:20:02			89.80	1494	704	864	790	323.18	-678
26.7	Langley Jn	1496	92.05	00:21:08			91.21	1494	707	881	787	291.50	-278
28.58	Stevenage	1477	86.86	00:22:24			88.79	1481	740	880	741	308.59	581
31.9	Hitchin	794	92.09	00:24:36			90.43	1144	372	638	772	220.94	-200
35.7	Three Counties	792	90.28	00:27:05			91.79	800	9	397	791	144.14	-261
37.04	Arlesey	2353	89.09	00:27:59			89.43	1069	330	599	739	129.62	-487
38.5		38.5	2352	88.87	00:28:58		88.61	2322	1593	1476	729	141.62	642
41.15	Biggleswade	1497	92.55	00:30:42			91.73	1725	912	1029	814	98.86	-327
43.2		43.2	1493	91.08	00:32:03		91.87	1499	694	878	805	85.90	-835
44.13	Sandy	1485	88.75	00:32:40			89.90	1486	725	880	762	92.15	786
44.5		44.5	1482	87.88	00:32:55		88.31	1481	749	882	732	94.64	786
45.8		45.8	1490	90.15	00:33:48		89.04	1487	742	884	745	68.64	-264
47.51	Tempsford	2099	89.82	00:34:56			89.70	1928	1170	1191	758	68.64	10058824
49.6		49.6	2083	87.06	00:36:21		88.94	2089	1337	1300	752	91.04	493
50.5		50.5	2100	90.21	00:36:57		88.47	2095	1348	1303	747	73.44	-270
51.73	St Neots	2089	88.07	00:37:47			89.36	2094	1331	1300	763	89.52	404
54		54	1494	91.25	00:39:17		90.28	1522	741	895	781	47.56	-286
55.95	Offord	1487	89.19	00:40:35			90.77	1491	712	880	779	41.11	-1595
58.88	Huntingdon	2878	90.68	00:42:34			88.58	2369	1632	1504	737	54.92	1120
62	MP 62	2843	86.93	00:44:41			88.26	2840	2091	1822	748	131.48	215
63.53	Abbotts Ripton	794	91.37	00:45:43			89.72	1976	1191	1205	785	101.65	-271
67.35	Conington S	1939	92.67	00:48:12			92.21	847	31	417	816	4.76	-208
69.35	Holme	1934	91.62	00:49:30			92.12	1914	1122	1180	792	4.76	10000000
72.6	Yaxley	2863	88.85	00:51:39			90.57	2244	1461	1403	783	34.36	580
75	Fletton Junction	1926	89.97	00:53:16			89.06	1948	1187	1196	761	25.79	-1478
76.35	Peterborough	1924	89.48	00:54:10			89.67	1924	1158	1181	767	27.02	5776
77.85	New England N	1911	87.31	00:55:12			87.61	1912	1184	1180	728	41.25	557
79.5	Werrington J	1924	89.48	00:56:19			88.94	1922	1170	1183	752	26.05	-573
81.9	Helpston	2178	88.49	00:57:56			89.20	2001	1244	1238	757	33.45	1713
84.84	Tallington	2717	91.84	00:59:54			89.63	2671	1905	1704	767	47.93	1072
87.2		87.2	2722	92.47	01:01:26		92.10	2716	1888	1717	828	67.94	623
88.65	Essendine	2707	90.47	01:02:23			91.43	2712	1896	1716	816	96.94	264
89.8		89.8	2720	92.25	01:03:08		91.15	2714	1903	1718	810	98.10	5223
92.23	Little Bytham	2955	89.62	01:04:45			91.00	2832	2025	1802	807	148.17	256
95.5		95.5	3000	85.92	01:06:59		87.61	2937	2191	1886	746	234.50	200
97.1	Corby Glen	3031	88.79	01:08:05			87.53	3017	2271	1941	747	249.71	555
100.1	Stoke	2989	84.89	01:10:09			86.69	3006	2273	1935	733	338.70	178
101.3	High Dyke	791	89.27	01:10:58			88.09	1758	1000	1056	758	307.02	-200
102.05	Great Ponton	792	89.80	01:11:28			89.54	811	51	404	760	287.22	-200
105.45	Grantham	4	85.21	01:13:46			89.03	30	-478	29	508	209.34	-231
Evaporation		Coal		HP									
galls	per mile	26.17	lbs/mile	36.31	av ihp	2080							
lbs	per hour	22444	lbs/hr	3115	av dhp	1259							
lbs	per dhp-hr	17.83	lbs total	3829									
Gallons	Total	2759	lbs/dhp-hr	2.47	Av Speed	85.8							
Cylinder steam			lbs/ihp-hr	1.50									
lbs	per ihp-hr	11.36	lbs steam/lb coal	7.21									
tonnes	per 100 mile	11.91	tonnes/100 mile	1.65	av ikW	1552							
tonnes	per hour	10.18	tonne/hr	1.42	av dbkW	940							
kg	per dbkW-hr	10.86	Tonnes total	1.74									
tonnes	Total	12.56	kg/dbkW-hr	1.51									
Cylinder steam			kg/ikW-hr	0.91									
kg	per ikW-hr	6.92	kg steam/kg coal	7.21									

Engine	5at1	aero	0.16 R3	9.60 ref	wind mph	Fan trip, 110mph limit
Tare wt	460	diam	74.00 R4	0.00 DAW	60	3.5
gross wt	500	R0	2.40 R5	0.00 cyl factor	1	Area, sq ft
Engine wt	160	R1	0.05 W5	0.00 Non coup	6	96
total wt	660	R2	0.00091 W6	0.00 V denom	25.00	0

miles	Place	inst ihp	inst speed	est time	mp/cut of	log speed	total time	av ihp	av edhp	av dhp	LR	height
0	King's Cross	0	0.01	00:00:00			0					48.67
1.4	Holloway S Dn	2598	39.62	00:03:23			24.86	1669	1603	1247	66	102.95
2.5	Finsbury Park	2987	54.96	00:04:48			46.52	2849	2632	2091	217	121.32
3.4	Harringay	2877	61.91	00:05:43			58.73	2932	2586	2114	345	131.99
4.05	Hornsey	3031	68.81	00:06:19			65.15	2969	2553	2127	416	122.99
4.98	Wood Green	2974	72.97	00:07:06			71.96	2968	2466	2108	502	127.33
6.44	New Southgate	2974	72.98	00:08:18			72.97	2974	2458	2109	516	165.87
8.38	Oakleigh Park	2974	72.99	00:09:53			72.99	2974	2458	2109	516	217.09
9.15	New Barnet	2975	73.00	00:10:31			73.00	2974	2458	2109	516	237.41
10.58	Hadley Wood	2975	73.00	00:11:42			73.00	2975	2458	2109	516	275.17
12.71	Potter's Bar	2975	73.11	00:13:27			73.01	2975	2458	2109	516	330.87
14.46	Brookman's Park	3147	84.74	00:14:46			79.58	3069	2456	2160	613	300.57
17.7	Hatfield	3009	96.48	00:16:55			90.58	3100	2294	2141	806	254.05
18.4		18.4	3020	98.21	00:17:21		97.20	3020	2078	2050	942	242.93
20.31	Welwyn	2983	92.73	00:18:32			95.78	3006	2096	2048	910	286.00
21		21	2964	90.60	00:19:00		91.64	2947	2122	2022	826	304.21
22	Welwyn N	2978	92.35	00:19:39			91.82	2976	2148	2043	828	298.94
23.49	Woolmer Green	3031	88.82	00:20:38			90.63	3069	2264	2119	805	335.18
25.03	Knebworth	3065	92.57	00:21:39			90.40	3009	2206	2073	803	323.18
26.7	Langley Jn	3108	98.17	00:22:42			95.65	3091	2184	2113	907	291.50
28.58	Stevenage	3096	96.54	00:23:52			96.81	3096	2163	2110	933	308.59
31.9	Hitchin	3065	107.28	00:25:49			102.33	3079	2021	2070	1058	220.94
35.7	Three Counties	2622	110.58	00:27:53			109.89	2789	1543	1809	1247	144.14
37.04	Arlesey	2621	109.74	00:28:37			110.33	2614	1362	1678	1253	129.62
38.5		38.5	3063	106.60	00:29:26		107.80	3014	1831	1998	1183	141.62
41.15	Biggleswade	3071	109.23	00:30:54			108.28	3069	1865	2031	1203	98.86
43.2		43.2	3069	108.52	00:32:02		108.93	3070	1848	2027	1221	85.90
44.13	Sandy	3064	106.77	00:32:33			107.63	3063	1875	2029	1188	92.15
44.5		44.5	3061	106.12	00:32:45		106.44	3059	1902	2033	1157	94.64
45.8		45.8	3068	108.23	00:33:29		107.20	3067	1891	2035	1176	68.64
47.51	Tempsford	3063	106.55	00:34:26			107.36	3067	1886	2033	1181	68.64
49.6		49.6	3044	102.10	00:35:38		104.71	3048	1933	2034	1114	91.04
50.5		50.5	3052	104.04	00:36:10		102.92	3050	1980	2046	1071	73.44
51.73	St Neots	3039	101.27	00:36:53			102.84	3042	1973	2040	1069	89.52
54		54	3059	105.54	00:38:11		103.93	3053	1958	2043	1095	47.56
55.95	Offord	3056	104.82	00:39:18			105.67	3058	1920	2037	1138	41.11
58.88	Huntingdon	3041	101.65	00:41:00			102.59	3042	1979	2041	1063	54.92
62	MP 62	2973	91.75	00:42:57			96.02	2996	2081	2039	916	131.48
63.53	Abbots Ripton	3013	97.12	00:43:56			93.95	2994	2123	2047	872	101.65
67.35	Conington S	3068	108.14	00:46:09			103.32	3045	1965	2040	1079	4.76
69.35	Holme	3062	106.22	00:47:16			107.15	3062	1887	2032	1175	4.76
72.6	Yaxley	3033	100.14	00:49:09			104.21	3047	1945	2036	1102	34.36
75	Fletton Junction	3037	100.95	00:50:35			100.17	3034	2027	2047	1007	25.79
76.35	Peterborough	3035	100.48	00:51:23			100.67	3035	2017	2046	1018	27.02
77.85	New England N	3022	98.51	00:52:18			98.80	3022	2046	2045	976	41.25
79.5	Werrington J	3034	100.42	00:53:17			99.95	3033	2032	2048	1001	26.05
81.9	Helpston	3027	99.03	00:54:44			100.08	3031	2027	2046	1005	33.45
84.84	Tallington	3016	97.44	00:56:32			97.66	3017	2066	2047	951	47.93
87.2		87.2	3002	95.34	00:58:00		96.28	3006	2085	2045	921	67.94
88.65	Essendine	2976	92.04	00:58:56			93.64	2985	2119	2041	866	96.94
89.8		89.8	3153	92.95	00:59:41		92.25	3007	2170	2065	837	98.10
92.23	Little Bytham	3114	88.70	01:01:17			91.07	3122	2307	2156	815	148.17
95.5		95.5	3040	82.35	01:03:35		85.30	3077	2366	2144	710	234.50
97.1	Corby Glen	3062	84.11	01:04:44			83.39	3054	2377	2134	677	249.71
100.1	Stoke	2983	78.21	01:06:57			80.94	3016	2380	2114	636	338.70
101.3	High Dyke	3090	86.91	01:07:50			82.69	3048	2384	2133	664	307.02
102.05	Great Ponton	3136	91.29	01:08:20			89.14	3123	2345	2165	778	287.22
105.45	Grantham	4	91.07	01:10:30			94.36	30	188	586	-158	209.34

Evaporation		Coal	HP
galls per mile	35.06	lbs/mile	52.69
lbs per hour	31471	lbs/hr	4729
lbs per dhp-hr	16.41	lbs total	5556
Gallons Total	3698	lbs/dhp-hr	2.47
Cylinder steam		lbs/ihp-hr	1.64
lbs per ihp-hr	11.46	lbs steam/lb coal	6.66
tonnes per 100 mile	15.95	tonnes/100 mile	2.39
tonnes per hour	14.28	tonne/hr	2.15
kg per dbkW-hr	10.00	Tonnes total	2.52
tonnes Total	16.82	kg/dbkW-hr	1.50
Cylinder steam		kg/ikW-hr	1.00
kg per ikW-hr	6.98	kg steam/kg coal	7.21
		av ihp	2892
		av dhp	1917
		Av Speed	89.8
		av ikW	2158
		av dbkW	1431

Engine		5at1	aero	0.16 R3	9.60 ref	wind mph	Fan trip 90mph limit						
Tare wt		460	diam	74.00 R4	0.00 DAW	60	3.5						
gross wt		500	R0	2.40 R5	0.00 cyl factor	1	Area, sq ft						
Engine wt		160	R1	0.05 W5	0.00 Non coupl	6	96						
total wt		660	R2	0.00091 W6	0.00 V denom	25.00	0						
miles	Place	inst ihp	inst speed	est time	mp/cut of	log speed	total time	av ihp	av edhp	av dhp	LR	height	av grad
0	King's Cross	0	0.01	00:00:00			0					48.67	
1.4	Holloway S Dn	2598	39.62	00:03:23			24.86	1669	1603	1247	66	102.95	136
2.5	Finsbury Park	2987	54.96	00:04:48			46.52	2849	2632	2091	217	121.32	316
3.4	Harringay	2877	61.91	00:05:43			58.73	2932	2586	2114	345	131.99	445
4.05	Hornsey	3031	68.81	00:06:19			65.15	2969	2553	2127	416	122.99	-381
4.98	Wood Green	2974	72.97	00:07:06			71.96	2968	2466	2108	502	127.33	1133
6.44	New Southgate	2974	72.98	00:08:18			72.97	2974	2458	2109	516	165.87	200
8.38	Oakleigh Park	2974	72.99	00:09:53			72.99	2974	2458	2109	516	217.09	200
9.15	New Barnet	2975	73.00	00:10:31			73.00	2974	2458	2109	516	237.41	200
10.58	Hadley Wood	2975	73.00	00:11:42			73.00	2975	2458	2109	516	275.17	200
12.71	Potter's Bar	2975	73.11	00:13:27			73.01	2975	2458	2109	516	330.87	202
14.46	Brookman's Park	3147	84.74	00:14:46			79.58	3069	2456	2160	613	300.57	-305
17.7	Hatfield	1675	92.63	00:16:56			89.69	2497	1707	1688	789	254.05	-368
18.4		18.4	1675	92.94	00:17:23		92.62	1691	856	1074	835	242.93	-332
20.31	Welwyn	3011	86.79	00:18:40			89.49	2487	1729	1702	758	286.00	234
21		21	2993	85.22	00:19:09		85.98	2973	2264	2072	710	304.21	200
22	Welwyn N	3021	87.95	00:19:50			86.95	3014	2277	2092	737	298.94	-1001
23.49	Woolmer Green	2991	85.15	00:20:52			86.62	3045	2313	2116	732	335.18	217
25.03	Knebworth	1487	89.10	00:21:56			87.11	2803	2062	1930	741	323.18	-678
26.7	Langley Jn	1491	90.48	00:23:03			90.01	1516	726	948	790	291.50	-278
28.58	Stevenage	1490	90.21	00:24:18			89.93	2946	2183	2050	763	308.59	581
31.9	Hitchin	795	93.22	00:26:27			92.42	1176	336	678	840	220.94	-200
35.7	Three Counties	792	90.31	00:28:55			92.34	801	-2	421	803	144.14	-261
37.04	Arlesey	2541	91.24	00:29:49			90.45	1990	1232	1335	758	129.62	-487
38.5		38.5	2530	89.73	00:30:47		90.11	2520	1744	1720	776	141.62	642
41.15	Biggleswade	1493	91.05	00:32:32			91.03	1611	807	1020	804	98.86	-327
43.2		43.2	2705	90.35	00:33:54		90.19	1841	1071	1211	770	85.90	-835
44.13	Sandy	2703	89.96	00:34:31			90.15	2686	1913	1848	773	92.15	786
44.5		44.5	2702	89.82	00:34:46		89.89	2701	1916	1848	785	94.64	786
45.8		45.8	1493	91.15	00:35:37		90.56	1563	764	982	799	68.64	-264
47.51	Tempsford	2096	89.31	00:36:46			89.98	1933	1168	1282	765	68.64	10058824
49.6		49.6	2242	85.29	00:38:12		87.68	2180	1451	1473	729	91.04	493
50.5		50.5	2261	88.19	00:38:49		86.57	2252	1538	1528	714	73.44	-270
51.73	St Neots	2244	85.64	00:39:40			87.14	2251	1525	1524	726	89.52	404
54		54	1488	89.61	00:41:12		88.72	1848	1093	1213	755	47.56	-286
55.95	Offord	2525	89.02	00:42:30			89.32	2016	1258	1344	758	41.11	-1595
58.88	Huntingdon	2519	88.35	00:44:30			88.01	2507	1771	1719	737	54.92	1120
62	MP 62	2809	83.67	00:46:42			85.46	3126	2425	2190	701	131.48	215
63.53	Abbotts Ripton	793	90.58	00:47:45			86.69	2812	2077	1938	735	101.65	-271
67.35	Conington S	2108	91.37	00:50:16			91.15	867	55	451	812	4.76	-208
69.35	Holme	2099	89.80	00:51:36			90.55	2077	1316	1400	762	4.76	10000000
72.6	Yaxley	2833	85.72	00:53:48			88.35	2391	1646	1628	744	34.36	580
75	Fletton Junction	2184	89.56	00:55:27			87.62	2706	1969	1865	737	25.79	-1478
76.35	Peterborough	2181	88.79	00:56:21			89.12	2191	1420	1464	771	27.02	5776
77.85	New England N	2162	86.33	00:57:23			86.76	2164	1446	1461	718	41.25	557
79.5	Werrington J	2858	88.37	00:58:31			87.85	2195	1458	1480	737	26.05	-573
81.9	Helpston	2872	89.82	01:00:08			89.57	2856	2087	1974	769	33.45	1713
84.84	Tallington	2879	90.70	01:02:06			89.70	2872	2086	1975	785	47.93	1072
87.2		87.2	2873	89.93	01:03:40		90.22	2872	2077	1973	795	67.94	623
88.65	Essendine	3103	87.75	01:04:39			88.72	3038	2271	2105	767	96.94	264
89.8		89.8	3122	89.66	01:05:25		88.49	3111	2345	2158	766	98.10	5223
92.23	Little Bytham	3087	86.24	01:07:04			88.23	3098	2335	2149	763	148.17	256
95.5		95.5	3018	80.70	01:09:26		83.27	3052	2377	2133	675	234.50	200
97.1	Corby Glen	3046	82.84	01:10:36			81.94	3035	2383	2125	652	249.71	555
100.1	Stoke	2970	77.34	01:12:51			79.88	3002	2383	2108	619	338.70	178
101.3	High Dyke	3082	86.25	01:13:44			81.93	3038	2387	2128	651	307.02	-200
102.05	Great Ponton	3130	90.73	01:14:15			88.53	3117	2350	2163	767	287.22	-200
105.45	Grantham	4	86.07	01:16:31			89.76	30	-492	22	522	209.34	-231
Evaporation		Coal			HP								
galls	per mile	30.97	lbs/mile	44.39	av ihp	2342							
lbs	per hour	25610	lbs/hr	3671	av dhp	1554							
lbs	per dhp-hr	16.48	lbs total	4681									
Gallons	Total	3266	lbs/dhp-hr	2.36	Av Speed	82.7							
Cylinder steam			lbs/ihp-hr	1.57									
lbs	per ihp-hr	11.51	lbs steam/lb coal	6.98									
tonnes	per 100 mile	14.09	tonnes/100 mile	2.02	av ikW	1748							
tonnes	per hour	11.62	tonne/hr	1.67	av dbkW	1160							
kg	per dbkW-hr	10.04	Tonnes total	2.12									
tonnes	Total	14.86	kg/dbkW-hr	1.44									
Cylinder steam			kg/ikW-hr	0.95									
kg	per ikW-hr	7.01	kg steam/kg coal	7.21									