

Geophysical Survey Report

AGES Archaeological & Historical Association

The Hadleigh Essex Enclosure

National Grid Ref: TQ 807 869

Techniques: Resistivity survey

June 2018

A Geophysical Survey of the Hadleigh Essex Enclosure

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1 Summary of Results

AGES Archaeological & Historical Association (AGES AHA) was given permission by the landowner, The Salvation Army, to undertake a resistivity survey over the area of the scheduled monument in their field to the south of Homestead Way, Hadleigh Essex. A licence under section 42 of the Ancient Monuments and Archaeological Areas Act 1979 was issued by Historic England.

The survey appears to confirm the existence of a double ditched enclosure, the full location and extent of which could be determined by further geophysical survey.

2 Introduction

2.1 Background

The site (Scheduled Monument List Entry Number: 1002171 (Roman Fort near Hadleigh)) was scheduled after appearing in an aerial photograph in 1949 which initially indicated it might be a Roman fort. A small excavation in 1951 does not seem to have produced much specific further evidence. The Essex County Council heritage record SMR number 9536 currently still records it as a Roman fort, but includes references to it being a possible Roman signal station. Little evidence exists of any excavation to confirm that the site is either Roman or a fortlet and some have passed the opinion that it may be a Pre Roman Iron Age stock enclosure.

With the local community archaeology club, AGES AHA, having recently obtained Lottery funded resistivity equipment and associated training, there appeared to be an opportunity to further that training on a little investigated scheduled site of great interest to the local community.

2.2 Site location

The site is located in a field south of Homestead Gardens, Hadleigh, Essex at Ordnance Survey Reference TQ 807 869.

2.3 Description of site

The survey area comprises 0.2ha of level grassland left undisturbed amid cultivated fields.

2.4 Geology and soils

There are no excavation details known of at this site, but approximately 60m to the north, now within a garden, the natural clay was found approximately 25cm below the current ground level.

2.5 Site history and archaeological potential

The field has probably been ploughed over hundreds of years (including at the time of the 1847 tithe assessment) until scheduled as a monument.

In 1951, 2 small test pits were dug and the results were recorded on an old copy of the Ordnance Survey card, which only survives as an NMR fiche. (RCHM NMR Archive, London). The Historic England Pastscape website indicates that the site was visited and nothing visible found on the ground except a sherd of greyware. A further sherd and two pieces of iron were found in an area of dark patch, on air photographs, west of the fort. (This was thought to be a possible rubbish pit). (F1 DG 06-SEP-51).

The Historic England Pastscape website also indicates that the cropmarks describe a small Roman Fort defended by two ditches set far apart and so arranged that the entrance is staggered, the internal area being about 200 ft. square. A cropmark of a rectangular ditch was observed during field walking 150 yards immediately west of fort. (Letter (L Helliwell Curator Prittlewell Priory Museum Southend-on-Sea).

Within about 200m to the northwest, the Essex County heritage record SMR Number 9799 indicates that an excavation by Essex County Council in 1986 revealed a linear feature, possibly enclosure ditch containing large amounts of early Iron Age pottery (parallels Orsett) and daub (N. Brown). This was taken to be a domestic settlement dated to the Early Iron Age.

A single sherd of Roman pottery was found by AGES AHA when fieldwalking the field to the south of the site in 2003 and, in 2017, a single piece of Roman roof tile (tegula) found by AGES AHA when fieldwalking the adjacent area of the field to the east.

2.6 Survey objectives

This was a trial survey to establish that the location of enclosure ditches to an unexcavated feature revealed by aerial photography over 50 years ago could be confirmed by resistivity survey.

2.7 Survey methods

Resistivity survey. More information regarding this technique is included in the Methodology section below.

3 Methodology

3.1 Date of Fieldwork

The fieldwork was carried out over 4 sessions between 16th April 2018 and 11th May 2018. Weather conditions during the survey were generally dry (following a week of heavy rain). High temperatures during this period seemed to be significantly drying out the ground.

3.2 Grid location

The location was only determined from open source maps and mobile phone gps and did not have the accuracy of professional gps systems. The location of the survey grids has been plotted in Appendix A, together with the referencing information. The location of the survey grids is based on the Ordnance Survey National Grid, see Figure 2.

3.3 Survey equipment

The cutting and subsequent silting or backfilling of a ditch may result in the retention of moisture increasing the conductivity of the soil and the presence of stone or other masonry increasing the resistivity. A TR Systems Ltd twin probe Mk2 TR Resistance Meter resistance meter was used with a probe spacing of 0.5m.

3.4 Sampling interval and data capture

Sampling was at 1m intervals along traverses 1m apart. This equates to 2,400 sampling points in a full 60m x 40m grid.

The readings were logged consecutively via bluetooth into a portable tablet computer whilst on site. At the end of the survey, data was transferred to a home desktop computer for processing and presentation. Due to a temporary problem in the field with the recording of readings into the tablet, manual readings were taken for part of the survey.

3.5 Processing, presentation of results and interpretation

Processing was performed using software known as Snuffler.

4 Results

The detailed on site readings are in Appendix B.

The resulting plot (through Snuffler software) contains a number of strong responses. The shape of the anomalies does not seem to be consistent with modern agriculture or geological features and thus may represent features of potential archaeological significance.

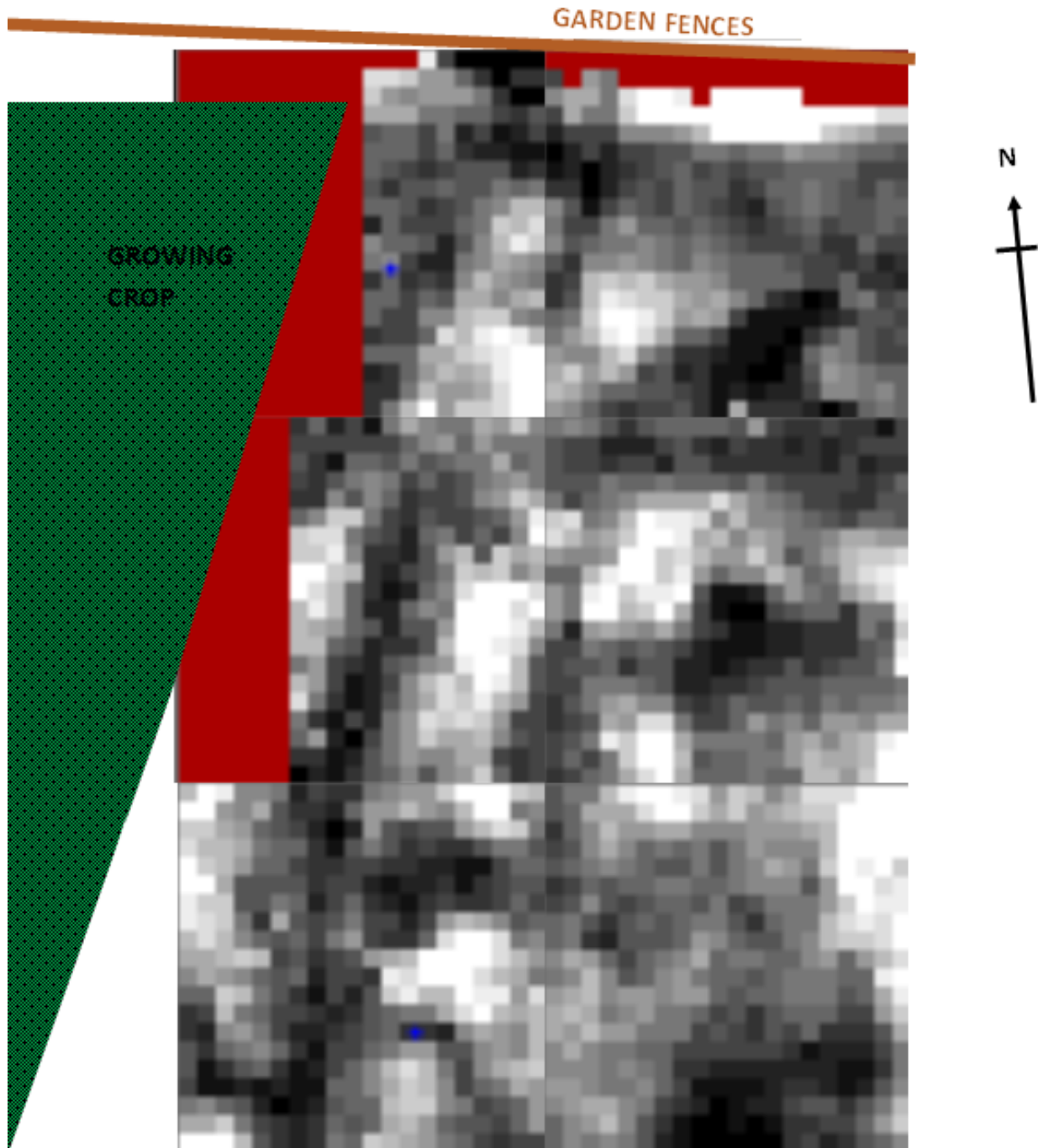


Figure 1 – Results Plot

5 Conclusions

Interpretation (through Snuffler software) gives the following image which may be compared with the aerial photograph from 1949.

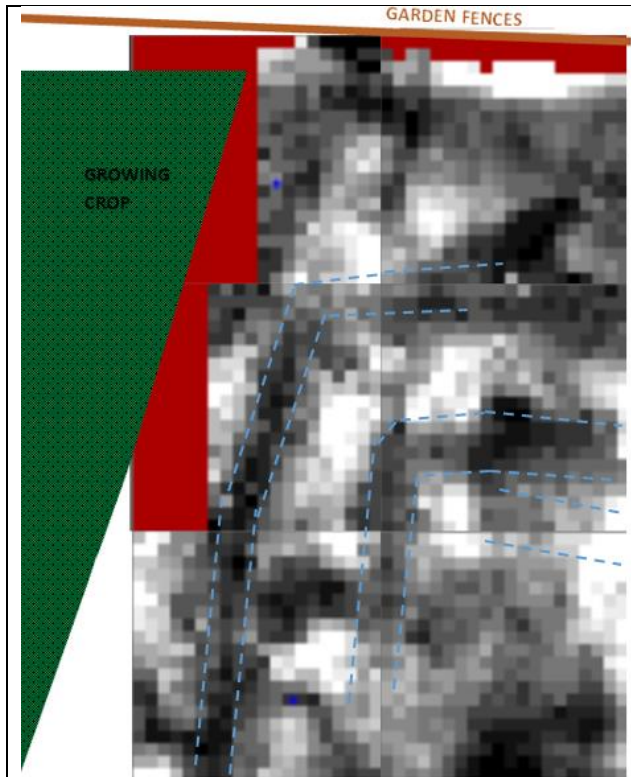


Figure 2 – Results Interpretation
(Dashed blue line interpretation by AGES
AHA)



Figure 3 – 1949 Aerial photograph of site
(Cambridge University Collection of Aerial
Photography © copyright reserved)



Figure 4 – Aerial Photograph Interpretation
(from AGES Project Hadleigh 2003
Fieldwalking Report)

Conclusions

The survey results appear to confirm the existence of a double ditched enclosure with its northwest corner approximately 20m from the back garden fences in Homestead Gardens.

This area of resistivity results overlies the north west corner of the scheduled site. This seems to show the possible existence and location of a double ditch.

From the results, if they are ditches, they are about 3 to 5m wide and about 8 to 10m apart.

6 References

Spracklen J W/2003/Project Hadleigh Fieldwalking Report.

Appendix A – Grid Locations



Figure 5 - Site plan showing location of grids and referencing

The starting point of the main grid [0,0] is 60m grid south of where the boundaries to 71 and 73 Homestead Gardens meet on their rear fences.

Only grids G1 to G6 were completed within the survey period. These proved sufficient to indicate an underlying feature.

All grids were walked from south to north and from west to east.

Inaccessible areas were recorded as null readings, shown in the final plots as red squares.

Appendix B – Detailed readings

Grid G1:

0,0,79.734	1,0,81.363	2,0,83.304	3,0,73.220	4,0,65.359	5,0,63.418	6,0,61.758
0,1,72.218	1,1,72.375	2,1,74.128	3,1,68.147	4,1,64.107	5,1,63.700	6,1,61.288
0,2,67.865	1,2,69.493	2,2,66.706	3,2,65.391	4,2,61.695	5,2,59.754	6,2,60.536
0,3,64.232	1,3,60.443	2,3,61.038	3,3,61.382	4,3,61.163	5,3,61.539	6,3,60.411
0,4,65.297	1,4,60.129	2,4,63.418	3,4,65.767	4,4,67.364	5,4,62.791	6,4,60.630
0,5,65.203	1,5,62.635	2,5,67.426	3,5,68.241	4,5,69.525	5,5,66.769	6,5,63.261
0,6,63.449	1,6,62.416	2,6,69.744	3,6,70.527	4,6,68.491	5,6,64.389	6,6,62.447
0,7,62.635	1,7,64.952	2,7,73.533	3,7,68.773	4,7,67.270	5,7,64.764	6,7,64.890
0,8,66.800	1,8,67.051	2,8,74.410	3,8,73.126	4,8,68.773	5,8,65.516	6,8,63.261
0,9,69.493	1,9,72.030	2,9,71.122	3,9,69.431	4,9,66.925	5,9,65.860	6,9,66.549
0,10,72.218	1,10,71.592	2,10,73.878	3,10,74.911	4,10,73.408	5,10,64.890	6,10,65.172
0,11,73.095	1,11,75.882	2,11,73.471	3,11,69.932	4,11,66.894	5,11,65.547	6,11,66.487
0,12,77.010	1,12,76.070	2,12,74.849	3,12,68.585	4,12,62.666	5,12,71.466	6,12,65.109
0,13,76.571	1,13,74.191	2,13,73.972	3,13,65.735	4,13,65.265	5,13,67.959	6,13,66.800
0,14,79.859	1,14,78.325	2,14,71.842	3,14,66.017	4,14,65.923	5,14,66.048	6,14,65.673
0,15,78.983	1,15,74.692	2,15,72.876	3,15,70.245	4,15,67.207	5,15,66.737	6,15,63.950
0,16,75.224	1,16,73.377	2,16,73.126	3,16,72.437	4,16,68.710	5,16,67.113	6,16,67.364
0,17,74.598	1,17,75.005	2,17,72.594	3,17,70.402	4,17,66.424	5,17,65.453	6,17,64.733
0,18,79.327	1,18,78.575	2,18,70.997	3,18,68.898	4,18,71.404	5,18,65.516	6,18,62.510
0,19,72.970	1,19,80.768	2,19,76.790	3,19,69.932	4,19,68.836	5,19,68.021	6,19,62.384

7,0,63.292	8,0,68.053	9,0,66.456	10,0,74.285	11,0,72.782	12,0,71.717	13,0,70.871
7,1,63.042	8,1,67.395	9,1,65.359	10,1,66.957	11,1,71.560	12,1,72.876	13,1,70.809
7,2,61.789	8,2,65.673	9,2,67.364	10,2,66.487	11,2,73.659	12,2,74.880	13,2,74.629
7,3,61.069	8,3,66.393	9,3,67.489	10,3,70.088	11,3,71.936	12,3,74.723	13,3,73.565
7,4,61.789	8,4,64.451	9,4,66.456	10,4,69.963	11,4,72.688	12,4,75.256	13,4,73.502
7,5,60.505	8,5,63.981	9,5,64.545	10,5,66.518	11,5,68.804	12,5,70.339	13,5,70.871
7,6,61.914	8,6,63.198	9,6,64.827	10,6,65.046	11,6,66.863	12,6,62.823	13,6,63.355
7,7,62.823	8,7,61.946	9,7,63.261	10,7,65.767	11,7,67.489	12,7,68.460	13,7,68.115
7,8,60.724	8,8,64.576	9,8,62.228	10,8,66.205	11,8,74.066	12,8,77.479	13,8,72.907
7,9,61.977	8,9,64.921	9,9,64.483	10,9,63.105	11,9,76.571	12,9,76.070	13,9,82.146
7,10,63.042	8,10,63.887	9,10,65.485	10,10,70.433	11,10,72.155	12,10,72.782	13,10,78.544
7,11,64.796	8,11,67.614	9,11,70.683	10,11,64.984	11,11,63.543	12,11,63.011	13,11,66.863
7,12,64.138	8,12,65.234	9,12,68.241	10,12,63.981	11,12,63.981	12,12,61.288	13,12,64.764
7,13,62.416	8,13,64.389	9,13,67.395	10,13,63.011	11,13,61.445	12,13,60.881	13,13,63.731
7,14,63.480	8,14,64.702	9,14,64.764	10,14,62.259	11,14,60.411	12,14,61.507	13,14,61.413
7,15,63.230	8,15,63.073	9,15,64.232	10,15,64.483	11,15,62.635	12,15,63.042	13,15,61.977
7,16,62.760	8,16,60.975	9,16,65.798	10,16,68.178	11,16,65.109	12,16,62.697	13,16,64.733
7,17,61.601	8,17,58.689	9,17,62.259	10,17,70.777	11,17,65.109	12,17,64.764	13,17,65.078
7,18,63.261	8,18,62.008	9,18,66.456	10,18,70.934	11,18,70.746	12,18,73.189	13,18,70.652
7,19,64.107	8,19,63.668	9,19,63.637	10,19,68.021	11,19,69.305	12,19,70.433	13,19,71.278

Grid G1 continued:

14,0,68.303	15,0,66.549	16,0,64.263	17,0,62.729	18,0,64.013	19,0,64.107
14,1,67.332	15,1,65.641	16,1,65.986	17,1,64.232	18,1,66.925	19,1,70.151
14,2,69.024	15,2,68.303	16,2,64.702	17,2,65.641	18,2,67.238	19,2,70.151
14,3,68.867	15,3,63.887	16,3,66.737	17,3,68.491	18,3,71.529	19,3,71.122
14,4,68.366	15,4,64.764	16,4,69.619	17,4,71.780	18,4,72.876	19,4,74.849
14,5,65.673	15,5,65.297	16,5,69.118	17,5,70.777	18,5,69.963	19,5,73.753
14,6,61.413	15,6,69.744	16,6,72.469	17,6,70.965	18,6,70.088	19,6,72.970
14,7,71.999	15,7,76.007	16,7,79.108	17,7,72.844	18,7,71.529	19,7,73.721
14,8,73.878	15,8,81.989	16,8,77.511	17,8,77.072	18,8,71.059	19,8,75.757
14,9,84.025	15,9,83.618	16,9,75.632	17,9,72.688	18,9,71.592	19,9,67.927
14,10,83.273	15,10,81.613	16,10,80.674	17,10,75.287	18,10,72.688	19,10,70.589
14,11,75.224	15,11,78.325	16,11,80.110	17,11,75.600	18,11,68.554	19,11,69.305
14,12,70.182	15,12,72.750	16,12,71.560	17,12,69.368	18,12,66.080	19,12,66.612
14,13,64.670	15,13,62.854	16,13,63.637	17,13,64.357	18,13,66.831	19,13,64.451
14,14,62.666	15,14,61.100	16,14,62.510	17,14,63.950	18,14,65.046	19,14,65.453
14,15,61.507	15,15,60.474	16,15,60.944	17,15,63.887	18,15,66.831	19,15,66.612
14,16,63.637	15,16,63.105	16,16,65.046	17,16,68.303	18,16,68.053	19,16,66.048
14,17,66.236	15,17,70.339	16,17,72.938	17,17,75.694	18,17,75.037	19,17,68.429
14,18,69.493	15,18,73.753	16,18,81.488	17,18,81.770	18,18,68.710	19,18,69.838
14,19,74.661	15,19,79.578	16,19,85.183	17,19,80.267	18,19,73.940	19,19,73.439

Grid G2:

0	0	99999.9	1	0	99999.9	2	0	99999.9	3	0	99999.9	4	0	99999.9
0	1	99999.9	1	1	99999.9	2	1	99999.9	3	1	99999.9	4	1	99999.9
0	2	99999.9	1	2	99999.9	2	2	99999.9	3	2	99999.9	4	2	99999.9
0	3	99999.9	1	3	99999.9	2	3	99999.9	3	3	99999.9	4	3	99999.9
0	4	99999.9	1	4	99999.9	2	4	99999.9	3	4	99999.9	4	4	99999.9
0	5	99999.9	1	5	99999.9	2	5	99999.9	3	5	99999.9	4	5	99999.9
0	6	99999.9	1	6	99999.9	2	6	99999.9	3	6	99999.9	4	6	99999.9
0	7	99999.9	1	7	99999.9	2	7	99999.9	3	7	99999.9	4	7	99999.9
0	8	99999.9	1	8	99999.9	2	8	99999.9	3	8	99999.9	4	8	99999.9
0	9	99999.9	1	9	99999.9	2	9	99999.9	3	9	99999.9	4	9	99999.9
0	10	99999.9	1	10	99999.9	2	10	99999.9	3	10	99999.9	4	10	99999.9
0	11	99999.9	1	11	99999.9	2	11	99999.9	3	11	99999.9	4	11	99999.9
0	12	99999.9	1	12	99999.9	2	12	99999.9	3	12	99999.9	4	12	99999.9
0	13	99999.9	1	13	99999.9	2	13	99999.9	3	13	99999.9	4	13	99999.9
0	14	99999.9	1	14	99999.9	2	14	99999.9	3	14	99999.9	4	14	99999.9
0	15	99999.9	1	15	99999.9	2	15	99999.9	3	15	99999.9	4	15	99999.9
0	16	99999.9	1	16	99999.9	2	16	99999.9	3	16	99999.9	4	16	99999.9
0	17	99999.9	1	17	99999.9	2	17	99999.9	3	17	99999.9	4	17	99999.9
0	18	99999.9	1	18	99999.9	2	18	99999.9	3	18	99999.9	4	18	99999.9
0	19	99999.9	1	19	99999.9	2	19	99999.9	3	19	99999.9	4	19	99999.9

Grid G2 continued:

5	0	99999.9	6	0	57.7	7	0	63.1	8	0	61.1	9	0	64
5	1	99999.9	6	1	64	7	1	65.5	8	1	61.2	9	1	62.1
5	2	99999.9	6	2	72.3	7	2	80	8	2	63.4	9	2	56.9
5	3	99999.9	6	3	74	7	3	66	8	3	60.9	9	3	67.5
5	4	99999.9	6	4	88.8	7	4	73.8	8	4	66.1	9	4	60.5
5	5	99999.9	6	5	84.9	7	5	78.5	8	5	67.7	9	5	60.1
5	6	99999.9	6	6	74	7	6	78.8	8	6	68.6	9	6	64.8
5	7	99999.9	6	7	85	7	7	83.7	8	7	73	9	7	69.2
5	8	99999.9	6	8	82.8	7	8	82.1	8	8	79.8	9	8	71.1
5	9	99999.9	6	9	83.7	7	9	90.4	8	9	84.9	9	9	71
5	10	99999.9	6	10	95	7	10	88.7	8	10	83.3	9	10	73
5	11	99999.9	6	11	93.1	7	11	93.5	8	11	86.1	9	11	82.9
5	12	99999.9	6	12	86.5	7	12	86	8	12	90	9	12	77.7
5	13	99999.9	6	13	85.2	7	13	87.9	8	13	87.6	9	13	75.5
5	14	99999.9	6	14	72.5	7	14	76	8	14	86.3	9	14	87
5	15	99999.9	6	15	65.3	7	15	64	8	15	75.8	9	15	69.9
5	16	99999.9	6	16	68.5	7	16	64.6	8	16	70.4	9	16	75.1
5	17	99999.9	6	17	69.6	7	17	65.6	8	17	60.9	9	17	71.3
5	18	99999.9	6	18	67.4	7	18	68.6	8	18	68.6	9	18	67.1
5	19	99999.9	6	19	64.8	7	19	71.3	8	19	63.5	9	19	67

10	0	69	11	0	73.1	12	0	75.9	13	0	70.1	14	0	77.2
10	1	69.9	11	1	74.7	12	1	79.5	13	1	77.9	14	1	76
10	2	67.3	11	2	74.4	12	2	79.1	13	2	85.4	14	2	82
10	3	63.3	11	3	74.1	12	3	78.7	13	3	88	14	3	86.7
10	4	63.8	11	4	70.1	12	4	76.3	13	4	81.3	14	4	87.9
10	5	63.9	11	5	67.2	12	5	76.5	13	5	83.5	14	5	89.3
10	6	61.6	11	6	70.7	12	6	72.3	13	6	77.5	14	6	78.5
10	7	61.7	11	7	65.1	12	7	66.1	13	7	70.3	14	7	84.7
10	8	69.3	11	8	63.5	12	8	69.4	13	8	70.6	14	8	79.4
10	9	62.4	11	9	63	12	9	72.5	13	9	77.9	14	9	74.8
10	10	65	11	10	61.3	12	10	63.3	13	10	73.2	14	10	77.8
10	11	66.2	11	11	62.5	12	11	66.3	13	11	70.4	14	11	74.4
10	12	65.8	11	12	65.6	12	12	62.6	13	12	69.6	14	12	79.8
10	13	69.4	11	13	66.5	12	13	63.8	13	13	71.2	14	13	75.4
10	14	75.6	11	14	68.3	12	14	64.2	13	14	69.6	14	14	68.6
10	15	77.4	11	15	73.1	12	15	64.6	13	15	67.3	14	15	67.5
10	16	77	11	16	73.8	12	16	67.6	13	16	72.9	14	16	66.8
10	17	71.3	11	17	69.7	12	17	73.4	13	17	69.9	14	17	72.5
10	18	67.3	11	18	66.8	12	18	73.2	13	18	77.7	14	18	78.4
10	19	60	11	19	74.9	12	19	80.7	13	19	76.1	14	19	73.8

Grid G2 continued:

15	0	78.5	16	0	86.5	17	0	72.2	18	0	65	19	0	67.6
15	1	81.6	16	1	80.9	17	1	67.1	18	1	66.1	19	1	67.4
15	2	80.6	16	2	83.5	17	2	77.2	18	2	70.1	19	2	67.6
15	3	88.2	16	3	86.5	17	3	78.1	18	3	66.6	19	3	67.9
15	4	86.4	16	4	91.7	17	4	83.1	18	4	79.7	19	4	66.8
15	5	84.3	16	5	97.1	17	5	90.3	18	5	83.3	19	5	69.1
15	6	91.6	16	6	99	17	6	95.8	18	6	84.9	19	6	70.9
15	7	106	16	7	106.3	17	7	91.5	18	7	89	19	7	76.5
15	8	101.8	16	8	97.1	17	8	98.1	18	8	90.9	19	8	83.7
15	9	95.1	16	9	93.7	17	9	94.5	18	9	88.6	19	9	92.9
15	10	89.7	16	10	99.3	17	10	99.2	18	10	97.1	19	10	89.4
15	11	85.2	16	11	84.7	17	11	86.1	18	11	76.2	19	11	81.9
15	12	83.3	16	12	69.8	17	12	86	18	12	81.8	19	12	84.2
15	13	68.1	16	13	72.9	17	13	67.4	18	13	75.8	19	13	95.9
15	14	66.5	16	14	69.5	17	14	73	18	14	79.4	19	14	91.1
15	15	69.9	16	15	76.3	17	15	79.5	18	15	86.5	19	15	82
15	16	68.7	16	16	73.8	17	16	77.8	18	16	78.5	19	16	73.7
15	17	75.1	16	17	75.3	17	17	80.9	18	17	73.1	19	17	74.4
15	18	71.2	16	18	79.7	17	18	75.2	18	18	75	19	18	75.2
15	19	74	16	19	80.9	17	19	78.4	18	19	86.2	19	19	77.4

Grid G3:

0	0	99999.9	1	0	99999.9	2	0	99999.9	3	0	99999.9
0	1	99999.9	1	1	99999.9	2	1	99999.9	3	1	99999.9
0	2	99999.9	1	2	99999.9	2	2	99999.9	3	2	99999.9
0	3	99999.9	1	3	99999.9	2	3	99999.9	3	3	99999.9
0	4	99999.9	1	4	99999.9	2	4	99999.9	3	4	99999.9
0	5	99999.9	1	5	99999.9	2	5	99999.9	3	5	99999.9
0	6	99999.9	1	6	99999.9	2	6	99999.9	3	6	99999.9
0	7	99999.9	1	7	99999.9	2	7	99999.9	3	7	99999.9
0	8	99999.9	1	8	99999.9	2	8	99999.9	3	8	99999.9
0	9	99999.9	1	9	99999.9	2	9	99999.9	3	9	99999.9
0	10	99999.9	1	10	99999.9	2	10	99999.9	3	10	99999.9
0	11	99999.9	1	11	99999.9	2	11	99999.9	3	11	99999.9
0	12	99999.9	1	12	99999.9	2	12	99999.9	3	12	99999.9
0	13	99999.9	1	13	99999.9	2	13	99999.9	3	13	99999.9
0	14	99999.9	1	14	99999.9	2	14	99999.9	3	14	99999.9
0	15	99999.9	1	15	99999.9	2	15	99999.9	3	15	99999.9
0	16	99999.9	1	16	99999.9	2	16	99999.9	3	16	99999.9
0	17	99999.9	1	17	99999.9	2	17	99999.9	3	17	99999.9
0	18	99999.9	1	18	99999.9	2	18	99999.9	3	18	99999.9
0	19	99999.9	1	19	99999.9	2	19	99999.9	3	19	99999.9

Grid G3 continued:

4	0	99999.9	5	0	99999.9	6	0	99999.9		7	0	99999.9
4	1	99999.9	5	1	99999.9	6	1	99999.9		7	1	99999.9
4	2	99999.9	5	2	99999.9	6	2	99999.9		7	2	99999.9
4	3	99999.9	5	3	99999.9	6	3	99999.9		7	3	99999.9
4	4	99999.9	5	4	99999.9	6	4	99999.9		7	4	99999.9
4	5	99999.9	5	5	99999.9	6	5	99999.9		7	5	99999.9
4	6	99999.9	5	6	99999.9	6	6	99999.9		7	6	99999.9
4	7	99999.9	5	7	99999.9	6	7	99999.9		7	7	99999.9
4	8	99999.9	5	8	99999.9	6	8	99999.9		7	8	99999.9
4	9	99999.9	5	9	99999.9	6	9	99999.9		7	9	99999.9
4	10	99999.9	5	10	99999.9	6	10	99999.9		7	10	99999.9
4	11	99999.9	5	11	99999.9	6	11	99999.9		7	11	99999.9
4	12	99999.9	5	12	99999.9	6	12	99999.9		7	12	99999.9
4	13	99999.9	5	13	99999.9	6	13	99999.9		7	13	99999.9
4	14	99999.9	5	14	99999.9	6	14	99999.9		7	14	99999.9
4	15	99999.9	5	15	99999.9	6	15	99999.9		7	15	99999.9
4	16	99999.9	5	16	99999.9	6	16	99999.9		7	16	99999.9
4	17	99999.9	5	17	99999.9	6	17	99999.9		7	17	99999.9
4	18	99999.9	5	18	99999.9	6	18	99999.9		7	18	99999.9
4	19	99999.9	5	19	99999.9	6	19	99999.9		7	19	99999.9

8	0	99999.9	9	0	99999.9	10	0	70.308		11	0	76.884
8	1	99999.9	9	1	99999.9	10	1	69.9		11	1	71.122
8	2	99999.9	9	2	99999.9	10	2	67.708		11	2	71.122
8	3	99999.9	9	3	99999.9	10	3	75.82		11	3	76.227
8	4	99999.9	9	4	99999.9	10	4	69.619		11	4	72.938
8	5	99999.9	9	5	99999.9	10	5	76.164		11	5	72.844
8	6	99999.9	9	6	99999.9	10	6	76.227		11	6	75.851
8	7	99999.9	9	7	99999.9	10	7	70.997		11	7	75.131
8	8	99999.9	9	8	99999.9	10	8	76.884		11	8	78.701
8	9	99999.9	9	9	99999.9	10	9	79.358		11	9	75.945
8	10	99999.9	9	10	99999.9	10	10	69.086		11	10	75.287
8	11	99999.9	9	11	99999.9	10	11	75.475		11	11	76.508
8	12	99999.9	9	12	99999.9	10	12	74.066		11	12	70.903
8	13	99999.9	9	13	99999.9	10	13	75.412		11	13	73.846
8	14	99999.9	9	14	99999.9	10	14	75.318		11	14	75.882
8	15	99999.9	9	15	99999.9	10	15	74.254		11	15	75.162
8	16	99999.9	9	16	99999.9	10	16	83.085		11	16	83.304
8	17	99999.9	9	17	99999.9	10	17	87.72		11	17	81.018
8	18	99999.9	9	18	99999.9	10	18	88.722		11	18	89.505
8	19	99999.9	9	19	99999.9	10	19	99999.9		11	19	99999.9

Grid G3 continued:

12	0	84.275		13	0	301.432		14	0	80.486		15	0	86.843
12	1	78.356		13	1	85.34		14	1	81.864		15	1	82.208
12	2	76.195		13	2	82.271		14	2	84.494		15	2	83.43
12	3	75.663		13	3	82.584		14	3	82.459		15	3	87.313
12	4	72.187		13	4	75.726		14	4	88.973		15	4	86.029
12	5	71.372		13	5	78.92		14	5	79.17		15	5	84.714
12	6	71.905		13	6	74.943		14	6	73.314		15	6	83.367
12	7	70.652		13	7	71.686		14	7	69.713		15	7	79.922
12	8	72.656		13	8	68.053		14	8	67.74		15	8	77.886
12	9	76.289		13	9	74.16		14	9	69.243		15	9	73.972
12	10	71.873		13	10	71.936		14	10	71.936		15	10	75.35
12	11	73.784		13	11	70.245		14	11	72.907		15	11	73.283
12	12	73.189		13	12	73.377		14	12	75.256		15	12	73.878
12	13	72.343		13	13	69.619		14	13	72.813		15	13	73.095
12	14	75.412		13	14	71.936		14	14	74.974		15	14	70.558
12	15	76.101		13	15	72.907		14	15	76.728		15	15	69.243
12	16	83.179		13	16	77.886		14	16	78.544		15	16	75.757
12	17	79.077		13	17	80.674		14	17	80.768		15	17	80.611
12	18	87.658		13	18	80.862		14	18	81.05		15	18	76.446
12	19	99999.9		13	19	91.04		14	19	71.216		15	19	64.42

16	0	86.123		17	0	89.223		18	0	96.677		19	0	95.08
16	1	83.367		17	1	89.568		18	1	94.579		19	1	92.011
16	2	85.34		17	2	90.507		18	2	93.076		19	2	94.172
16	3	89.349		17	3	90.132		18	3	93.295		19	3	93.514
16	4	90.32		17	4	96.583		18	4	90.226		19	4	84.275
16	5	86.969		17	5	87.752		18	5	79.452		19	5	77.949
16	6	83.555		17	6	80.141		18	6	83.398		19	6	84.964
16	7	84.557		17	7	80.548		18	7	79.828		19	7	77.793
16	8	80.455		17	8	82.96		18	8	81.926		19	8	79.828
16	9	78.951		17	9	85.81		18	9	90.32		19	9	87.063
16	10	78.419		17	10	86.092		18	10	85.81		19	10	88.66
16	11	76.759		17	11	80.423		18	11	85.904		19	11	84.933
16	12	73.283		17	12	77.511		18	12	76.415		19	12	77.636
16	13	73.596		17	13	74.254		18	13	67.614		19	13	69.744
16	14	68.554		17	14	68.522		18	14	66.017		19	14	67.113
16	15	72.124		17	15	66.894		18	15	68.898		19	15	72.531
16	16	75.788		17	16	71.748		18	16	70.934		19	16	73.659
16	17	77.135		17	17	70.589		18	17	63.668		19	17	64.232
16	18	70.903		17	18	64.232		18	18	71.028		19	18	70.026
16	19	53.584		17	19	54.931		18	19	57.937		19	19	58.783

Grid G4:

0	0	89.004	1	0	85.716	2	0	80.83	3	0	77.918
0	1	91.885	1	1	91.071	2	1	85.81	3	1	81.582
0	2	91.071	1	2	94.203	2	2	87.564	3	2	93.232
0	3	88.409	1	3	85.09	2	3	87.031	3	3	91.572
0	4	84.62	1	4	87.595	2	4	92.512	3	4	98.525
0	5	80.768	1	5	83.712	2	5	94.266	3	5	101.907
0	6	76.007	1	6	78.701	2	6	92.512	3	6	98.838
0	7	75.569	1	7	77.323	2	7	91.478	3	7	93.827
0	8	80.517	1	8	74.723	2	8	85.685	3	8	86.248
0	9	86.28	1	9	80.705	2	9	80.799	3	9	83.805
0	10	84.432	1	10	78.106	2	10	76.602	3	10	84.119
0	11	85.559	1	11	79.045	2	11	70.276	3	11	77.824
0	12	75.945	1	12	75.131	2	12	68.961	3	12	74.16
0	13	72.155	1	13	73.721	2	13	69.963	3	13	72.656
0	14	69.525	1	14	72.782	2	14	76.759	3	14	74.254
0	15	74.316	1	15	77.824	2	15	77.636	3	15	78.074
0	16	76.947	1	16	89.286	2	16	83.774	3	16	83.586
0	17	85.058	1	17	89.286	2	17	90.1	3	17	83.712
0	18	77.323	1	18	99999.9	2	18	88.315	3	18	84.494
0	19	99999.9	1	19	99999.9	2	19	99999.9	3	19	99999.9

4	0	76.007	5	0	77.855	6	0	77.699	7	0	80.517
4	1	81.864	5	1	80.141	6	1	80.423	7	1	78.106
4	2	87.626	5	2	78.513	6	2	80.392	7	2	73.22
4	3	96.552	5	3	86.029	6	3	82.709	7	3	76.477
4	4	103.316	5	4	96.489	6	4	91.196	7	4	82.459
4	5	101.312	5	5	99.339	6	5	93.765	7	5	88.816
4	6	95.738	5	6	93.514	6	6	95.456	7	6	90.539
4	7	91.666	5	7	94.892	6	7	89.505	7	7	88.19
4	8	87.125	5	8	85.841	6	8	83.743	7	8	82.835
4	9	84.15	5	9	86.436	6	9	83.774	7	9	81.551
4	10	87.344	5	10	81.832	6	10	82.302	7	10	80.705
4	11	81.143	5	11	79.014	6	11	78.2	7	11	81.895
4	12	78.137	5	12	79.077	6	12	76.759	7	12	81.269
4	13	76.258	5	13	77.229	6	13	79.421	7	13	81.676
4	14	76.696	5	14	78.482	6	14	79.045	7	14	80.361
4	15	87.031	5	15	86.624	6	15	86.248	7	15	88.722
4	16	95.111	5	16	102.596	6	16	101.97	7	16	100.216
4	17	97.617	5	17	100.78	6	17	100.466	7	17	99.715
4	18	99999.9	5	18	99999.9	6	18	99999.9	7	18	99999.9
4	19	99999.9	5	19	99999.9	6	19	99999.9	7	19	99999.9

Grid G4 continued:

8	0	75.131		9	0	70.683		10	0	90.288		11	0	76.039
8	1	74.755		9	1	71.091		10	1	72.813		11	1	71.247
8	2	75.099		9	2	71.153		10	2	71.842		11	2	69.431
8	3	76.007		9	3	74.034		10	3	71.466		11	3	70.683
8	4	80.799		9	4	78.356		10	4	70.715		11	4	71.091
8	5	89.317		9	5	88.315		10	5	77.761		11	5	72.187
8	6	88.754		9	6	90.476		10	6	85.591		11	6	80.768
8	7	88.378		9	7	86.311		10	7	81.645		11	7	81.425
8	8	85.653		9	8	84.87		10	8	81.175		11	8	80.956
8	9	83.273		9	9	82.49		10	9	79.39		11	9	77.166
8	10	81.645		9	10	78.795		10	10	76.759		11	10	74.473
8	11	79.484		9	11	77.385		10	11	74.629		11	11	74.128
8	12	80.267		9	12	80.329		10	12	76.352		11	12	77.573
8	13	78.544		9	13	80.642		10	13	78.106		11	13	79.202
8	14	83.085		9	14	82.866		10	14	82.803		11	14	82.991
8	15	92.011		9	15	100.153		10	15	100.153		11	15	100.78
8	16	104.225		9	16	105.321		10	16	113.15		11	16	112.367
8	17	10369.235		9	17	109.611		10	17	105.853		11	17	111.522
8	18	99999.9		9	18	99999.9		10	18	99999.9		11	18	99999.9
8	19	99999.9		9	19	99999.9		10	19	99999.9		11	19	99999.9

12	0	76.289		13	0	76.195		14	0	74.16		15	0	70.026
12	1	73.158		13	1	73.878		14	1	77.166		15	1	85.403
12	2	68.178		13	2	72.907		14	2	79.672		15	2	87.939
12	3	68.053		13	3	71.654		14	3	81.613		15	3	86.53
12	4	70.809		13	4	68.742		14	4	74.442		15	4	80.298
12	5	70.809		13	5	70.402		14	5	70.746		15	5	72.907
12	6	76.164		13	6	74.348		14	6	69.493		15	6	70.276
12	7	81.394		13	7	81.676		14	7	76.822		15	7	77.26
12	8	81.363		13	8	79.64		14	8	77.73		15	8	77.918
12	9	77.01		13	9	78.419		14	9	78.732		15	9	74.911
12	10	78.2		13	10	80.674		14	10	81.112		15	10	77.135
12	11	79.922		13	11	81.112		14	11	83.899		15	11	82.052
12	12	81.801		13	12	81.05		14	12	83.085		15	12	81.457
12	13	78.92		13	13	81.237		14	13	81.05		15	13	81.582
12	14	83.993		13	14	87.564		14	14	87.094		15	14	85.779
12	15	100.842		13	15	102.847		14	15	101.688		15	15	95.205
12	16	114.246		13	16	111.929		14	16	113.213		15	16	105.884
12	17	101.594		13	17	104.381		14	17	99999.9		15	17	99999.9
12	18	99999.9		13	18	99999.9		14	18	99999.9		15	18	99999.9
12	19	99999.9		13	19	99999.9		14	19	99999.9		15	19	99999.9

Grid G4 continued:

16	0	73.94		17	0	81.175		18	0	83.586		19	0	81.832
16	1	86.123		17	1	83.461		18	1	86.467		19	1	81.989
16	2	86.123		17	2	83.242		18	2	82.678		19	2	80.893
16	3	84.432		17	3	78.795		18	3	77.573		19	3	77.793
16	4	83.148		17	4	78.795		18	4	77.385		19	4	79.296
16	5	76.477		17	5	79.672		18	5	79.859		19	5	77.511
16	6	80.987		17	6	84.964		18	6	77.197		19	6	79.609
16	7	80.924		17	7	75.851		18	7	75.037		19	7	74.254
16	8	76.477		17	8	76.665		18	8	73.471		19	8	74.535
16	9	75.412		17	9	81.363		18	9	78.513		19	9	78.137
16	10	80.016		17	10	80.329		18	10	81.112		19	10	80.548
16	11	80.392		17	11	79.202		18	11	82.02		19	11	82.146
16	12	79.014		17	12	78.074		18	12	82.302		19	12	79.452
16	13	81.175		17	13	78.074		18	13	77.949		19	13	78.575
16	14	83.868		17	14	82.584		18	14	82.114		19	14	80.58
16	15	92.418		17	15	90.288		18	15	86.499		19	15	86.875
16	16	106.981		17	16	105.133		18	16	96.614		19	16	97.209
16	17	99999.9		17	17	99999.9		18	17	99999.9		19	17	99999.9
16	18	99999.9		17	18	99999.9		18	18	99999.9		19	18	99999.9
16	19	99999.9		17	19	99999.9		18	19	99999.9		19	19	99999.9

Grid G5:

0	0	67.9		1	0	69.7		2	0	75.7		3	0	78.1		4	0	85.2
0	1	70.8		1	1	74.8		2	1	70		3	1	77.4		4	1	93
0	2	71.1		1	2	71.7		2	2	79.1		3	2	96.8		4	2	92.3
0	3	65.9		1	3	71.2		2	3	72.6		3	3	85.6		4	3	84.7
0	4	67		1	4	71.7		2	4	77.1		3	4	84.9		4	4	86.6
0	5	70.3		1	5	70.8		2	5	78.8		3	5	78.8		4	5	77.2
0	6	68.7		1	6	72.2		2	6	72.2		3	6	76.4		4	6	67.5
0	7	70.2		1	7	70.7		2	7	77.6		3	7	74.8		4	7	71.8
0	8	79.2		1	8	65.1		2	8	84.1		3	8	87.8		4	8	83
0	9	83.3		1	9	79		2	9	103.5		3	9	102.9		4	9	90.4
0	10	83.6		1	10	79.2		2	10	96.5		3	10	106.8		4	10	92.5
0	11	75		1	11	75.2		2	11	88		3	11	98.3		4	11	104.4
0	12	84.1		1	12	81.9		2	12	82.2		3	12	84.7		4	12	99.3
0	13	94.6		1	13	89.7		2	13	84.1		3	13	85.7		4	13	92.2
0	14	91.6		1	14	94.5		2	14	79.5		3	14	79.8		4	14	90.5
0	15	78.4		1	15	71		2	15	75.2		3	15	77.4		4	15	80.2
0	16	72.8		1	16	71.8		2	16	72.7		3	16	77.9		4	16	76.3
0	17	72.3		1	17	69.7		2	17	71.1		3	17	66.7		4	17	69.7
0	18	73.2		1	18	69.4		2	18	68.8		3	18	65.2		4	18	65
0	19	78.6		1	19	81.9		2	19	78.9		3	19	73.6		4	19	68.1

Grid G5 continued:

5	0	93.8	6	0	101.6	7	0	86.2	8	0	75.9	9	0	74.5
5	1	106.5	6	1	102	7	1	88.4	8	1	73	9	1	74.6
5	2	103.7	6	2	100.3	7	2	86.8	8	2	76.9	9	2	77.8
5	3	93.5	6	3	95.2	7	3	77	8	3	69.7	9	3	70.5
5	4	81	6	4	80	7	4	71	8	4	67.9	9	4	69.3
5	5	76.2	6	5	72.6	7	5	65.5	8	5	64.1	9	5	65.9
5	6	72.9	6	6	73.2	7	6	65.5	8	6	63.9	9	6	61.2
5	7	74.4	6	7	72.8	7	7	69	8	7	64.9	9	7	60.9
5	8	80	6	8	87.6	7	8	78.4	8	8	69.1	9	8	66.3
5	9	93	6	9	110.4	7	9	87.4	8	9	71.2	9	9	62.7
5	10	97.1	6	10	96.6	7	10	102.1	8	10	71.6	9	10	61.7
5	11	108.9	6	11	91.5	7	11	98.5	8	11	82.5	9	11	75.1
5	12	105.8	6	12	92.4	7	12	94.6	8	12	88.4	9	12	85
5	13	112	6	13	106.4	7	13	98.3	8	13	87.8	9	13	89.6
5	14	103.3	6	14	96.9	7	14	96.1	8	14	94.7	9	14	79.6
5	15	85.9	6	15	85.3	7	15	87.1	8	15	85.6	9	15	94.7
5	16	75.6	6	16	78.4	7	16	76.3	8	16	75.3	9	16	74.3
5	17	69.5	6	17	65.5	7	17	72.3	8	17	71.9	9	17	66.5
5	18	64.8	6	18	69.9	7	18	72	8	18	66	9	18	63.5
5	19	71.8	6	19	74.1	7	19	76.4	8	19	74.3	9	19	76

10	0	75.2	11	0	77.1	12	0	75.9	13	0	76.4	14	0	89.7
10	1	76.5	11	1	78.4	12	1	79	13	1	83.9	14	1	89.1
10	2	77.8	11	2	77.9	12	2	74.4	13	2	82.4	14	2	86.1
10	3	76.7	11	3	83.6	12	3	79.3	13	3	80.1	14	3	75.6
10	4	74.3	11	4	71.9	12	4	72	13	4	74.2	14	4	73.2
10	5	66.1	11	5	69.6	12	5	71.6	13	5	73.7	14	5	73.8
10	6	64.7	11	6	66.9	12	6	68	13	6	73.8	14	6	67.4
10	7	61.4	11	7	62	12	7	64.4	13	7	64.8	14	7	66.8
10	8	61.6	11	8	60.6	12	8	64.5	13	8	65.1	14	8	66.1
10	9	57.5	11	9	59.7	12	9	69.4	13	9	74	14	9	74.4
10	10	62	11	10	65.6	12	10	75.8	13	10	84.2	14	10	76.9
10	11	79.8	11	11	81.6	12	11	88.8	13	11	84.2	14	11	76.4
10	12	84.9	11	12	91.8	12	12	82.9	13	12	73.1	14	12	77.3
10	13	82.3	11	13	87	12	13	84.5	13	13	78.5	14	13	77.1
10	14	89.9	11	14	81.9	12	14	82.3	13	14	79	14	14	75.9
10	15	86.8	11	15	82.3	12	15	77.5	13	15	75.2	14	15	70.4
10	16	73.9	11	16	77.6	12	16	72.8	13	16	69.1	14	16	69.3
10	17	68.3	11	17	68.4	12	17	66.9	13	17	67.1	14	17	67.8
10	18	68.9	11	18	66	12	18	67.6	13	18	65.7	14	18	66.7
10	19	72.7	11	19	83.9	12	19	70.4	13	19	65.8	14	19	66.3

Grid G5 continued:

15	0	89.1		16	0	82.9		17	0	92.7		18	0	104.9		19	0	123.3
15	1	86.4		16	1	87.7		17	1	87.9		18	1	101.9		19	1	103.3
15	2	80.1		16	2	85.1		17	2	90		18	2	97.1		19	2	99.7
15	3	84.1		16	3	83.4		17	3	82.2		18	3	85.5		19	3	85.6
15	4	78.2		16	4	75.5		17	4	76.9		18	4	78.6		19	4	80.6
15	5	74.2		16	5	74.4		17	5	74.5		18	5	74.6		19	5	78.4
15	6	68.7		16	6	72.8		17	6	71.3		18	6	76.9		19	6	101
15	7	67.6		16	7	68.4		17	7	73		18	7	75.2		19	7	97.6
15	8	66.3		16	8	66.9		17	8	78.9		18	8	72.4		19	8	91.4
15	9	74.8		16	9	66.4		17	9	77.9		18	9	77.4		19	9	98.5
15	10	74.3		16	10	84.5		17	10	88.8		18	10	94.9		19	10	104.3
15	11	78.9		16	11	89.8		17	11	94.5		18	11	98.5		19	11	104.3
15	12	83.1		16	12	90.5		17	12	91.2		18	12	92.9		19	12	93.6
15	13	82		16	13	85.7		17	13	85.5		18	13	83.3		19	13	82.4
15	14	73.5		16	14	68.8		17	14	74.8		18	14	75.8		19	14	73.8
15	15	69.3		16	15	66.5		17	15	68		18	15	72.1		19	15	73.2
15	16	68.9		16	16	69.2		17	16	68.1		18	16	68.8		19	16	74.6
15	17	65.1		16	17	71.2		17	17	65.7		18	17	66.6		19	17	67.7
15	18	63.8		16	18	67.1		17	18	69.7		18	18	70.1		19	18	70.1
15	19	68.6		16	19	68.1		17	19	68.1		18	19	61		19	19	69.4

Grid G6:

0,0,66.174	1,0,69.337	2,0,68.272	3,0,69.274	4,0,67.489	5,0,63.762	6,0,58.188
0,1,66.299	1,1,69.713	2,1,70.433	3,1,75.068	4,1,69.587	5,1,63.606	6,1,60.724
0,2,68.930	1,2,71.560	2,2,73.251	3,2,72.531	4,2,70.026	5,2,68.272	6,2,61.789
0,3,71.278	1,3,70.496	2,3,70.370	3,3,67.896	4,3,68.303	5,3,69.305	6,3,64.702
0,4,69.587	1,4,70.120	2,4,68.867	3,4,67.583	4,4,70.120	5,4,68.209	6,4,66.048
0,5,70.182	1,5,73.251	2,5,70.120	3,5,68.115	4,5,66.925	5,5,66.393	6,5,65.234
0,6,73.345	1,6,72.312	2,6,75.381	3,6,71.184	4,6,71.686	5,6,68.366	6,6,67.270
0,7,74.066	1,7,75.005	2,7,72.876	3,7,68.460	4,7,70.276	5,7,72.061	6,7,68.084
0,8,71.466	1,8,73.158	2,8,74.849	3,8,68.710	4,8,71.560	5,8,70.527	6,8,70.120
0,9,67.552	1,9,69.493	2,9,74.880	3,9,69.305	4,9,64.608	5,9,66.362	6,9,69.149
0,10,68.898	1,10,73.220	2,10,70.433	3,10,64.890	4,10,61.946	5,10,66.080	6,10,67.270
0,11,65.297	1,11,68.366	2,11,60.161	3,11,58.720	4,11,62.854	5,11,64.295	6,11,63.668
0,12,65.109	1,12,66.988	2,12,63.919	3,12,59.941	4,12,63.011	5,12,65.359	6,12,64.608
0,13,62.510	1,13,64.013	2,13,68.648	3,13,63.230	4,13,61.977	5,13,64.514	6,13,65.579
0,14,60.380	1,14,62.416	2,14,65.172	3,14,64.389	4,14,66.236	5,14,66.111	6,14,66.769
0,15,63.919	1,15,66.205	2,15,67.113	3,15,69.838	4,15,67.019	5,15,65.860	6,15,63.950
0,16,62.259	1,16,64.576	2,16,68.961	3,16,72.813	4,16,69.086	5,16,65.954	6,16,67.332
0,17,59.346	1,17,66.017	2,17,69.399	3,17,75.475	4,17,71.936	5,17,71.372	6,17,72.813
0,18,62.854	1,18,65.109	2,18,72.750	3,18,73.220	4,18,73.345	5,18,79.828	6,18,84.682
0,19,63.762	1,19,66.831	2,19,67.145	3,19,74.442	4,19,81.551	5,19,86.311	6,19,90.038

Grid G6 continued:

7,0,55.745	8,0,53.239	9,0,55.119	10,0,54.837	11,0,54.962	12,0,53.490	13,0,59.315
7,1,55.870	8,1,53.647	9,1,55.087	10,1,55.526	11,1,53.960	12,1,56.215	13,1,59.503
7,2,60.098	8,2,57.060	9,2,54.993	10,2,55.651	11,2,57.217	12,2,58.689	13,2,62.228
7,3,61.413	8,3,56.716	9,3,55.808	10,3,56.403	11,3,55.933	12,3,58.657	13,3,59.691
7,4,60.505	8,4,60.818	9,4,58.783	10,4,57.874	11,4,57.342	12,4,57.937	13,4,58.470
7,5,61.539	8,5,61.163	9,5,61.914	10,5,60.944	11,5,61.319	12,5,61.445	13,5,60.192
7,6,68.460	8,6,62.416	9,6,64.389	10,6,62.196	11,6,60.474	12,6,63.073	13,6,62.353
7,7,67.865	8,7,65.359	9,7,62.697	10,7,63.794	11,7,60.474	12,7,63.167	13,7,65.485
7,8,71.372	8,8,71.811	9,8,65.735	10,8,64.639	11,8,66.174	12,8,65.109	13,8,67.646
7,9,70.809	8,9,68.084	9,9,66.111	10,9,66.330	11,9,64.389	12,9,64.921	13,9,67.646
7,10,68.554	8,10,72.500	9,10,66.456	10,10,67.959	11,10,67.145	12,10,65.986	13,10,66.424
7,11,66.017	8,11,71.247	9,11,69.525	10,11,65.422	11,11,64.670	12,11,64.107	13,11,66.800
7,12,66.048	8,12,68.209	9,12,68.397	10,12,64.451	11,12,59.660	12,12,65.078	13,12,67.959
7,13,64.827	8,13,64.545	9,13,67.646	10,13,62.228	11,13,64.044	12,13,66.925	13,13,67.364
7,14,67.019	8,14,65.704	9,14,64.764	10,14,67.332	11,14,68.616	12,14,70.245	13,14,69.807
7,15,63.543	8,15,67.301	9,15,64.357	10,15,66.925	11,15,70.339	12,15,72.813	13,15,70.558
7,16,65.391	8,16,67.959	9,16,64.576	10,16,66.769	11,16,71.122	12,16,70.057	13,16,69.055
7,17,73.439	8,17,70.151	9,17,69.493	10,17,70.370	11,17,70.903	12,17,70.809	13,17,70.621
7,18,84.181	8,18,76.352	9,18,73.408	10,18,77.918	11,18,70.871	12,18,74.003	13,18,75.851
7,19,81.331	8,19,78.450	9,19,71.936	10,19,77.793	11,19,74.504	12,19,69.243	13,19,73.439

14,0,62.353	15,0,58.939	16,0,59.941	17,0,62.791	18,0,66.205	19,0,69.243
14,1,59.879	15,1,61.288	16,1,62.510	17,1,64.733	18,1,72.155	19,1,76.477
14,2,63.324	15,2,63.073	16,2,59.440	17,2,63.042	18,2,67.677	19,2,75.694
14,3,60.818	15,3,58.751	16,3,55.870	17,3,58.031	18,3,63.230	19,3,69.775
14,4,57.655	15,4,57.248	16,4,55.212	17,4,57.029	18,4,59.096	19,4,67.896
14,5,56.747	15,5,58.376	16,5,57.311	17,5,58.751	18,5,61.914	19,5,67.301
14,6,64.796	15,6,59.221	16,6,60.129	17,6,59.409	18,6,62.854	19,6,73.345
14,7,65.704	15,7,65.109	16,7,60.944	17,7,60.881	18,7,71.873	19,7,76.759
14,8,67.301	15,8,67.583	16,8,64.326	17,8,64.858	18,8,73.815	19,8,81.425
14,9,67.238	15,9,66.612	16,9,65.579	17,9,66.174	18,9,80.455	19,9,84.150
14,10,68.710	15,10,70.683	16,10,65.109	17,10,71.811	18,10,74.285	19,10,79.296
14,11,70.308	15,11,74.535	16,11,77.605	17,11,76.227	18,11,78.889	19,11,83.805
14,12,66.863	15,12,75.099	16,12,78.983	17,12,81.488	18,12,78.106	19,12,82.866
14,13,67.614	15,13,70.652	16,13,78.012	17,13,82.177	18,13,80.548	19,13,80.768
14,14,64.263	15,14,70.934	16,14,83.398	17,14,85.027	18,14,79.327	19,14,80.298
14,15,68.397	15,15,76.540	16,15,85.340	17,15,80.016	18,15,81.895	19,15,77.072
14,16,69.399	15,16,75.131	16,16,82.083	17,16,86.624	18,16,86.311	19,16,89.192
14,17,73.158	15,17,74.911	16,17,83.367	17,17,91.009	18,17,96.364	19,17,91.322
14,18,77.542	15,18,77.166	16,18,84.338	17,18,92.512	18,18,102.721	19,18,97.836
14,19,78.513	15,19,78.701	16,19,79.296	17,19,89.380	18,19,91.290	19,19,97.836