APPENDIX A. THE SOUTH SULAWESI LANGUAGE GROUP

A.1 Introduction

The concept of a South Sulawesi language group, introduced by Esser's (1938) broad classificatory maps of Netherlands Indies languages, has survived the advent of modern comparative linguistic studies initiated by Mills (1975a, 1975b). Its justification lies in a suite of generally shared qualitative characters, some of which are unique to the group, rather than in the lexicostatistical data which in fact would tend to remove the Makassar languages from the group (Sirk, 1989). Small bodies of lexicostatistical data may be found in several works (e.g. Mills, 1975a; Sirk, 1989) but none approaches the comprehensiveness of Grimes and Grimes (1987). Their study has since been constructively reviewed by Friberg and Laskowske (1989) who proposed several revisions (A.6) including alternative names to be preferred for some of the speech communities. However, because my primary original contribution will be to explore the implications of the Grimes' lexicostatistical data, I will review their scheme directly and retain their names for the speech communities.

Their database consists of a standardised 202-word list, slightly modified from the Swadesh 200-word list, recorded from 39 dialects and languages in South Sulawesi, with standard Indonesian as the 40th comparative group. Using the Grimes' abbreviations as spelled out in my later figures, the large map in Figure A-1 locates the 39 South Sulawesi speech communities based on the distribution maps of Grimes and Grimes (1987: Maps 2 and 7 to 11). Grimes and Grimes inspected the word lists to ascertain the percentages of words which appeared similar between each two speech communities. Following the guidelines of Simons (1977a), they presented these percentages in a 40 by 40 half-matrix sorted so as to place (i) the highest percentages of similar words along the diagonal, and (ii) the speech communities with the highest average lexicostatistical similarity (compared against the other speech communities) closest to the centre of the assortment. The half-matrix allowed them to classify

the speech communities into languages, subfamilies, families and stocks, i.e. groups whose members respectively show around 75-80%, 60-75%, 45-60% and 25-45% lexicostatistical similarity.

The two maps in Figure A-1 compare the Grimes' classification with the one suggested here by my formal statistical analysis. Note that the lexicostatistical boundaries can be read both externally and internally. For instance, in the Grimes' classification (the smaller map) the Makassar languages comprise a family when compared against the other families in the South Sulawesi stock, but internally they comprise a subfamily because the Grimes recognised languages as the highest internal division.[1] The differences between the two schemes will be reviewed in Sections A.4 and A.6.

A.2 Scatter Analysis of the Lexicostatistical Data

As a first analysis, let us disregard the issue of which speech communities group together so as to obtain a global picture. Here I chose multidimensional scaling with the similarities between the speech communities (hereafter, "operational taxonomic units" or OTUs) displayed on two-dimensional Euclidean space. I entered the half-matrix of similarities published by Grimes and Grimes into the OSIRIS MDSCAL package on the VAX computer at the Australian National University, and chose the appropriate options. The analysis juggled the OTUs until they found the configuration in which the closest OTUs are those with the highest similarity coefficients, and the most distant OTUs are those with the lowest similarity coefficients. That is, the rank order of Euclidean distances most fully reverses the rank order of inter-OTU similarities (Kruskal, 1964a), and the extent of mismatch from a perfect reversal can be measured as a percentage in "stress" (Kruskal, 1964b). The resulting configuration has 18.2% stress which, though technically verging towards poor, is in my experience a remarkably good

[1] In my formal analysis shown in the larger map, Makassar would be a stock when compared externally but a family when compared internally.

result considering the number of OTUs involved (cf. Bulbeck, 1981). Although the choice of three or more Euclidean dimensions would have resolved much of the stress, the results would have been harder to visualise, nor would it be possible to compare the configuration with the geographical distribution of the speech communities.

This is done in Figure A-2 which not only shows the two-dimensionally scaled configuration of the speech communities, but also fits a contorted map of South Sulawesi over the configuration. The exercise clearly shows the very strong influence of geography over lexicostatistical variation because, were these phenomena not strongly related, the large number of OTUs involved would render futile any map-fitting attempt. It is even possible to draw in *kabupaten* boundaries such that only one community, Mambi, cannot be placed in the correct *kabupaten*. Even though Kabupaten Luwu has speech communities from three "stocks" in Grimes and Grimes' classification, and Selayar and Mamuju each have representatives from two stocks, all three *kabupaten* retain their convex integrity in the map-fitting exercise (cf. Figure A-1).

Of course geography is not exercising direct control over lexicostatistical patterns so much as indirect control through its influence over population densities and avenues of communication. Thus the boundary between the Makassar and Bugis languages essentially follows the spine of the highest mountains of the western cordillera, while Bugis is demarcated from the languages of the "Northern South Sulawesi family" by a line running along the transition from prevailing lowlands to prevailing highlands (cf. Figures A-1 and 1-4). The main body of the South Sulawesi peninsula, a large area of well-populated lowlands inhabited by the Bugis (Figure A-1), has become greatly reduced in the "language map" (Figure A-2). Conversely the most sparsely populated region of South Sulawesi, corresponding to my "Northern Central Highlands" (Figure 1-4), has become grossly enlarged, except for a specific restriction corresponding to the Palu-Koro fault which is the main corridor through the region (Figure A-2).

All in all, the exercise highlights the point made by Grimes and Grimes (1987:11,13-14) - exchange of lexical items between communities in contact is a ubiquitous and constant process, regardless of the level of taxonomic distinctiveness between the speeches involved. Moreover the distortions to physical space themselves usefully highlight specific linguistic relationships. For instance, Campalagian sits on an imaginary peninsula jutting towards the Bugis dialects, with which Campalagian is most closely related, and away from the contiguous Mandar dialects. Selayar island has been "dragged" into the Gulf of Bone as a correct reflection of Laiyolo's specifically close relationships with Pamona, Padoe and especially Wotu.

A.3 Hierarchical Seriations and Lexicostatistical Data

Hierarchical seriations (or seriated dendrograms) represent a means of combining the best aspects of two important branches of statistical analysis, seriations and hierarchical clusters, in order to counteract weaknesses in either method used alone. Although seriation is most widely used to detect chronological ordering, what the exercise actually does is order items into a one-dimensional series, along a scale which need not be time (Irwin, 1985:122-125) and in this case will be social space. Hierarchical clustering, on the other hand, joins up OTUs into clusters via one of a variety of clustering algorithms (e.g. Sneath and Sokal, 1973; Kronenfeld, 1985). As usually applied, a weakness of hierarchical clustering is that, once an OTU joins a particular cluster, any specific relationships of the OTU with individual OTUs in other clusters is lost. This is because people believe that the sister branches of a hierarchical dendrogam can be twiddled at will without altering the significance of the results (e.g. Sneath and Sokal, 1973). However, here I will argue that the sister branches should be twiddled to reflect a seriated order.

The extra information available in the seriated dendrogam, compared to its unseriated counterpart, is the representation of the wider relationships of an OTU beyond those within its cluster. So for instance when two OTUs are similar, but one

(or both) has still closer links with a cluster which locks out the other OTU, the seriation may refind the temporarily lost inter-OTU similarity by placing the two OTUs next to each other at the adjacent peripheries of their respective clusters.

The extra information available for the seriation is that we have a structure for the OTUs over and above their ordering along a single dimension. It would of course be possible to produce the seriation first and then seek out the structure within the seriated OTUs, as for instance in the sorted and shaded matrices produced by Irwin (1985:125ff.) - a comparison which illustrates the point that seriations are clustered strings of clustered OTUs. In this respect the novelty of the present approach is that it produces the seriation from the structure rather than *vice versa*.

A further advantage of using hierarchical clustering to produce the seriation is the computational utility. Whereas the number of possible orders rapidly approaches a huge number as the number of OTUs increases, the superimposition of a hierarchical dendrogram drastically decreases the number of possible orders, and also allows whole suites of possible orders to be rejected merely by analysing how the higher-level blocks of OTUs relate to each other. True, given the size of the half-matrices with which I am dealing, up to 40 by 40, enough feasible orders still remain such that demonstration of the best order would require a specially written computer program. My efforts in computerisation do not go beyond writing a formula, using the Borland/Analytica (1987) "Reflex: The Analyst" PC programme, to assist in calculating the "goodness of fit" as measured here. However, applying this measure will show, at least for the data considered here, the degree to which seriated orders can vary with almost equally good results as long as the main axis of variation is observed.

As a final introductory point, I will cluster using the average linkage technique 'whereby admission of an item into a cluster is based on the average of the similarity of the item (or lot) with the other items in a cluster' (Irwin, 1985:131). Since our original coefficients of similarity are

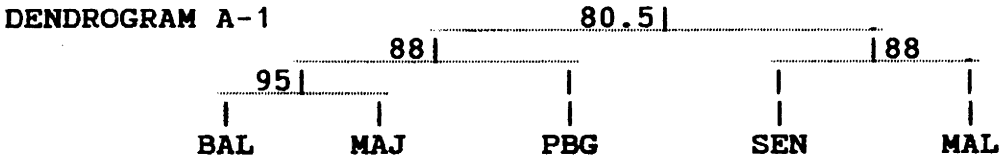
a simple additive variable, i.e. the number of lexically similar items expressed as a percentage, the estimate of average similarity (as derived from average linkage clustering) equals the average percentage of similar words which the word lists in one cluster share with the word lists in the other cluster as would have been deduced from comparing the original word lists. For example, say one cluster has two word lists and the other has three, so that in comparing the clusters we are actually comparing two times three equals six word lists, then both average linkage clustering and comparing the original word lists use the same formula - (number of similar items across the word lists [first word] plus number of similar items across the word lists [second word]...plus number of similar items across the word lists [202nd word]) divided by (six [word lists] times 202 [words]) multiplied by 100 (to obtain a percentage). I raise the point because it is generally overlooked that once two OTUs join into a common stem in a dendrogram, it is the common stem which behaves thereafter, and logically the analysis should proceed as though the two OTUs had been pooled. The statistical relationships which prevail after the clustered OTUs are treated as a pooled sample need not always be accurately predictable from the relationships which had prevailed beforehand (B.4.1). However, this equivalence does hold true in the present case where (i) every original OTU has the same sample size, here 202 words, (ii) the mathematical relationship is expressed by a simple additive variable, and (iii) average linkage clustering is used.

Grimes and Grimes (1987) themselves combined variants of seriation and hierarchical clustering but in the reverse order from that applied here. After sorting their half-matrix (A.1) they followed the guidelines of Simons (1977b) to identify cases of "successive divergence", where values away from the diagonal decrease down the columns but not along the rows; "sporadic convergence", where a cell has an anomalously high value compared to the cells around it; and "chaining", where the values away from the diagonal decrease along the rows as well as down the columns. From their inspection they carved the sorted half-matrix into blocks, and represented

the inter-relationships with dendrograms in which the branches diverge to show successive divergence, converge to show sporadic convergence, and criss-cross to show chaining (Grimes and Grimes, 1987:10-11ff.). In my terms successive divergence is the classical hierarchical dendrogram where the ordering of the OTUs is of no significance; chaining is a hierarchical dendrogram whose OTUs need to be seriated to bring out the full relationships; and sporadic convergence represents cases where two OTUs show a specifically close relationship which cannot however be produced from seriating the dendrogram. These points will become clear by following the order in which the OTUs would cluster together.

A.4 Hierarchical Seriation of the Data From South Sulawesi

Let us start with what is the most tightly clustered block of OTUs, the "Mandar language" of Grimes and Grimes. The seriated dendrogram appears as given below, with the values at which the OTUs cluster by average linkage shown at the point of joining:



The sorted half-matrix of lexicostatistical similarities is:

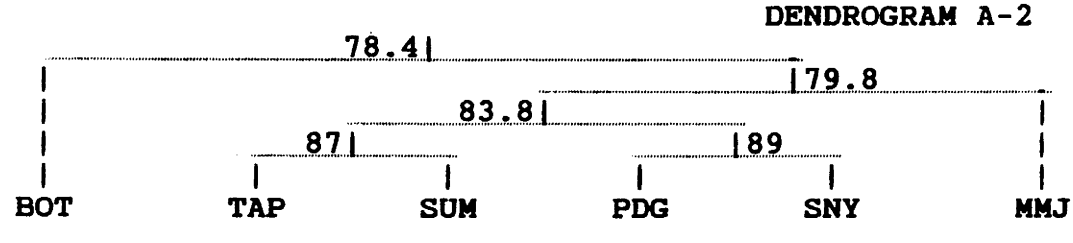
BAL				
95	MAJ			
88	88	PBG		
82	81	84	SEN	
76	78	82	88	MAL

Now if the seriation were perfect, then whether we move down the columns or along the rows, every value further away from the diagonal should become smaller or at least stay the same. All cases of larger values further away from the diagonal than smaller values represent stress in the seriation. Hence we consider the sum of all the possible differences between any cell closer to the diagonal and any cell further away, and the sum of all these possible differences but ignoring

the sign of the difference. Considering the first value as the numerator and the second as the denominator, and expressing the result as a percentage, measures the "goodness of fit" of the seriation compared against a perfect seriation. In this case, (95-88) + (95-82) + (95-76) + (88-82) + (88-76) + (82-76) + (88-88) + (88-81) + (88-78) + (81-78) + (84-81) + (84-82) + (81-82) + (84-82) + (88-82) + (88-78) + (88-76) + (82-78) + (82-76) + (78-76), all divided by the sum |95-88| + |95-82| + |95-76| + |88-82| + |88-76| + |82-76| + |88-88| + |88-81| + |88-78| + |81-78| + |84-81| + |84-82| + |81-82| + |84-82| + |88-82| + |88-78| + |88-76| + |82-78| + |82-76| + |78-76| (where |x| signifies sign ignored), equals 129/131 or 98.5%. This order, also found by Grimes and Grimes, is easily spotted as the best, although Sendana (SEN) and Malunda (MAL) could have been reversed with almost equally satisfactory results. Mandar is however a clear case of a dialect chain (Grimes and Grimes, 1987:36) with, as shown here, the two subgroupings of Balanipa/Majene/Pamboang (BAL/MAJ/PBG) and SEN/MAL. Geographically speaking we are looking at a steady transition along the Mandar Peninsula coastline, from Balanipa in the Gulf of Mandar, to Malunda to the north (see Figure A-1).

The block of sampled speech communities which Grimes and Grimes identify as the Mamuju language forms an almost equally tight cluster. Grimes and Grimes (1987:39) also found the best order for this dialect chain whose goodness of fit is 158/186 or 85.0%:

DENDROGRAM A-2

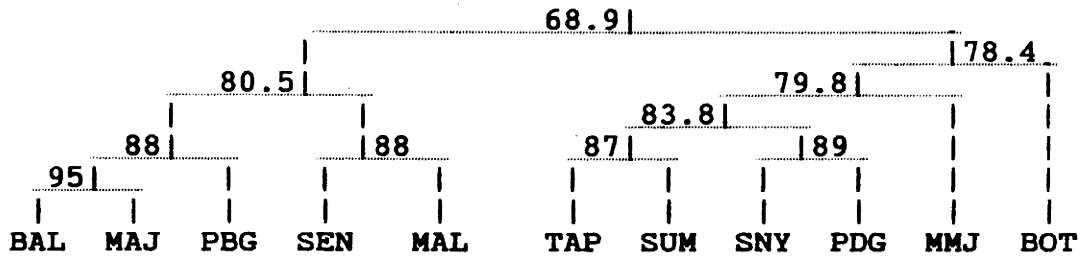


As represented here we are looking at a south-to-north lexicostatistical transition along the Mandar Peninsula north of the Mandar language area, although with Botteng (BOT) an isolate to some degree (see Figure A-1). As with Dendrogram A-1, and Dendrogram A-4 which follows, Grimes and Grimes give

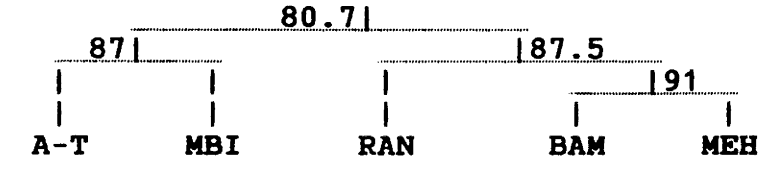
a counterpart dendrogram which contains very much the same information, but using the conventions proposed by Simons (1977b).

Botteng acts as an isolate in the wider context as well, as seen in the cluster formed by the Mandar and Mamuju languages. The best possible order is obtained by simply juxtaposing the two clusters as given above, except that Botteng swings around to fall beyond Mamuju (MMJ). This order which, excluding Botteng, suggests a south-to-north dialectical transition encompassing both languages from Balanipa to Mamuju, scores a goodness of fit of 2511/2751 or 91.3%.

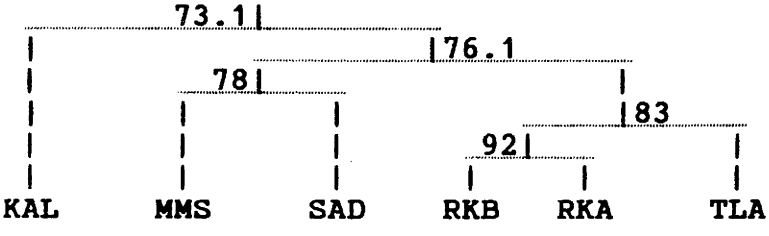
DENDROGRAM A-3



Let us move eastwards into the Southern Central Highlands (see Figure 1-4), considering first the block of speech communities which the Grimes identify as the Pitu Uluna Salu (PUS) language, and then their Toraja-Sakdan subfamily.



DENDROGRAM A-4
PUS language
"Fit":
114/116 = 98.3%



DENDROGRAM A-5
Toraja-Sakdan
subfamily
"Fit":
247/279 = 88.5%

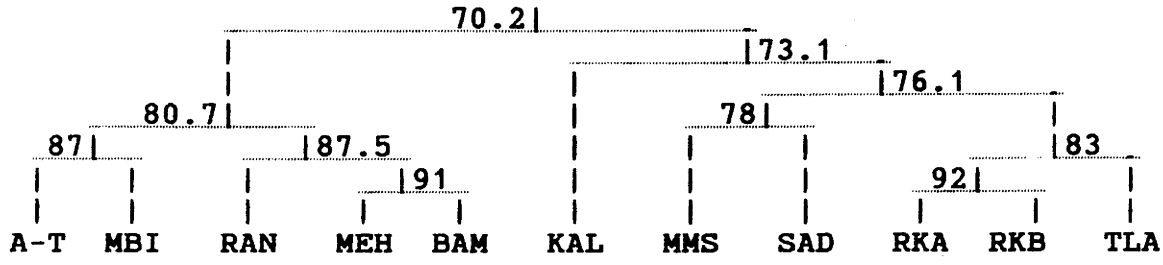
The PUS dialect chain as shown here was also identified by Grimes and Grimes (1987:42) and shows a south-to-north transition except that Bambang (BAM), which is located north

of Mambi (MBI), shows a specific affinity with Mehalakan (MEH) to the south (see Figure A-1).

As regards the Toraja-Sakdan subfamily, Grimes and Grimes (1987:46) placed Rongkong, i.e. Rongkong Bawah (RKB) and Rongkong Atas (RKA) treated as a single entity, between Mamasa (MMS) and Sakdan (SAD), and identified a sporadic convergence involving Rongkong and Toala. If we keep RKB and RKA separate then the Grimes' order can score no better than 205/269 = 76.2%. In the half-matrix which treats Rongkong as a single entity (Grimes and Grimes 1987:46), the counterpart to the order given here scores 129/141 = 91.5%, while the Grimes' order scores 115/141 = 81.6%. Clearly the former is more satisfactory, even though Kalumpang (KAL) and Rongkong would show a slight sporadic convergence, and indicates a general west-to-east lexicostatistical transition (see Figure A-1).

The PUS language and Toraja-Sakdan subfamily then cluster together. The best seriated order (Dendrogram A-6) fits at 2533/2727 or 92.9%. It involves some slight changes from the orders shown above, with the RKA-RKB and MEH-BAM pairs being twiddled around, in both cases involving small and quite insignificant improvements to the seriated order. Further, the placement of RAN (Rantebulahan) with respect to the MEH-BAM pair is also of little significance. For instance, if we changed the RAN-MEH-BAM order given below to MEH-BAM-RAN, the goodness of fit would be measured as 2478/2670 or 92.8%. In all cases we are dealing with a generally west-to-east lexicostatistical transition (see Figure A-1).

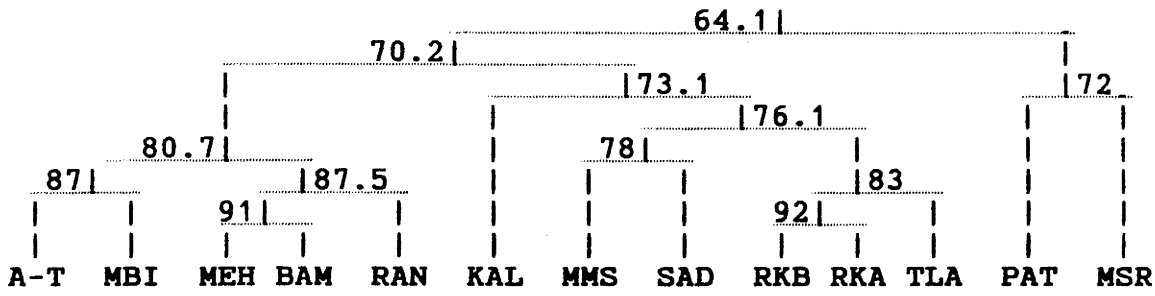
DENDROGRAM A-6



The next event involves Pattaek (PAT) clustering with Masenrempulu (MSR) and their common stem joining Dendrogram A-6 to the right-hand side of Toala (TLA). The best seriated

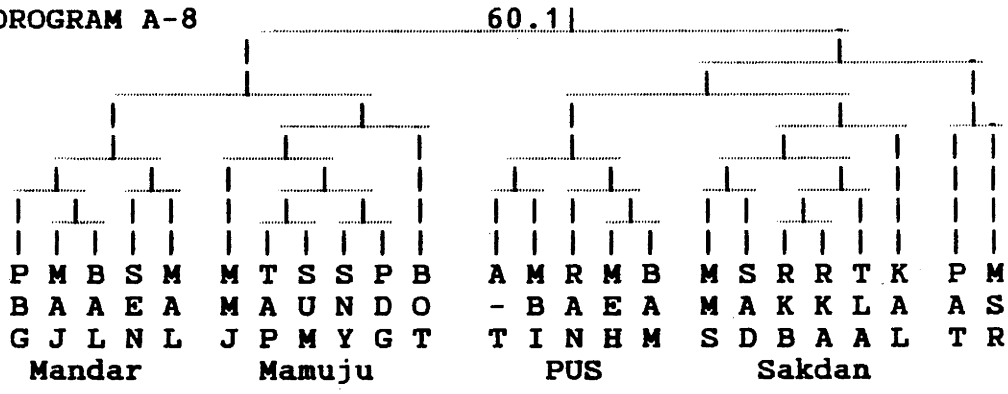
order, which also involves some fiddling with RAN-MEH-BAM and RKA-RKB, scores 4537/4845 or 93.6%, and places PAT and MSR in a position homologous to that in the sorted half-matrix of Grimes and Grimes (1987:19).

DENDROGRAM A-7



This cluster, and the Mandar-Mamuju cluster given above (Dendrogram A-2), then cluster into the Northern South Sulawesi Family of Grimes and Grimes. After some experimentation I found what appears to be the best seriated order, scoring the still high value of 34,887/38,523 or 90.6%. For the sake of simplicity, this dendrogram and most of those which follow will dispense with the values for the lower-level joins.

DENDROGRAM A-8



As well as some minor twiddles along the same lines discussed previously, we here see a few more prominent relocations, notably the repositioning of MMJ next to Mandar (cf. Dendrogram A-3) and KAL next to Pattaek (cf. Dendrogram A-7). These switches have occurred because both MMJ and KAL are to some degree isolates which do not fit in with the wider lexicostatistical patterns. They have been pushed to the furthest peripheries which the higher-level structure of

the seriated dendrogram allows because this involves the smallest possible stress in the overall seriation, at least as gauged here. It would however be quite wrong to read this diagram as implying that MMJ is close to Mandar and KAL is close to Pattaek-Masenrumpulu, because quite the reverse is true as indicated in the dendrograms given previously.[2] On the other hand BOT is correctly shown as lexicostatistically transitional between the Mandar-Mamuju languages and the languages to the east, even though it is not geographically intermediate. Apart from BOT (a geographical isolate but a lexicostatistical link) and KAL, PAT and MSR (geographical and especially lexicostastical isolates), the dendrogram shows a clear west-to-east transition (see Figure A-1). The great separation between Mandar and PAT in the dendrogram, even though they are geographically adjacent, points to a sharp distinction at their border.

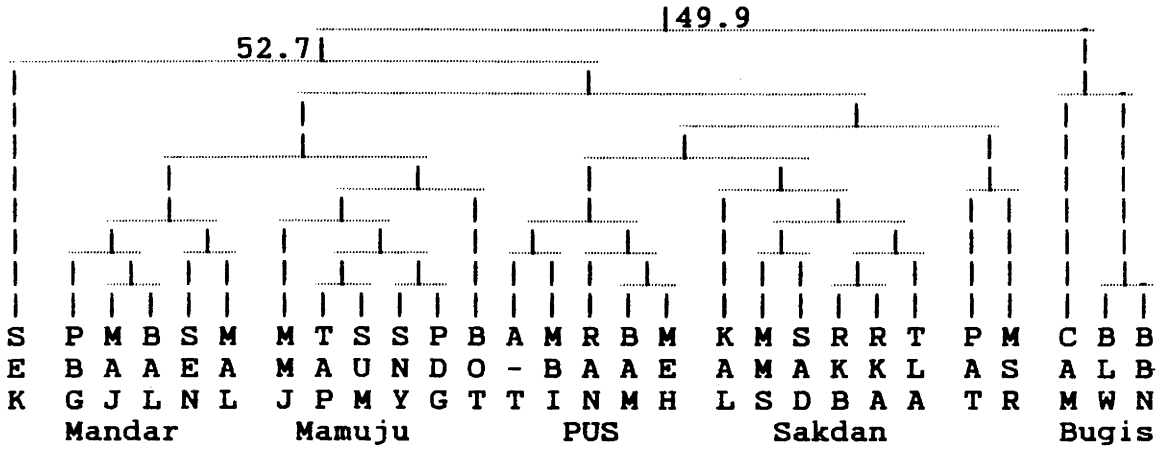
Seko Tengah (SEK) then joins Dendrogram A-8 with an average 52.7% lexicostatistical similarity. It falls to the far right of MSR, leaving the rest of the dendrogram's order unchanged, but lowering the goodness of fit slightly, to 40,195/44,432 or 90.5%. From the point of view of Seko the geographically close RKA and RKB (see Figure A-1) are the most similar OTUs, but from the point of view of Rongkong, Seko is not similar at all (see Grimes and Grimes, 1987:19). So while it is my introduction of hierarchical clustering which specifically forces Seko to the periphery of the seriation, a seriated order that placed SEK next to Rongkong would occasion more stress than that given here. Hence both the present seriation and the large half-matrix given by Grimes and Grimes (1987:19) place Seko next to PAT and MSR, even though Seko is specifically dissimilar from the latter OTUs, as a compromise towards bringing Seko as close as reasonable to Rongkong and the other Toraja-Sakdan OTUs.

Our next cluster consists of Bugis, represented by the two dialects Luwuk Bugis (BLW) and Bone Bugis (BBN), plus Campalagian (CAM) which joins the Bugis even though its highest individual similarities are with contiguous Mandar

[2] One of the advantages of building up the dendrogram in the step-wise procedure followed here is that it pre-empts these sorts of erroneous misreadings.

dialects. This cluster joins the main dendrogram after Seko had joined. After some experimentation the best order appeared to be:

DENDROGRAM A-9

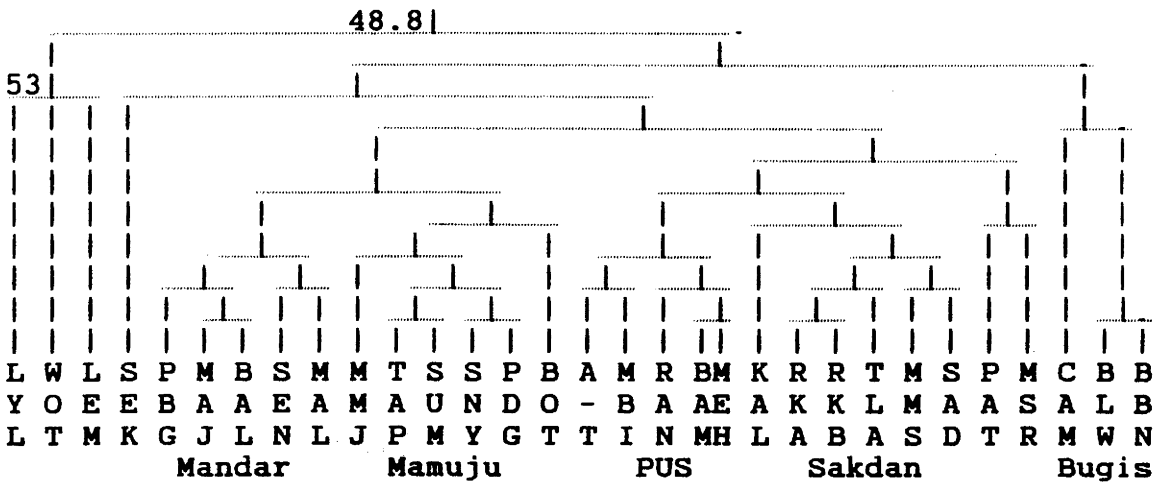


The dendrogram's goodness of fit, 53,302/62,957 or 84.7%, shows that adding the Bugis Family creates considerable stress. Bone and especially Luwuk Bugis show quite strong lexicostatistical similiarities with Pattaek (PAT) and Toala (TLA), and to a lesser degree with MSR, Rongkong and Sakdan (SAD), causing the Bugis Family to fall at the right of the dendrogram. CAM however would prefer a position next to Mandar and so is misplaced in this dendrogram. Seko and the Bugis-CAM OTUs are poles apart as the dendrogram correctly shows, even though this leads to the misplacement of Seko next to Mandar. The left-to-right order of the seriation finds its close equivalent in Figure A-2 by drawing a line from top-left to bottom-right, slanted at 45° through the point of origin (0,0), drawing perpendiculars from this line to the OTUs, and placing the OTUs on this line at the base of the perpendiculars. Finally, note that the isolate KAL, which is lexicostatistically dissimilar from the Bugis OTUs, has been switched back towards PUS (cf. Dendrogram A-8).

The next cluster to join the main cluster is the triplet which includes Lemolang, Wotu and Laiyolo (LEM-WOT-LYL). Wotu

shares 53% lexicostatistical similarity with both LEM and LYL, hence we are dealing with a three-way join at 53%.[3]

DENDROGRAM A-10



The goodness of fit of this order is 76,646/91,075 or 84.2%, showing that the placement of LYL-WOT-LEM at the Mandar end of the seriation adds yet further stress, because they (like Seko) would prefer the Toraja-Sakdan end of the seriation which has been pre-empted by the Bugis Family. Note that switching the extremes would create further stress, e.g. the order BBN-BLW-CAM-MSR-PAT-PBG-MAJ-BAL-SEN-MAL-MMJ-TAP-SUM-SNY-PDG-BOT-A-T-MBI-RAN-MEH-BAM-RKB-RKA-TLA-MMS-SAD-KAL-SEK-LEM-WOT-LYL scores 73,146/92,130 or 79.4%. Also note that the Grimes, and Friberg and Laskowske (1989), place Wotu and Laiyolo in the Muna-Buton stock, whereas they place the speech communities from LEM to Bugis in the South Sulawesi stock.

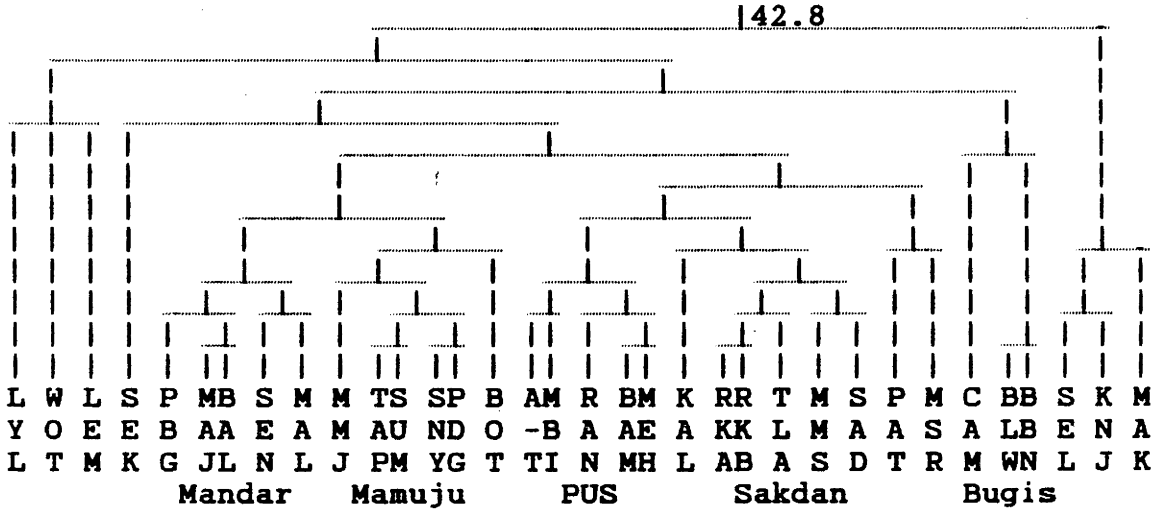
Our next addition to the main dendrogram involves the Makassar subfamily of Grimes and Grimes (1987), represented by Lakiung Makassar (MAK), Coastal Konjo (KNJ) and Selayar (SEL). Even though the Grimes (see Figure A-1) and Friberg and Laskowske (1989) place the Makassar languages in the South Sulawesi stock, the present analysis shows that they cluster with the other OTUs belonging to the South Sulawesi stock only after Wotu and Laiyolo (Muna-Buton stock) had joined the main cluster. All three Makassar languages,

[3] In the next two dendrograms, no space will be allowed between some lexicostatistically similar OTUs, so that the whole dendrogram can fit on the page.

especially MAK, are lexicostatistically aberrant within the South Sulawesi context. If we rigidly apply the Grimes' lexicostatistical classifications then their data would have the Makassar languages form their own stock, while the other peninsular languages including Wotu and Laiyolo would form another stock (Figure A-1). I give the latter the whimsical name "Remainder Stock" because I do not wish to imply a formal grouping, since in all likelihood Wotu and Laiyolo are incorporated only because of the lack of comparisons with the languages of Southeast Sulawesi (A.6). As regards the stock-level distinctiveness of the Makassar languages, Charles and Barbara Grimes were already aware of this implication but placed the Makassar languages in the South Sulawesi stock owing to a suite of qualitative linguistic similarities - the same point made by Sirk (1989) and others.

Joining the Makassar stem with the main cluster places it to the far right, beyond the Bugis. The fit of the seriation, 105,563/125,044 or 84.4%, is a slight improvement over the previous dendrogram, as a reflection of the great lexicostatistical dissimilarity between LYL-WOT-LEM-SEK and the Makassar languages.

DENDROGRAM A-11



At this stage it is worth pointing out two "sporadic convergences", one involving LYL and SEL, and the other involving WOT and BLW (respectively, 54% and 56% lexicostatistical similarity). LYL shows only a low lexicostatistical similarity with the non-SEL Makassar

languages, as does WOT with respect to BBN and CAM, resulting in the placement of LYL and WOT at the other extreme from BLW and SEL in all the seriated dendrograms which involve these OTUs. The extreme placement of these OTUs should not be regarded as a shortcoming of the seriated order, rather the concept of "sporadic convergence" usefully emphasises that certain individual similarities are anomalous within the context of overarching trends.

The sporadic convergences considered here would reflect lexical hybridisation resulting from the geographical proximity of SEL with LYL, and BLW with WOT and the other languages of the Luwuk Coastal Plain (see Figures 1-4 and A-1). Accordingly, the Selayar language might have resulted from a fairly recent expansion of a Makassar language (Konjong) on to Selayar island, and the Luwuk dialect of Bugis might represent a fairly recent expansion of Bugis into the Gulf of Bone.

To complete the exercise, standard Indonesian then joins the main cluster, to be followed by the five languages of the Central Sulawesi stock included by the Grimes in their large half-matrix. The order given by Grimes and Grimes (1987:19) is close to the best, with its goodness of fit calculable as 184,289/214,015 or 86.1%. I managed to find some minor rearrangements which decrease the stress of the seriation slightly, including those which allow a hierarchical dendrogram to be imposed on the seriation (which is not quite possible using the order given by the Grimes). The least stressful order I could find, shown in Figure A-3, scores a goodness of fit 184,666/213,876 or 86.3%.

Some other plausible orders, which would be permissible within the framework of a hierarchical cluster, were tried with the following results:
RAM-PDO-TOP-SAR-PMN-LYL-WOT-LEM-SEK-MAJ-PBG-BAL-SEN-MAL-MMJ-SUM-TAP-SNY-PDG-BOT-A-T-MBI-RAN-BAM-MEH-RKB-RKA-TLA-MMS-SAD-KAL-PAT-MSR-CAM-BLW-BBN-SEL-KNJ-MAK-BI (i.e. an extension of what had been the best order before Indonesian and the Central Sulawesi languages joined): goodness of fit 182,502/213,082 or 85.6%;

BI-MAK-KNJ-SEL-BBN-BLW-CAM-PBG-MAJ-BAL-SEN-MAL-MMJ-SNY-PDG-SUM-TAP-BOT-MSR-PAT-A-T-MBI-MEH-BAM-RAN-MMS-SAD-RKB-RKA-TLA-KAL-SEK-LEM-WOT-LYL-PMN-SAR-TOP-PDO-RAM (i.e. the best order I could find which placed MSR and PAT centrally within the Northern South Sulawesi language family): goodness of fit 183,506/215,320 or 85.2%.

These involve radical rearrangements of the Northern South Sulawesi OTUs compared to the order shown in Figure A-3, yet the seriation's goodness of fit changes by 1.1% or less. All three seriations correctly strike the main axis of variation which, as shown in Figure A-2, places the block of primarily southern OTUs (Indonesian, Makassar, Bugis) at one extreme, the block of primarily northern OTUs (Seko, Lemolang, Wotu, Laiyolo, Central Sulawesi languages) at the other extreme, and the OTUs of the Northern South Sulawesi family in the middle. By recognising this main axis of north-to-south variation, and sensibly arranging the OTUs within the three main blocks, 85 to 86% of the variation in the original 40 by 40 half-matrix can be correctly represented in a suite of seriations. This point highlights the ubiquitous diffusion of lexical items across South Sulawesi's landscape, and suggests that the use of lexicostatistical data to classify South Sulawesi's speech communities into languages, subfamilies and so on primarily amounts to a useful pigeonholing procedure. Further, a hierarchical dendrogram such as Figure A-3 does not represent a linguistic family tree, and any attempt to reconstruct linguistic origins from any modern linguistic features alone would somehow have to account for the past diffusion of linguistic features.

A.5 Down-the-Line Seriation of the South Sulawesi Languages

As regards the hierarchical seriations discussed above, I have found guidelines to help determine the order of the branches, but no hard and fast rules, except the *post hoc* rule that the order should maximise goodness of fit. Appendix B, which deals with the tradewares, uses a rule-bound seriating procedure which can be called "down-the-line" seriation. The procedure is designed specifically for those clustering exercises where the relationships of a common stem

cannot be accurately predicted from the relationships which the member OTUs had before they clustered. In these cases the original half-matrix of coefficients need not be an accurate guide to how the OTUs should cluster, and so they do not provide a fair test of the validity of the seriated order which results. However, as explained above (A.3), lexicostatistical data are one of the few data sets where the correct hierarchical clustering can be deduced from the original coefficients with perfect accuracy. So it is of some methodological interest to investigate whether down-the-line seriation is applicable to lexicostatistical data.

We will first try out "nearest next-to-sister" seriation. Here the argument runs as follows: if hierarchical clustering always places sister stems adjacent (at their level in the dendrogram), then the stems should be twiddled such that the nearest next-to-sister stems are also adjacent. The seriation proceeds in the reverse order of the linkages, from the top of the page down (see Figure A-4). The last two clusters to join, the "Central Sulawesi stock" and "Other", are the first to split. The second-to-last join, Rampi with the other Central Sulawesi languages, becomes the second split in the seriation. At this point Rampi is lexicostatistically the less like "Other" languages, so the common stem of the non-Rampi Central Sulawesi languages is placed next to the "Other" common stem, and Rampi is placed at an extreme. The third-to-last join, Padoe (PDO) with Saruda-Topoiyo-Pamona (STP), becomes the third split. At this stage the clustering half-matrix was:

"Other"			
34.77	Padoe		
38.25	40.33	STP	
35.89	36	40	Rampi

Excluding the 40.33 value at which Padoe and STP joined, the highest lexicostatistical similarity is between STP and Rampi. Hence STP is placed next to Rampi as a reflection of their next-to-sister relationship.

With Padoe now fixed as the left-hand member of the Central Sulawesi languages, the next split, BI from "Other", is gauged with respect to Padoe. At this stage the relevant

lexicostatistical similarities were "Other":PDO = 34.8 and BI:PDO = 33. BI's lower similarity results in BI taking an extreme position to the left hand of the dendrogram (Figure A-4). Hence the next split, between the Makassar languages (MKL) and my "Remainder stock", is gauged with respect to the immediate outliers, BI and Padoe. At this stage the relevant half-matrix used during the clustering procedure was:

BI			
40.8	"Remainder"		
38.67	42.78	MKL	
33	35.13	31.67	Padoe

The "Remainder stock" is positioned next to BI, because they share the highest lexical similarity after that which had clustered MKL and the "Remainder stock", so the Makassar stem swings over towards Padoe. And so on, with the seriating decisions shown in small figures in Figure A-4.

The resulting order differs radically from those considered previously.[4] The comparison cited immediately above causes the whole block of Sulawesi languages not belonging to the Central Sulawesi stock, from Laiyolo to Makassar, to be reversed with respect to the outliers Indonesian (BI) and the Central Sulawesi languages. As shown by comparison with Figure A-2, this is a less satisfactory order, and the goodness of fit comes to 157,912/207,183 or only 76.2%.

Although "nearest next-to-sister" analysis produces a comparatively poor seriation, it does highlight two connected points which are disguised in the main seriations. Firstly, it is the "Remainder stock" rather than the "Makassar stock" which is lexicostatistically closer to Indonesian. Indeed, the "Remainder stock" relates more to Indonesian than to the Central Sulawesi languages despite the diffusion of lexical items between the "Remainder" and Central Sulawesi stocks.

[4] Note that the method would have produced the same result even if one of the Central Sulawesi languages other than Padoe had taken up the left-hand position. This is because the highest average lexicostatistical similarity which the "Remainder stock" shares with any Central Sulawesi language, 40.23% (with Saruda), falls below the 40.8% average lexicostatistical similarity recorded between Indonesian and the "Remainder stock".

Secondly, the aberrant lexicon of the Makassar languages within the South Sulawesi context cannot be attributed to borrowings from Malay (Indonesian), nor have any other specific relationships between Makassar and any non-South Sulawesi language been seriously proposed.

A variant which I tried on the above procedure involves seriating by the least stress within the immediate comparisons. For instance, in the comparison involving "Other", Padoe, STP and Rampi, some stress is clearly involved because Padoe (compared against STP) is the less like both of the outliers (i.e. "Other" and Rampi). We might argue that Padoe should be placed next to "Other", since its lexicostatistical similarity with "Other" is only 3.48% less than the comparable value of STP, as opposed to 4% when Padoe and STP are compared against Rampi. At this stage, and the stage where Indonesian hives off from "Other", the same order results as in the "nearest next-to-sister" seriation. But when we come to placing the Makassar and "Remainder" stocks with respect to Indonesian and Padoe, less stress (40.8 minus 38.67 or 1.13%) results from placing the Makassar stem next to Indonesian than from placing it next to Padoe (35.13 minus 31.67 or 3.46%). That is, the procedure correctly picks up the point that, although the Makassar languages are generally aberrant, they are less so with respect to Indonesian than with respect to the Central Sulawesi languages. However, lower in the dendrogram the procedure reverses the order of the PUS, Toraja-Sakdan and MSR-PAT blocks of OTUs compared to the best seriations (cf. Figures A-3 and A-5). This reversal lowers the goodness of fit slightly to 178,111/213,965 or 83.2%, even though the fit with the main axis of variation in Figure A-2 appears equally good or even slightly better.

Down-the-line seriation disconsiders relationships beyond the immediate comparisons and so, not surprisingly, fails to produce the best fitted order overall. By the same token it is more sensitive to immediate relationships. For instance, the within-ordering of the Central Sulawesi languages suggested by Figure A-2 is better represented by down-the-line seriation (Figures A-4 and A-5) than in the seriations which in effect order the Central Sulawesi

languages with respect to those further south (e.g. Figure A-3). However, one problem with down-the-line seriation is that OTUs which are anomalous within a cluster fall to the extremities of the cluster, even if they are generally anomalous rather than representive of a transition towards a sister cluster. For instance, Saruda or Pamona would appear to be a better candidate than Padoe as the Central Sulawesi language by which to seriate the other languages (see Figure A-2). This potential weakness is not counteracted at all by "nearest next-to-sister" seriation and so would appear to explain its poor performance. In contrast, "least neighbours' tension" seriation overrules the main anomalies and so appears to perform quite well.

A.6 Other Reviews of the Languages of South Sulawesi

The Summer Institute of Linguistics, which undertook the survey of South Sulawesi speech communities studied by Grimes and Grimes (1987), has since carried out further surveys. Based on the results, Friberg and Laskowske (1989:2ff.) suggested various revisions to the Grimes' distribution map and classification of South Sulawesi's languages, principally involving the fringes of the Northern South Sulawesi family. However, since Friberg and Laskowske substantiate their argument with only a selection of immediate lexicostatistical comparisons, which falls far short of the 40-by-40 half-matrix provided by Grimes and Grimes (1987:19), their suggestions cannot be rigorously tested here.

For instance Ulumanduk, which the Grimes could not include in their study, proved to be lexicostatistically (and geographically) central within the Mandar Peninsula speech communities, and apparently also extensive. Thus Friberg and Laskowske reclassify Tappalang (TAP), Botteng (BOT) and Sondoang as dialects of Ulumanduk rather than dialects of Mamuju, and find that much of the northern Mandar-speaking area (in the Grimes' study) is really Ulumanduk territory. Ulumanduk belongs to a Pitu Uluna Salu subfamily, so compared to the situation shown in Figures A-1 to A-5, PUS would cut in between Mandar and Mamuju (Friberg and Laskowske, 1989). This significant rearrangement may be correct, because the

relations shown between groups depend on which particular OTUs are sampled, but Friberg and Laskowske nowhere provide a half-matrix comparing all the Mandar, Mamuju and PUS OTUs whereby the breakup into particular groups could be formally demonstrated. Their point that Mamasa, PUS, Ulumanduk, Mamuju and Mandar form one linguistic continuum, on account of the ubiquity of transitional dialects (Friberg and Laskowske, 1989:6), would certainly be supported by the present study (e.g. Figure A-3), or even extended to include almost the entire Northern South Sulawesi family (cf. Friberg and Laskowske, 1989:8-9).

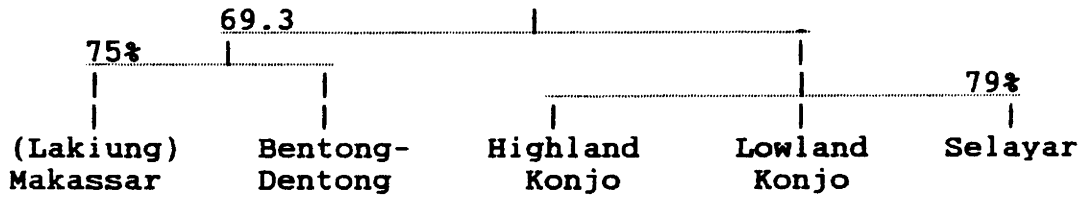
Friberg and Laskowske (1989:8-9) further propose the following minor amendments to the Northern South Sulawesi family: reclassification of Pattaek as a dialect of Mamasa; recognition of Rongkong and Luwuk (Toalak) as dialects of the same language rather than as separate languages; and relabelling the Grimes' three dialects of the Masenrempulu language - Enrekang, Maiwa and Duri - as the three languages of the Masenrempulu subfamily (while the Grimes' other Masenrempulu language, Pattinjo, becomes a dialect of Enrekang). Friberg and Laskowske's second point is strictly correct (cf. Dendrogram A-5); they may also have enjoyed the advantage of sounder information in proposing their first and third points, but they do not provide any supporting data.

As regards the Muna-Buton stock, specifically the Grimes' finding of a 53% lexicostatistical similarity between the Barang-Barang dialect of Laiyolo (LYL) and Wotu, Friberg and Laskowske (1989:13) relate a Barang-Barang folk history in which a Barang-Barang prince sailed away to settle in Wotu. If this passage is meant to imply a relationship of sporadic convergence between LYL and Wotu, it would do so misleadingly, because LYL shows comparable lexicostatistical similarities (38-50%) with the Central Sulawesi languages sampled by Grimes and Grimes (1987:19), similarities which are consistently higher than those involving Wotu. Further, the relationships extend to Sulawesi's southeast tip given the 58% lexicostatistical similarity between LYL and Buton (Grimes and Grimes, 1987:63). Sirk (1988:11) confirms the last point to the extent of showing that Wolio, a dialect of

Buton, shares a 76% similarity with LYL and a 56% similarity with Wotu, as calculated from a 100-item Swadesh word list. In the terminology of Grimes and Grimes, Wotu, Laiyolo and Buton would comprise a family, one which would belong in the same stock with Muna based on the lexicostatistical comparisons given by Sirk (1988:11). In his study of Muna, Van den Berg (1989:8) also accepts a Muna-Buton grouping and points out the need to investigate its wider relationships with the languages of Central and Southeast Sulawesi.

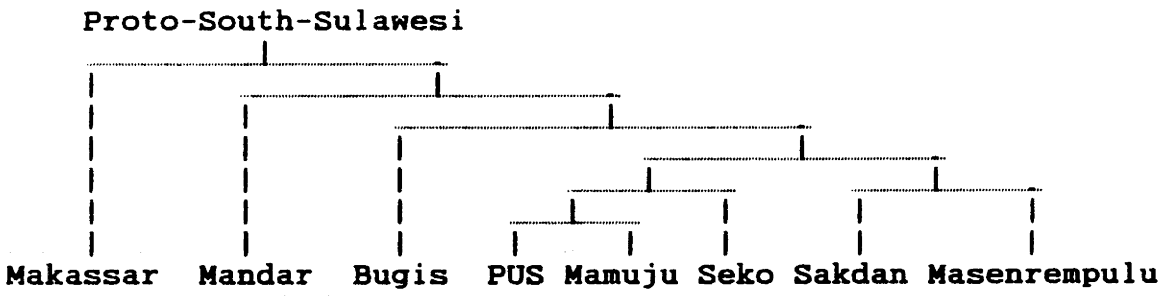
The above paragraph might be interpreted to suggest that LYL, and the related Kalao language on Kalao island near Selayar, represent a linguistic continuum once widespread in South Sulawesi, stretching from Selayar across the Gulf of Bone, and then further east to Sulawesi's southeastern tip. In this scenario the South Sulawesi segment of the continuum has been interrupted by the impingement of the Makassar, Bugis and Toraja-Sakdan languages. As another possible interpretation, LYL and Kalao could have derived from the coasts of the Gulf of Bone or Sulawesi's southeast tip, or at least have been heavily influenced by thoroughgoing contact from these regions. Choosing between these interpretations could carry major implications for interpreting the genesis and spread of the languages of the South Sulawesi stock.

Friberg and Laskowske (1989:3) also provide lexicostatistical data on the two highland languages of the Makassar family, Bentong-Dentong and Highland Konjo, in addition to the three coastal communities sampled by the Grimes. The seriated dendrogram deriving from their data, with a goodness of fit of 147/151 or 97.4%, confirms the smooth, west-to-east lexicostatistical transition already suggested by the Grimes' smaller data set.



The linguists working with the Summer Institute of Linguistics' programme in South Sulawesi have desisted from

interpreting their classificatory system as a family tree. This is not the case with Mills (1975a, 1975b) whose goals were to reconstruct Proto-South-Sulawesi through a structural phonological analysis and to suggest a family tree for the South Sulawesi languages. Two difficulties with Mills' work, noted by Sirk (1989:55-56), are the poor quality of his word lists (compiled either from dictionaries or largely by informants familiar with the orthography of Bahasa Indonesia), and the numerous exceptions to his reconstruction of Proto-South-Sulawesi which Mills was unable to explain. A third difficulty is that Mills (1975a:497-498) claims to have considered his lexicostatistical evidence in reconstructing the two family trees he offers - yet not only is his evidence very incomplete, based on only nine OTUs (Mills, 1975a:490, 492), but also the implications support the Grimes' scheme (and hence Figure A-3) more than they support either family tree offered by Mills (cf. Grimes and Grimes, 1989:202-203). Given that his lexicostatistical efforts are demonstrably inadequate, his more critical family tree is the one which makes less recourse to lexicostatistics. It can be shown as follows:[5]



Mills' structural phonological analysis confirms the aberrance of Makassar but suggests that Mandar, rather than Bugis, was the next linguistic taxon to leave the main stem. As far as I am aware there has not been a serious review of Mills' structural phonological analysis, and so the family tree shown above cannot be easily dismissed. However, Mills' scenario of the culture history of the South Sulawesi languages is demonstrably in error (A.7).

[5] Note that the only difference between his family trees involves the position of Bugis and Mandar.

A very interesting and possibly crucial development within recent years is Adelaar's demonstration that the Tamanic languages, which are located almost centrally in the island of Kalimantan, also belong to the South Sulawesi group. Adelaar notes that the phonological evidence tends to relate Tamanic specifically with Bugis, even if the frequencies of shared lexical innovations would slightly favour a specific relationship between Tamanic and Toraja-Sakdan.[6] The nature of the phonological similarities and the geographical isolation of the Tamanic languages rule out the possibility of similarities through borrowing. Hence the possibilities boil down to whether Tamanic could have resulted from an ancient migration from South Sulawesi to Kalimantan, whether the South Sulawesi languages (excluding Tamanic) could have resulted from an ancient migration from Kalimantan, or whether there was some other, as yet unidentified homeland. Of these, the first scenario seems the most feasible (Adelaar, in press).

Finally, while Sirk (1989) concludes that the qualititative data support the concept of a South Sulawesi language group as conventionally understood to include Makassar, he also notes the existence of contrary trends. For instance the manner of forming the numeral "four hundred", and a few lexical roots, distinguish the non-Makassar languages of the South Sulawesi group from Makassar. Accentuation patterns, and the lowering of high vowels before *-q, are areal features also shown by the Badaic languages of Central Sulawesi province, while the lexical item *beluak unites the Central Sulawesi languages specifically with the non-Makassar members of the South Sulawesi language group (Sirk, 1989:74-75). So while different borders are suggested by the qualitative and the lexicostatistical data, the issue of diffusion of traits across borders, and a pattern of general geographical transition overall, remain as relevant to the qualititative as to the lexicostatistical comparisons.

[6] The specific relationships of Tamanic with both Bugis and Toraja-Sakdan recall Mills' suggestion (1975a:498) that Bugis must have passed through a Sakdan- or Masenrempulu-like stage.

A.7 A Tentative Overview

According to the dominant paradigm in island Southeast Asia's later Holocene prehistory, the colonisation of the archipelago by Austronesian speakers is related to the appearance of a Neolithic assemblage - especially pottery - in the archaeological record (Bellwood, 1985, 1988a; Spriggs, 1989). Recalibration of the radiocarbon dates which Glover (1978) associates with a ceramic Toalean phase at Ulu Leang 1 would date the arrival of Austronesian speakers at Leang-Leang, Maros, to approximately 5000 years ago (Spriggs, 1989). However, my understanding of the Leang-Leang sites would date the initial appearance of pottery to less than 3500 years ago (Bulbeck, in prep. a). This would seem to be rather late given the overall chronology, as currently understood, of the expansion of Austronesian within the Indo-Malaysian archipelago (e.g. Blust, 1988). It would imply a back-migration into South Sulawesi from further west, as assumed by Mills (1975a), and possibly supported by the lexicostatistical data (especially Figure A-4). Given the demonstration by SSPHAP's survey of Toalean sites in open (non-cave) contexts (e.g. Chapters 7 and 10), and the assumption that the "Toaleans" were hunter-gatherers who did not speak an Austronesian language, it is possible that the Toaleans had occupied the South Sulawesi peninsula at sufficiently high densities to resist substantial Austronesian colonisation for centuries or millennia.

A point of almost universal agreement is the relatively great distinctiveness of the Makassar languages from those surrounding it. Probably this does not merely reflect the comparative geographical isolation of the Makassar languages, nor the possible replacement of former intervening languages owing to the expansion of Bugis and Makassar. It probably also implies that "proto-Makassar" was the first language to split off the main line of descent of the South Sulawesi languages (e.g. Mills' family tree depicted above). To help explain the lexical aberrance of Makassar, Mills (1975a:513-514) suggests that Makassar may have mixed with an indigenous substratum related to the Central Sulawesi languages. However, as shown above, the Makassar languages

are lexically aberrant not only with respect to the other languages belonging to the South Sulawesi group, but also the Central Sulawesi languages, Wotu and Laiyolo (apart from the sporadic convergence between Selayar and Laiyolo), and even standard Indonesian. If the lexical aberrance of Makassar is to be accounted for by the inclusion of a substratum, on current evidence that substratum could have been provided by the original, "Toalean" inhabitants.

Leaving aside that speculation for other speculations, we can note that the seriated dendrograms of the languages of the "South Sulawesi stock" read like a succession of splits involving Makassar first, then Lemolang, then Bugis, then Seko, then the languages of the Northern South Sulawesi family (Figures A-3 to A-5). Given that Lemolang and Seko are so clearly transitional towards other "stocks", we can ignore them and simplify the structure to a successive three-step ramification - Makassar, then Bugis, then the Northern South Sulawesi family. Interpreting this structure as a family tree - it is in essence the family tree of Mills (1975a) which he did not prefer - strikes an appealing correspondence with South Sulawesi's rural population statistics which show the highest densities in the Makassar strongholds, intermediate densities in the Bugis strongholds, and the lowest densities to the north (Figure 1-3). The comparison lends some support to the model of a Proto-South-Sulawesi "homeland" on or near the peninsula's south coast, followed by a northwards colonisation as population densities built up.

However, we have Mills' preferred family tree, based on his structural phonological analysis, where Mandar, not Bugis, is the next stem after Makassar to split off the common line of descent. In this case our scenario would have to be adjusted to show an early branch colonising the Mandar coastline prior to the general northwards thrust during which the Bugis and Northern South Sulawesi (barring Mandar) stems divided. We also have Adelaar's reconstruction of a specific link between Tamanic and Bugis (and possibly Toraja-Sakdan), suggesting a migration to Kalimantan from the Bugis heartland after the Mandar stem had split off. This scenario would indicate that a major linguistic expansion, resulting not

only in the most numerous and geographically extensive of the South Sulawesi languages (Bugis), and not only in the majority of these languages within South Sulawesi and the colonisation of most of the province, but also in a migration to central Kalimantan, had occurred in comparatively recent times. Be that as it may, the presence of Austronesian languages in South Sulawesi since at least 3000 years ago, and our virtual ignorance of events until the last 800 years or so, obviously leave ample scope to postulate a range of possible scenarios.

Nonetheless at least one scenario, Mills', can be rejected. Spurred on by his structural phonological analysis which suggested that the Mandar stem had split off the main line of descent before the Bugis stem, Mills posited that the Proto-South-Sulawesi homeland was close to the Mandar area, and more specifically at the mouth of the Sungai Sakdang. He hypothesised that the prospects for trade might have drawn these Proto-South-Sulawesi speakers to an area already inhabited by people speaking languages related to the Central Sulawesi languages. To get the South Sulawesi languages to their present-day positions, Mills developed an elaborate migratory scenario. Firstly, proto-Makassar split off and colonised the Sakdan valley, then migrated to the Luwuk Coastal Plain and thence to the main body of the peninsula, finally pitching a last stand on the peninsula's south coast - pursued all the time by the proto-Bugis. Before proto-Bugis split off, proto-Mandar had split off and migrated westwards. After proto-Bugis split off, the PUS, Mamuju, Seko, Toraja-Sakdan and Masenrempulu language stems ramified and colonised the Central Highlands and Mamuju area (Mills, 1975a, 1975b).

This scenario seems to be unnecessarily defiant of the principle of parsimony (e.g. Blust, 1988:47), involving as it does long and complex migrations by proto-Makassar and proto-Bugis, and a succession of language replacements. In addition it is difficult to see how the mouth of the Sungai Sakdang could have held such extraordinary benefits for population growth that it remained the static centre for four successive migratory waves. Moreover Mills (1975a:500) makes

the extraordinary claim that South Sulawesi lacks suitable harbours south of the Sakdang delta (see Allied Geographical Section [1945] for example). He also invokes an inland sea separating the southwest peninsula from the Central Highlands during the period in question (Mills, 1975a:502-503,533-534), which is now known to have existed only between 7100 and 2600 years ago, and even then extended only from the mouth of the Sungai Cenrana to the ridge of Celebes molasse immediately east of the Tempe Depression (Gremmen, 1990). Then there is Mills' strange argument that the Central Highlands would have been cooler and therefore more densely populated than the southwest peninsula (Mills, 1975a:500-501), even though pleasantness of climate to a westerner is not usually invoked by human geographers as a factor influencing carrying capacity. Mills' argument further involves the presence of a few Makassar toponyms in the area now inhabited by the Bugis, explaining away the Makassar toponym of Majene which does not fit his scenario (Mills, 1975a:502,534), and ignoring the comparable presence of Bugis toponyms (e.g. Sanrabone, Bone-Bone, Pattiro - see Chapters 6 to 10) in the area now inhabited by the Makassar. Finally there is Mills' fanciful conflation of isolated statements in the Bugis chronicles and local origin myths into an undated scenario - at least one of these folk stories, Luwuk's reputation as the oldest Bugis kingdom, is almost certainly false (13.4.2).

If we accept Mills' family tree based on structural phonological analysis, the most parsimonious scenario would posit a Proto-South-Sulawesi homeland on or near the peninsula's south coast, and a general north-to-south colonisation thrust preceded by Mandar as a precocious offshoot. The other main scenarios would also suggest a homeland within the southwest peninsula. From the point of view of the present thesis, the fugitive status which Mills would ascribe to the Bugis and especially the Makassar can be safely ignored. The linguistic line leading to modern Bugis would appear to have been based in the present Bugis heartland for several thousand years, and the counterpart proposition for the Makassar is even more certain.

APPENDIX B. TRADEWARES DESCRIPTION AND DATING

B.1 Introduction

The revision of greater Gowa's history advanced in this thesis relies heavily on SSPHAP's method of drawing very precise chronological implications from the high-fired ceramics identified at site exposures (Chapters 6 to 12). This appendix will explain the procedures by which the identifications were made, describe the tradeware classes, and apply seriation theory to illustrate their relative chronology. Conversion of the relative chronology into an absolute chronology depends primarily on a review of the literature on tradewares, although the available radiocarbon dates (Tables 13-4 and 13-5) support the scheme. Finally, the great majority of the collected specimens have been deposited with Suaka's museum in Ujung Pandang, so SSPHAP's identifications are amenable to investigation by other ceramic experts.[1]

During SSPHAP's fieldwork a grand total of 42,980 tradeware pieces were identified and provenanced by site and zone - 5351 during the Soppeng survey (Kallupa et al., 1989) and 37,629 during the Gowa survey. These pieces are generally represented by single sherds although a small proportion are represented by two or more matching sherds, and a still smaller proportion are complete vessels. 40,156 or 93.4% were given identifications in the field and of these, 3905 or 9.1% were collected for follow-up study in the laboratory. 6.6% of the grand total were either collected but not identified at the sites or already present within Suaka's museum collections.[2] In all, identifications made under laboratory conditions are available for 6754 pieces, 15.7% of the grand

[1] I brought back a small proportion to Canberra for further examination. 87 of these were later sent to the Research Centre for Southeast Asian Ceramics in Adelaide for physical and chemical analysis. The remainder will be returned to Suaka, along with a hard copy of the computer files listing the collected tradewares, after completion of this thesis.

[2] The vast majority of this 6.6% was collected either at the very outset of the survey, whilst I was still formulating an appropriate survey strategy, or during SSPHAP's last two completed surveys at Benteng Tallok and along the Paknakkukang-Barombong coastal wall.

total (Table B-41). Identifications made in the field are used for the remainder.

B.2 Background to SSPHAP's Classificatory System

The tradewares which commonly occur in Indonesian archaeological contexts consist of high-fired ceramics produced in China, Japan, mainland Southeast Asia and Europe. Classifying the tradewares by country of origin and period assumes, as it were, all the manufacturing sites have been located, their products securely dated, and appropriate classes erected on the basis of defining visual or chemical characteristics. But the advances which have been made along these lines (e.g. Palmgren et al., 1963; Guy, 1989) prefigure more than bridge the vast lacunae in the ideal database. Moreover the ideal database, were it attainable, would not necessarily advance far beyond the skills of practising ceramic experts in terms of accurate and precise tradeware identifications. There is not and may never be a scientifically rigorous, "correct" classificatory system; systems must be assessed on softer critera such as utility and appropriateness.

The systematic scholarly study of Oriental ceramics has had a long history (e.g. Hobson, 1915) in which to build a general framework on unshakeable foundations. Nonetheless the mainstream literature betrays its antiquarian bias through an emphasis on highest quality wares and a penchant for "understanding" culture by its finest artefacts. The minority interest in commonplace wares, sherdage collections and general trade patterns can be largely attributed to the scholars who, in the middle decades of this century, pioneered the study of high-fired ceramics found in Southeast Asia. Important as this step was, it did tend to involve a merely partial understanding of the international ceramics literature which was itself of only oblique relevance.[3] On top of that, different systems took root under the various

[3] For instance, as noted by Fox (1979:186-187), the most impressive Chinese celadons found in island Southeast Asia have usually been ascribed automatically to the Song dynasty, whereas the majority are Yuan or even early Ming.

colonial administrations and have projected their shadow into the corresponding national archaeological bodies following independence.[4] In Indonesia's case the standards were set by de Flines who classified primarily by Chinese dynasty or non-Chinese place of manufacture. Regrettably most Indonesian archaeological reports dispense with the supplementary information which de Flines used to give on the type of ware involved - information of great relevance in documenting the likely reliability of the identifications.[5]

Although South Sulawesi is one of the world's great ceramics troves, a permanent archaeological presence was established only in 1973, well after most of the richest sites had been plundered. Two of the functions of Suaka Peninggalan Sejarah dan Purbakala Sulawesi Selatan (Suaka) have been the documentation of privately held collections and the inspection of antiques registered for legal export, including the right to request donations and the power to appropriate antiques under certain circumstances (Hadimuljono and Macknight, 1983). The two officers mainly responsible for this work, Hadimuljono and Karaeng Demmanari, studied tradewares under the tutelage of co-operative antique dealers (Demmanari, pers. comm.). While dealers have undoubtedly played a major part in shaping the systems used elsewhere in Southeast Asia, their influence in South Sulawesi appears to have been particularly pronounced.

The foregoing explains much about the system in use in South Sulawesi, when I began fieldwork there, as already applied to 14,611 tradewares recorded by Suaka up to 1977 (Hadimuljono and Macknight, 1983). On the one hand it followed the standard Indonesian practice of classifying by Chinese dynasty or non-Chinese place of manufacture. On the other hand the influence of antique dealers is apparent in the preponderance of "Song" wares[6] and the construction of

[4] For example, the quite sophisticated systems developed in Sarawak for certain groups of wares (Zainie and Harrisson, 1967; Moore, 1968, 1970) have not been applied beyond Malaysia and Brunei.

[5] Not surprisingly, one of the tasks which the SEAMO Project in Archaeology and Fine Arts (SPAFA) has set itself is to standardise the classification and reporting of high-fired ceramics.

[6] More than ten times the number of wares classified as Yuan.

three idiosyncratic categories. One of these, "Korean", had already been reinterpreted as Vietnamese before I arrived, while the "Siam" category was soon recast as Qing-period monochromes during fieldwork (B.3.7). The well represented "Swatow" category merited deliberation because it signalled a welcome relief from the usual tyranny of the imperial dynasties in the classification of Chinese tradewares. What was unusual in South Sulawesi was the relegation of nondescript monochromes to the "Swatow" class, and the recognition of "Ming Swatow" and "Qing Swatow" as related classes.[7] Of course local ceramic experts also entertained a complex subsidiary nomenclature, e.g. Wanli, Qianlong, even *Qing dapur* (Kitchen Qing) by the time I left; there is after all a lot of interest in ceramics in South Sulawesi.

Nonetheless the system which SSPHAP took to the field was essentially an elaboration on that published in Hadimuljono and Macknight (1983). I was fortunate to have Karaeng Demmanari as a linchpin in SSPHAP's survey team and the bulk of the tradeware identification naturally fell on his shoulders. That meant Demmanari's standards had to be understood by the other team members, myself especially.

I tackled this issue as part of my broader campaign to compile a statistically useful database on the characters shown by sherds from high-fired ceramics. Despite the voluminous literature on Oriental ceramics and the various attempts to pigeonhole the salient characters of particular classes, precise quantified data are virtually non-existent. Where one might want to know the Munsell colours of the bodies of Vietnamese wares, for instance, one reads that 'The body is ... pale beige or grey-white' (Guy, 1986:105) or of a '... hard gray, beige or cream ... [or] putty coloured, pale beige, or gray paste' (Fraschė, 1976:97). Even Harrisson's quite unique attempt to compile a system for martavans based on the sherds' characteristics employs descriptive terms which are impressionistic and so not always repeatable by other observers (Harrisson, 1986:35-43).

[7] These last classes are not cited in Hadimuljono and Macknight (1983) and may have been derived since 1979, either from the "Swatow" or from the "Ming" and "Qing" classes.

Hence I used my "rest days" during fieldwork to build up the missing arsenal of observations from approximately 2000 specimens selected from the collections. A section of the wall was broken off at a point which did not carry decorations or other diagnostic features. This fresh cross-section and the interior and exterior surfaces of the sherd were examined macroscopically and with a 30X hand lens.[8] The sherd was described in terms of its weight, thickness of vessel parts, translucency, slipping, type of wall fracture, decorations (including the shadows of now lost overglaze enamels), wheel lines and spur marks or other evidence of manufacture, well-known diagnostic characters such as chocolate bases or dirty feet, and rim diameter or foot diameter using a plastic diameter template. Cross-sections and faces were drawn where these assisted the documentation, and many of the sherds were photographed. Munsell colour values were recorded of the body, not only at the fresh cross-section but also on the weathered walls and on any unglazed surfaces. Glaze and decoration colours were also recorded by the closest Munsell value, or by the closest colour on the *Pottery Colour Chart*[9] in cases of the richer celadon glazes and the more earthy decoration colours. As regards the better oxidised cobalt decorations, however, I described them using the sorts of impressionistic classes found in the ceramics literature ("silvery blue", "Mohammedan blue" etc.), since at the time I had neither a complete colour chart nor knowledge of the ISCC-NBS names for blues (see Agoston, 1987). I also examined the fresh cross-section microscopically to describe body texture, percentage of the body made up by inclusions, form and colour of the inclusions, body porosity, thickness of the glaze and number of glaze applications. Body hardness was determined by an adapted Moh's scale scratch test on the fresh cross-section, while glaze bubbles, crackling and irregularities were determined by macroscopic and microscopic inspection of the

[8] The 30X level of magnification was recommended by Dick Richards, Curator of Antiques at Adelaide Museum.
[9] Published by The Study Group for Romano-British Pottery, n.d. I thank Peter Bellwood who loaned me his copy of what proved to be a valuable supplementary standard.

glazed surfaces. Using the above observations I also typed the glaze according to transparency, reflectance and colour saturation, and classified the body into broad fabrication types. Comparisons were then made with specimens and descriptions published in the literature.

Originally I had hoped to codify the observations into a format whereby distances could be calculated between the sherds for the purposes of clustering them into a mathematically based typology. However, my early forays soon brought out methodological problems[10] which could have been surmounted only by engulfing the time available for preparing the thesis. Still the time spent scrutinising my notebooks allowed me to standardise the identifications I had made during the period of observation and to pick out the sets of observations which appeared both reliable and useful (B.3). In particular it increased my general confidence in the main body of SSPHAP's identifications in a laboratory setting, carried out in Ujung Pandang after I had already spent a lot of time documenting sherds in detail.

Between June and August of 1987 Karaeng Demmanari and myself classified all the collected tradeware sherds which I had not yet studied in detail. We exposed a fresh cross-section of the wall and examined the section and the faces both macroscopically and with a 30X hand lens. We discussed possibilities, referring to the literature at hand and SSPHAP's other tradeware specimens, until we agreed on the most likely identification. Karaeng Demmanari had had enormous experience in classifying tradewares previously and rapidly absorbed the new information available from a microscopic perspective. We tried to make our laboratory identifications as discrete as possible, e.g. a plain white sherd similar in body and glaze to specimens which we had identified as Kangxi blue-and-white would accordingly be identified as "Kangxi white". The main methodological

[10] e.g., variability in my criteria as my observations became more sophisticated during the process, variability related to different parts (e.g. bases and rims) of the same vessel, variability as it related to different vessels (e.g. tempayan and cups) within the same type of ware, and difficulties in using very different types of data to arrive at a single measure of distance.

justification for driving the identifications to their most discrete level possible is that classes can be pooled if so desired, but a class treated as undifferentiated can never be split up. Since returning to Australia I have reclassified a small proportion of these specimens as prompted by recently available information and allowed by my documentation of the specimens in question. Nonetheless the core of the identifications made under laboratory conditions, by which the reliability of the identifications made in the field can be tested, resides in the work co-executed by Demmanari and myself in Ujung Pandang.

B.3 Description of SSPHAP's Tradeware Classes

B.3.1 Introductory points

The data compiled and analysed in this appendix have been entered into three Reflex PC files (Borland/Analytica, 1987). Hard copies will be deposited with Suaka after completion of this thesis, and either PC disc or hard copies are available from me on request. The specimens are identified by site, zone, and specimen number within the zone (5.5.3).[11] The files also give those identification made in the field on the specimens. This section reports the descriptive data made under laboratory conditions.

In the laboratory work Demmanari and I strove after a chronology of far finer grain than would be possible in any system to be applied in the field. Obviously, to bring all of SSPHAP's identifications together, the main headings must be those which were applied in the field, or at the very least to be found among the tradeware classes regularly collected during fieldwork (B.5.1). 31 main classes can be recognised, most of them represented by photographed specimens in the main text (Chapters 6 to 11). This section describes these main classes, not only in terms of their overall characters

[11] A slight exception involves the complete collections made at Benteng Tallok, Paknakkukang and Barombong, where the specimens which received the same identification in the same zone were simply gathered together into the same sample bag and not individually numbered.

but also as constituted by the finer categories recognised during laboratory work.[12]

One set of descriptions comprises the identifications of tradeware category, vessel form and distinguishing characters made by Demmanari and me. The second set is the discrete observations (excluding those I had already winnowed out as unreliable or unmanageable before compiling the database) which I made on a selection of the pieces. In the tables which follow, traits are usually presented as percentage frequencies for the finer categories, but as raw frequencies (in brackets) and as percentage frequencies for the 31 main classes.

Particular conventions adopted in the tables should be spelled out as a prelude to the descriptions. (i) As the observed colours frequently fell between the Munsell (1975) shades, especially as regards the white to light grey spectrum in which fine determinations can be mandatory, I frequently recorded the colours as whiter than (<) or darker than (>) the closest Munsell reading. (ii) Glaze colours usually fell within or near the range of Munsell's (1975) "Colour Chart for Gley". The notations can usually be identified in my tables by the letters G (greenish) and B (bluish). There is however a potential source of confusion in that notations at the yellow end of the scale occur also in the "Soil Colour Charts" where they describe a different colour. To sidestep any confusion, I will use "y" when gley colours are involved and "Y" when soil colours are involved. (iii) Glaze colours spelled out fully are from the *Pottery Colour Chart*. (iv) Glaze thickness are ranked as "1" for vestigial glazes; "2" for glazes applied as a thin even sliver; "3" for glazes clearly visible as a macroscopic band in cross-section; "4" when the glaze becomes thick in places, e.g. at an inflexion; "5" for moderately thick glazes; and "6" for very thick glazes. (v) Body hardness follows the Moh scale up to "6". However, "7" signifies harder than iron but

[12] A fine-grained description is desirable for a number of reasons, e.g. as part of the description of the main classes, as an aid to their dating, and because SSPHAP's standardised chronological histograms which use the fine classes (B.4) take whichever is the finest chronological determination which can be sustained.

softer than quartz, "8" signifies quartz hardness, and "9" signifies harder than quartz. (vi) Translucency was determined by shining a small torch with a concentrated light through the sherd's wall. "Y" means clearly translucent, "F" means faintly translucent, and "N" means opaque. (vii) Body type is categorised into five main ideal types. "China porcelains" (CP) are white, hard, free of inclusions and translucent. "Semi-porcelains" (SP) approach china porcelains, but appear sugary with glassy splinters when viewed at 30X. "Stonewares" (SW) are hard and opaque, but otherwise variable. "Proto-porcelains" (PP) are a type of homogeneous stoneware which appears chalky at 30X. "Earthenwares" (EW) are soft (hardness less than 7), porous, opaque, and usually rich in inclusions.

B.3.2 Early whitewares (Chinese)

119 early whitewares were recognised in the laboratory, and as a group compare well with the A.1 and A.2 categories of Zainie and Harrisson (1967).[13] "*Qingbai*" is the best known category (e.g. Addis, 1968c) and the one which dominates SSPHAP's early whitewares (Table B-1). One example included here apparently combined a spot of iron decoration beneath the *qingbai* glaze (cf. Wiesner, n.d.). The other well represented category comprises early tradewares from Dehua (Locsin, 1968b). A residue of similar pieces could not be assigned to these categories but could be comfortably placed among Lam's (1985) Guangdong whitewares.

My criteria for identifying early whitewares came from detailed study of the whitewares in the few assemblages free of the usually dominant strains of blue-and-white wares. As these whitewares could be confidently dated pre-Ming, the range of characters they showed could be used to identify early whitewares mixed among predominantly blue-and-white assemblages. However, the logic broke down with one particular category of early whitewares. The "Shufu" early whitewares are distinguished from their *Qingbai* counterparts

[13] I am grateful to Peter Bellwood for lending me his photographs of key examples, on display in the Sarawak Museum, of the categories of Zainie and Harrisson.

by a thicker and more opaque glaze (Addis, 1968b; Medley, 1974:16; Guy, 1986:73), but so are Ming whitewares (Dick Richards, pers. comm.; cf. Medley, 1974:20). Hence I have come to shift the burden of proof with these specimens and reclassify as Ming all but eight of the pieces I had first identified as "Shufu"; bowls with an unglazed stacking ring in the centre (Bulbeck, in press: Figure 2-d) are a good example.

TABLE B-1. COMPOSITION OF SSPHAP'S EARLY WHITEWARES

	Qingbai	Dehua	Guangdong	Shufu	Total
Bowls	34	5	2	5	46
Small bowls	7	0	0	0	7
Cups	2	0	0	0	2
Plates	13	1	1	3	18
"Open"	3	0	1	0	4
Boxes	8	25	0	0	33
Kendis	2	0	1	0	3
Vases	4	0	0	0	4
Jars	2	0	0	0	2
Total	75	31	5	8	119

B.3.3 Early monochromes (Chinese)

At the finer end of its range SSPHAP's category of early monochromes overlaps with early whitewares. To sort out the (literally) grey area, the pale-glazed pieces which did not conform to a recognised whiteware category were generally consigned to the monochromes. At the coarser end SSPHAP's early monochromes overlap with the older "coarse stonewares" (B.3.5). Here, borderline cases were placed among the early monochromes via a combination of finer body, less earthy glazes and smaller, open vessel form - e.g. the bowls but not the jars of Adhyatman's (1983) "early olivegreen wares", and the smaller and more olive-glazed examples of Grau-Abaya's "brownwares" (see also Sorsby Ltd, 1974:44). In all 291 early monochromes were identified in the laboratory, roughly corresponding as a group to the B.1, C.1 and C.2 categories of Zainie and Harrisson (1967).

Demmanari and I usually classified the glaze colours as "celadon" or *abu-abu* (grey). The word "celadon" has come into abuse for its apparent etymological impropriety (Willetts,

TABLE B-2. EARLY WHITEWARE GLAZE CHARACTERS (PERCENTAGES)

	Exterior Glaze					Interior Glaze				
Colour	*Qingbai*	Dehua	Guangdong	Shufu	Total	*Qingbai*	Dehua	Guangdong	Shufu	Total
N8/-	1.8	0	0	0	1.2 (1)	1.9	15.4	0	0	4.1 (3)
> N8/-	0	5.3	0	0	1.2 (1)	0	0	0	0	0
Green/Brown A5	0	5.3	0	0	1.2 (1)	0	7.7	0	0	1.4 (1)
Green/Brown A6	3.6	0	0	60.0	6.0 (5)	1.9	0	0	60.0	5.5 (4)
Green/Brown A7	5.5	0	0	0	3.6 (3)	7.7	0	0	0	5.5 (4)
< 5B 7/1	7.3	0	0	0	4.8 (4)	5.8	0	0	0	4.1 (3)
5BG 6/1	1.8	0	0	0	1.2 (1)	0	0	0	0	0
5BG 7/1	5.5	0	0	0	3.6 (3)	3.8	0	0	0	2.7 (2)
< 5BG 7/1	10.9	0	0	0	7.1 (6)	13.5	0	0	0	9.6 (7)
5G 7/1	16.4	10.5	20.0	0	14.3 (12)	13.5	0	0	0	9.6 (7)
< 5G 7/1	9.1	0	0	0	6.0 (5)	11.5	0	0	0	8.2 (6)
5Gy 7/1	12.7	5.3	0	40.0	11.9 (10)	7.7	0	0	40.0	8.2 (6)
< 5Gy 7/1	5.5	5.3	0	0	4.8 (4)	7.7	0	0	0	5.5 (4)
5y 6/1	1.8	0	0	0	1.2 (1)	0	0	0	0	0
5y 7/1	5.5	5.3	20.0	0	6.0 (5)	7.7	0	33.3	0	6.8 (5)
5Y 8/1	1.8	5.3	0	0	2.4 (2)	1.9	15.4	0	0	4.1 (3)
<5Y 7/1	0	5.3	0	0	1.2 (1)	1.9	0	0	0	1.4 (1)
5Y 7/1	0	10.5	0	0	2.4 (2)	0	7.7	0	0	1.4 (1)
5Y 7/2	1.8	5.3	0	0	2.4 (2)	1.9	0	0	0	1.4 (1)
5Y 7/3	0	5.3	0	0	1.2 (1)	0	0	0	0	0
5Y 6/2	0	0	0	0	0	0	7.7	0	0	1.4 (1)
5Y 6/3	0	5.3	0	0	1.2 (1)	0	7.7	0	0	1.4 (1)
10YR 8/1	0	5.3	0	0	1.2 (1)	0	7.7	33.3	0	2.7 (2)
10YR 8/2	0	5.3	0	0	1.2 (1)	0	7.7	0	0	1.4 (1)
10YR 7/2	1.8	0	0	0	1.2 (1)	1.9	0	0	0	1.4 (1)
7.5YR 8/2	0	5.3	0	0	1.2 (1)	0	7.7	0	0	1.4 (1)
5YR 8/1	1.8	10.5	20.0	0	4.8 (4)	1.9	15.4	33.3	0	5.5 (4)
5YR 8/2	0	0	40.0	0	2.4 (2)	0	0	0	0	0
YR5 7/1	3.6	0	0	0	2.4 (2)	5.8	0	0	0	4.1 (3)
YR5 7/2	1.8	0	0	0	1.2 (1)	1.9	0	0	0	1.4 (1)
Total	(55)	(19)	(5)	(5)	(84)	(52)	(13)	(3)	(5)	(73)
Glaze Thickness										
1	5.4	10.5	0	0	5.9 (5)	1.9	0	0	0	1.4 (1)
2	53.6	47.4	40.0	40.0	50.6 (43)	57.7	57.1	33.3	40.0	55.4 (41)
3	35.7	31.6	60.0	60.0	37.6 (32)	40.4	42.9	66.7	60.0	43.2 (32)
4	5.4	10.5	0	0	5.9 (5)	0	0	0	0	0
Total	(56)	(19)	(5)	(5)	(85)	(52)	(14)	(3)	(5)	(74)

Glaze Number: one Shufu piece showed two glaze layers interiorly and exteriorly (20%); otherwise single glaze layers only.

TABLE B-3. EARLY WHITEWARE BODY CHARACTERS (PERCENTAGES)

Colour at Fresh Cross-section

	Qingbai	Dehua	Guangdong	Shufu	Total	
N8/-	17.9	36.8	0	20.0	21.2	(18)
> N8/-	21.4	5.3	0	0	15.3	(13)
< N7/-	8.9	5.3	20.0	20.0	0.4	(8)
N7/-	5.4	0	0	40.0	5.9	(5)
5YR 8/1	16.1	0	40.0	0	12.9	(11)
> 5YR8/1	17.9	0	20.0	0	2.4	(2)
< 5YR7/1	1.8	0	0	0	1.2	(1)
5YR 7/1	12.5	15.8	20.0	20.0	14.1	(12)
5YR 8/2	5.4	0	0	0	3.5	(3)
5YR 7/2	1.8	0	0	0	1.2	(1)
5YR 7/3	0	5.3	0	0	1.2	(1)
7.5YR8/2	0	10.5	0	0	2.4	(2)
7.5YR7/2	1.8	0	0	0	1.2	(1)
7.5YR 6/2	1.8	0	0	0	1.2	(1)
10YR 8/1	1.8	5.3	0	0	2.4	(2)
10YR 7/1	0	5.3	0	0	1.2	(1)
10YR 7/2	1.8	0	0	0	1.2	(1)
2.5YR8/2	0	5.3	0	0	1.2	(1)
5Y 8/1	0	5.3	0	0	1.2	(1)
Total	(56)	(19)	(5)	(5)	(85)	

Body Type

CP	5.4	26.3	0	20.0	10.6	(9)
Almost CP	10.7	5.3	0	20.0	9.4	(8)
SP	46.4	10.5	40.0	20.0	36.5	(31)
PP	7.1	31.6	20.0	0	12.9	(11)
SW	30.3	26.3	40.0	40.0	30.6	(26)
Total	(56)	(19)	(5)	(5)	(85)	

Translucency

	Qingbai	Dehua	Guangdong	Shufu	Total	
Y	19.6	38.9	0	20.0	22.6	(19)
F	8.9	0	0	20.0	7.1	(6)
N	71.4	61.1	100.0	60.0	70.2	(59)
	(56)	(18)	(5)	(5)	(84)	

Hardness

6	0	0	20.0	0	1.2	(1)
7	42.9	36.8	60.0	0	40.0	(34)
8	33.9	26.3	0	60.0	31.8	(27)
9	23.2	36.8	20.0	40.0	27.1	(23)
	(56)	(19)	(5)	(5)	(85)	

% of Body Inclusions

1	37.5	52.6	40.0	40.0	41.1	(35)
3	41.1	26.3	20.0	60.0	37.6	(32)
5	12.5	10.5	40.0	0	12.9	(11)
10	5.4	5.3	0	0	4.7	(4)
20	1.8	0	0	0	1.2	(1)
30	0	5.3	0	0	1.2	(1)
40	1.8	0	0	0	1.2	(1)
	(56)	(19)	(5)	(5)	(85)	

Slipping

	Qingbai (56)	Dehua (19)	Guangdong (5)	Shufu (5)	Total (85)
Unslipped	73.2	73.7	20.0	100.0	71.8 (61)
Slipped only on exterior face	1.8	0	40.0	0	3.5 (3)
Slipped only on interior face	7.1	5.3	40.0	0	8.2 (7)
Slipped on both faces	17.9	21.1	0	0	16.5 (14)

Basal Glazing Characters

	Qingbai (12)	Dehua (1)	Guangdong (1)	Shufu (1)	Total (15)
Glazed base and foot	16.7	0	0	0	13.3 (2)
Glaze-splashed base	8.3	100.0	0	0	13.3 (2)
Unglazed base and foot	41.7	0	100.0	100.0	46.7 (7)
Glaze does not reach non-extant foot	33.3	0	0	0	26.7 (4)

1979) and "greenwares" is often the preferred term now (e.g. Guy, 1986). However, "celadon" is widely understood to indicate only thicker, richer glazes which are furthermore generally browner than the specifically excluded green lead glazes. In my opinion, etymological niceties do not provide adequate grounds to jettison a useful term for a misleading one, and hence I retain the original term. *Abu-abu* can then be translated as "subceladons", excluding a few examples which can be better typed as olivegreenwares (cf. Adhyatman, 1983) and olivewares (Table B-4).

In the laboratory a distinction was made between apparent Song examples (41) and c. Yuan examples (250), but the pieces are hard enough to identify as "early" without needing to say how early (Footnote 3). In particular, the production of similar sorts of monochromes clearly continued into the Ming dynasty (e.g. Palmgren et al., 1963). To identify the pre-Ming examples, I relied on the range of variability shown among the specimens in clearly pre-Ming assemblages, and classified as "early" any others which could not be clearly distinguished. Hence SSPHAP's "early monochromes" in part constitute a default classification which accordingly is somewhat broader than if the burden of proof had been placed on making a positive identification.[14]

TABLE B-4. COMPOSITION OF SSPHAP'S EARLY MONOCHROMES

	Celadons	Sub-celadons	Olive-wares	Olivegreen wares	Total
Plates	113	17	5	0	135
Conical forms	10	7	5	0	22
Bowls	60	24	10	2	96
Shallow bowls	4	0	0	0	4
Small bowls	4	3	0	0	7
"Open"	3	0	1	0	4
Boxes	3	0	0	0	3
Jarlets	5	1	0	0	6
Vases	2	0	0	0	2
Jars/*Tempayan*	9	1	2	0	12
Total	213	53	23	2	291

[14] Note that the class "early monochromes", as understood here, is narrower than I have used it elsewhere (Bulbeck, in press) where it included early whitewares, earlier examples of Vietnamese monochromes, and "Yuan-like Ming celadons" (B.3.8).

TABLE B-5. EARLY MONOCHROME GLAZE CHARACTERS (PERCENTAGES)

	Exterior Glaze						Interior Glaze					
Colour	Celadon	Sub-celadon	Olive	Olive-green	Total		Celadon	Sub-celadon	Olive	Olive-green	Total	
Green/Brown A1	0	0	0	0	0		0.9	0	0	0	0.6	(1)
Green/Brown A2	3.7	0	0	0	2.5	(4)	3.5	0	0	0	2.3	(4)
Green/Brown A3	4.6	0	0	100.0	3.7	(6)	3.5	0	0	0	2.3	(4)
Green/Brown A4	31.2	2.9	0	0	21.7	(35)	31.3	5.4	0	0	22.2	(38)
Green/Brown A5	10.1	2.9	0	0	7.5	(12)	11.3	2.7	0	0	8.2	(14)
Green/Brown A6	0.9	0	0	0	0.6	(1)	0.9	0	0	0	0.6	(1)
Green/Brown A7	0.9	0	0	0	0.6	(1)	0.9	0	0	0	0.6	(1)
Brown/Green A5	0.9	0	0	0	0.6	(1)	0	0	0	0	0	
Blue/Green A3	0.9	0	0	0	0.6	(1)	1.7	0	0	0	1.2	(2)
Blue/Green A4	0.9	0	0	0	0.6	(1)	0.9	0	0	0	0.6	(1)
Blue/Green A5	0.9	0	0	0	0.6	(1)	0	0	0	0	0	
Blue/Green A6	4.6	0	0	0	3.1	(5)	5.2	0	0	0	3.5	(6)
5BG 6/1	0.9	0	0	0	0.6	(1)	0	0	0	0	0	
5G 4/2	0.9	0	0	0	0.6	(1)	0.9	0	0	0	0.6	(1)
5G 4/1	0.9	0	0	0	0.6	(1)	0	0	0	0	0	
5G 5/1	0	0	0	0	0		0.9	0	0	0	0.6	(1)
5G 6/2	3.7	0	0	0	2.5	(4)	3.5	0	0	0	2.3	(4)
5G 6/1	3.7	2.9	0	0	3.1	(5)	3.5	2.7	0	0	2.9	(5)
5G 7/1	3.7	0	0	0	2.5	(4)	4.3	2.7	0	0	3.5	(6)
5Gy 4/1	0.9	0	0	0	0.6	(1)	0	0	0	0	0	
5Gy 5/1	3.7	2.9	0	0	3.1	(5)	2.6	2.7	0	0	2.3	(4)
5Gy 6/1	13.8	8.6	0	0	11.2	(18)	14.8	8.1	0	0	11.7	(20)
5Gy 7/1	5.5	0	6.3	0	4.3	(7)	7.0	0	0	0	4.7	(8)
5y 4/1	0	5.7	0	0	1.2	(2)	0	5.4	0	0	1.2	(2)
5y 5/1	0.9	14.3	0	0	3.7	(6)	0.9	13.5	0	0	3.5	(6)
5y 6/1	0	8.6	0	0	1.9	(3)	0	8.1	0	0	1.8	(3)
5y 7/1	0.9	2.9	0	0	1.2	(2)	0	2.7	0	0	0.6	(1)
5Y 4/4	0	0	6.3	0	0.6	(1)	0	0	5.6	0	0.6	(1)
5Y 4/3	0	0	0	0	0		0	0	5.6	0	0.6	(1)
5Y 5/4	0	0	6.3	0	0.6	(1)	0	0	11.1	0	1.2	(2)
5Y 5/3	0	0	12.5	0	1.2	(2)	0.9	0	16.7	100.0	2.9	(5)
5Y 5/2	0	0	0	0	0		0	0	11.1	0	1.2	(2)
5Y 6/4	0	0	6.3	0	0.6	(1)	0	0	5.6	0	0.6	(1)
5Y 6/3	0	0	0	0	0		0	2.7	5.6	0	1.2	(2)
5Y 6/2	0	0	31.3	0	3.1	(5)	0	0	16.7	0	1.8	(3)
5Y 7/2	0	2.9	0	0	0.6	(1)	0	2.7	0	0	0.6	(1)
5Y 7/1	0	2.9	0	0	0.6	(1)	0	2.7	0	0	0.6	(1)
5Y 8/3	0	0	0	0	0		0	2.7	0	0	0.6	(1)
2.5Y 4/3	0	0	6.3	0	0.6	(1)	0	0	0	0	0	
2.5Y 5/4	0	0	6.3	0	0.6	(1)	0	0	0	0	0	
2.5Y 6/2	0	2.9	6.3	0	1.2	(2)	0	2.7	5.6	0	1.2	(2)
2.5Y 7/2	0	2.9	0	0	0.6	(1)	0	2.7	0	0	0.6	(1)
2.5Y 8/2	0	0	0	0	0		0.9	0	0	0	0.6	(1)

TABLE B-5. EARLY MONOCHROME GLAZE CHARACTERS (CONT.)

Colour	Celadon	Sub-celadon	Olive	Olive-green	Total	Celadon	Sub-celadon	Olive	Olive-green	Total
10YR 5/4	0	0	6.3	0	0.6 (1)	0	2.7	0	0	0.6 (1)
10YR 5/3	0	0	0	0	0	0	2.7	0	0	0.6 (1)
10YR 6/3	0	5.7	0	0	1.2 (2)	0	2.7	0	0	0.6 (1)
10YR 6/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
10YR 7/4	0	5.7	0	0	1.2 (2)	0	5.4	0	0	1.2 (2)
10YR 7/3	0	0	0	0	0	0	2.7	0	0	0.6 (1)
10YR 7/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
10YR 8/3	0	2.9	0	0	0.6 (1)	0	0	0	0	0
7.5YR 7/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 3/4	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5YR 5/6	0.9	0	0	0	0.6 (1)	0	0	0	0	0
5YR 5/4	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 5/3	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 6/2	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
5YR 7/1	0	2.9	0	0	0.6 (1)	0	2.7	0	0	0.6 (1)
Total	(109)	(35)	(16)	(1)	(161)	(115)	(37)	(18)	(1)	(171)
Glaze Thickness										
1	2.7	23.5	0	0	4.3 (7)	0.9	2.7	0	0	1.2 (2)
2	17.3	34.3	58.8	100.0	25.8 (42)	21.7	40.5	50.0	100.0	29.2 (50)
3	42.7	45.7	41.2	0	42.9 (70)	48.7	48.6	50.0	0	48.5 (83)
4	13.6	2.9	0	0	9.8 (16)	7.8	2.7	0	0	5.8 (10)
5	20.0	5.7	0	0	14.7 (24)	20.9	5.4	0	0	15.2 (26)
6	3.6	0	0	0	2.5 (4)	0	0	0	0	0
Total	(110)	(35)	(17)	(1)	(163)	(115)	(37)	(18)	(1)	(171)
Glaze Number										
1 layer	91.9	97.1	100.0	100.0	93.9 (154)	93.0	97.3	100.0	100.0	94.7(162)
2 layers	7.2	2.9	0	0	5.5 (9)	6.1	2.7	0	0	4.7 (8)
4 layers	0.9	0	0	0	0.6 (1)	0.9	0	0	0	0.6 (1)
Total	(111)	(35)	(17)	(1)	(164)	(115)	(37)	(18)	(1)	(171)

Slipping	Celadon (118)	Subcel. (37)	Olive (18)	Olivegreen (1)	Total (174)
Unslipped	75.4	83.8	66.7	0	75.9 (132)
Slipped only on exterior face	0.8	2.7	0	0	1.1 (2)
Slipped only on interior face	5.1	5.4	11.1	0	5.7 (10)
Slipped on both faces	18.6	8.1	22.2	100.0	17.2 (30)

Basal Glazing Characters	Celadon (29)	Subceladon (8)	Oliveware (2)	Total (39)
Glazed base	27.6	12.5	50.0	25.6 (10)
Glaze-splashed base and foot	6.9	12.5	0	7.7 (3)
Unglazed base, glaze-splashed foot	6.9	0	0	5.1 (2)
Unglazed base, foot not extant	6.9	0	0	5.1 (2)
Unglazed base and foot	27.6	62.5	50.0	35.9 (13)
Glaze does not reach non-extant foot	24.1	12.5	0	20.5 (8)

TABLE B-6. EARLY MONOCHROME BODY CHARACTERS (PERCENTAGES)

Main Colour at Fresh Cross-section

	Celadon	Sub-celadon	Olive	Olive-green	Total
N4/-	2.6	2.6	0	0	2.3 (4)
N5/-	7.8	2.6	5.6	0	6.4 (11)
N6/-	5.2	5.3	5.6	0	5.2 (9)
< N6/-	5.2	5.3	5.6	0	5.2 (9)
N7/-	42.6	26.3	0	100.0	34.9 (60)
< N7/-	3.5	2.6	5.6	0	3.5 (6)
> N8/-	0.9	5.3	0	0	1.7 (3)
N8/-	0.9	0	0	0	0.6 (1)
2.5YR 4/8	1.7	0	0	0	1.2 (2)
2.5YR 6/6	0	0	5.6	0	0.6 (1)
2.5YR 5/4	0.9	0	0	0	0.6 (1)
5YR 3/2	0.9	0	0	0	0.6 (1)
5YR 5/6	0.9	0	0	0	0.6 (1)
5YR 6/4	0.9	2.6	0	0	1.2 (2)
5YR 7/4	0.9	0	0	0	0.6 (1)
5YR 8/4	0	0	5.6	0	0.6 (1)
5YR 7/3	1.7	2.6	5.6	0	2.3 (4)
5YR 8/3	0	2.6	0	0	0.6 (1)
5YR 6/2	0.9	0	5.6	0	1.2 (2)
5YR 7/2	2.6	5.3	0	0	2.9 (5)
5YR 8/2	0.9	5.3	0	0	1.7 (3)
5YR 4/1	0.9	0	0	0	0.6 (1)
5YR 5/1	0.9	0	0	0	0.6 (1)
5YR 6/1	1.7	5.3	5.6	0	2.9 (5)
< 5YR 6/1	0.9	0	0	0	0.6 (1)
5YR 7/1	7.8	2.6	16.7	0	7.6 (13)
< 5YR 7/1	0.9	2.6	0	0	1.2 (2)
5YR 8/1	0.9	2.6	5.6	0	1.7 (3)
7.5YR 7/4	0	0	5.6	0	0.6 (1)
7.5YR 8/4	0.9	0	0	0	0.6 (1)
7.5YR 7/2	0	0	5.6	0	0.6 (1)
7.5YR 8/2	0	2.6	0	0	0.6 (1)
7.5YR 4/1	0.9	0	0	0	0.6 (1)
7.5YR 6/1	1.7	0	0	0	1.2 (2)
7.5YR 7/1	0	0	5.6	0	0.6 (1)
10YR 4/3	0	0	5.6	0	0.6 (1)
10YR 3/1	0.9	0	0	0	0.6 (1)
10YR 8/3	0	2.6	0	0	0.6 (1)
10YR 6/2	0.9	0	0	0	0.6 (1)
10YR 6/1	1.7	0	0	0	1.2 (2)
< 10YR6/1	0	2.6	0	0	0.6 (1)
10YR 7/1	0.9	10.5	5.6	0	3.5 (6)
	(115)	(38)	(18)	(1)	(172)

Translucency

	Celadon	Sub-celadon	Olive	Olive-green	Total
N	100.0	100.0	100.0	100.0	100.0
	(116)	(38)	(18)	(1)	(173)

Hardness

5	4.2	7.9	16.7	0	6.3 (11)
6	0.8	0	11.1	0	1.7 (3)
7	36.4	52.6	38.9	0	40.0 (70)
8	46.6	23.7	27.8	100.0	40.0 (70)
9	11.9	15.8	5.6	0	12.0 (21)
	(118)	(38)	(18)	(1)	(175)

% of Body Inclusions

0	0.8	0	0	0	0.6 (1)
1	30.5	16.2	11.8	0	25.4 (44)
2-3	20.3	29.7	23.5	0	22.5 (39)
5	22.9	29.7	29.4	100.0	25.4 (44)
10	15.3	13.5	23.5	0	15.6 (27)
15	5.9	5.4	0	0	5.2 (7)
20	1.7	5.4	5.9	0	2.9 (5)
25	0.8	0	5.9	0	1.2 (2)
30	0.8	0	0	0	0.6 (1)
40	0.8	0	0	0	0.6 (1)
	(118)	(37)	(17)	(1)	(173)

Body Type

SP	2.5	0	0	0	1.7 (3)
PP	5.1	21.1	16.7	0	9.7 (17)
SW	89.0	73.7	72.2	100.0	83.8 (147)
EW	3.4	5.3	11.1	0	4.6 (8)
	(118)	(38)	(18)	(1)	(175)

N.B. Nine variably coloured bodies were observed: (celadons) core N5/-, walls N4/-; core 5YR 5/2, walls N4/-; core N7/-, walls 5YR 6/4; core 7.5YR 6/2, walls 5YR 4/1; outer wall N5/-, inner wall 2.5YR 5/2; outer wall 2.5YR 4/8, inner wall 5YR 7/1; outer wall 10YR 3/1, inner wall 7.5YR6/2; (subceladon) outer wall N6/-, inner wall 10R 8/3; (oliveware) outer wall 2.5YR 6/6, inner wall 5YR 7/2. A central stacking ring was observed on 2 celadons and 1 subceladon.

B.3.4 Early Chinese polychromes (four classes)

Some early tradeware assemblages in the Philippines contain a distinctive class of usually miniature wares with blue cobalt decorations under a *qingbai* glaze, closely matched by a rarer variant with underglaze decorations in copper red (Addis, 1968d, 1968e; Sorsby Ltd, 1974). I have not found any evidence that these wares reached South Sulawesi in any number. The decorations found on the standard Ming BW wares, which China exported in bulk from the late 15th century onwards (e.g. Joseph, 1979; Carswell, 1985), also characterise the oldest detectable blue-and-white presence among SSPHAP's pieces. However, I date a small proportion to the late 14th and early 15th centuries on the basis of apparently older characters such as unglazed bases, "heaped and piled" cobalt decorations, a *qingbai* glaze, and the occasional archaic motif (cf. Medley, 1974; Macintosh, 1977). Three pieces also appeared to have underglaze copper decorations. These "early BW wares" (Table B-7) do not constitute a well defined class and any particular identification might be in error, although there is little doubt that some BW wares from China would have been reaching South Sulawesi by c.1400.

As with the early BW wares, "early overglaze-decorated wares" were identifed as pieces exhibiting apparently older characters than usually found on their Swatow and Ming counterparts. These older traits include unusual decorations with a Yuan echo to them, richer glazes like those usually found on early monochromes, and slipping beneath the glaze. As might be expected if the pieces' considerable antiquity is correctly inferred, the enamel decorations were rarely preserved. Rather, they were usually represented by shadows which flashed on the glaze surface when the sherd was viewed at different angles. When enamel decorations remained they were most often red but also occasionally black or green. The 17 pieces identified (Tables B-8 and B-9) conform reasonably well with the descriptions given by Medley (1974:107) and Mao (1979) of enamel-decorated wares from the Yuan dynasty.

TABLE B-7. SSPHAP'S SAMPLE OF EARLY BLUE-AND-WHITE WARES

	1. Yuan BW	2. Yuan BW with underglaze red	3. Yuan underglaze red	4. Yuan/early 15th century BW	5. Early 15th century BW	Total
Plates	0	1	1	2	6	10
Bowls	2	0	1	2	5	10
Boxes	0	0	0	1	2	3
Jarlets	0	0	0	0	1	1
Jars	0	0	0	0	1	1
Total	2	1	2	5	15	25

Exterior Glaze

Colour	1.	2.	3.	4.	5.	Total
5BG 7/1	0	0	0	1	1	2 (10.0%)
< 5BG 7/1	1	0	0	0	1	2 (10.0%)
5G 7/1	0	0	1	0	3	4 (20.0%)
< 5G 7/1	0	0	0	1	2	3 (15.0%)
5Gy 7/1	0	0	0	0	2	2 (10.0%)
10YR 8/1	0	0	0	0	2	2 (10.0%)
7.5YR 8/2	0	0	1	1	0	2 (10.0%)
10YR 8/3	0	0	0	1	0	1 (5.0%)
10YR 7/2	0	0	0	1	0	1 (5.0%)
10YR 7/41	0	1	0	0	0	1 (5.0%)
7.5YR 7/41	0	0	0	0	0	0
Glaze T.						
2	1	0	1	4	1	7 (35.0%)
3	0	1	1	1	8	11 (55.0%)
5	0	0	0	0	2	2 (10.0%)
Glaze No.						
1	1	1	2	4	11	19 (95.0%)
2	0	0	0	1	0	1 (5.0%)
Total	(1)	(1)	(2)	(5)	(11)	(20)

Interior Glaze

Colour	1.	2.	3.	4.	5.	Total
5BG 7/1	0	0	0	1	2	3 (14.3%)
< 5BG 7/1	1	0	0	0	1	2 (9.5%)
5G 7/1	0	0	1	0	4	5 (23.8%)
< 5G 7/1	0	0	0	1	2	3 (14.3%)
5Gy 7/1	0	0	0	0	2	2 (9.5%)
10YR 8/1	0	0	0	0	1	1 (4.8%)
7.5YR 8/2	0	0	1	1	0	2 (9.5%)
10YR 8/3	0	0	0	1	0	1 (4.8%)
10YR 7/2	0	0	0	1	0	1 (4.8%)
10YR 7/41	0	0	0	0	0	0
7.5YR 7/41	0	1	0	0	0	1 (4.8%)
Glaze T.						
2	1	0	1	4	2	8 (38.1%)
3	0	1	1	1	8	11 (52.4%)
5	0	0	0	0	2	2 (9.5%)
Glaze No.						
1	1	1	2	4	12	20 (95.2%)
2	0	0	0	1	0	1 (4.8%)
Total	(1)	(1)	(2)	(5)	(12)	(21)

Main Colour at Fresh Cross-section

	1.	2.	3.	4.	5.	Total
N8/-	1	0	1	0	2	4 (25.0%)
> N8/-	0	0	0	0	1	1 (5.0%)
< N7/-	0	0	0	2	0	2 (10.0%)
N7/-	0	1	0	0	2	3 (15.0%)
5YR 8/1	0	0	0	0	2	2 (10.0%)
10YR 8/1	0	0	0	1	0	1 (5.0%)
10YR 8/2	0	0	0	0	1	1 (5.0%)
< 5YR 7/1	0	0	0	0	1	1 (5.0%)
5YR 7/1	0	0	1	0	0	2 (10.0%)
10YR 7/1	0	0	0	0	1	1 (5.0%)
5YR 7/2	0	0	0	1	0	1 (5.0%)
5YR 7/4	0	0	0	0	1	1 (5.0%)
5YR 5/1	0	0	0	1	0	1 (5.0%)
	(1)	(1)	(2)	(5)	(11)	(20)

Translucency

	1.	2.	3.	4.	5.	Total
Y	0	0	0	0	0	1 (5.3%)
F	0	0	1	0	0	1 (5.3%)
N	0	1	1	5	10	17 (89.5%)
	(0)	(1)	(2)	(5)	(10)	(19)

Hardness

	1.	2.	3.	4.	5.	Total
5	0	0	0	0	1	1 (4.8%)
7	0	1	1	1	5	8 (38.1%)
8	1	0	0	4	5	10 (47.6%)
9	0	0	1	0	1	2 (9.5%)
	(1)	(1)	(2)	(5)	(12)	(21)

Body Type

	1.	2.	3.	4.	5.	Total
Almost CP	0	0	0	0	1	1 (4.8%)
SP	1	0	1	0	7	9 (42.9%)
PP	0	0	0	1	1	2 (9.5%)
SW	0	1	1	4	3	9 (42.9%)
	(1)	(1)	(2)	(5)	(12)	(21)

% of Body Inclusions

	1.	2.	3.	4.	5.	Total
1	1	0	1	0	5	7 (35.0%)
3	0	0	1	2	5	8 (40.0%)
5	0	0	0	2	0	2 (10.0%)
10	0	1	0	0	1	2 (10.0%)
25	0	0	0	1	0	1 (5.0%)
	(1)	(1)	(2)	(5)	(11)	(20)

Basal Glazing Characters	1. Yuan BW	4. Yuan/early 15th century BW	5. Early 15th century BW	Total (9)
Glazed base and foot	0	1	2	3 (33.3%)
Unglazed base and foot	1	3	2	6 (66.7%)

N.B. Slipping absent. The early 15th century BW 5YR 7/4 on its outer wall was N 7/- on its inner wall.

TABLE B-8. EARLY OVERGLAZE, JIZHOU AND SANCAI: BODIES

	Early Overglaze			Jizhou	Sancai			
	13th-14th centuries	14th-15th centuries	Total		13th-14th centuries	15th century	"Looked latish"	Total
Tempayan	0	0	0	7	0	9	0	8
Jars	0	0	0	0	0	1	0	1
Vases	0	0	0	0	0	1	1	2
Jarlets	0	0	0	0	1	0	0	1
Boxes	1	0	1	0	0	1	0	1
Bowls	6	2	8	0	0	1	0	1
Plates	6	2	8	0	0	0	0	0
Not determined	0	0	0	0	1	0	0	2
Total	13	4	17	7	2	13	1	16

Main Colour at Fresh Cross-section

	Early Overglaze				
	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai
> N8/-	1	1	2 (14%)	0	0
< N7/-	1	0	1 (7%)	0	0
N7/-	1	0	1 (7%)	0	0
N6/-	0	1	1 (7%)	0	1 (11%)
N5/-	0	0	0	0	1 (11%)
5YR 8/1	1	0	1 (7%)	0	0
7.5YR 8/1	0	1	1 (7%)	0	0
7.5YR 8/2	0	0	0	2 (50%)	1 (11%)
5YR 8/3	0	0	0	0	1 (11%)
10YR 8/3	1	0	1 (7%)	0	0
5YR 8/4	1	0	1 (7%)	0	0
7.5YR 8/4	0	0	0	0	1 (11%)
5YR 7/1	0	1	1 (7%)	1 (25%)	0
5YR 7/2	0	0	0	1 (25%)	0
5YR 7/3	0	0	0	0	1 (11%)
5YR 7/4	1	0	1 (7%)	0	2 (22%)
10YR 7/1	1	0	1 (7%)	0	0
5YR 6/2	1	0	1 (7%)	0	0
5YR 5/2	0	0	0	0	1 (11%)
2.5YR 5/4	1	0	1 (7%)	0	0
	(10)	(4)	(14)	(4)	(9)

Hardness

	Early Overglaze				
	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai
5	2	0	2 (14%)	1 (25%)	3 (38%)
6	1	0	1 (7%)	2 (50%)	0
7	4	2	6 (43%)	1 (25%)	4 (50%)
8	2	2	4 (29%)	0	1 (13%)
9	1	0	1 (7%)	0	0

% of Body Inclusions

1	1	0	1 (7%)	0	0
3	6	3	9 (64%)	2 (50%)	1 (13%)
5	2	1	3 (21%)	0	1 (13%)
15	1	0	1 (7%)	2 (30%)	5 (63%)
30	0	0	0	0	1 (13%)
	(10)	(4)	(14)	(4)	(8)

Body Type

SP	1	0	1 (7%)	0	0
PP	1	1	2 (14%)	0	0
SW	6	3	9 (64%)	4	6 (67%)
EW	2	0	2 (14%)	0	3 (33%)
	(10)	(4)	(14)	(4)	(9)

Slipping	Early overglaze 13th-14th c's	14th-15th c's	Total (14)	Jizhou (4)	Sancai (9)
Unslipped	5	3	8 (57%)	0	4 (44%)
Slipped only on exterior face	0	0	0	1 (25%)	3 (33%)
Slipped only on interior face	2	0	2 (14%)	0	0
Slipped on both faces	3	1	4 (29%)	3 (75%)	2 (22%)

N.B. One of the Sancai specimens, and the early overglaze-decorated specimen, coloured 5YR 7/4 on the outer wall were respectively coloured 2.5YR 6/6 and 5YR 7/1 on the inner wall.

TABLE B-9. EARLY OVERGLAZE, JIZHOU AND SANCAI: GLAZES

	Exterior Glaze					Interior Glaze				
	--- Early Overglaze ---					--- Early Overglaze ---				
Colour	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai	13th-14th centuries	14th-15th centuries	Total	Jizhou	Sancai
10YR 8/2	0	0	0	1 (25%)	0	0	0	0	0	1 (17%)
10YR 8/3	0	0	0	1 (25%)	0	0	0	0	0	0
10YR 8/4	0	0	0	1 (25%)	0	0	0	0	0	0
10YR 7/2	1	0	1 (8%)	0	0	1	0	1 (7%)	0	0
10YR 7/3	0	0	0	0	0	1	0	1 (7%)	0	0
5Y 6/3	1	0	1 (8%)	0	0	1	0	1 (7%)	0	0
5Y 5/3	0	0	0	0	1 (6%)	0	0	0	0	0
5YR 6/2	0	0	0	0	1 (6%)	0	0	0	0	0
5YR 6/3	0	0	0	0	1 (6%)	0	0	0	0	0
10YR 7/6	0	0	0	0	1 (6%)	0	0	0	0	0
7.5YR 6/6	0	0	0	0	1 (6%)	0	0	0	0	0
7.5YR 7/8	0	0	0	0	2 (11%)	0	0	0	0	0
5YR 6/8	0	0	0	0	1 (6%)	0	0	0	0	0
5YR 5/6	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
5YR 3/2	0	0	0	0	0	0	0	0	0	1 (17%)
Yellow/Brown A4	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
5y 6/1	1	0	1 (8%)	0	0	1	0	1 (7%)	0	0
5Gy 7/1	3	0	3 (23%)	1 (25%)	0	2	0	2 (14%)	1	0
5Gy 6/1	0	2	2 (15%)	0	0	0	1	1 (7%)	0	0
5G 7/1	1	1	2 (15%)	0	0	2	1	3 (21%)	0	0
5G 6/2	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
5BG 5/1	0	0	0	0	1 (6%)	0	0	0	0	0
Green/Brown A6	1	1	2 (15%)	0	0	1	1	2 (14%)	0	0
Green/Brown A4	0	0	0	0	0	1	0	1 (7%)	0	0
Green/Brown A2	1	0	1 (8%)	0	0	0	0	0	0	0
Brown/Green A7	0	0	0	0	0	1	0	1 (7%)	0	0
Brown/Green A6	0	0	0	0	1 (6%)	0	0	0	0	0
Brown/Green A5	0	0	0	0	1 (6%)	0	0	0	0	1 (17%)
Brown/Green A4	0	0	0	0	2 (11%)	0	0	0	0	0
Green A3	0	0	0	0	1 (6%)	0	0	0	0	0
Total	(9)	(4)	(13)	(4)	(18)	(10)	(4)	(14)	(1)	(6)
Glaze Thickness										
1	0	0	0	1 (25%)	0	0	0	0	0	2 (40%)
2	1	0	1 (8%)	2 (50%)	8 (89%)	1	0	1 (7%)	0	3 (60%)
3	5	3	8 (62%)	1 (25%)	1 (11%)	6	2	8 (57%)	1	0
4	1	0	1 (8%)	0	0	0	0	0	0	0
5	2	1	3 (23%)	0	0	3	2	5 (36%)	0	0
Glaze Number										
1 layer	8	2	10 (77%)	4	9	9	2	11 (79%)	1	5
2 layers	1	2	3 (23%)	0	0	1	2	3 (21%)	0	0
Total	(9)	(4)	(13)	(4)	(9)	(10)	(4)	(14)	(1)	(5)

Basal Glazing Characters	Early overglaze 13th-14th c's	14th-15th c's	Total (3)	Sancai (2)
Glazed base	1	0	1 (33%)	0
Glaze-splashed base	1	0	1 (33%)	0
Unglazed base	1	0	1 (33%)	2 (100%)

N.B. Only the Sancai pieces attributed a 15th century were studied in detail. The number of recorded glaze colours exceeds the number of glazes studied, as the name "three-coloured" wares might suggest.

While some Jizhou pieces may be present in the class just described, the best known Jizhou wares have black underglaze decorations painted in iron oxides. Wirgin (1970:89ff.) and Medley (1974:103 ff.) describe the range of examples collected from China, while examples from archaeological sites in the Philippines ("Chi-chou wares") and Sarawak are described by Locsin (1968a) and Zainie and Harrisson (1967) respectively. These sources show that a reasonable variety of the tremendous range of forms made in China was exported to island Southeast Asia, but only *tempayan* (large jars) were represented among the seven pieces recorded by SSPHAP (Tables B-8 and B-9).[15] The Sukothai wares produced in Thailand often have strongly reminiscent decorations, but close scrutiny of the body allows an unequivocal identification.[16]

The so-called "Sancai" or three-coloured wares included lead in the glaze which allowed the potters to achieve striking colour combinations such as the renowned "eggs and spinach effect". They have been produced in China from the 1st millennium AD (Medley, 1981) through to the Qing dynasty (e.g. Harrisson, 1986), but current opinion holds that the majority exported to island Southeast Asia were Ming period wares (e.g. Guy, 1986:102-103). Correspondingly, the 16 pieces identified by Demmanari and myself were tentatively given a wide chronological distribution with a 15th century mode (Tables B-8 and B-9).

B.3.5 Coarse stonewares

Following advice from Campbell Macknight that sherds from large jars (*tempayan*) would resist accurate dating, I allowed a column specifically for coarse stonewares when I designed SSPHAP's site recording forms. During the fieldwork, more often than not their frequency was simply counted and the sherds replaced, but the specimens which were collected led to an attempted classification of 400 under laboratory

[15] Another example of a piece from a Jizhou iron-decorated *tempayan* is kept at the site museum of the Watanglamuru royal Islamic cemetery, Bone.
[16] Prior to SSPHAP's fieldwork, Jizhou iron-decorated pieces were not recognised in South Sulawesi but rather were included with the Sukothai class.

conditions. The primary references available to Demmanari and me in Ujung Pandang were Adhyatman and Ridho (1984) and Guy (1986), plus the warning by Richards et al. (1984) that large Sawankhalok storage jars had not yet been reported from Southeast Asian export sites. We assumed a Chinese source unless the piece could be clearly identified as something else, or was so perplexing that any suggestion of its origins appeared to be speculative. We also assigned dates which usually spanned two centuries, and characterised the type of glaze (although without reference to the Munsell colour chart).

After I returned to Canberra, Campbell Macknight acquainted me with Harrisson's (1986) major study on *tempayan*. Essentially the book adumbrates two classificatory systems which only partially overlap. One system is based on sherds from Brunei's 16th century capital, Kota Batu, in which Harrisson avoids giving the full time range of the described categories.[17] The second system describes a chronological framework based on complete specimens generally devoid of any archaeological context. I have compared the complete jars figured by Harrisson with the identical jars or close counterparts in Adhyatman and Ridho (1984), and found that the two sources provide very comparable dates, although Harrisson's catalogue is much ampler. The point of interest, however, is Harrisson's system based on sherds. Considering SSPHAP's coarse stonewares which I had documented in sufficient detail to allow direct comparison with Harrisson's criteria, I have matched them to her categories whenever the descriptions fitted. But as Harrisson's categories (other than Sawankhalok) are undated I have usually had to retain the chronological identifications given in Ujung Pandang.

The re-analysis indicated that the work in Ujung Pandang had been myopic towards large Sawankhalok jars which, as Harrisson documents at Kota Batu, were probably the major Ming period *tempayan* transported in Southeast Asian waters. A second problem in SSPHAP'S identifications is revealed after removal of the Sawankhalok pieces from the re-analysed

[17] With the partial exception of the Sawankhalok sherds most of which had been produced at a known kiln site of known chronology.

sample. Considering only the pieces dated between the 14th-15th and the 16th-17th centuries, we see that they are outnumbered by more recent as well as by older pieces, even in the group of categories recognised by Harrisson at Kota Batu (Table B-10b). Hence the reliability of SSPHAP's general identifications of coarse stonewares appears in doubt, both in terms of place of manufacture and chronological determination, for want of Harrisson's crucial study.

Table B-10a shows the relationship between vessel form and coarse stoneware category, using a corrected classification where available but otherwise following the Ujung Pandang classifications. At over 75% of all cases *tempayan* clearly dominate, and the great majority of other pieces represent smaller closed vessels. However, a small proportion consists of vessel forms generally assigned to other classes, which raises the question of how coarse should a stoneware be to qualify. With the *tempayan* and jars I included them here unless there were clear signs of a preferable identification elsewhere, e.g. a Sancai or celadon (not subceladon) glaze, or underglaze decorations. But sherds from small stoneware vessels were placed among the coarse stonewares only if they bore not a trace of glaze (which obviously prevents any classification based on glaze colour) or if the glazes fell among the strong reds, browns and blacks which usually characterise *tempayan*.

The identifications which could be corrected into Harrisson's categories are probably quite reliable, while the few pieces identified as Vietnamese or Cambodian would at least belong to the tips of their respective icebergs. But the remaining identifications of even the pieces studied in detail are not reliable and so are pooled in the description (Tables B-11 and B-12). The coarse stonewares evince an extraordinary range of glaze and body colours, not only as a class but also within individual categories, and hence the recorded Munsell colours are merged under the Munsell colour names for the sake of some manageability.

TABLE B-10. COMPOSITION OF SSPHAP'S COARSE STONEWARES

TABLE B-10A. VESSELS

	Tempayan	Jars	Vases	Bottles	Kendis	Teapots	Flower pots	Jarlets	Boxes	Bowls	Basins	Cups	Total
Coarse Red	9	2	0	0	0	0	0	0	0	0	0	0	11
Brittleware	21	5	0	0	0	0	0	1	0	1	0	0	28
Guangdong	26	6	0	1	0	0	0	0	0	0	0	0	33
Miscellaneous pre-Ming	1	18*	2	0	0	0	1	1	0	0	0	0	1
Miscellaneous Ming	196	4	1	0	0	0	0	0	1	0	0	0	234
Miscellaneous Qing	1	9	2	0	0	2	0	1	0	1	0	0	1
Miscellaneous Chinese	11	4	0	0	1	0	0	0	0	1	0	0	22
Sawankhalok	24	11	0	0	0	0	0	0	1	0	0	1	37
Sawank. unglazed	2	5	0	0	0	0	0	0	0	0	0	0	7
Coarse Brown	7	0	0	0	0	0	0	0	0	0	1	0	8
Wavyline	8	0	0	0	0	0	0	0	0	0	0	0	8
Vietnamese	1	2	0	0	0	0	0	1	0	0	0	0	4
Cambodian	0	2	1	0	0	0	0	0	0	0	0	0	3
Unidentified	2	3	0	0	0	0	0	0	0	0	0	0	5
Total	307	71	6	1	1	2	1	4	2	3	1	1	400

* Include one spouted jar.

TABLE B-10B. CENTURIES

	10th-12th	12th-13th	13th-14th	14th	14th-15th	15th-16th	16th	16th-17th	17th	17th-18th	18th	18th-19th	Not dated	Total
Coarse Brown	0	1	2	0	0	0	0	1	0	0	0	0	4	8
Coarse Red	0	0	4	0	0	1	0	2	0	0	0	0	4	11
Brittleware	0	1	4	0	2	3	1	2	1	2	3	0	9	28
Guangdong	3	4	7	1	2	4	0	2	1	4	1	0	4	33
Wavyline	0	0	1	0	0	1	0	1	0	0	0	0	5	8
Brownwares	1	2	2	0	0	0	0	0	0	0	0	2	3	10
Oliveware	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Redware	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Greywares	0	0	1	0	0	0	0	0	0	0	0	0	1	2
Blackwares	0	0	0	0	1	0	0	0	0	1	0	1	2	5
Unglazed	0	1	1	0	0	0	0	0	0	0	0	1	2	5
Vietnamese	0	0	1	0	1	1	0	0	0	0	0	0	1	4
Total	4	9	23	1	6	10	1	8	2	9	4	4	35	116

TABLE B-11. COARSE STONEWARES EXTERIOR GLAZE CHARACTERS (PERCENTAGES)

Colour	Coarse Brown	Coarse Red	Brittleware	Guangdong	Wavyline	Sawankhalok	Vietnam	Other	Total
Green/Brown A1	0	0	0	0	0	0	0	5.6	1 (0.8%)
Green/Brown A3	0	0	0	0	0	4.2	0	0	1 (0.8%)
Very Dusky Red	12.5	0	4.3	0	0	0	0	0	2 (1.7%)
Dusky Red	12.5	0	0	0	0	0	0	0	1 (0.8%)
Light Red	0	11.1	0	0	0	0	0	0	1 (0.8%)
Yellowish Red	0	0	0	0	0	4.2	0	5.6	2 (1.7%)
Dark Reddish Brown	12.5	22.2	17.4	27.3	0	16.7	0	5.6	21 (17.8%)
Reddish Brown	12.5	11.1	4.3	12.1	0	8.3	50.0	0	10 (9.3%)
Light Reddish Brown	0	0	0	3.0	0	0	0	0	1 (0.8%)

TABLE B-11. COARSE STONEWARES EXTERIOR GLAZE CHARACTERS (CONT.)

Colour	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Vietnam	Other	Total
Very Dark Brown	12.5	0	17.4	3.0	0	4.2	0	5.6	8 (6.8%)
Dark Brown	12.5	0	17.4	12.1	0	20.8	0	22.2	18 (15.3%)
Brown/Dark Brown	0	22.2	13.0	3.0	0	0	50.0	5.6	8 (6.8%)
Brown	0	0	0	0	100.0	4.2	0	0	2 (1.7%)
Strong Brown	0	0	4.3	0	0	0	0	0	1 (0.8%)
Dark Yellow Brown	0	33.3	4.3	6.1	0	4.2	0	5.6	8 (6.8%)
Olive Brown	0	0	4.3	9.1	0	0	0	5.6	5 (4.2%)
Very Dark Grey Brown	0	0	0	0	0	8.3	0	0	2 (1.7%)
Dark Greyish Brown	0	0	0	3.0	0	0	0	0	1 (1.7%)
Olive	0	0	0	3.0	0	0	0	0	1 (0.8%)
Dark Reddish Grey	0	0	0	0	0	0	0	5.6	1 (0.8%)
Reddish Grey	12.5	0	0	0	0	0	0	0	1 (0.8%)
Light Brownish Grey	0	0	0	0	0	0	0	5.6	1 (0.8%)
Light Grey	0	0	0	3.0	0	4.2	0	0	2 (1.7%)
Very Dark Grey	0	0	4.3	0	0	0	0	5.6	2 (1.7%)
Black	12.5	0	8.7	15.2	0	20.8	0	22.2	17 (14.4%)
Total	(8)	(9)	(23)	(33)	(1)	(24)	(2)	(18)	(118)
Thickness									
1	28.6	11.1	28.0	37.0	100.0	12.0	100.0	33.3	32 (28.1%)
2	57.1	55.5	24.0	37.0	0	52.0	0	27.8	43 (37.7%)
3	14.3	33.3	48.0	18.5	0	36.0	0	27.8	35 (30.7%)
4	0	0	0	7.4	0	0	0	11.1	4 (3.5%)
	(7)	(9)	(25)	(27)	(1)	(25)	(2)	(18)	(114)

TABLE B-12. COARSE STONEWARE BODY CHARACTERS (PERCENTAGES)

Colours	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Unglazed Sawankhalok	Viet-nam	Cambo-dian	Other	Total
N7/-	0	0	4.2	0	0	8.3	20.0	0	0	3.6	5 (3.8%)
N6/-	0	0	0	7.4	0	4.2	0	0	0	3.6	4 (3.0%)
N5/-	0	0	0	7.4	0	0	0	0	0	3.6	3 (2.3%)
N4/-	25.0	0	0	0	0	8.3	0	0	0	7.1	6 (4.5%)
N3/-	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Light Grey	12.5	0	16.7	14.8	0	4.2	0	0	0	7.1	13 (9.8%)
Light Grey/Grey	0	0	12.5	0	0	12.5	0	0	0	3.6	7 (5.3%)
Grey	0	0	4.2	7.4	0	4.2	0	0	0	10.7	7 (5.3%)
Dark Grey	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Very Dark Grey	12.5	0	0	3.7	0	0	0	0	0	0	2 (1.5%)
Pinkish Grey	0	0	4.2	3.7	0	12.5	0	100.0	0	0	6 (4.5%)
Light Brown Grey	0	0	4.2	0	0	0	0	0	0	0	1 (0.8%)
Reddish Grey	0	0	4.2	3.7	0	4.2	0	0	0	3.6	4 (3.0%)
Dark Red Grey	0	9.1	8.3	3.7	0	0	0	0	0	7.1	6 (4.5%)
(Off-)White	0	0	0	0	0	4.2	0	0	0	0	1 (0.9%)
Pinkish White	0	18.2	0	0	0	0	0	0	0	7.1	4 (3.0%)
Pink	0	9.1	0	11.1	12.5	4.2	0	0	0	3.6	7 (5.3%)
Very Pale Brown	0	0	4.2	7.4	0	0	0	0	0	7.1	5 (3.8%)
Yellow	0	0	4.2	0	0	0	0	0	0	0	1 (0.8%)
Light Red Brown	0	0	0	0	0	4.2	0	0	0	3.6	2 (1.5%)
Reddish Brown	0	0	0	0	12.5	0	0	0	33.3	0	2 (1.5%)
Brown	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)

TABLE B-12. COARSE STONEWARE BODY CHARACTERS (CONT.)

Colours	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Unglazed Sawankhalok	Viet-nam	Cambo-dian	Other	Total
Light Red	0	9.1	0	0	0	0	0	0	0	0	1 (0.8%)
Pale Red	0	9.1	0	0	0	0	0	0	0	3.6	2 (1.5%)
Weak Red	25.0	9.1	4.2	0	12.5	0	0	0	33.3	0	6 (4.5%)
Red	0	18.2	4.2	0	0	0	0	0	0	0	3 (2.3%)
Dark Red	0	9.1	0	0	0	0	0	0	0	0	1 (0.8%)
Dusky Red	0	9.1	0	0	0	4.2	0	0	0	3.6	3 (2.3%)
2 shades of Light Grey/Grey X & I	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Light Grey/Grey X, Grey I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Very Pale Brown X, Light Grey/Grey I	0	0	4.2	3.7	0	0	0	0	0	0	2 (1.5%)
Pink X, Pinkish Grey I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Light Brown X, Pinkish Grey I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Grey X, Very Pale Brown I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Grey X, Pink I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Dark Grey X, Pink I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Dark Grey X, Pinkish Grey I	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Dark Grey X, Reddish Brown I	12.5	0	0	0	0	0	0	0	0	0	1 (0.8%)
Dark Grey X, Light Grey/Grey I	0	0	8.3	0	0	0	0	0	0	0	2 (1.5%)
Very Dark Grey X, Grey I	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Black X, Very Dark Grey I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Core & Walls 2 shades of Light Grey/Grey	0	0	0	0	0	4.2	20.0	0	0	0	2 (1.5%)
Walls Light Grey/ Grey, Core Pinkish Grey	0	0	4.2	0	0	4.2	0	0	0	0	2 (1.5%)
Walls Grey, Core Light Grey/Grey	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Walls Grey, Core Pink	0	0	0	0	0	0	20.0	0	0	0	1 (0.8%)
Walls Light Grey/ Grey, Core Light Reddish Brown	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Walls Light Grey/ Grey, Core Dark Reddish Brown	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Walls Light Red, Core Red	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Walls Red Brown, Core Dusky Red	12.5	0	0	0	0	0	0	0	0	0	1 (0.8%)
Walls Very Dark Grey, Core Light Grey/Grey	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Walls Grey, Core Dark Grey	0	0	0	0	0	4.2	0	0	0	0	1 (0.8%)
Walls Dark Grey, Core Dark Reddish Grey	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)

TABLE B-12. COARSE STONEWARE BODY CHARACTERS (CONT.)

Colours	Coarse Brown	Coarse Red	Brittle-ware	Guang-dong	Wavy-line	Sawank-halok	Unglazed Sawankhalok	Viet-nam	Cambo-dian	Other	Total
Light Grey/Grey X, Core Pink, Light Brown I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Light Grey/Grey X, Core Red, Pink I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Greyish Brown X, Core Yellowish Red, Pink I	0	0	0	0	0	0	20.0	0	0	0	1 (0.8%)
Dark Grey X, Core Pinkish Grey, Light Brown I	0	0	0	0	0	0	20.0	0	0	0	1 (0.8%)
Grey X, Core Yellow Red, Very Pale Brown I	0	0	0	3.7	0	0	0	0	0	0	1 (0.8%)
Pink X, Core Dark Red Brown, Grey I	0	0	4.2	0	0	0	0	0	0	0	1 (0.8%)
Light Red Brown X, Core Dark Red Grey, Red I	0	0	0	0	12.5	0	0	0	0	0	1 (0.8%)
Very Dark Grey X, Core Light Red Brown, Pink I	0	0	0	0	0	0	0	0	0	3.6	1 (0.8%)
Black X, Core Dusky Red, Red Brown I	0	0	0	0	0	0	0	0	33.3	0	1 (0.8%)
Total	(8)	(11)	(24)	(27)	(8)	(24)	(5)	(1)	(3)	(28)	(133)
Hardness											
2	14.3	0	0	0	0	0	0	0	0	0	1 (0.7%)
3	0	0	3.7	0	0	0	0	0	0	0	1 (0.7%)
4	0	10.0	7.4	10.0	0	0	0	0	0	6.9	8 (5.5%)
5	0	50.0	40.7	16.7	42.9	12.0	20.0	0	0	37.9	39 (26.9%)
6	28.6	20.0	18.5	10.0	14.3	8.0	20.0	0	100.0	10.3	22 (15.2%)
7	42.9	20.0	14.8	46.7	28.6	36.0	40.0	100.0	0	41.4	50 (34.5%)
8	14.3	0	7.4	10.0	14.3	44.0	20.0	0	0	3.4	20 (13.8%)
9	0	0	7.4	6.7	0	0	0	0	0	0	4 (2.8%)
% Inclusions											
1	0	0	0	10.0	0	0	0	0	0	0	3 (2.1%)
2-3	0	0	11.1	23.3	0	7.7	20.0	0	33.3	17.2	19 (13.1%)
4-5	0	30.0	48.1	26.7	28.6	23.1	20.0	100.0	33.3	37.9	46 (31.7%)
10-15	28.6	40.0	33.3	26.7	28.6	30.8	40.0	0	0	34.5	45 (31.0%)
20-30	71.4	30.0	7.4	13.3	42.9	38.5	20.0	0	33.3	10.3	32 (22.1%)
Total	(7)	(10)	(27)	(30)	(7)	(25-26)	(5)	(1-2)	(3)	(29)	(145)
Body Type											
PP	0	0	0	0	0	0	0	50.0	0	3.3	2 (1.4%)
SW	71.4	50.0	44.4	76.7	57.1	92.3	80.0	50.0	33.3	53.3	95 (64.6%)
EW	26.4	50.0	55.5	23.3	42.9	7.7	20.0	0	66.7	43.3	50 (34.0%)
Total	(7)	(10)	(27)	(30)	(7)	(26)	(5)	(2)	(3)	(30)	(147)
Slipping											
None	100.0	30.0	85.7	55.2	62.5	76.0	100.0	100.0	100.0	89.3	109 (75.2%)
X	0	60.0	7.1	17.2	12.5	12.0	0	0	0	7.1	19 (13.1%)
I	0	10.0	3.6	10.3	0	12.0	0	0	0	3.6	9 (6.2%)
X and I	0	0	3.6	17.2	25.0	0	0	0	0	0	8 (5.5%)
Total	(8)	(10)	(28)	(29)	(8)	(25)	(5)	(1)	(3)	(28)	(145)

B.3.6 Ming celadons (including Yuan-like Ming celadons)

These two classes include celadons which we dated between the 14th and the 16th centuries, including pieces we called "*Qingbai* celadons". The celadons dated to the 14th or the 14th-15th centuries, the "Yuan-like Ming celadons", resembled the celadons of the early monochrome class in overall appearance, but also exhibited certain features usually regarded as "late". These features include fully glazed base, thinner or more watery glaze, a tendency to a more porcellanous body, conspicuous brown or yellow miscolourations of the glaze, and a tendency to crowded and "artificial" decorations (Gompertz, 1980:164,182; Zainie and Harrisson, 1967:70; Sorsby Ltd, 1974:14; Lu Yaw, 1979). We dated the celadons with a whitish porcellanous body and a uniform, depthless glaze to the 15th and 16th centuries.[18] The middle ground of variation between the latter pieces and the "*Qingbai*" early whitewares was reserved for the "*Qingbai* celadons". These were distinguished by their incised, moulded or gouged decorations which lacked the vigour of their *Qingbai* whiteware counterparts, and their greener glaze which lacked the greasy sheen of the classical *Qingbai* glaze. I have decided to treat the *Qingbai* celadons as nothing more than one variant of the Ming celadons, in view of the general similarities and the absence of *Qingbai* celadons from

TABLE B-13. SSPHAP'S MING (INC. YUAN-LIKE) CELADONS

	— Yuan-like —		— Ming celadon —			— *Qingbai* celadon —			
	"14th century"	"14th-15th centuries"	15th century	15th-16th centuries	16th century	15th century	15th-16th centuries	16th century	Total
Plates	8	29	13	10	13	17	1	1	92
Bowls	0	10	2	2	3	5	0	0	22
"Open"	0	1	0	0	1	0	0	0	2
Boxes	0	0	1	0	0	1	0	0	2
Jarlets	0	0	1	0	1	0	0	0	2
Vases	0	0	2	0	2	0	0	0	4
Jars/*Tempayan*	3	2	0	1	1	0	0	0	7
Total	11	42	19	13	21	23	1	1	131

[18] It is possible that some Japanese celadons (cf. Kallupa et al., 1989:Plates) have been mixed in here as well.

TABLE B-13. SSPHAP'S MING (INC. YUAN-LIKE) CELADONS (CONT.)

	---- Yuan-like ----			------- Ming celadons -------				
Exterior Glaze Colour	"14th century"	"14th-15th centuries"	Total	15th century	15th-16th centuries	16th century	*Qingbai*	Total
Blue/Green A3	0	5.3	1 (4.0%)	0	0	0	0	0
Green/Brown A4	50.0	21.1	7 (28.0%)	0	0	0	0	0
Green/Brown A5	16.7	5.3	2 (8.0%)	0	0	0	0	0
Green/Brown A6	0	5.3	1 (4.0%)	0	0	0	12.5	1 (6.3%)
5G 6/2	0	10.5	2 (8.0%)	0	0	0	0	0
5G 7/1	0	0	0	0	0	0	50.0	4 (25.0%)
5Gy 5/2	16.7	0	1 (4.0%)	0	0	0	0	0
5Gy 5/1	0	15.8	3 (12.0%)	0	0	33.3	0	1 (6.3%)
5Gy 6/1	16.7	26.3	6 (24.0%)	33.3	0	66.7	0	3 (18.8%)
5Gy 7/1	0	5.3	1 (4.0%)	33.3	100.0	0	25.0	5 (31.3%)
< 5Gy 7/1	0	0	0	0	0	0	12.5	1 (6.3%)
5y 7/1	0	5.3	1 (4.0%)	33.3	0	0	0	1 (6.3%)
X Glaze Thickness								
2	0	5.3	1 (4.0%)	33.3	0	0	25.0	3 (18.8%)
3	33.3	42.1	10 (40.0%)	66.7	50.0	33.3	37.5	7 (43.8%)
4	50.0	10.5	6 (24.0%)	0	0	33.3	25.0	3 (18.8%)
5	16.7	36.8	8 (32.0%)	0	50.0	33.3	12.5	3 (18.8%)
X Glaze Number								
1 layer	83.3	94.7	23 (92.0%)	100.0	100.0	100.0	87.5	15 (93.8%)
2 layers	16.7	5.3	2 (8.0%)	0	0	0	12.5	1 (6.3%)
Total	(6)	(19)	(25)	(3)	(2)	(3)	(8)	(16)
I Glaze Colour								
Green/Brown A4	42.9	25.0	8 (29.6%)	0	0	0	0	0
Green/Brown A5	0	5.0	1 (3.7%)	0	0	0	0	0
Green/Brown A6	0	0	0	0	0	0	12.5	1 (6.3%)
5G 6/2	0	10.0	2 (7.4%)	0	0	0	0	0
5G 7/1	0	0	0	0	0	0	50.0	4 (25.0%)
5Gy 5/1	0	10.0	2 (7.4%)	0	0	0	0	0
5Gy 6/1	57.1	35.0	11 (40.7%)	33.3	0	66.7	12.5	4 (25.0%)
5Gy 7/1	0	10.0	2 (7.4%)	33.3	100.0	33.3	25.0	6 (37.5%)
5y 7/1	0	0	0	33.3	0	0	0	1 (6.3%)
5Y 5/3	0	5.0	1 (3.7%)	0	0	0	0	0
I Glaze Thickness								
1	12.5	0	1 (3.6%)	0	0	0	0	0
2	12.5	5.0	2 (7.1%)	0	0	33.3	25.0	3 (18.8%)
3	50.0	40.0	12 (42.9%)	66.7	50.0	33.3	25.0	6 (37.5%)
4	12.5	25.0	6 (21.4%)	33.3	0	0	25.0	3 (18.8%)
5	12.5	30.0	7 (25.0%)	0	50.0	33.3	25.0	4 (25.0%)
I Glaze Number								
1 layer	100.0	95.0	27 (96.4%)	100.0	100.0	100.0	87.5	15 (93.8%)
2 layers	0	5.0	1 (5.6%)	0	0	0	12.5	1 (6.3%)
Total	(7-8)	(20)	(27-28)	(3)	(2)	(3)	(8)	(16)

TABLE B-13. SSPHAP'S MING (INC. YUAN-LIKE) CELADONS (CONT.)

	Yuan-like			Ming celadons				
Interior Body Colour	"14th century"	"14th-15th centuries"	Total	15th century	15th-16th centuries	16th century	*Qingbai*	Total
N5/-	0	11.8	2 (8.7%)	0	0	0	0	0
N6/-	0	5.9	1 (4.3%)	0	0	0	0	0
N7/-	83.3	41.2	12 (52.2%)	33.3	50.0	100.0	25.0	7 (43.8%)
< N7/-	0	29.4	5 (21.7%)	33.3	50.0	0	25.0	4 (25.0%)
> N8/-	0	5.9	1 (4.3%)	33.3	0	0	25.0	3 (18.8%)
5YR 5/4	0	5.9	1 (4.3%)	0	0	0	0	0
5YR 7/1	16.7	0	1 (4.3%)	0	0	0	12.5	1 (6.3%)
5YR 8/1	0	0	0	0	0	0	12.5	1 (6.3%)
Total	(6)	(17)	(23)	(3)	(2)	(3)	(8)	(16)
Translucency								
Faint (F)	0	0	0	33.3	0	100.0	25.0	6 (37.5%)
No (N)	100.0	100.0	27 (100%)	66.7	100.0	0	75.0	10 (62.5%)
Hardness								
6	0	5.0	1 (3.7%)	0	0	0	0	0
7	0	25.0	5 (18.5%)	0	50.0	0	25.0	3 (18.8%)
8	85.7	45.0	15 (55.6%)	33.3	50.0	100.0	50.0	9 (56.3%)
9	14.3	25.0	6 (22.2%)	66.7	0	0	25.0	4 (25.0%)
% Inclusions								
1	57.1	55.0	15 (55.6%)	66.7	0	33.3	62.5	8 (50.0%)
3	42.9	15.0	6 (22.2%)	0	50.0	0	25.0	3 (18.8%)
5	0	20.0	4 (14.8%)	0	0	66.7	12.5	3 (18.8%)
10	0	10.0	2 (7.4%)	33.3	0	0	0	1 (6.3%)
15	0	0	0	0	50.0	0	0	1 (6.3%)
Body Type								
Almost China P.	0	5.0	1 (3.7%)	0	0	33.3	25.0	3 (18.8%)
Semi-porcelain	0	0	0	0	50.0	0	25.0	3 (18.8%)
Stoneware	100.0	95.0	26 (96.3%)	100.0	50.0	66.7	50.0	10 (62.5%)
Slipping								
None	100.0	90.0	25 (92.6%)	100.0	100.0	100.0	87.5	15 (93.8%)
X and I	0	10.0	2 (7.4%)	0	0	0	12.5	1 (6.3%)
Total	(7)	(20)	(27)	(3)	(2)	(3)	(8)	(16)

	Yuan-like			Ming celadons			
Basal Glazing Characters	"14th c."	"14th-15th c."	Total (8)	15th c.	16th c.	*Qing-bai*	Total (4)
Ordinarily glazed base	3	3	6 (66.7%)	0	1	0	1 (25.0%)
Red-glazed base	0	0	0	1	0	0	1 (25.0%)
Glaze-splashed base	1	0	1 (33.3%)	0	0	2	2 (50.0%)
Unglazed base	0	1	1 (33.3%)	0	0	0	0
Glaze does not reach to foot	0	1	1 (33.3%)	0	0	0	0

N.B. One celadon dated "14th century" had an unglazed central stacking ring, but the three *Qingbai* celadons with the relevant part extant lacked the stacking ring.

SSPHAP's clearly pre-Ming assemblages.[19]

The composition of the Ming celadon classes shows a dominance of plates to an even greater extent than with the early monochromes. So few pieces had a subceladon (*abu-abu*) glaze that I have not bothered to distinguish them from the celadons (Table B-13).

B.3.7 Qing monochromes

This class, which broadly equates with the local "Siam" class (Hadimuljono and Macknight, 1983), includes the monochromes which Demmanari and I dated to between the 17th and 20th centuries. The majority were from stoneware bowls with a strong green glaze which we dated to the 18th-19th centuries. The class also includes early Qing celadons which exceeded even the Ming celadons in transparency of the glaze (cf. Gompertz, 1980:202); apparent Qing-period imitations of earlier Chinese wares, which we usually attributed to the Qianlong reign when the Chinese potters were responding to a wave of antiquarianism (Macintosh, 1977:83; Medley, 1980:258);[20] and some fine brownwares (Table B-14). This last group constitutes the closest approximations we found to the wide range of exquisite Qing monochromes with subtle or bright glazes described by Tam (1977) and Medley (1980:250-259). I did not record many of the pieces in detail because their dates fall later than SSPHAP's period of main interest, and the pieces which were recorded (Table B-17) may not be particularly representative of the class.

B.3.8 Wares blue or white

12 pieces were identified as bluewares in the laboratory (Table B-15). A few are possibly doubtful inclusions, either because the piece is small or, in one case (T.30.1.48),

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[19] Note that in an earlier report I treated both the "14th century celadons" and the *Qingbai* celadons as early or pre-Ming Chinese wares (Bulbeck, in press). Review of the pieces, and especially the results of seriation (Bulbeck, 1989), have convinced me to treat them as Ming.

[20] A good example is provided by the greyish green wares with heavily crackled glaze, locally called *pecah seribu (a thousand pieces)*.

because the obverse contained blue-and-white decorations. In terms of the ISCC-NBS colour names (Agoston, 1987), the observed colours would have ranged between light blues, vivid blues and violets. The three pieces observed in detail are described in Table B-18. The Gowa survey did not come upon any evidence of blueware antiques looted from the pre-Islamic burial grounds, but three bowls with very dark blue glazes, which appeared to be of Qing antiquity, are held in the *kabupaten* head office of the Department of Education in Soppeng.

As regards the whitewares, we felt confident in dating them prior to the Qing dynasty only if the glaze had a conspicuous richness about it, or if an archaic feature such as an unglazed base was present, or if the vessel form fell in particular categories. Those considered Ming whitewares tended to be, as it were, rejects from the early whiteware class - pieces with an opaque but otherwise *qingbai*-like glaze, or pieces which looked like early whitewares but failed to match any recognised category. The 36 recognised Wanli whitewares tended to consist of small open forms - cups, bowls with slender graceful profiles, and plates with foliated edges - further characterised by an icey, pink or cream glaze (see Photo 10-24 and Table B-16). Descriptive characters of the Ming whitewares and single Wanli whiteware studied in detail are given in Table B-18.

B.3.9 Ming blue-and-white and *Ming merah* (Ming red)

The Ming blue-and-white class is here taken to cover a well-defined group of Chinese BW wares which excludes older looking pieces (those we dated to the early 15th century or earlier), Wanli and later pieces, and members of the Swatow family (B.3.11). The class includes a small number of pieces whose decorations combined red overglaze enamels with the underglaze cobalt blue (Table B-19). The range of decorations overlaps with the repertoire found on the high-quality, "imperial" Ming BW wares, as described particularly well by Macintosh (1977), but centres on a group of standard motifs which would appear to have been the specialisation of the Chinese provincial kilns. The wares produced in these kilns,

which occur in numerous Southeast Asian sites as a distinct late 15th to 16th century horizon, are treated by Addis (1968a), Sorsby Ltd (1974), McElney (1979) and Guy (1986:94-97). A particularly common example in South Sulawesi involves bowls whose exterior cavetto is covered with a lattice of hexagonal diapers enclosing dots inside the hexagons.[21] For the purposes of initial seriation (B.4) I treat these "Ming BW hexagonal wares" as a separate class because the identification is unequivocal as long as part of the cavetto is extant. Nonetheless the "hexagonal wares" evince very similar characters to the other Ming BW pieces, including the tendency to a porcellanous body but the rarity of true porcelains (Table B-19).

Demmanari and I dated the Ming BW pieces to the 16th century except for a small number whose specific motifs or fabrication techniques indicated a slightly earlier date, according to the sources just cited. Plates and bowls vied for equal prominence among SSPHAP's sample of Ming BW wares, with *balubu* (the porcellanous equivalent to *tempayan*) and jars constituting the majority of the remainder (Table B-19). The types of wares recorded during laboratory study of the assemblages specifically associated with greater Gowa's palaces (G.1.107-108, G.3.3, U.25.1) differed markedly from the general ruck. For instance, the palatial assemblages contained the majority of the recorded *balubu* but not one of the "hexagonal wares".

Related to the Ming BW class is the class called *Ming merah* in South Sulawesi ("Ming red"), which differs in having enamel overglaze decorations usually restricted to a few standard floral motifs. An alternative label is provided by adapting the terminology used for the earlier class of Qing overglaze-decorated wares and calling the class, or at least those pieces whose extant decorations include green enamels, Ming *famille verte*. Only 27 pieces were identified in the laboratory, and these proved to be either plates or bowls, the majority lacking green enamels (Table B-20). The single piece I recorded in detail (Photo 10-24; Table B-21) has some

[21] An example is figured in Carswell (1985).

TABLE B-14. COMPOSITION OF SSPHAP'S QING MONOCHROMES

	17th		Kangxi	17-18th		--- 18th ---				Qianlong		18-19th			19th	19-20	20th	Qing	
	C	S	P	C	S	C	S	B	P	C	S	C	S	P	S	C	P	C	Sum
Bowls	7	3	3	17	1	2	0	0	1	1	10	150	5	1	2	4	1	1	209
Plates	0	1	0	1	1	0	2	0	0	1	1	2	1	0	2	0	0	1	13
Cups	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Boxes	0	0	1	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5
Bottle	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Vases	0	0	0	2	0	0	0	0	0	1	6	2	0	0	0	0	0	0	11
Jars	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
Tempayan	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	9	4	4	23	2	2	3	1	1	3	18	156	6	1	4	4	1	2	244

N.B. In the column headings, the numbers refer to the century or centuries to which the pieces were dated; C stands for celadons, S for subceladons, B for the brown-glazed stoneware, and P for brown-glazed porcelains.

TABLE B-15. COMPOSITION OF SSPHAP'S BLUEWARES

	16th century	16th-17th centuries	17th century	17th-18th centuries	18th century	Total
Bowls	0	0	1#	1^	2	4
Plates	0	0	0	1	0	1
Boxes	0	0	0	1	1	2
Jars	1	1*	0	0	0	2
Vases	2	0	1	0	0	3
Totals	3	1	2	3	3	12

* Navy blue exterior glaze (2 layers, "5" thickness).
\# Deep purplish exterior glaze (1 layer, "3" thickness).
^ Pale azure exterior glaze (1 layer, "3" thickness).

TABLE B-16. COMPOSITION OF SSPHAP'S MING/WANLI WHITEWARES

	Ming Whitewares						Wanli Whitewares		
	Dehua 14th-15th centuries	Other 14th-15th centuries	15th century	16th century	Other	Total	Dehua 16th-17th centuries	Other	Total
Bowls	0	1	3	3	3	11	0	19	19
Plates	0	0	0	3	2	4	0	9	9
Cups	0	0	0	0	0	0	0	4	4
"Open"	0	1	0	0	0	1	0	0	0
Boxes	0	0	1	1	1	3	1	1	2
Jarlets	0	0	0	0	0	0	0	1	1
Vases	0	0	0	0	2	2	0	0	0
Kendis	2	0	0	0	0	2	0	0	0
Jars	1	0	0	0	0	1	0	0	0
Figurette (human head)	0	0	0	0	0	0	1	0	1
Total	3	2	4	7	8	25	2	34	36

TABLE B-17. SSPHAP'S SAMPLE OF QING MONOCHROMES

	Exterior Glaze				Interior Glaze			
Colour	Celadons	Subceladons	Brownware	Total	Celadons	Subceladons	Brownware	Total
Blue/Green A4	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
Blue/Green A5	2	0	0	2 (14.3%)	2	0	0	2 (14.3%)
Blue/Green A6	3	0	0	3 (21.4%)	3	0	0	3 (21.4%)
5G 6/2	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
5G 7/1	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5Gy 4/1	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
5y 6/1	0	0	0	0	0	1	0	1 (7.1%)
5y 7/1	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5Y 7/2	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5YR 5/1	0	1	0	1 (7.1%)	0	1	0	1 (7.1%)
5YR 6/1	0	1	0	1 (7.1%)	0	0	0	0
7.5YR 5/4	0	0	1	1 (7.1%)	0	0	0	0
7.5YR 4/4	0	0	0	0	0	0	1	1 (7.1%)
Glaze Thickness								
2	4	0	1	5 (35.7%)	4	0	0	4 (28.6%)
3	3	5	0	8 (57.1%)	3	5	0	8 (57.1%)
4	0	0	0	0	0	0	1	1 (7.1%)
5	1	0	0	1 (7.1%)	1	0	0	1 (7.1%)
Body Colour					**Hardness**			
10YR 8/2	0	2	0	2 (14.3%)	5	0	0	1 (7.1%)
10YR 8/3	1	0	0	1 (7.1%)	6	1	1	2 (14.3%)
5YR 8/4	1	0	0	1 (7.1%)	7	4	3	7 (50.0%)
5YR 7/1	1	1	0	2 (14.3%)	8	2	0	2 (14.3%)
10YR 7/2	1	0	0	1 (7.1%)	9	1	1	2 (14.3%)
7.5YR 7/2	1	0	0	1 (7.1%)				
10YR 7/3	1	0	0	1 (7.1%)	**% Incs**			
5YR 6/1	1	0	0	1 (7.1%)				
5YR 6/2	1	0	0	1 (7.1%)	1	1	0	0	1 (7.1%)
10YR 6/3	0	0	1	1 (7.1%)	3	1	4	0	5 (35.7%)
2.5YR 5/6	0	1	0	1 (7.1%)	5	1	1	1	3 (21.4%)
2.5YR 5/8	0	1	0	1 (7.1%)	10	3	0	0	3 (21.4%)
					15	2	0	0	2 (14.3%)
Body Type								
					Slip			
Semi-porcelain	0	1	0	1 (7.1%)				
Stoneware	8	4	0	12 (85.7%)	None	5	5	1	11 (78.6%)
Earthenware	0	0	1	1 (7.1%)	X & I	3	0	0	3 (21.4%)
	(8)	(5)	(1)	(14)		(8)	(5)	(1)	(14)

Basal Glazing Characters	Celadons (2)	Subceladons (4)	Brownware (1)	Total (7)
Glazed base	2	2	0	4 (57.1%)
Unglazed base	0	2	0	2 (28.6%)
Glaze stops short of non-extant foot	0	0	1	1 (14.3%)

N.B. The celadons include specimens dated between the 17th and the 18th centuries, and the subceladons specimens dated between the 17th and the 19th centuries. All specimens had only a single layer of glaze and an opaque body. Unglazed central stacking rings were present on one of the two celadons, and on all five subceladons, which preserved the relevant area.

TABLE B-18. SSPHAP'S SAMPLE OF BLUE OR WHITE WARES

	Exterior Glaze					Interior Glaze				
		--- Ming Whitewares ---					--- Ming Whitewares ---			
Colour	Blue-wares	14th-15th centuries	15th/16th centuries	Total	Wanli White	Blue-wares	14th-15th centuries	15th/16th centuries	Total	Wanli White
< 5BG 7/1	0	0	3	3 (23.1%)	0	0	0	3	3 (30.0%)	0
5G 7/1	0	0	1	1 (7.7%)	0	0	1	0	1 (10.0%)	0
< 5G 7/1	0	0	0	0	0	1	0	0	0	0
5Gy 7/1	0	0	1	1 (7.7%)	0	0	1	0	1 (10.0%)	0
< 5Gy 7/1	0	0	1	1 (7.7%)	0	1	0	1	1 (10.0%)	0
5y 7/1	0	0	0	0	1	0	0	0	0	1
N8/-	0	1	0	1 (7.7%)	0	0	2	0	2 (20.0%)	0
5YR 8/2	0	0	1	1 (7.7%)	0	0	0	1	1 (10.0%)	0
7.5YR 8/2	0	3	0	3 (23.1%)	0	0	0	0	0	0
10YR 8/2	0	1	0	1 (7.7%)	0	0	0	0	0	0
N7/-	0	0	0	0	0	0	0	1	1 (10.0%)	0
5YR 7/2	0	1	0	1 (7.7%)	0	0	0	0	0	0
Glaze Thick.										
2	0	3	1	4 (30.8%)	1	0	2	2	4 (40.0%)	1
3	2	3	5	8 (61.5%)	0	2	2	4	6 (60.0%)	0
4	0	0	1	1 (7.7%)	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0
	(3)	(6)	(7)	(13)	(1)	(2)	(4)	(6)	(10)	(1)
Body Colour							**Hardness**			
N8/-	2	1	2	3 (23.1%)	1	"7" 0	1	2	3 (23.1%)	0
> N8/-	0	0	2	2 (15.4%)	0	"8" 1	3	4	7 (53.8%)	1
< N7/-	0	0	2	2 (15.4%)	0	"9" 2	2	1	3 (23.1%)	0
N7/-	1	0	0	0	0					
5YR 8/1	0	1	0	1 (7.7%)	0		**% of Body Inclusions**			
10YR 8/1	0	1	0	1 (7.7%)	0					
5YR 8/2	0	0	1	1 (7.7%)	0	"0" 0	1	2	3 (23.1%)	0
5YR 7/4	0	1	0	1 (7.7%)	0	"1" 1	4	3	7 (53.8%)	1
5YR 7/6	1	2	0	2 (15.4%)	0	"3" 2	1	1	2 (15.4%)	0
						"15" 0	0	1	1 (7.7%)	0
	(3)	(6)	(7)	(13)	(1)					
Translucency							**Body Type**			
						CP 2	0	5	5 (38.5%)	1
Y	2	0	4	4 (33.3%)	1	Near CP 1	0	1	1 (7.7%)	0
F	0	0	2	2 (16.7%)	0	SP 0	4	1	5 (38.5%)	0
N	1	5	1	6 (50.0%)	0	SW 0	2	0	2 (15.4%)	0
Slipping						(3)	(6)	(7)	(13)	(1)
None	2	4	6	10 (83.3%)	1					
Exterior	0	0	1	1 (8.3%)	0					
Interior	1	0	0	0	0					
X and I	0	1	0	1 (8.3%)	0					
	(3)	(5)	(7)	(12)	(1)					

Basal Glazing Characters Ming White	14th-15th centuries	15th-16th centuries	Total
Regularly glazed base	0	2 (50.0%)	2 (40%)
Irregularly glazed base	0	1 (25.0%)	1 (20%)
Unglazed base	0	1 (25.0%)	1 (20%)
Glaze does not reach non-extant foot	1 (100%)	0	1 (20%)
Unglazed central stacking ring present	1 (100%)	3 (100%)	4 (100%)

N.B. Only one glaze layer present in all cases except for one blue glaze (Table B-15).

TABLE B-19. SSPHAP'S MING BW (INC. HEXAGONAL) WARES

	15th century	Late 15th century	Late 15th-early 16th century	15th-16th centuries	"Ming BW"	BW/Red 16th century	16th century	Total	Hexagonal Ming BW
Plates	0	3	5	0	10	292	0	310	0
Bowls	2	7	2	3	11	233	2	260	75
Dishes	0	0	0	0	0	2	0	2	0
Cups	0	0	0	1	0	0	0	1	0
"Open"	0	0	0	0	0	2	0	2	0
Boxes	0	1	1	1	0	12	1	16	0
Jarlets	0	0	0	0	0	3	0	3	0
Vases	0	0	0	0	0	8	0	8	0
Jars	0	0	0	0	0	42	0	42	0
Balubu	0	0	2	0	0	97	2	101	0
Total	2	11	10	5	21	691	5	745	75

N.B. Jars and *balubu* include 50 pieces from Tallok's royal cemetery (U.25.1), identified only as Jars/*balubu*, divided up according the the recorded frequencies of the jars and *balubu* at other sites.

X Glaze Colour	Late 15th century	Late 15th-early 16th century	15th-16th centuries	BW/Red 16th century	16th century	Total	Hexagonal Ming BW
< 5B 7/1	0	0	0	0	1.3	1 (1.1%)	0
5BG 7/1	100.0	11.1	0	0	8.7	9 (9.9%)	1 (8.3%)
5G 7/1	0	33.3	25.0	0	13.2	14 (15.4%)	4 (33.3%)
< 5G 7/1	0	0	0	100.0	11.8	10 (11.0%)	1 (8.3%)
5Gy 6/1	0	11.1	0	0	0	1 (1.1%)	0
5Gy 7/1	0	11.1	25.0	0	27.6	23 (25.3%)	2 (16.7%)
< 5Gy 7/1	0	11.1	25.0	0	18.4	16 (17.6%)	2 (16.7%)
5y 6/1	0	0	0	0	1.3	1 (1.1%)	0
5y 7/1	0	0	0	0	1.3	1 (1.1%)	0
< 5y 7/1	0	11.1	0	0	3.9	4 (4.4%)	0
N8/-	0	0	0	0	5.3	4 (4.4%)	0
> N8/-	0	0	0	0	1.3	1 (1.1%)	0
< N7/-	0	0	0	0	0	0	1 (8.3%)
10YR 8/1	0	11.1	0	0	2.6	3 (3.3%)	0
7.5YR 8/2	0	0	0	0	1.3	1 (1.1%)	0
5Y 8/2	0	0	0	0	0	0	1 (8.3%)
5Y 7/1	0	0	25.0	0	1.3	1 (1.1%)	0
5Y 7/2	0	0	0	0	1.3	1 (1.1%)	0
X Glaze Thickness							
2	0	0	25.0	0	5.3	5 (5.5%)	0
3	100.0	77.8	75.0	100.0	78.9	72 (79.1%)	11 (91.7%)
4	0	0	0	0	7.9	6 (6.6%)	0
5	0	22.2	0	0	7.9	8 (8.8%)	1 (8.3%)
Slipping							
None	100.0	88.9	100.0	100.0	100.0	90 (98.9%)	12 (100%)
X and I	0	11.1	0	0	0	1 (1.1%)	0
	(1)	(9)	(4)	(1)	(76)	(91)	(12)

TABLE B-19. SSPHAP'S MING BW (INC. HEXAGONAL) WARES (CONT.)

I Glaze Colour	Late 15th century	Late 15th-early 16th century	15th-16th centuries	BW/Red 16th century	16th century	Total	Hexagonal Ming BW
5BG 7/1	100.0	0	0	0	6.8	6 (6.7%)	1 (9.1%)
< 5BG 7/1	0	0	0	0	1.4	1 (1.1%)	0
5G 7/1	0	44.4	25.0	100.0	13.5	16 (18.0%)	3 (27.3%)
< 5G 7/1	0	0	0	0	10.8	8 (9.0%)	1 (9.1%)
5Gy 6/1	0	11.1	0	0	1.4	2 (2.2%)	0
5Gy 7/1	0	11.1	25.0	0	25.7	21 (23.6%)	2 (18.2%)
< 5Gy 7/1	0	11.1	25.0	0	20.3	17 (19.1%)	2 (18.2%)
5y 7/1	0	0	0	0	1.4	1 (1.1%)	0
< 5y 7/1	0	11.1	0	0	5.4	5 (5.6%)	0
N8/-	0	0	0	0	5.4	4 (4.5%)	0
> N8/-	0	0	0	0	1.4	1 (1.1%)	0
< N7/-	0	0	0	0	0	0	1 (9.1%)
10YR 8/1	0	11.1	0	0	2.7	3 (3.4%)	0
< 5Y 8/2	0	0	0	0	0	0	1 (9.1%)
10YR 7/1	0	0	0	0	1.4	1 (1.1%)	0
5Y 7/1	0	0	25.0	0	0	1 (1.1%)	0
5Y 7/2	0	0	0	0	1.4	1 (1.1%)	0
10YR 6/3	0	0	0	0	1.4	1 (1.1%)	0
	(1)	(9)	(4)	(1)	(74)	(89)	(11)
I Glaze Thick.							Ming BW
1	0	0	25.0	0	0	1 (1.1%)	0
2	0	0	0	0	17.6	13 (14.6%)	0
3	100.0	77.8	75.0	100.0	68.9	64 (71.9%)	11 (100%)
4	0	0	0	0	6.8	5 (5.6%)	
5	0	22.2	0	0	6.8	6 (6.7%)	0
	(1)	(9)	(4)	(1)	(74)	(89)	(11)
Body Type							
China Porcelain	0	12.5	20.0	0	20.5	18 (19.4%)	1 (8.3%)
Almost CP	0	25.0	0	100.0	10.3	11 (11.8%)	1 (8.3%)
Semi-porcelain	100.0	37.5	40.0	0	41.0	37 (40.0%)	6 (50.0%)
Protoporcelain	0	12.5	0	0	1.3	2 (2.2%)	3 (25.0%)
Stoneware	0	12.5	40.0	0	26.9	25 (26.9%)	1 (8.3%)
	(1)	(8)	(5)	(1)	(78)	(93)	(12)
							Hexagonal
Translucency							
Not translucent	-	100.0	80.0	0	79.6	53 (80.3%)	6 (60.0%)
Faintly	-	0	0	0	11.1	6 (9.1%)	3 (30.0%)
Translucent (Y)	-	0	20.0	100.0	9.3	7 (10.6%)	1 (10.0%)
	(0)	(6)	(5)	(1)	(54)	(66)	(10)

TABLE B-19. SSPHAP'S MING BW (INC. HEXAGONAL) WARES (CONT.)

Body Colour							
N8/-	100.0	12.5	0	0	14.1	13 (14.1%)	1 (8.3%)
> N8/-	0	25.0	0	0	17.9	16 (17.4%)	1 (8.3%)
< N7/-	0	25.0	25.0	0	14.1	14 (15.2%)	2 (16.7%)
N7/-	0	0	0	0	16.7	13 (14.1%)	0
> N7/-	0	0	0	0	1.3	1 (1.1%)	0
5YR 8/1	0	12.5	0	0	11.5	10 (10.9%)	2 (16.7%)
10YR 8/1	0	0	0	0	1.3	1 (1.1%)	0
5YR 8/2	0	0	25.0	0	1.3	2 (2.2%)	3 (25.0%)
7.5YR 8/2	0	12.5	0	0	0	1 (1.1%)	0
10YR 8/3	0	0	0	0	1.3	1 (1.1%)	0
5YR 7/1	0	12.5	25.0	100.0	11.5	12 (13.0%)	2 (16.7%)
10YR 7/1	0	0	0	0	2.6	2 (2.2%)	0
5Y 7/1	0	0	0	0	1.3	1 (1.1%)	0
5YR 7/2	0	0	0	0	1.3	1 (1.1%)	1 (8.3%)
5YR 6/1	0	0	0	0	2.6	2 (2.2%)	0
10YR 6/1	0	0	0	0	1.3	1 (1.1%)	0
5YR 6/2	0	0	25.0	0	0	1 (1.1%)	0
	(1)	(8)	(4)	(1)	(78)	(92)	(12)
Hardness							
5	0	0	0	0	1.3	1 (1.1%)	0
7	0	50.0	40.0	100.0	21.8	24 (25.8%)	6 (50.0%)
8	100.0	37.5	60.0	0	59.0	53 (57.0%)	6 (50.0%)
9	0	12.5	0	0	17.9	15 (16.1%)	0
% Inclusions							
0	0	0	20.0	0	6.4	6 (6.5%)	1 (8.3%)
1	0	50.0	20.0	0	61.5	53 (57.0%)	7 (58.3%)
3	100.0	25.0	0	100.0	20.5	20 (21.5%)	1 (8.3%)
5	0	12.5	40.0	0	7.7	9 (9.7%)	1 (8.3%)
10-15	0	12.5	20.0	0	2.6	4 (4.3%)	1 (8.3%)
30	0	0	0	0	1.3	1 (1.1%)	0
40	0	0	0	0	0	0	1 (8.3%)
	(1)	(8)	(5)	(1)	(78)	(93)	(12)

Basal Glazing Characters	Late 15th century (5)	Late 15th-early 16th century (2)	16th century (34)	Total (41)	Hexagonal Ming BW (3)
Regularly glazed base	4 (80%)	2 (100%)	33 (97.1%)	39 (95.1%)	3 (100%)
Dirty base	0	0	1 (2.9%)	1 (2.4%)	0
Unglazed base	1 (20%)	0	0	1 (2.4%)	0

N.B. One piece dated to the late 15th-early 16th century had two layers of glaze on both faces, but all other observed glazes had only one layer.

TABLE B-20. MING *MERAH*, WANLI BW AND LATE MING BW WARES

	Overglaze *Famille verte*	Over-glaze Red	Total Ming *Merah*	Wanli BW	Wanli BW/ overglaze *F.verte*	Wanli Red/ *F.verte*	Total Wanli BW	Late Ming BW	Late BW/ red	Late Ming Red/ *F. verte*	Total Late Ming BW
Plates	6	13	19	50	0	1	51	133	1	9	143
Bowls	1	7	8	153	1	1	155	203	0	1	204
Small bowls	0	0	0	15	0	0	15	5	0	0	5
Cups	0	0	0	25	0	1	26	2	0	1*	3
Ashtray	0	0	0	1	0	0	1	0	0	0	0
"Open"	0	0	0	0	0	0	0	2	0	0	2
Boxes	0	0	0	19	0	0	19	12	0	2	14
Jarlets	0	0	0	2	0	0	2	7	0	1	8
Vases	0	0	0	10	0	0	10	13	0	0	13
Jars	0	0	0	8	0	1	9	12	0	0	12
Balubu	0	0	0	2	0	0	2	11	0	0	11
Figure (duck)	0	0	0	0	0	0	0	1	0	0	1
Total	7	20	27	285	1	4	290	401	1	14	416

* Identified as a stem-cup.

TABLE B-21. MING RED AND LATER BW TRAITS (PERCENTAGES)

	Exterior Glaze								Interior Glaze						
Colour	Wanli BW	Wanli *Merah*	Total Wanli BW		Late Ming BW	Late Ming Red	Total Late Ming BW		Ming *F. verte*	Wanli BW	Wanli *Merah*	Total Wanli BW		Late Ming BW	Late Ming Red	Total Late Ming BW	
5B 7/1	3.8	0	1	(3.6)	2.2	0	1	(2.2)	0	0	0	0		2.2	0	1	(2.2)
<5B 7/1	0	0		0	0	0		0	0	0	0	0		0	0		0
5BG 7/1	0	0		0	4.4	0	2	(4.3)	0	0	0	0		4.4	0	2	(4.3)
<5BG7/1	3.8	0	1	(3.6)	6.7	0	3	(6.5)	0	4.2	0	1	(3.8)	6.7	0	3	(6.5)
5G 7/1	11.5	50	4	(14.3)	26.7	0	12	(26.1)	1	16.7	0	4	(15.4)	31.1	0	14	(30.4)
<5G 7/1	23.1	0	6	(21.4)	11.1	100	6	(13.0)	0	20.8	0	5	(19.2)	6.7	100	4	(8.7)
5Gy 6/1	0	0		0	2.2	0	1	(2.2)	0	0	0	0		2.2	0	1	(2.2)
5Gy 7/1	15.4	0	4	(14.3)	8.9	0	4	(8.7)	0	16.7	50	5	(19.2)	11.1	0	5	(10.9)
<5Gy7/1	11.5	50	4	(14.3)	15.6	0	7	(15.2)	0	8.3	50	3	(11.5)	17.8	0	8	(17.4)
5y 7/1	7.7	0	2	(7.1)	4.4	0	2	(4.4)	0	12.5	0	3	(11.5)	2.2	0	1	(2.2)
<5y 7/1	15.4	0	4	(14.3)	2.2	0	1	(2.2)	0	8.3	0	2	(7.7)	2.2	0	1	(2.2)
N8/-	7.7	0	2	(7.1)	8.9	0	4	(8.7)	0	12.5	0	3	(11.5)	6.7	0	3	(6.5)
> N8/-	0	0		0	2.2	0	1	(2.2)	0	0	0	0		2.2	0	1	(2.2)
< N7/-	0	0		0	2.2	0	1	(2.2)	0	0	0	0		2.2	0	1	(2.2)
5Y 7/1	0	0		0	2.2	0	1	(2.2)	0	0	0	0		2.2	0	1	(2.2)
Thickness																	
1	0	0		0	0	0		0	0	4.2	0	1	(3.8)	0	0		0
2	15.4	50	5	(17.9)	8.0	100	5	(10.9)	1	20.8	50	6	(23.1)	6.7	100	4	(8.7)
3	73.1	50	20	(71.4)	80.0	0	36	(78.3)	0	66.7	50	17	(65.4)	86.7	0	39	(84.8)
4	7.7	0	2	(7.1)	4.4	0	2	(4.3)	0	4.2	0	1	(3.8)	2.2	0	1	(2.2)
5	3.8	0	1	(3.6)	4.4	0	2	(4.3)	0	4.2	0	1	(3.8)	2.2	0	1	(2.2)
6	0	0		0	2.2	0	1	(2.2)	0	0	0	0		2.2	0	1	(2.2)
Number																	
1 layer	100	100	28	(100)	97.8	100	45	(97.8)	1	100	100	26	(100)	97.8	100	45	(97.8)
2 layers	0	0		0	0	0		0	0	0	0	0		2.2	0	1	(2.2)
3 layers	0	0		0	2.2	0	1	(2.2)	0	0	0	0		0	0		0
	(26)	(2)		(28)	(45)	(1)		(46)	(1)	(24)	(2)	(26)		(45)	(1)		(46)

TABLE B-21. MING RED AND LATER BW TRAITS (CONT.)

Body Colour	Ming *F. verte* (1)	Wanli BW	Wanli *F. verte*/Red	Total Wanli BW (28)	Late Ming BW	Late Ming Red	Total Late Ming BW (46)
N8/-	0	38.5	0	10 (35.7%)	24.4	0	11 (23.9%)
> N8/-	0	23.1	50.0	7 (25.0%)	26.7	0	12 (26.1%)
< N7/-	0	15.4	50.0	5 (17.9%)	13.3	0	6 (13.0%)
N7/-	0	3.8	0	1 (3.6%)	22.2	0	10 (21.7%)
5YR 8/1	0	7.7	0	2 (7.1%)	2.2	0	1 (2.2%)
5YR 7/1	0	7.7	0	2 (7.1%)	4.4	100.0	3 (6.5%)
5YR 8/2	0	0	0	0	2.2	0	1 (2.2%)
7.5YR 8/2	0	0	0	0	2.2	0	1 (2.2%)
10YR 8/2	0	3.8	0	1 (3.6%)	2.2	0	1 (2.2%)
5YR 8/3	100.0	0	0	0	0	0	0
Hardness							
7	100.0	11.5	50.0	4 (14.3%)	31.1	0	14 (30.4%)
8	0	61.5	50.0	17 (60.7%)	48.9	0	22 (47.8%)
9	0	26.9	0	7 (25.0%)	20.0	100.0	10 (21.7%)
% Inclusions							
0	0	42.3	0	11 (39.3%)	4.4	0	2 (4.3%)
1	0	26.9	100.0	9 (32.1%)	64.4	100.0	30 (65.2%)
2-3	0	19.2	0	6 (17.9%)	22.2	0	10 (21.7%)
5	100.0	7.7	0	2 (7.1%)	4.4	0	2 (4.3%)
10	0	3.8	0	1 (3.6%)	2.2	0	1 (2.2%)
20	0	0	0	0	2.2	0	1 (2.2%)
Body Type							
China Porcelain	0	46.2	50.0	13 (46.4%)	33.3	0	15 (32.6%)
Almost CP	0	3.8	0	1 (3.6%)	11.1	0	5 (10.9%)
Semi-porcelain	0	42.3	50.0	12 (42.9%)	24.4	0	11 (23.9%)
Stoneware	100.0	7.7	0	2 (7.1%)	31.1	100.0	15 (32.6%)
Slipping							
No	0	100.0	100.0	28 (100.0%)	100.0	100.0	46 (100.0%)
Interior face	100.0	0	0	0	0	0	0

Translucency	Ming *F. verte* (1)	Wanli BW (None *Merah*) (15)	Late Ming BW	Late Ming Red	Total Late Ming BW (40)
Not translucent	100.0	4 (26.7%)	64.1	100.0	26 (65.0%)
Faintly translucent	0	1 (6.7%)	17.9	0	7 (17.5%)
Clearly translucent (Y)	0	10 (66.7%)	17.9	0	7 (17.5%)

Basal glazing Characters	Ming *F. verte* (1)	Wanli BW (6)	Late Ming BW (23)
Fully glazed base	0	100.0	22 (95.7%)
Unglazed base	100.0	0	1 (4.3%)

Swatow-like characters and may not be fully representative of the *Ming merah* class.

B.3.10 Wanli blue-and-white and late Ming BW

Demmanari and I identified Wanli blue-and-white wares mainly through their delicacy which included a soft clear glaze, whitish porcelain to porcellanous body (Table B-21), and silvery blue decorations executed with care (Macintosh, 1977:60). The dominant vessel form was bowls, notably examples with slender graceful cavettos, while smaller vessels such as cups and small bowls were also prominent. One piece combined red enamels with the underglaze decorations, and four pieces were decorated only with red or famille verte enamels (Table B-20).[22]

As understood by McElney (1979) *Kraak porselein*, which was given its name by the Dutch to commemorate their seizure of a Portuguese carrack laden with the wares in 1603, is almost synonymous with SSPHAP's Wanli class. McElney draws attention to the delicate potting and silvery blue decorations. He further outlines a chronology between 1550 and 1640 based on precisely the decorative repertoire Demmanari and I associated with Wanli - e.g. animals and humans depicted as central emblems, animals and subtle floral motifs in vertical panels (e.g. Photos 10-24 and 10-25), and the "eight precious things". On the other hand, Medley (1980:225-229) asserts that Kraak wares were exported to Southeast Asia and thence to Europe throughout the 17th century, while Kwan and Martin (1985:131) extend the temporal range of Kraak to the early 18th century. The repertoire Medley describes includes open vessels with complex landscapes, which we would have classified as Swatow (B.3.11), and she notes a specifically 17th century tendency towards "moth-eaten" or flaky glaze along the rims, which would also have struck us as a Swatow characteristic. In addition SSPHAP's Wanli class includes some large closed vessels (Table B-20) which would not be matched among the range of Kraak forms described in the

[22] These overglaze-decorated Wanli wares were too rare to constitute their own class and so are pooled into the Wanli BW class.

literature, probably because *Kraak porselein* refers primarily to the export wares marketed to meet European tastes.

By the latter stages of fieldwork recording sites, and certainly in the laboratory, SSPHAP followed the lead of Medley (1980:230-232) in recognising a "Transitional (Ming-Qing) BW" class. In practice Demmanari and I also used it as a pigeonhole for pieces combining Ming with early Qing traits. The pieces were not always clearly distinct from Wanli (cf. Medley, 1980:229), and we tended to prefer the "Transitional" classification in the absence of the Wanli specialisations, e.g. tendencies to a stronger or more irregular glaze, coarser body (Table B-21), larger vessel form (Table B-20) or decorations in stronger blues. I renamed the class "late Ming blue-and-white" after seriation appeared to demonstrate its contemporaneity with Wanli wares (Bulbeck, 1989). The class includes one piece with overglaze red decorations complementing the underglaze blue, and 14 pieces decorated only with overglaze enamels, usually red (Table B-20).

B.3.11 The Swatow family

Swatow, a major South China port close to the presumed kilns, has given its name to a variable group of wares produced mainly for the Japanese and Southeast Asian markets between the 16th and 17th centuries (Medley, 1980:234-236). The primary reference on Swatow catalogues five main groups: BW pieces painted in a "Simple" style and monochromes, both produced mainly during the middle 16th century decades; and BW pieces and enamelled polychromes decorated in a "Complex" style, as well as slip-decorated wares, produced mainly during the reign of Wanli (Harrisson, 1979).

Except for the slip-decorated wares, all of Harrisson's main groups were recorded among SSPHAP's assemblages. Furthermore, "Swatow" in South Sulawesi also covers miscellaneous monochromes which cannot be readily classified elsewhere, and Qing period vessels whose decorations hearken after the Swatow style. A three-stage chronology of "Ming Swatow", "Swatow" and "Qing Swatow" has become entrenched in the local classificatory system. Recognising the importance

of these abundantly represented classes for my chronological determinations, I embarked on a sustained project to systematise the variation among these wares. After studying hundreds of pieces in detail I developed a brief way of codifying the body, glaze and decorative style, which I then also applied during the laboratory work carried out jointly with Karaeng Demmanari (detailed below).

Body Type

1. Usual Qing porcelain, such as that found in modern Chinese wares. The body was dead white, clearly translucent, and very low in impurities.

2. "Soft paste" bodies. Here I had attempted to recognise an innovation of the Kangxi reign described by Macintosh (1977:74). Indeed, it seemed that wares which we identified as Kangxi often had a body subtly different from the usual Qing porcelain in being harder, less translucent, and of slightly coarser crystallisation. Possibly I was recognising an older type of Qing porcelain body, but its relation to the rare "soft paste" body would be oblique at best.

3. "Semiporcelain"-type bodies, showing both porcelain and stoneware characteristics, plus a sugary appearance when viewed at 30X.

4. Usual Swatow stoneware bodies. These bodies tended to be hard and well-fired, comparatively free of impurities and white to light grey in colour (Table B-26).

5. Poorer Swatow stoneware bodies. These tended to be low on Moh's hardness scale, lower fired, fuller of inclusions and more earthy in colour. Occasionally they qualified as earthenwares (Table B-25).

Glaze Type

A. Nearly perfect Qing-type glazes. Colourless glazes with virtually no traces of macroscopic defects, nor muffling of the decorations owing to microscopic defects.

B. Imperfect Qing-type glazes. Distinguished from the "A" glazes by slight muffling of the decorations owing to sheeny specks and other microscopic defects within the glaze. These

glazes also occasionally contained inclusions or other macroscopic defects.

C. Usual Swatow-type glaze. In microscopic view these glazes looked full of bubbles and showed numerous sheeny specks and other defects. Macroscopically they corresponded to the greyer Munsell light gley colours, appeared flakey at the edges of the sherd and often had pronounced crackling.

D. Poor Swatow-type glazes. Microscopically they were crowded with bubbles and defects. Macroscopically they tended to be heavily crackled, slightly earthy in colour, and covered with small holes where glaze bubbles had exploded at the glaze surface. Usually the glaze was in the process of flaking off the sherd.

E. Oily Swatow-type glazes. These were distinguished from the "D" and poorer "C" types by their pronounced brownish tinge, and a greasey consistency when viewed at 30X.

F. Ghostly Swatow-type glazes. Here the defects within the glaze were so pronounced that the decorations were heavily muffled and only irregularly visible.

G. Celadon Swatow-type glaze. Particularly rich and lustrous by Swatow standards, these glazes usually corresponded to the greener Munsell light gley colours. They were more characteristic of enamelled wares, where the glaze provided a pleasant backdrop to the decorations, than on the BW wares when the glaze would have obscured the motifs.

Decorative Type

I. Very fine decorations with clean tones and fine outlines; similar in theme to miniature versions of the Swatow motifs.

II. Devolved Swatow-type decorations. One group of these fell along the path of devolution, driven by repeated copying over the generations, which can be traced through wares 3201-3241 of the 1760s "Geldermalsen" cargo (van der Waal and Sheaf, 1986) to the Fu and related plates within Willetts' (1981) "Kitchen Ch'ing" wares. The other group consisted of cases where a single Swatow rim motif was repeated as a lattice decoration. The most common example, which I call roundelwares and which Macknight (1976:Figure 29[b]) calls

"Kellor" decoration, concerns bowls and plates whose interior face is covered with roundels similar to the classical Swatow roundels.

III. "Classical" Swatow decorations, corresponding to the "Complex" style described by Harrisson (1979).

IV. 16th century Ming-type decorations. Here I exclude the standardised Ming motifs such as conch shells, double *vajra* and hexagons, and instead refer to a medley of landscape and figurative motifs which can be found on similarly potted wares. Any particular motif occurred rarely but collectively they constituted a common decorative substratum. Classification of pieces bearing these designs depended on whether the body and glaze conformed to Ming BW or to Swatow standards.

V. Decorations corresponding to Harrisson's (1979) "Simple" style. Emphasis is on large motifs, often a single emblem in the centre such as a flower. Decorations tended to be poorly oxidised and muddy greyish blue owing to the weak dilutions of cobalt applied as thick lines and broad sheets. Harrisson and Shariffuddin (1969:Plate 18) show some of the examples excavated at Sungai Lumut in Brunei,[23] while a 16th century shipwreck excavated in the Philippines also contained numerous specimens (Goddio, 1988).

VI. Pieces which are either undecorated or carry extant decorations too miniscule or generalised to indicate membership in any of types "I" to "V".

As shown by cross-tabulation, the frequencies of body, glaze and decorative types systematically vary across the Qing Swatow, Swatow and Ming Swatow classes as identified by Demmanari and myself (Table B-22). The patterns of co-variation are particularly clear by the cross-tabulation of body, glaze and decorative types shown in Table B-23. To read the table, imagine that the five two-way comparisons are stacked on top of each other in three-dimensional space, starting at body type "2" at the top and ending at body type "5". One could then see that vast majority of the observed combinations of characters fall along an axis from

[23] The excavators dated the site to the 15th century, but the figured examples clearly span the 14th to 16th centuries.

top-top-left to bottom-bottom-right. Most of the Qing Swatow pieces - identified by their porcellanous body, Qing-type glaze and devolved Swatow decorations - sit at the top-top-left; the Swatow pieces tend to occupy the centre of the cube; and at the bottom-bottom-right come the Ming Swatow pieces with their coarse bodies and glazes and 16th century decorative styles. By this analysis the three Swatow classes represent nodes along a continuum, which would legitimise the practice in South Sulawesi of treating them as related.

I have also drawn lines in Table B-23 to section off the cells dominated by the Qing Swatow, Swatow and Ming Swatow classes. In cases where equal numbers of two classes are present, the cell is attributed to the class less well represented in the total sample (i.e., not Swatow). More

TABLE B-22. PERCENTAGES OF THE BODY, GLAZE AND DECORATIVE TYPES AMONG THE SWATOW CLASSES IDENTIFIED IN UJUNG PANDANG

Body Type	Number	Qing Swatow	Swatow	Ming Swatow
"2"	139	96.4%	3.6%	0%
"1"	29	89.7%	10.3%	0%
"3"	207	24.6%	72.0%	3.4%
"4"	581	1.5%	82.6%	15.8%
"5"	419	0%	8.1%	91.9%
Glaze Type				
"A"	33	97.0%	3.0%	0%
"B"	257	54.1%	45.1%	0.8%
"C"	484	8.1%	76.9%	15.1%
"G"	110	8.2%	74.5%	17.3%
"F"	45	2.2%	44.4%	53.3%
"D"	289	0%	18.7%	81.3%
"E"	157	0%	16.6%	83.4%
Decorative Type				
"I"	56	91.1%	7.1%	1.8%
"II"	159	70.4%	22.6%	0%
"III"	602	7.5%	69.9%	22.6%
"VI"	208	4.8%	53.4%	41.8%
"IV"	250	0.8%	33.2%	66.0%
"V"	100	0%	5.0%	95.0%
Total pieces	(1375)	(220)	(671)	(484)

TABLE B-23. LOCATION OF THE IDENTIFICATIONS IN TABLE B-22 BY COMBINATIONS OF BODY, GLAZE AND DECORATIVE TYPES

	"I"	"II"	"III"	"VI"	"IV"	"V"
"2A"	9QS	7QS	4QS			
"2B"	21QS	45QS	14QS;3S	2QS	2QS	
"2C"		15QS	12QS			
"2G"		1QS	2QS			
"2F"		2S		(Swatow)		
"2E"						
"2D"						

	"I"	"II"	"III"	"VI"	"IV"	"V"
"1A"	4QS	1QS		1QS		
"1B"	8QS;1S	8QS	3QS;1S			
"1C"	1QS;1S					
"1G"	(Qing Swatow)					
"1F"				(Swatow)		
"1E"						
"1D"						

	"I"	"II"	"III"	"VI"	"IV"	"V"
"3A"	4QS		1QS	1QS		
"3B"	2QS	22QS;4S	3QS;24S	2QS;1S		1S
"3C"	1QS	7QS;7S	2QS;55S;2MS	14S	7S	1S
"3G"	(Qing Swatow)		3QS;3S	1QS;5S	1S	
"3F"			3S	1QS;2S	1S	
"3E"		1S	3S	1S	2S;1MS	1MS
"3D"	(Swatow)		6S;1MS	2S	5S;2MS	

	"I"	"II"	"III"	"VI"	"IV"	"V"
"4A"			1S			
"4B"	1QS;1S	4QS;19S	1QS;40S	1QS;8S	9S;1MS	
"4C"	1S	1QS;9S	186S;8MS	30S	40S;7MS	8MS
"4G"			39S	1QS;33S;2MS	1MS	
"4F"	(Swatow)		7S	1S	1S	1MS
"4E"		1S	8S;1MS	4S;1MS	2S	1S;3MS
"4D"		1S	19S;5MS	4S;11MS	15S;16MS	27MS

	"I"	"II"	"III"	"VI"	"IV"	"V"
"5A"						(Ming
"5B"		1S	2S	1S	1MS	Swatow)
"5C"		2S	15S;21MS	4S;4MS	19MS	4MS
"5G"			1S;7MS	8MS	1MS	
"5F"	(Swatow)		2S;10MS	1S;6MS	4MS	3MS
"5E"			1S;34MS	33MS	24MS	2S;33MS
"5D"	1MS		2S;47MS	31MS	79MS	15MS

N.B. QS stands for Qing Swatow pieces, S for Swatow pieces and MS for Ming Swatow pieces.

precisely, two cells which would scrape in as Qing Swatow by this procedure ("3BVI" and "3GIII"), but which protrude into a space of cells otherwise dominated by Swatow, are treated as Swatow cells because we are dealing with a continuum in variation.[24] After the three dimensions of variation are carved up into Qing Swatow, Swatow and Ming Swatow spaces, we see that less than ten percent of the pieces as identified by Demmanari and myself occur in the wrong space. Clearly our laboratory identifications were by and large consistent, and the minor inconsistencies reflect the point that the three classes fall along a single range of continuous variation. To enhance the degree of consistency I have reclassified the pieces falling in the wrong space according to Table B-23, which involves 9.1% of the original Qing Swatow pieces becoming Swatow, 9.8% of the original Swatow pieces becoming Ming Swatow, and 6.6% of the original Ming Swatow pieces becoming Swatow.[25] These figures exclude the pieces whose body, glaze and decorative type I did not note, and hence whose original classification made by Demmanari and myself is simply retained.[26]

Table B-24 shows the composition of the three Swatow classes by decorative style, or glaze type when no decorations were extant, and by vessel form. The Ming Swatow and Swatow classes show remarkably comparable proportions of vessel forms, apart from the declining frequency of *balubu* in the Swatow class.[27] There is however a clear trend towards greater use of overglaze enamels with the Swatow class, in line with Harrisson's (1979) notes on chronological changes. The Qing Swatow wares differ from the Swatow class by a clear shift towards smaller vessels, including the loss of *balubu*;

[24] The choice of where to draw the lines through the empty spaces of unfilled cells is of course largely arbitrary.
[25] In my PC tradewares file, these pieces are tagged by showing the original classification in brackets after the reclassification.
[26] Involving 42 Qing Swatow pieces, 180 Swatow pieces and 276 Ming Swatow pieces, most of them from the site museum collection at Tallok's royal graveyard (U.25.1).
[27] As with the Ming BW wares, the majority of the Ming Swatow and Swatow *balubu* were also recorded within assemblages associated with Makassar palaces.

TABLE B-24. COMPOSITION OF THE SWATOW FAMILY CLASSES

Ming Swatow	Plates	Bowls	Small Bowls	Dishes	"Open"	Boxes	Jar-lets	Vases	Jars	*Balubu*	Total
Blue-and-white	465	100	2	3	1	8	8	3	15	84	689
BW/enamelled	2	0	0	0	0	0	0	0	0	0	2
Overglaze enamels	31	5	0	0	1	1	0	1	0	0	39
Subceladons	1	1	0	0	0	0	0	0	1	0	3
Whitewares	1	0	0	0	0	0	0	0	0	0	1
Plain	17	5	0	1	1	1	0	0	1	0	26
Total Ming Swatow	517	111	2	4	3	10	8	4	17	84	760

Swatow	Plates	Bowls	Small Bowls	Dishes	"Open"	Boxes	Jar-lets	Vases	Jars	*Balubu*	Total
Blue-and-white	485	126	4	2	3	9	3	2	16	28	678
BW/enamelled	2	1	0	0	0	0	0	0	0	0	3
Overglaze enamels	75	21	2	0	1	6	0	2	2	0	109
Celadons	5	1	0	0	0	0	0	0	0	0	6
Subceladons	12	7	0	0	0	0	2	0	0	0	21
Whitewares	4	6	0	0	0	0	0	0	0	0	10
Plain	15	6	1	0	0	0	0	0	2	0	24
Total Swatow	598	168	7	2	4	15	5	4	20	28	851

Qing Swatow	Plates	Bowls	Small Bowls	Cups	Boxes	Jar-lets	Vases	Jars	Spoons	Total
Blue-and-white	113	83	8	1	7	3	4	3	1	223
BW/enamelled	3	1	1	0	0	1	0	0	0	6
Overglaze enamels	14	12	1	0	3	0	4	0	0	34
Total Qing Swatow	130	96	10	1	10	4	8	3	1	263

N.B. Qing Swatow pieces lacking traces of decoration would have been classified with the "Qing white" pieces.

TABLE B-25. CHARACTERS OF MING SWATOW WARES (PERCENTAGES)

Basal glazing Traits	Ming Swatow BW (36)	Ming Swatow *Merah* (2)	Plain Ming Swatow (3)	Total (41)
Ordinarily glazed base	61.1%	50.0%	0%	23 (56.1%)
Red-glazed base	2.8%	0%	0%	1 (2.4%)
Glaze-splashed base	11.1%	50.0%	0%	5 (12.2%)
Dirty glazed base	11.1%	0%	0%	4 (9.8%)
Unglazed base	13.9%	0%	100.0%	8 (19.5%)

TABLE B-25. CHARACTERS OF MING SWATOW WARES (CONT.)

	Exterior Glaze						Exterior Glaze					
Colour	Ming Swatow BW	Ming Swatow BW/*Merah*	Ming Swatow *Merah*	Plain Ming Swatow	Total Ming Swatow		Ming Swatow BW	Ming Swatow BW/*Merah*	Ming Swatow *Merah*	Plain Ming Swatow	Total Ming Swatow	
Green/Brown A5	0	0	0	9.1	1	(0.7%)	0	0	0	7.7	1	(0.7%)
Green/Brown A6	0	0	0	0	0		0	0	0	7.7	1	(0.7%)
5BG 6/1	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5BG 7/1	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
5G 6/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5G 7/1	3.3	0	0	0	4	(2.9%)	4.0	0	0	0	5	(3.5%)
< 5G 7/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5Gy 5/1	0	0	0	0	0		0.8	0	0	0	1	(0.7%)
5Gy 6/1	1.6	0	16.7	18.2	5	(3.6%)	2.4	0	16.7	15.4	6	(4.2%)
5Gy 7/1	28.7	100.0	0	45.5	41	(29.3%)	26.6	100.0	0	38.5	39	(27.1%)
< 5Gy 7/1	11.5	0	0	0	14	(10.0%)	11.3	0	0	0	14	(9.7%)
5y 7/1	9.8	0	50.0	0	15	(10.7%)	10.5	0	50.0	7.7	17	(11.8%)
< 5y 7/1	13.1	0	16.7	0	17	(12.1%)	12.9	0	16.7	7.7	18	(12.5%)
> N8/-	3.3	0	0	9.1	5	(3.6%)	1.6	0	0	0	2	(1.4%)
5Y 8/1	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
2.5Y 8/2	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
5Y 8/2	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
> 5Y 8/2	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
10YR 8/3	1.6	0	0	0	2	(1.4%)	1.6	0	0	0	2	(1.4%)
5Y 7/1	3.3	0	0	9.1	5	(3.6%)	4.0	0	0	7.7	6	(4.2%)
10Y 7/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
< 10YR 7/2	0.8	0	0	0	1	(0.7%)	1.6	0	0	0	2	(1.4%)
10YR 7/2	1.6	0	0	0	2	(1.4%)	2.4	0	0	0	3	(2.1%)
5Y 7/2	5.7	0	0	0	7	(5.0%)	4.0	0	0	0	5	(3.5%)
2.5Y 7/2	0	0	16.7	0	1	(0.7%)	0	0	16.7	0	1	(0.7%)
10YR 7/3	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
< 5Y 6/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5Y 6/1	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
5Y 6/2	1.6	0	0	0	2	(1.4%)	2.4	0	0	0	3	(2.1%)
2.5Y 6/2	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
10YR 6/2	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5Y 6/3	0.8	0	0	0	1	(0.7%)	0.8	0	0	0	1	(0.7%)
10YR 6/3	0	0	0	9.1	1	(0.7%)	0	0	0	7.7	1	(0.7%)
R10 6/2	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5YR 6/4	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
5YR 7/6	0	0	0	0	0		0.8	0	0	0	1	(0.7%)
Thickness												
1	1.6	0	0	0	2	(1.4%)	0	0	0	7.7	1	(0.7%)
2	6.6	0	0	0	8	(5.7%)	8.1	0	0	0	10	(6.9%)
3	57.4	0	16.7	45.5	76	(54.3%)	56.5	0	33.3	61.5	80	(55.6%)
4	4.9	0	16.7	18.2	9	(6.4%)	4.0	0	0	7.7	6	(4.2%)
5	29.5	100.0	66.7	36.4	45	(32.1%)	31.5	100.0	66.7	23.1	47	(32.6%)
Number												
1 layer	78.7	0	66.7	81.8	109	(77.9%)	80.6	0	66.7	84.6	115	(79.9%)
2 layers	18.0	100.0	33.3	18.2	27	(19.3%)	17.7	100.0	33.3	15.4	27	(18.8%)
3 layers	2.5	0	0	0	3	(2.1%)	1.6	0	0	0	2	(1.4%)
4 layers	0.8	0	0	0	1	(0.7%)	0	0	0	0	0	
Total	(122)	(1)	(6)	(11)	(140)		(124)	(1)	(6)	(13)	(144)	

TABLE B-25. CHARACTERS OF MING SWATOW WARES (CONT.)

Exterior Body Colour

	Ming Swatow BW	Ming Swatow BW/*Merah*	Ming Swatow *Merah*	Plain Ming Swatow	Total Ming Swatow
> N8/-	1.6	0	0	7.7	3 (2.1%)
< N7/-	4.8	0	0	0	6 (4.2%)
N7/-	6.5	0	0	0	8 (5.6%)
< N6/-	0.8	0	0	0	1 (0.7%)
N6/-	0.8	0	0	0	1 (0.7%)
N5/-	0	0	16.7	0	1 (0.7%)
5YR 8/1	2.4	0	0	0	3 (2.1%)
7.5YR8/1	0.8	0	0	0	1 (0.7%)
10YR 8/1	2.4	0	0	0	1 (2.1%)
5Y 8/1	1.6	0	0	0	2 (1.4%)
5YR 8/2	2.4	0	16.7	7.7	5 (3.5%)
7.5YR8/2	1.6	0	0	7.7	3 (2.1%)
10YR 8/2	2.4	0	0	0	3 (2.1%)
5Y 8/2	0.8	0	0	0	1 (0.7%)
5YR 8/3	7.3	0	0	15.4	9 (6.3%)
10YR 8/3	4.8	0	16.7	0	7 (4.9%)
5Y 8/3	0.8	0	0	0	1 (0.7%)
5YR 8/4	0.8	0	0	7.7	2 (1.4%)
7.5YR8/4	2.4	0	0	0	3 (2.1%)
2.5Y 8/4	0.8	0	0	0	1 (0.7%)
<5YR 7/1	4.0	0	16.7	0	27 (18.8%)
5YR 7/1	21.8	0	0	0	27 (18.8%)
7.5YR7/1	1.6	0	0	0	2 (1.4%)
10YR 7/1	2.4	0	0	0	3 (2.1%)
5Y 7/1	0.8	0	0	0	1 (0.7%)
5YR 7/2	4.0	0	0	0	5 (3.5%)
7.5YR7/2	0.8	0	0	7.7	2 (1.4%)
10YR 7/2	0.8	0	0	0	1 (0.7%)
5YR 7/3	2.4	0	0	7.7	4 (2.8%)
5YR 7/4	0	0	0	7.7	1 (0.7%)
7.5YR7/4	0	0	0	7.7	1 (0.7%)
7.5YR7/6	1.6	0	0	0	2 (1.4%)
5YR 6/2	0	0	0	7.7	1 (0.7%)
7.5YR6/2	1.6	0	0	7.7	3 (2.1%)
10YR 6/2	0.8	0	0	0	1 (0.7%)
2.5Y 6/2	0	0	16.7	0	1 (0.7%)
10YR 6/3	0.8	0	0	0	1 (0.7%)
5YR 6/4	1.6	0	0	0	2 (1.4%)
5YR 6/6	2.4	0	0	0	3 (2.1%)
2.5YR6/8	0	0	0	7.7	1 (0.7%)
5YR 5/1	0.8	0	0	0	1 (0.7%)
2.5YR5/2	0.8	0	0	0	1 (0.7%)
2.5YR5/4	1.6	100.0	0	0	3 (2.1%)
5YR 4/2	0.8	0	0	0	1 (0.7%)
10R 5/6	0.8	0	0	0	1 (0.7%)
Total	(124)	(1)	(6)	(13)	(144)

Hardness

	Ming Swatow BW	Ming Swatow BW/*Merah*	Ming Swatow *Merah*	Plain Ming Swatow	Total Ming Swatow
3	0.8	0	0	0	1 (0.7%)
4	1.6	0	0	0	2 (1.4%)
5	12.1	0	16.7	23.1	19 (13.2%)
6	5.6	0	0	7.7	8 (5.6%)
7	62.9	100.0	83.3	61.5	92 (63.9%)
8	15.3	0	0	7.7	20 (13.9%)
9	1.6	0	0	0	2 (1.4%)

% of Body Inclusions

1	22.5	0	16.7	15.4	31 (21.5%)
3	37.1	100.0	16.7	30.8	52 (36.1%)
5	25.8	0	0	53.8	39 (27.1%)
8	0.8	0	0	0	1 (0.7%)
10	11.3	0	50.0	0	17 (11.8%)
15	0.8	0	16.7	0	2 (1.4%)
20	1.6	0	0	0	2 (1.4%)

Body Type

SP	0.8	0	0	0	1 (0.7%)
PP	1.6	0	0	0	2 (1.4%)
SW	92.7	100.0	100.0	84.6	133 (92.4%)
EW	4.8	0	0	15.4	8 (5.6%)
	(124)	(1)	(6)	(13)	(144)

Translucency

N	98.7	100.0	100.0	100.0	90 (98.9%)
F	1.3	0	0	0	1 (1.1%)
	(75)	(1)	(5)	(10)	(91)

Slipping

None	97.6	-	100.0	77.8	133 (96.4%)
X	0.8	-	0	0	1 (0.7%)
X & I	1.6	-	0	22.2	4 (2.9%)
	(125)	(0)	(4)	(9)	(138)

N.B. Ming Swatow *merah* sample includes three pieces with red enamel decorations and three with *famille verte* decorations. Plain Swatow sample includes three "subceladons" as well as outer wall 2.5YR 5/4 and inner wall 2.5YR 5/2 (both BW); outer wall 7.5YR 6/2 and inner wall 2.5YR 5/2 (subceladon). Unglazed central stacking rings were observed on one *famille verte* and four BW specimens; while two open BW vessels had unglazed centres.

TABLE B-26. SWATOW AND QING SWATOW TRAITS (PERCENTAGES)

Exterior Glaze Colour	Swatow BW	Swatow BW/Merah	Swatow Merah	Plain Swatow	Total Swatow	Qing Swatow BW	Qing Swatow Merah	Total Qing Swatow
Green/Brown A5	0	0	4.3	14.3	2 (1.2%)	0	0	0
< 5B 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
5BG 7/1	0.8	0	0	0	1 (0.6%)	9.8	0	6 (9.4%)
< 5BG 7/1	0.8	0	0	0	1 (0.6%)	8.2	0	5 (7.8%)
5G 6/1	0.8	0	0	0	1 (0.6%)	0	0	0
5G 7/1	9.8	0	34.8	0	21 (12.7%)	16.4	0	10 (15.6%)
< 5G 7/1	4.5	0	8.7	0	8 (4.8%)	24.6	66.7	17 (26.6%)
5Gy 6/1	0	0	13.0	14.3	4 (2.4%)	0	0	0
5Gy 7/1	34.6	0	17.4	42.9	53 (32.1%)	4.9	0	3 (4.7%)
< 5Gy 7/1	16.5	0	4.3	0	23 (13.9%)	4.9	0	3 (4.7%)
5y 6/1	0.8	50.0	0	0	2 (1.2%)	0	0	0
5y 7/1	6.8	0	17.4	14.3	14 (8.5%)	0	0	0
< 5y 7/1	12.0	0	0	0	16 (9.7%)	4.9	0	3 (4.7%)
N8/-	3.8	0	0	0	5 (3.0%)	19.7	33.3	13 (20.3%)
> N8/-	2.3	0	0	0	3 (1.8%)	3.3	0	2 (3.1%)
< N7/-	1.5	0	0	0	2 (1.2%)	0	0	0
N7/-	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
5Y 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
7.5YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/2	0.8	0	0	14.3	2 (1.2%)	0	0	0
10YR 8/3	0.8	0	0	0	1 (0.6%)	0	0	0
5YR 7/1	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
5Y 7/1	0	50.0	0	0	1 (0.6%)	0	0	0
Interior Glaze Colour								
Neutral 6	0.8	0	0	0	1 (0.6%)	0	0	0
Green/Brown A5	0	0	4.2	14.3	2 (1.2%)	0	0	0
< 5B 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
5BG 6/1	0.8	0	0	0	1 (0.6%)	0	0	0
5BG 7/1	0.8	0	0	14.3	2 (1.2%)	11.5	0	7 (10.9%)
< 5BG 7/1	0.8	0	0	0	1 (0.6%)	6.6	0	4 (6.3%)
5G 6/1	1.5	0	4.2	0	3 (1.8%)	0	0	0
5G 7/1	6.8	0	29.2	0	16 (9.6%)	14.8	0	9 (14.1%)
< 5G 7/1	4.5	0	8.3	0	8 (4.8%)	26.2	66.7	18 (28.1%)
5Gy 6/1	0	0	12.5	14.3	4 (2.4%)	0	0	0
5Gy 7/1	34.6	0	25.0	42.9	55 (33.1%)	3.3	0	2 (3.1%)
< 5Gy 7/1	16.5	0	4.2	0	23 (13.9%)	4.9	0	3 (4.7%)
5y 6/1	0.8	50.0	0	0	2 (1.2%)	0	0	0
5y 7/1	6.0	0	12.5	0	11 (6.6%)	0	0	0
< 5y 7/1	10.5	0	0	0	14 (8.4%)	4.9	0	3 (4.7%)
N8/-	3.8	0	0	0	5 (3.0%)	21.3	33.3	14 (21.9%)
> N8/-	3.0	0	0	0	4 (2.4%)	3.3	0	2 (3.1%)
< N7/-	1.5	0	0	0	2 (1.2%)	0	0	0
N7/-	0.8	0	0	0	1 (0.6%)	0	0	0
5YR 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/1	1.5	0	0	0	2 (1.2%)	0	0	0
5Y 8/1	0.8	0	0	0	1 (0.6%)	0	0	0
7.5YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/3	0.8	0	0	0	1 (0.6%)	0	0	0
< 5YR 7/1	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 7/1	0	0	0	0	0	1.6	0	1 (1.6%)
10YR 7/2	0.8	0	0	14.3	2 (1.2%)	0	0	0
5Y 7/1	0	50.0	0	0	1 (0.6%)	0	0	0

TABLE B-26. SWATOW AND QING SWATOW TRAITS (PERCENTAGES)

Exterior Glaze Thickness								
2	6.8	0	17.4	14.3	14 (8.5%)	8.2	0	5 (7.8%)
3	57.9	100.0	60.9	57.1	97 (58.8%)	85.2	100.0	55 (85.9%)
4	2.3	0	0	0	3 (1.8%)	4.9	0	3 (4.7%)
5	33.1	0	21.7	28.6	51 (30.9%)	0	0	0
6	0	0	0	0	0	1.6	0	1 (1.6%)
Exterior Glaze Number								
1 layer	82.7	100.0	73.9	85.7	135 (81.8%)	98.4	100.0	63 (98.4%)
2 layers	16.5	0	21.7	14.3	28 (17.0%)	1.6	0	1 (1.6%)
3 layers	0	0	4.3	0	1 (0.6%)	0	0	0
4 layers	0.8	0	0	0	1 (0.6%)	0	0	0
Interior Glaze Thickness								
1	0.8	0	0	0	1 (0.6%)	0	0	0
2	6.0	0	8.3	0	10 (6.0%)	6.6	0	4 (6.3%)
3	63.2	100.0	66.7	85.7	108 (65.1%)	88.5	100.0	56 (87.5%)
4	0.8	0	0	0	1 (0.6%)	3.3	0	2 (3.1%)
5	29.3	0	25.0	14.3	46 (27.7%)	0	0	0
6	0	0	0	0	0	1.6	0	1 (1.6%)
Interior Glaze Number								
1 layer	83.5	100.0	75.0	85.7	137 (82.5%)	98.4	100.0	63 (98.4%)
2 layers	15.8	0	16.7	14.3	26 (15.7%)	1.6	0	1 (1.6%)
3 layers	0	0	4.2	0	1 (0.6%)	0	0	0
4 layers	0.8	0	4.2	0	2 (1.2%)	0	0	0
Total	(133)	(2)	(23-24)	(7)	(165-166)	(61)	(3)	(64)
Exterior Body Colour								
N8/-	1.5	0	0	12.5	3 (1.8%)	45.9	33.3	29 (45.3%)
> N8/-	7.5	0	8.3	0	12 (7.2%)	14.8	66.7	11 (17.2%)
< N7/-	24.8	0	12.5	0	36 (21.6%)	16.4	0	10 (15.6%)
N7/-	24.1	50.0	37.5	75.0	48 (28.7%)	6.6	0	4 (6.3%)
< N6/-	1.5	0	0	0	2 (1.2%)	0	0	0
N6/-	0	0	12.5	0	3 (1.8%)	0	0	0
5YR 8/1	1.5	0	4.2	0	3 (1.8%)	6.6	0	4 (6.3%)
10YR 8/1	1.5	0	0	0	2 (1.2%)	1.6	0	1 (1.6%)
5Y 8/1	0.8	0	4.2	0	2 (1.2%)	0	0	0
5YR 8/2	2.3	50.0	0	0	4 (2.4%)	0	0	0
10YR 8/2	0.8	0	0	0	1 (0.6%)	0	0	0
10YR 8/3	0.8	0	0	0	1 (0.6%)	0	0	0
< 5YR 7/1	8.3	0	4.2	0	12 (7.2%)	0	0	0
5YR 7/1	14.3	0	0	0	19 (11.4%)	6.6	0	4 (1.6%)
7.5YR 7/1	0.8	0	0	0	1 (0.6%)	1.6	0	1 (1.6%)
10YR 7/1	2.3	0	12.5	12.5	7 (4.2%)	0	0	0
5YR 7/2	1.5	0	0	0	2 (1.2%)	0	0	0
7.5YR 7/2	1.5	0	0	0	2 (1.2%)	0	0	0
< 5YR 6/1	0.8	0	0	0	1 (0.6%)	0	0	0
5YR 6/1	1.5	0	0	0	2 (1.2%)	0	0	0
5YR 6/2	0	0	4.2	0	1 (0.6%)	0	0	0
7.5YR 6/2	1.5	0	0	0	2 (1.2%)	0	0	0
7.5YR 6/4	0.8	0	0	0	1 (0.6%)	0	0	0

TABLE B-26. SWATOW AND QING SWATOW TRAITS (CONT.)

Body Hardness								
5	0.8	0	0	0	1 (0.6%)	0	0	0
6	1.5	0	0	0	2 (1.2%)	0	0	0
7	40.9	0	41.7	25.0	66 (39.8%)	13.1	33.3	9 (14.1%)
8	43.2	50.0	54.2	75.0	77 (46.4%)	41.0	33.3	26 (40.6%)
9	13.6	50.0	4.2	0	20 (12.0%)	45.9	33.3	29 (45.3%)
% Inclusions								
0	0	0	0	0	0	6.6	33.3	5 (7.8%)
1	52.6	0	37.5	12.5	80 (47.9%)	77.0	66.7	49 (76.6%)
3	30.1	100.0	37.5	62.5	56 (33.5%)	11.5	0	7 (10.9%)
5	10.5	0	8.3	12.5	17 (10.2%)	4.9	0	3 (4.7%)
10	5.3	0	12.5	12.5	11 (6.6%)	0	0	0
15	0.8	0	4.2	0	2 (1.2%)	0	0	0
20	0.8	0	0	0	1 (0.6%)	0	0	0
Body Type								
China Porcelain	0	0	0	0	0	54.1	66.7	35 (54.7%)
Almost CP	3.1	0	0	0	4 (2.4%)	26.2	33.3	17 (26.6%)
Semi-porcelain	31.3	0	29.2	12.5	49 (29.7%)	13.1	0	8 (12.5%)
Stoneware	65.7	100.0	70.8	87.5	112 (67.9%)	6.6	0	4 (6.3%)
Slipping								
None	97.0	100.0	91.7	87.5	160 (95.8%)	100.0	100.0	64 (100%)
Interior only	0.8	0	0	0	1 (0.6%)	0	0	0
X and I	2.3	0	8.3	12.5	6 (3.6%)	0	0	0
Total	(131-133)	(2)	(24)	(8)	(165-167)	(61)	(3)	(64)
Translucency								
No	94.2	100.0	90.0	100.0	109 (94.0%)	27.7	33.3	14 (28.0%)
Faintly	4.7	0	10.0	0	6 (5.2%)	21.3	33.3	11 (22.0%)
Yes	1.2	0	0	0	1 (0.9%)	51.1	33.3	25 (50.0%)
Total	(86)	(2)	(20)	(8)	(116)	(47)	(3)	(50)

Basal Glazing Traits	Swatow BW	Swatow Merah	Plain Swatow	Total Swatow	Qing Swatow BW	Qing Swatow Merah	Total Qing Swatow
Ordinarily glazed base	28.1	37.5	0	12 (27.9%)	92.6	100.0	26 (92.9%)
Pink-glazed base	0	0	0	0	3.7	0	1 (3.6%)
Red-glazed base	15.6	0	33.3	6 (14.0%)	0	0	0
Glaze-splashed base	12.5	0	0	4 (9.3%)	0	0	0
Dirty glazed base	28.1	12.5	0	10 (23.3%)	3.7	0	1 (3.6%)
Chocolate base	3.1	0	0	1 (2.3%)	0	0	0
Unglazed base	12.5	50.0	66.7	10 (23.3%)	0	0	0
Total	(32)	(8)	(3)	(43)	(27)	(1)	(28)

N.B. The Swatow plain sample included four Swatow "subceladons" and four just plain pieces. One of the Swatow BW bodies coloured 5YR 7/1 exteriorly was coloured 2.5YR 4/4 on the interior wall. One of the Qing Swatow BW bases noted as ordinarily glazed had dirty feet as is typical of Ming Swatow and Swatow feet. Unglazed central stacking rings were observed on one Swatow BW vessel and one Swatow subceladon.

a trend away from plates towards bowls; and the greater occurrence of small bowls and even a cup and a spoon. A notable proportion of the Qing Swatow plates were also defined as small in our notes.

Tables B-25 and B-26 describe the variability within and between the Ming Swatow, Swatow and Qing Swatow classes, as summarised above.

B.3.12 Qing blue-and-white

SSPHAP's Qing blue-and-white category excludes pieces which looked modern (20th century) but includes enamelled wares, as well as BW wares, belonging to the previous centuries under Qing. The composition of the Qing BW sample studied in the laboratory (Table B-27) may not be fully representative of the general sherdage at the sites for three reasons. Firstly, much of the laboratory sample comes from collections made at sites which appear to have been abandoned by at least the 19th century because European sherdage was conspicuously rare. Hence the sample probably underrepresents the proportions of 18th and especially 19th century pieces. Secondly, some of the pieces dated to the Ming period in the field and collected for confirmation were demoted to the status of Qing BW, especially Kangxi BW, in the laboratory. Thirdly we tended to collect pieces which stood outside of the general ruck, notably those with a brown glaze on the exterior cavetto (called "Batavian wares" by Jakarta archaeologists) and spoon fragments.

The sample is nonetheless adequate to demonstrate certain general points. Large closed vessels were rare and bowls dominated over plates (many of which were small and hence more like saucers). Overglaze enamels constituted an important supplement to the dominant strains of cobalt blue. These included *famille verte* (i.e., including at least some green) and red enamels, mainly on the Kangxi pieces, and *famille rose* enamels on 18th to 19th century pieces (cf. Medley, 1980:242-250).

As regards the critical issue of dating the underglaze blue decorations, the most relevant general source was Macintosh (1977). His description of Kangxi glazes as thin

and tinged with a suspicion of bluish-green (see Table B-28), and his notes on the delicately graded, sapphire blue Kangxi decorations (Macintosh, 1977:73), directly applied to legions of SSPHAP's BW sherdage. We also followed Macintosh (1977:77,83) in expecting lavendar decorations with the early 18th century pieces, and almost blackish tones against a strongly white background (see Table B-28) with the Qianlong pieces. In addition, Qing tradewares embraced new decorative styles, as exemplified by the ceramics cargo salvaged from the "Geldermalsen" 1760s shipwreck (van der Waals and Sheaf, 1986): miniature landscapes such as those in the Chinese Imari style; panels of crosses along the rims, which distinguish the so-called Nanking wares; simplified and rather blobby versions of decorations as old as Chinese blue-and-white itself, such as the *lingchih* fungus and lotus sprays; and coarse calligraphic decorations. Other commonly occurring variants in South Sulawesi included "Kangxi birthday bowls", copied after the original plates made in 1713 (Medley, 1980:243); "wheelware" bowls (as I call them), as figured in Macknight (1976:Figure 29a), which were particularly prominent in the assemblages containing no or few European sherds; and "endless entrails" (cf. Macintosh, 1977:132).

We also partly followed Willetts (1981) in adapting his "Kitchen Ch'ing" (*Qing dapur*) category. Willetts proclaims a 19th to early 20th century date for all sorts of Qing tradewares including "Kangxi birthday bowls" (which were presumably copied from 1713 onwards) and precise counterparts to pieces from the "Geldermalsen" (mid-18th century). Indeed the only dated[28] pieces Willetts refers to, the Balambangan sherds from Malaysian Borneo, date either c.1770 or c.1800 (Willetts, 1981:1), and so refer specifically to the late 18th century. However, we found Willetts' general idea useful as a way of referring to the Qing BW pieces which looked the most recent (19th century): pieces with stamped or particularly devolved decorations; and the Fu and related plates.

[28] i.e. dated by criteria other than Willetts' intuitive judgment of how old the pieces are.

TABLE B-27. COMPOSITION OF SSPHAP'S QING BLUE-AND-WHITE WARES

	"Kangxi" Late 17th-early 18th centuries	"Yungzheng" Early 18th century	18th century	"Qianlong" Late 18th century	18th-19th centuries	"Kitchen Qing" 19th century	Total
Bowls	200#	110	93	61	13	44	527*
Small bowls	19	2	7	0	1	1	30
Plates	165	24	25	8	16	31	269
Cups	8	0	1	0	2	0	11
"Open"	3	0	1	0	0	0	5*
Boxes	14	3	5	0	1	0	23
Jarlets	2	2	1	0	0	0	5
Vases	8	1	1	3	0	1	14
Bottles	0	0	0	1	0	0	1
Jars	9	2	1	0	0	0	12
Balubu	3	0	0	0	0	0	3
Spoons	3	2	1	3	2	4	15
Total	434	146	136	76	35	82	915*

	"Kangxi"	"Yung-zheng"	18th century	"Qian-long"	18th-19th centuries	"Kitchen Qing"	Total
Blue-and-white decorations only	387	144	95^	73	9	72	780
With brown glaze exteriorly	0	0	10	0	0	0	10
In conjunction with underglaze black	0	0	0	1	0	0	1
In conjuction with red enamels	3	1	1	0	0	1	6
In conjuction with *famille verte*	11	0	1	0	0	0	12
In conjuction with *famille rose*	1	0	1	0	0	0	2
Total with BW decorations	402	145	108	74	9	73	811
Famille verte enamels only	25#	0	0	0	1	0	26
F. verte enamels on brown glaze	2	0	0	0	0	0	2
Red enamels only	5	0	0	0	0	0	5
Total with "*merah*" decorations	46	1	2	0	1	1	51
Famille rose enamels only	0	1	27	2	25	9	64
With brown glaze exteriorly	0	0	1	0	0	0	1
Total with *f. rose* decorations	1	1	29	2	25	9	67
Total with brown glazing	2	0	11	0	0	0	13

One specimen was identified as having come from a set of stacking bowls.
* Include a few pieces dated no more closely than as Qing.
^ Include three Nanking wares and one decorated in the "Imari" style.

TABLE B-28. QING BLUE-AND-WHITE TRAITS (PERCENTAGES)

Exterior Glaze Thickness	"Kangxi" Late 17th-early 18th centuries	"Yungzheng" Early 18th century	18th century	"Qianlong" Late 18th century	18th-19th centuries	"Kitchen Qing" 19th century		Total
2	0	9.5	15.2	0	25.0	18.2	11	(8.9%)
3	87.2	76.2	78.8	100.0	75.0	63.6	100	(80.6%)
4	6.4	9.5	3.0	0	0	9.1	7	(5.6%)
5	6.4	4.8	3.0	0	0	9.1	6	(4.8%)

TABLE B-28. QING BLUE-AND-WHITE TRAITS (CONT.)

Exterior Glaze Colour	"Kangxi" Late 17th–early 18th centuries	"Yungzheng" Early 18th century	18th century	"Qianlong" Late 18th century	"Kitchen Qing" 18th–19th centuries	19th century	Total
5B 7/1	0	9.5	0	0	0	0	2 (1.6%)
< 5B 7/1	6.4	9.5	0	0	12.5	0	6 (4.8%)
5BG 7/1	19.1	9.5	9.1	0	0	0	14 (11.3%)
< 5BG 7/1	4.3	0	6.1	0	0	0	4 (3.2%)
5G 7/1	12.8	23.8	6.1	0	0	18.2	15 (12.1%)
< 5G 7/1	25.5	4.8	21.2	0	25.0	18.2	24 (19.4%)
5Gy 7/1	2.1	4.8	18.2	0	0	9.1	9 (7.3%)
< 5Gy 7/1	10.6	9.5	15.2	0	0	9.1	13 (10.5%)
5y 7/1	0	9.5	0	50.0	12.5	9.1	5 (4.0%)
< 5y 7/1	2.1	4.8	6.1	0	0	0	4 (3.2%)
N8/-	14.9	4.8	6.1	50.0	25.0	18.2	17 (13.7%)
> N8/-	0	4.8	0	0	0	0	1 (0.8%)
< N7/-	2.1	0	0	0	0	0	1 (0.8%)
7.5YR 8/2	0	0	0	0	12.5	0	1 (0.8%)
5Y 7/1	0	4.8	0	0	12.5	0	2 (1.6%)
2.5Y 7/2	0	0	0	0	0	9.1	1 (0.8%)
5YR 6/2	0	0	0	0	0	9.1	1 (0.8%)
10YR 3/3	0	0	3.0	0	0	0	1 (0.8%)
10YR 4/3	0	0	3.0	0	0	0	1 (0.8%)
2.5YR 2.5/4	0	0	3.0	0	0	0	1 (0.8%)
7.5YR 5/6	0	0	3.0	0	0	0	1 (0.8%)
Total	(47)	(21)	(33)	(2)	(8)	(11)	(124)
X Glaze Number							
1	100.0	100.0	100.0	100.0	100.0	100.0	124 (100%)
Total	(47)	(21)	(33)	(2)	(8)	(11)	(124)
I Glaze Colour							
5B 7/1	0	4.8	0	0	0	0	1 (0.8%)
< 5B 7/1	6.4	9.5	0	0	12.5	0	6 (4.8%)
5BG 7/1	17.0	19.0	12.1	0	0	0	16 (12.8%)
< 5BG 7/1	4.3	0	6.1	0	0	0	4 (3.2%)
5G 7/1	14.9	19.0	6.1	0	0	36.4	17 (13.6%)
< 5G 7/1	29.8	4.8	21.2	0	25.0	18.2	26 (20.8%)
5Gy 7/1	0	4.8	18.2	0	0	9.1	8 (6.4%)
< 5Gy 7/1	8.5	9.5	24.2	0	0	9.1	15 (12.0%)
5y 7/1	0	9.5	0	33.3	12.5	9.1	5 (4.0%)
< 5y 7/1	2.1	4.8	6.1	0	0	0	4 (3.2%)
N8/-	14.9	4.8	6.1	33.3	25.0	9.1	16 (12.8%)
> N8/-	0	4.8	0	33.3	0	0	2 (1.6%)
< N7/-	2.1	0	0	0	0	0	1 (0.8%)
5Y 7/1	0	4.8	0	0	12.5	9.1	3 (2.4%)
7.5YR 8/3	0	0	0	0	12.5	0	1 (0.8%)
I Glaze Thickness							
2	6.4	9.5	12.1	0	12.5	9.1	11 (8.8%)
3	87.2	85.7	81.8	100.0	87.5	81.8	107 (85.6%)
4	0	0	3.0	0	0	0	1 (0.8%)
5	6.4	4.8	3.0	0	0	9.1	6 (4.8%)
I Glaze Number							
1	93.6	100.0	97.0	100.0	100.0	100.0	121 (96.8%)
2	4.3	0	3.0	0	0	0	3 (2.4%)
4	2.1	0	0	0	0	0	1 (0.8%)

TABLE B-28. QING BLUE-AND-WHITE TRAITS (CONT.)

Body Colour							
N8/-	29.8	33.3	39.4	0	50.0	27.3	43 (34.4%)
> N8/-	29.8	4.8	12.1	0	25.0	9.1	22 (17.6%)
< N7/-	14.9	14.3	0	33.3	0	0	11 (8.8%)
N7/-	10.6	4.8	24.2	33.3	0	18.2	17 (13.6%)
N6/-	0	0	3.0	0	0	0	1 (0.8%)
5YR 8/1	10.6	9.5	3.0	0	0	18.2	10 (8.0%)
5YR 8/2	0	9.5	9.1	33.3	12.5	0	7 (5.6%)
5YR 7/1	4.3	4.8	6.1	0	0	0	5 (4.0%)
5YR 7/2	0	14.3	0	0	0	9.1	4 (3.2%)
7.5YR 8/2	0	0	0	0	12.5	0	1 (0.8%)
7.5YR 7/2	0	4.8	0	0	0	0	1 (0.8%)
10YR 7/1	0	0	3.0	0	0	0	1 (0.8%)
2.5Y 8/2	0	0	0	0	0	9.1	1 (0.8%)
5Y 8/2	0	0	0	0	0	9.1	1 (0.8%)
Hardness							
7	12.8	33.3	30.3	33.3	25.0	45.5	31 (24.8%)
8	40.4	33.3	45.5	33.3	25.0	36.4	48 (38.4%)
9	46.8	33.3	24.2	33.3	50.0	18.2	46 (36.8%)
% Inclusions							
0	10.6	0	12.1	33.3	37.5	0	13 (10.4%)
1	63.8	71.4	48.5	0	37.5	45.5	71 (56.8%)
2-3	21.3	14.3	30.3	33.3	12.5	36.4	29 (23.2%)
4-5	2.1	9.5	9.1	0	0	9.1	7 (5.6%)
10	2.1	4.8	0	33.3	12.5	9.1	5 (4.0%)
Body Type							
China Porcelain	59.6	38.1	51.5	0	62.5	27.3	63 (50.4%)
Almost CP	14.9	19.0	6.1	0	0	0	13 (10.4%)
Semi-porcelain	17.0	4.8	12.1	33.3	12.5	9.1	16 (12.8%)
Protoporcelain	0	4.8	0	0	0	0	1 (0.8%)
Stoneware	8.5	33.3	30.3	66.7	25.0	63.6	32 (25.6%)
Slipping							
None	100.0	100.0	100.0	100.0	100.0	100.0	125 (100%)
Total	(47)	(21)	(33)	(3)	(8)	(11)	(125)
Translucency							
Not translucent	24.3	45.0	42.9	100.0	80.0	72.7	44 (41.9%)
Faintly	18.9	20.0	21.4	0	0	0	17 (16.2%)
Translucent (Y)	56.8	35.0	35.7	0	20.0	27.3	44 (41.9%)
	(37)	(20)	(28)	(2)	(5)	(11)	(105)
Basal glazing							
Ordinarily glazed	91.7	100.0	100.0	50.0	-	100.0	39 (95.1%)
Unglazed	8.3	0	0	50.0	-	0	2 (4.9%)
	(12)	(9)	(10)	(2)	(0)	(8)	(41)

N.B. Except for basal glazing, the total sample includes two pieces identified only as Qing blue-and-white. The "Yungzheng" sample includes one piece with BW/red enamel decorations and one piece with *famille rose* decorations; the 18th century sample one piece with BW/*famille verte* decorations and four Batavian wares, one with *famille rose* rather than BW decorations; the 18th-19th century sample includes one piece with *famille rose* decorations; otherwise BW decorations throughout. One of the ordinarily glazed Kangxi BW bases had a dirty foot. Unglazed central stacking rings were observed on one Yungzheng BW piece, one 18th century BW piece, two Qianlong BW pieces and four Kitchen Qing BW pieces.

B.3.13 White Qing or Recent

Most of the sites were sprinkled with a residue of nondescript porcellanous sherdage which SSPHAP dutifully recorded under the headings *Qing putih* (white Qing) or *Baru* (Recent). The class included small quantities of pieces with enamel decorations of very modern appearance (Table B-29), but even the most modern looking pieces decorated only in underglaze blue were classified as Qing BW (or Japanese [B.3.14]).

The theoretical legitimacy of the class is premised on the assumption that Bugis-Makassar villagers have used hardly any tradewares other than white porcelain during recent times. While I did not carry out any inventories of the crockery assemblages in people's houses or village tradestores, I can at least refer to my informal survey of the streets of Malino (founded 1923) where I saw only five of 130 tradeware sherds with visible traces of decoration. But as regards the complementary assumption, to the effect that the fragmentary remnants of older Qing and Ming assemblages would not contain the same nondescript sherdage, a brief glance at the expanses of white background found on many blue-and-white wares is enough to raise serious doubts. Hence Demmanari and I tried to date the collected examples identified to the class, based on subtle criteria such as the tints of white in the body and glaze, and microscopic clues. We were wary of identifying the pieces as Ming unless there were very good reasons, but we were prepared to opt for time slots as small as half-century intervals for the 17th century onwards (Table B-29). Our attribution of many of the pieces to the 17th to 19th centuries is undoubtedly correct, even if carefully sampled assemblages would have to be collected to know the exact proportions.[29] The preponderance of bowls over plates in the earlier Qing white pieces, and the resurgence of plates from around the 18th century, also match the results found with

[29] Most of the collections which included "Qing white" pieces were made at sites or subsites which appeared to have been abandoned by at least the 19th century. SSPHAP's only collections of Qing white pieces at sites known to be still under settlement occurred at Paknakkukang (UP2) and Barombong (UP3) at the very end of the field season.

TABLE B-29. COMPOSITION OF SSPHAP'S "RECENT" CLASS

	Bowls	Small Bowls	Plates	Cups	"Open"	Boxes	Jar- lets	Tea- pots	Vases	Jars	Spoons	Total
Dehua 17th century white	0	0	0	0	0	2	0	0	0	0	0	2
Other 17th century white	19	0	7	0	0	0	1	0	0	0	0	27
Kangxi white	2	1	3	0	0	0	0	0	1	1	0	8
17th-18th century white	17	2	11	0	0	0	0	0	0	0	1	31
Early 18th century white	0	0	2	0	0	0	0	0	0	0	0	2
Qianlong white	2	0	1	0	2	0	0	0	0	0	0	5
18th century white	1	0	1	0	0	0	0	0	0	0	0	2
18th-19th century white	4	0	4	0	0	1	0	0	1	0	0	10
18th-20th century white	0	0	0	1	0	0	0	0	0	0	0	1
19th century white	1	0	12	0	0	0	0	0	0	0	0	13
19th-20th century white	1	0	1	0	0	0	0	0	0	0	0	2
20th century white	18	0	34	1	33	1	0	1	2	0	1	91
"Qing white"	0	0	4	0	7	0	0	0	0	0	0	11
20th c. *famille verte*	1	0	0	0	0	0	0	0	0	0	0	1
20th c. *famille rose*	0	0	1	0	0	0	0	0	0	0	0	1
20th c. overglaze red	1	0	1	0	0	0	0	0	0	0	0	2
20th century "overglaze"	0	0	2	0	0	0	0	0	0	0	0	2
20th c. BW/overglaze red	1	0	0	0	0	0	0	0	0	0	0	1
"Recent"	7	0	41	3	60	0	0	0	0	0	0	111
Total	75	3	125	5	102	4	1	1	4	1	2	323

N.B.The figures exclude 8 pieces of unidentified form identified only as "Recent".

TABLE B-30. SSPHAP'S JAPANESE AND EUROPEAN CLASSES

Japanese BW	Bowls	Plates	Cups	"Open"	Boxes	Flower-pots	Vases	Bottles	Jars	Total
Fine wares	4	1	0	0	3	0	4	0	0	12
Flower wares	22	0	0	0	0	0	0	0	0	22
Total	26	1	0	0	3	0	4	0	0	34
European										
Whiteware	31	42	1	1	0	0	0	0	0	75
Pale brown ware	0	0	0	0	0	0	0	0	1	1
"Blue-and-white"	2	11	0	0	0	0	0	0	0	13
Blue transferware	9	24	0	0	0	0	0	0	0	33
Blue,green,red transfer	1	0	0	0	0	0	0	0	0	1
Green and red transfer	3	0	0	0	0	0	0	0	0	3
Green transferware	2	3	0	0	0	0	0	0	0	5
Red transferware	6	3	0	0	0	0	0	0	0	9
"European"	34	25	5	0	0	1	4	3	0	72
Total	88	108	6	1	0	1	4	3	1	212

N.B. The colour(s) before transfer(ware) indicates the colour(s) of the extant decorations. The pieces identified as "blue-and-white" were presumably also transferwares. The figures exclude 17 pieces of unidentified form identified only as European.

TABLE B-31. TRAITS OF "RECENT", JAPANESE AND EUROPEAN PIECES

X Glaze Colour	17th-18th century white	18th-20th century white	Overglaze 20th century	Total "Recent"	Japan Fine wares	Japan Flower wares	Total Japanese	European
5B 7/1	0	0	0	0	0	0	0	1 (11.1%)
5BG 7/1	0	0	0	0	0	1	1 (20.0%)	0
< 5BG 7/1	0	0	0	0	1	0	1 (20.0%)	0
5G 7/1	0	1	0	1 (5.9%)	0	0	0	0
< 5G 7/1	0	1	1	2 (11.8%)	0	0	0	0
5Gy 7/1	0	0	1	1 (5.9%)	0	0	0	0
< 5Gy 7/1	0	2	0	2 (11.8%)	0	0	0	0
5y 7/1	1	0	0	1 (5.9%)	0	0	0	0
N8/-	1	5	3	9 (52.9%)	0	1	1 (20.0%)	4 (44.4%)
< N7/-	0	0	0	0	1	0	1 (20.0%)	0
5YR 8/1	0	0	0	0	0	0	0	2 (22.2%)
10YR 8/1	1	0	0	1 (5.9%)	0	0	0	0
5Y 8/1	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/2	0	0	0	0	0	0	0	1 (11.1%)
5YR 3/3	0	0	0	0	0	1	2 (20.0%)	0
X Glaze Thickness								
2	0	5	2	7 (41.2%)	0	1	1 (20.0%)	5 (55.6%)
3	3	4	3	10 (58.8%)	2	2	4 (80.0%)	4 (44.4%)
I Glaze Colour								
5B 7/1	0	0	0	0	0	1	1 (20.0%)	0
5BG 7/1	0	0	0	0	0	1	1 (20.0%)	0
< 5BG 7/1	0	0	0	0	1	0	1 (20.0%)	0
5G 7/1	0	1	0	1 (5.9%)	0	0	0	0
< 5G 7/1	0	1	0	1 (5.9%)	0	0	0	0
< 5Gy 7/1	0	2	1	3 (17.6%)	0	0	0	0
5y 7/1	1	0	0	1 (5.9%)	0	0	0	0
N8/-	1	5	4	10 (58.8%)	0	1	1 (20.0%)	4 (44.4%)
> N8/-	0	0	0	0	1	0	1 (20.0%)	0
5YR 8/1	0	0	0	0	0	0	0	2 (22.2%)
10YR 8/1	0	0	0	0	0	0	0	1 (11.1%)
5Y 8/1	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/2	0	0	0	0	0	0	0	1 (11.1%)
7.5YR 7/2	1	0	0	1 (5.9%)	0	0	0	0
I Glaze Thickness								
1	0	0	0	0	0	0	0	1 (11.1%)
2	0	5	2	7 (41.2%)	1	1	2 (40.0%)	4 (44.4%)
3	3	4	3	10 (58.8%)	1	2	3 (60.0%)	4 (44.4%)
Hardness								
5	0	0	0	0	0	0	0	1 (11.1%)
6	0	0	0	0	0	0	0	1 (11.1%)
7	1	0	0	1 (5.9%)	1	0	1 (20.0%)	7 (77.8%)
8	0	4	3	7 (41.2%)	0	2	2 (40.0%)	0
9	2	5	2	9 (52.9%)	1	1	2 (40.0%)	0

TABLE B-31. TRAITS OF "RECENT", JAPANESE AND EUROPEAN PIECES (CONT.)

Body Colour								
N8/-	2	5	3	10 (58.8%)	2	1	3 (60.0%)	1 (11.1%)
> N8/-	0	0	1	1 (5.9%)	0	0	0	0
< N7/-	0	2	1	3 (17.6%)	0	0	0	0
5YR 8/1	0	0	0	0	0	1	1 (20.0%)	0
5YR 8/2	1	0	0	1 (5.9%)	0	0	0	1 (11.1%)
5YR 7/1	0	2	0	2 (11.8%)	0	1	1 (20.0%)	0
7.5YR 7/4	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/1	0	0	0	0	0	0	0	1 (11.1%)
10YR 8/2	0	0	0	0	0	0	0	3 (33.3%)
5Y 8/1	0	0	0	0	0	0	0	2 (22.2%)
Translucency								
Not translucent	0	1	0	1 (5.9%)	0	2	2 (50.0%)	9 (100%)
Faintly	0	0	0	0	0	1	1 (25.0%)	0
Translucent (Y)	3	8	5	16 (94.1%)	1	0	1 (25.0%)	0
% Inclusions								
0	0	0	1	1 (5.9%)	0	0	0	0
1	1	7	3	11 (57.9%)	1	2	3 (60.0%)	5 (55.6%)
3	0	2	1	3 (17.6%)	0	0	0	4 (44.4%)
5	2	0	0	2 (11.8%)	1	1	2 (40.0%)	0
Body Type								
China Porcelain	1	8	5	14 (82.4%)	2	0	2 (40.0%)	0
Almost CP	1	0	0	1 (5.9%)	0	0	0	0
Semi-porcelain	1	0	0	1 (5.9%)	0	0	0	0
Protoporcelain	0	0	0	0	0	1	1 (20.0%)	0
Stoneware	0	1	0	1 (5.9%)	0	2	2 (40.0%)	9 (100%)
Total	(3)	(9)	(5)	(17)	(1-2)	(2)	(4-5)	(9)

N.B. None of the pieces showed slipping or more than one applied layer of glaze.

the Qing BW pieces (Table B-27), even if we sometimes dated the white pieces to an unsustainable degree of precision.

The small sample of 17 pieces studied in detail (Table B-31) shows proportions of pure white bodies and glazes, and fully porcelain bodies, unmatched by any other class. Hence there is some support for the general chronological distinctiveness, specifically a 20th century date, of the class as a whole.

B.3.14 The Japanese and European classes

Fine Japanese porcelains have been exported to Indonesia

since the 17th century (Adhyatman et al., 1984), and some examples are among the heirlooms of the Soppeng royal family (Kallupa et al., 1989), but we did not recognise any instances among the surface tradewares recorded at SSPHAP's sites. The South Sulawesi classificatory system recognises a Japanese class (Hadimuljono and Macknight) which is not among the wares looted at pre-Islamic burial grounds (*pace* Adhyatman et al., 1984:93). One category involves a group of very finely decorated blue-and-white wares which includes vases and boxes as well as open forms. The second category involves bowls decorated with stereotyped flowers created by repeated stamping of petal and sepal motifs (Table B-30).[30]

The very small sample I studied in detail suggests a few distinguishing traits. Pure white or light bluish glazes apparently characterise both categories, apart from the isolated instance of a brown-glazed exterior on one of the flowerwares. But the fine wares are porcelains whereas the flowerwares are either "protoporcelains" or stonewares (Table B-31). The fine wares are quite at home among the descriptions of later Japanese porcelain (e.g. Jenys, 1965), and the category possibly represents only the tip of the Japanese iceberg floating on the sea of "Qing Chinese" identifications. However, I know of no references in the literature that would prepare one for the flowerwares.

European sherdage was recorded in abundance but very rarely collected (see footnote 29). The 230 collected specimens reiterate the preponderance of plates, followed by bowls, noted for the Qing white pieces dated to the last few centuries. European transferwares of course tend to be very distinctive from Oriental ceramics, but as undecorated whitewares, possibly up to half the European pieces would have been identified in the field by glaze and body traits alone (Table B-30). In this regard the European pieces do present a distinctive constellation of characters, notwithstanding the small size of the sample I studied in detail. The distingushing traits include an often chalky stoneware body, soft yet comparatively free of inclusions,

[30] I thank Dick Richards for confirming the positive identification of these flowerwares as Japanese.

and generally coloured off-white; and a thin unblemished glaze, rather like a plastic film, which tends to pure white and off-white tones (see Table B-31).[31]

B.3.15 Vietnamese ceramics

219 Vietnamese pieces divided among three classes were recognised in the laboratory: 63 monochromes, eight pieces with underglaze black decorations, and 148 "blue-and-white" pieces. The last class also includes two pieces with only overglaze enamels and seven pieces which combined underglaze blue with overglaze enamels. Bowls, including conical bowls, were the main vessel form among the monochromes, black-and-white and calligraphic blue-and-white wares. With the non-calligraphic "blue-and-white" wares, plates, boxes and *balubu* were more frequent (Table B-32). Three-quarters of the *balubu* came from West Soppeng's former palace site of Tinco Tua (see Kallupa et al., 1989:25).

All but one of the Vietnamese black-and-white pieces showed calligraphic decorations, as described by Guy (1986) and Brown (1988).[32] The single exception involves specimen G.5.1.2, a base to a bowl decorated with a single solar motif (Photo 11-25). The motif occurs occasionally on Thai wares (e.g. Harper, n.d.:37; Brown, 1988:Plates XXXa and 50b) but G.5.1.2 is certainly not Sawankhalok or Sukothai.[33] A Vietnamese identification is likely because the piece's body and glaze traits are lost among the range of variability shown by the Vietnamese polychromes (see Table B-33), and a parallel decoration occurs on a cup identified as 11th-12th century Vietnamese (Fraschė, 1976:106).

[31] There is of course a tremendous range of European ceramics with their own specialist literature to match. Here my intention is nothing more than to characterise the probably Dutch products which found their way into the Bugis-Makassar countryside.

[32] Two of the pieces were also sent to Dick Richards who confirmed the identification.

[33] The piece's body could possible resemble the northern Thai Kalong bodies, which are desribed by Brown (1988:84) as fine-grained and whitish, but the piece's unglazed central stacking ring would seem to rule a Thai identification out of contention.

TABLE B-32. COMPOSITION OF SSPHAP'S VIETNAMESE CLASSES

	Bowls	Conical Bowls	Plates	Boxes	Jarlets	Vases	Jars	*Balubu*	Total
Underglaze iron black decorations	5	3	0	0	0	0	0	0	8
Blue-and-white calligraphic decs	6	0	1	1	0	0	0	0	8
Blue-and-white other decorations	18	0	50	29	4	2	5	23	131
BW/red overglaze enamels	1	0	1	1	0	1	0	0	4
BW/overglaze (colour not recorded)	1	0	1	0	0	0	0	1	3
Green overglaze enamels	0	0	1	0	0	0	0	0	1
Red and green overglaze enamels	0	0	0	0	1	0	0	0	1
Total "Vietnam Blue-and-white"	26	0	54	31	5	3	5	24	148
Celadon "13th-14th centuries"	1	0	0	0	0	0	0	0	1
Celadon "15th-16th centuries"	4	1	2	1	1	0	1	0	10
Celadon "16th century"	2	0	0	0	0	0	0	0	2
Subceladon "12th-13th centuries"	0	0	0	0	1	0	0	0	1
Subceladon "14th century"	1	0	1	0	0	0	0	0	2
Subceladon "14th-15th centuries"	1	0	1	0	0	1	0	0	3
Subceladon "15th-16th centuries"	8	3	2	0	0	0	0	0	13
Oliveware "13th-14th centuries"	1	0	0	0	0	0	1	0	2
Oliveware "14th-15th centuries"	0	0	0	1	0	0	0	0	1
Oliveware "15th-16th centuries"	3	0	0	1	0	0	0	0	4
Brownware "14th-15th centuries"	1	0	0	0	0	0	0	0	1
Brownware "15th-16th centuries"	1	0	0	0	0	0	0	0	1
Whiteware "13th-14th centuries"	0	1	0	0	0	0	0	0	1
Whiteware "14th-15th centuries"	0	0	0	1	0	0	0	0	1
Whiteware "15th century"	1	0	0	0	0	0	0	0	1
Whiteware "15th-16th centuries"	4	1	1	1	0	0	0	0	6
"Monochrome 15th-16th centuries"	8	0	4	0	0	0	0	0	12
Total Vietnam Monochromes	36	6	11	5	2	1	2	0	63
Total Vietnamese ceramics	67	9	65	36	7	4	7	24	219

N.B. Figures exclude Vietnamese "coarse stoneware" jars (Table B-10).

TABLE B-34. CHARACTERS OF VIETNAMESE MONOCHROMES (PERCENTAGES)

	Exterior Glaze					Interior Glaze				
Glaze Thick.	Celadon	Sub-celadon	Olive wares	White wares	Total	Celadon	Sub-celadon	Olive wares	White wares	Total
1	0	0	28.6	0	2 (5.9%)	0	0	0	0	0
2	33.3	61.5	42.9	62.5	18 (52.9%)	0	64.3	80.0	66.7	18 (58.1%)
3	50.0	38.5	28.6	25.0	12 (35.3%)	100.0	35.7	20.0	33.3	13 (41.9%)
5	16.7	0	0	12.5	2 (5.9%)	0	0	0	0	0
Total	(6)	(13)	(7)	(8)	(34)	(5)	(14)	(5)	(7)	(31)
Slipping										
None	16.7	57.1	71.4	50.0	18 (51.4%)	Unglazed base and foot (UB)/Glaze does not reach non-extant foot (ULC)				
Exteriorly	0	0	14.3	12.5	2 (5.7%)					
Interiorly	33.3	7.1	0	0	3 (8.6%)	UB 100.0	40.0	0	100.0	4 (50.0%)
X and I	50.0	35.7	14.3	37.5	12 (34.3%)	ULC 0	60.0	100.0	0	4 (50.0%)
	(6)	(14)	(7)	(8)	(35)	(1)	(5)	(1)	(1)	(8)

TABLE B-34. CHARACTERS OF VIETNAMESE MONOCHROMES (CONT.)

Exterior Glaze

Colour	Celadon	Sub-celadon	Olive wares	White wares	Total
Green/Brown A4	33.3	15.4	0	0	4 (11.8%)
Green/Brown A5	16.7	0	0	0	1 (2.9%)
Green/Brown A6	0	23.1	0	0	3 (8.8%)
Green/Brown A7	0	7.7	0	0	1 (2.9%)
5G 5/1	0	0	0	0	0
5G 6/1	16.7	0	0	0	1 (2.9%)
5Gy 4/1	16.7	0	0	0	1 (2.9%)
5Gy 6/1	16.7	0	0	0	1 (2.9%)
5Gy 7/1	0	7.7	0	0	1 (2.9%)
5y 6/1	0	7.7	0	0	1 (2.9%)
5y 7/1	0	7.7	0	0	1 (2.9%)
5YR 8/1	0	0	0	37.5	3 (8.8%)
7.5YR 8/2	0	0	0	25.0	2 (5.9%)
10YR 8/3	0	0	0	12.5	1 (2.9%)
10YR 7/2	0	0	0	12.5	1 (2.9%)
10YR 7/3	0	15.4	0	0	2 (5.9%)
5Y 7/2	0	7.7	0	0	1 (2.9%)
5Y 7/3	0	0	0	0	0
5Y 6/2	0	7.7	0	0	1 (2.9%)
5Y 6/3	0	0	42.9	12.5	4 (11.8%)
5Y 5/2	0	0	42.9	0	3 (8.8%)
2.5Y 5/4	0	0	14.3	0	1 (2.9%)
Total	(6)	(13)	(7)	(8)	(34)

Interior Glaze

Colour	Celadon	Sub-celadon	Olive wares	White wares	Total
Green/Brown A4	20.0	14.3	0	0	3 (9.7%)
Green/Brown A5	20.0	7.1	0	0	2 (6.5%)
Green/Brown A6	0	21.4	0	0	3 (9.7%)
Green/Brown A7	0	0	0	0	0
5G 5/1	20.0	0	0	0	1 (3.2%)
5G 6/1	20.0	0	0	0	1 (3.2%)
5Gy 4/1	0	0	0	0	0
5Gy 6/1	20.0	0	0	0	1 (3.2%)
5Gy 7/1	0	7.1	0	0	1 (3.2%)
5y 6/1	0	0	0	0	0
5y 7/1	0	14.3	0	0	2 (6.5%)
5YR 8/1	0	0	0	28.6	2 (6.5%)
7.5YR 8/2	0	0	0	28.6	2 (6.5%)
10YR 8/3	0	0	0	14.3	1 (3.2%)
10YR 7/2	0	0	0	14.3	1 (3.2%)
10YR 7/3	0	21.4	0	0	3 (9.7%)
5Y 7/2	0	7.1	0	14.3	2 (6.5%)
5Y 7/3	0	0	20.0	0	1 (3.2%)
5Y 6/2	0	7.1	0	0	1 (3.2%)
5Y 6/3	0	0	40.0	0	2 (6.5%)
5Y 5/2	0	0	40.0	0	2 (6.5%)
2.5Y 5/4	0	0	0	0	0
Total	(5)	(14)	(5)	(7)	(31)

Body Colour

	Celadon	Sub-celadon	Olive wares	White wares	Total
> N8/-	0	7.1	0	0	1 (2.9%)
N7/-	33.3	7.1	0	0	3 (8.6%)
5YR 8/1	0	0	0	37.5	3 (8.6%)
5YR 8/2	0	0	0	12.5	1 (2.9%)
5YR 8/3	0	7.1	0	12.5	2 (5.7%)
7.5YR 8/2	0	7.1	14.3	0	2 (5.7%)
10YR 8/1	0	7.1	0	0	1 (2.9%)
10YR 8/2	16.7	0	0	25.0	3 (8.6%)
> 5Y 8/1	0	7.1	0	0	1 (2.9%)
5YR 7/1	33.3	14.3	14.3	0	5 (14.3%)
5YR 7/2	0	7.1	14.3	0	2 (5.7%)
7.5YR 7/2	0	0	0	12.5	1 (2.9%)
10YR 7/1	0	14.3	0	0	2 (5.7%)
10YR 7/2	0	0	14.3	0	1 (2.9%)
5YR 6/1	16.7	0	0	0	1 (2.9%)
5YR 6/2	0	7.1	14.3	0	2 (5.7%)
10YR 6/1	0	0	14.3	0	1 (2.9%)
> 10YR 6/1	0	7.1	0	0	1 (2.9%)
10YR 6/2	0	0	14.3	0	1 (2.9%)
7.5YR 4/2	0	7.1	0	0	1 (2.9%)
	(6)	(14)	(7)	(8)	(35)

Hardness

	Celadon	Sub-celadon	Olive wares	White wares	Total
5	0	7.1	0	0	1 (2.9%)
6	0	7.1	14.3	12.5	3 (8.6%)
7	50.0	64.3	71.4	37.5	21 (60.0%)
8	33.3	21.4	14.3	25.0	8 (22.9%)
9	16.7	0	0	12.5	2 (5.7%)

% of Body Inclusions

	Celadon	Sub-celadon	Olive wares	White wares	Total
0	16.7	7.1	0	0	2 (5.7%)
1	16.7	21.4	0	12.5	5 (14.3%)
3	0	14.3	0	37.5	5 (14.3%)
5	50.0	28.6	57.1	37.5	14 (40.0%)
10	16.7	21.4	28.6	12.5	7 (20.0%)
15	0	7.1	14.3	0	2 (5.7%)

Body Type

	Celadon	Sub-celadon	Olive wares	White wares	Total
PP	16.7	21.4	14.3	50.0	9 (25.7%)
SW	83.3	78.6	85.7	50.0	26 (74.3%)
	(6)	(14)	(7)	(8)	(35)

N.B. All glazes were applied in one layer only and all bodies are opaque. An unglazed central stacking ring was observed on one whiteware and one subceladon.

TABLE B-33. VIETNAMESE POLYCHROME TRAITS (PERCENTAGES)

Exterior Glaze Colour	Underglaze Iron	Calligraphic Blue-and-white	Other Blue-and-white	BW/overglaze enamels	Overglaze decorated	Total "Vietnam BW"
Green/Brown A6	0	0	9.1	0	0	1 (5.6%)
< 5G 7/1	0	0	9.1	0	50.0	2 (11.1%)
10YR 8/1	0	0	9.1	0	0	1 (5.6%)
5Y 8/1	1 (12.5%)	0	0	0	0	0
5YR 8/2	1 (12.5%)	33.3	0	0	0	1 (5.6%)
7.5YR 8/2	0	0	9.1	0	0	1 (5.6%)
10YR 7/1	2 (25.0%)	33.3	0	50.0	0	2 (11.1%)
5Y 7/1	0	0	9.1	0	0	1 (5.6%)
7.5YR 7/2	0	0	9.1	0	50.0	2 (11.1%)
10YR 7/2	1 (12.5%)	0	0	0	0	0
5Y 7/2	0	0	18.2	0	0	2 (11.1%)
5YR 7/3	0	0	0	50.0	0	1 (5.6%)
10YR 7/3	1 (12.5%)	0	9.1	0	0	1 (5.6%)
10YR 7/4	0	33.3	0	0	0	1 (5.6%)
5Y 6/2	0	0	9.1	0	0	1 (5.6%)
5Y 6/3	1 (12.5%)	0	0	0	0	0
7.5YR 6/4	1 (12.5%)	0	0	0	0	0
7.5YR 5/6	0	0	9.1	0	0	1 (5.6%)
X Glaze T						
1	0	33.3	0	0	0	1 (5.6%)
2	3 (37.5%)	66.7	36.4	0	50.0	7 (38.9%)
3	5 (62.5%)	0	63.6	100.0	50.0	10 (55.6%)
	(8)	(3)	(11)	(2)	(2)	(18)
I Glaze Colour						
Green/Brown A6	0	0	11.1	0	0	1 (5.9%)
5G 6/1	0	0	0	0	50.0	1 (5.9%)
< 5G 7/1	0	0	11.1	0	50.0	2 (11.8%)
5YR 8/2	1 (12.5%)	0	0	0	0	0
7.5YR 8/2	0	0	11.1	0	0	1 (5.9%)
10YR 7/1	2 (25.0%)	25.0	0	50.0	0	2 (11.8%)
5Y 7/1	1 (12.5%)	0	0	0	0	0
5YR 7/2	0	25.0	0	0	0	1 (5.9%)
7.5YR 7/2	0	0	11.1	0	0	1 (5.9%)
10YR 7/2	1 (12.5%)	0	0	0	0	0
5YR 7/3	0	0	0	50.0	0	1 (5.9%)
5Y 7/2	0	25.0	22.2	0	0	3 (17.6%)
10YR 7/3	1 (12.5%)	0	11.1	0	0	1 (5.9%)
10YR 7/4	0	25.0	0	0	0	1 (5.9%)
5Y 6/3	1 (12.5%)	0	0	0	0	0
10YR 6/2	0	0	11.1	0	0	1 (5.9%)
7.5YR 6/4	1 (12.5%)	0	0	0	0	0
7.5YR 5/6	0	0	11.1	0	0	1 (5.9%)
I Glaze T						
1	1 (12.5%)	0	0	0	0	0
2	2 (25.0%)	75.0	44.4	0	100.0	9 (52.9%)
3	5 (62.5%)	25.0	55.6	100.0	0	8 (47.1%)
	(8)	(4)	(9)	(2)	(2)	(17)

TABLE B-33. VIETNAMESE POLYCHROME TRAITS (CONT.)

Exterior Body Colour	Underglaze Iron	Calligraphic Blue-and-white	Other Blue-and-white	BW/overglaze enamels	Overglaze decorated	Total "Vietnam BW"
> N8/-	0	25.0	0	0	0	1 (5.3%)
N7/-	0	0	9.1	0	0	1 (5.3%)
10YR 8/1	0	25.0	0	0	50.0	2 (10.5%)
5Y 8/1	0	0	9.1	0	0	1 (5.3%)
5YR 8/2	2 (25.0%)	0	0	50.0	0	1 (5.3%)
7.5YR 8/2	1 (12.5%)	0	9.1	0	0	1 (5.3%)
5YR 7/1	3 (37.5%)	25.0	18.2	0	0	3 (15.8%)
7.5YR 7/1	1 (12.5%)	0	0	0	0	0
10YR 7/1	0	0	9.1	0	50.0	2 (10.5%)
5Y 7/1	0	0	9.1	0	0	1 (5.3%)
5YR 7/2	0	0	18.2	50.0	0	3 (15.8%)
7.5YR 7/2	0	0	9.1	0	0	1 (5.3%)
5YR 6/1	0	0	9.1	0	0	1 (5.3%)
5YR 6/3	0	25.0	0	0	0	1 (5.3%)
Hardness						
5	0	0	9.1	0	50.0	2 (10.5%)
6	2 (25.0%)	0	0	0	0	0
7	3 (37.5%)	75.0	63.6	0	50.0	11 (57.9%)
8	2 (25.0%)	25.0	18.2	50.0	0	4 (21.1%)
9	1 (12.5%)	0	9.1	50.0	0	2 (10.5%)
% Inclusions						
0	2 (25.0%)	0	0	50.0	0	1 (5.3%)
1	1 (12.5%)	0	36.4	0	0	4 (21.1%)
3	2 (25.0%)	25.0	18.2	0	50.0	4 (21.1%)
5	3 (37.5%)	50.0	36.4	50.0	0	7 (36.8%)
10	0	0	9.1	0	50.0	2 (10.5%)
15	0	25.0	0	0	0	1 (5.3%)
Body Type						
Protoporc.	1 (12.5%)	75.0	54.5	100.0	50.0	12 (63.2%)
Stoneware	7 (87.5%)	25.0	45.5	0	50.0	7 (36.8%)
Slipping						
None	6 (75.0%)	0	63.6	100.0	50.0	10 (52.6%)
Exterior	0	0	9.1	0	0	1 (5.3%)
Interior	0	50.0	0	0	0	2 (10.5%)
X and I	2 (25.0%)	50.0	27.3	0	50.0	6 (31.6%)

Basal Glazing Traits	Underglaze Iron (2-3)	Calligraphic Blue-and-white (3)	Other Blue-and-white (2)	Total "Vietnam BW" (5)
Chocolate base	0	0	100.0	2 (40.0%)
Glaze-splashed base and foot	0	33.3	0	1 (20.0%)
Unglazed base and foot	66.7	66.7	0	2 (40.0%)
Glaze does not reach to non-extant foot	33.3	0	0	0
Open vessel with unglazed centre	0	66.7	0	2 (40.0%)
Unglazed stacking ring	50.0	0	0	0

N.B. All glazes were applied in one layer only and all bodies are opaque. One of the iron-decorated wares has walls coloured 5YR 8/2 and a core coloured 5YR 6/1.

Rather than the Yuan-like decorations typical of the blue-and-white wares, eight of the pieces had calligraphic decorations in underglaze blue. The four pieces studied in detail showed the same sorts of characters - e.g. pinkish white to brownish white (straw-coloured) body and glaze, and a stoneware body which tended to be chalky (protoporcelain) - as the other polychromes, although two of the pieces were idiosyncratic in having unglazed centres. Guy (1986) argues that the tradewares with blue calligraphic decorations were coeval with the iron-painted tradewares, but here I do not recognise them as constituting their own blue-and-white class because they are not numerous, and identification of the extant decorations as calligraphic is not always clear. Although the Vietnamese polychromes show a distinctive accent in their traits when considered as a group (Table B-33), isolated examples may be difficult to distinguish from Chinese Ming period pieces when only a small amount of decoration is extant (cf. Chin, 1981).

Vietnamese monochromes can also be difficult to distinguish from coarser Chinese early monochromes, and Demmanari and I preferred a Chinese identification in ambiguous cases. The full range of glazes described by Brown (1988) for the monochrome tradewares was observed although we categorised them somewhat differently. The dates we ascribed to the pieces (Table B-32) essentially followed Frasché (1976). The whitewares appear quite like the polychromes in their general characteristics, and only the "subceladons" and olivewares showed clearly darker bodies.

B.3.16 Thai ceramics

The recent surge of research in Thai high-fired ceramics has located several kiln sites in northern Thailand (e.g. Shaw, 1981; Brown, 1988; Rooney, 1989), and further provincial kilns formerly produced coarse stoneware jars too (Hein and Sangkhanukit, 1985; Harper, pers. comm. 1988). Wares from these kilns may well have reached South Sulawesi but Demmanari and I could not identify them. The only products we identified were from Sukothai and Sawankhalok (Si Satchanalai). The repertoire and chronology of Sawankhalok's

production is probably better understood than that of any other Oriental kiln site, owing to the research of the Thai-Australian Ceramics Project (e.g. Richards et al., 1984; Brown, 1988). Demmari and I recognised two Sawankhalok classes, wares decorated with iron oxides (black-and-white), and monochromes. We left the Sawankhalok wares glazed brown or black in the coarse stoneware class (B.3.5). Our primary source for identifying Sawankhalok wares was the South Australian Museum Catalogue (Richards, 1977).

The Sawankhalok iron-painted wares were almost entirely restricted to boxes (Table B-35) and readily assignable to the "mature export period" (Richards et al., 1984). Glaze colour usually varied between light greenish and light grey, and the bodies were generally light grey (Table B-34), just as Harper (n.d.) describes the sherds she collected at Si Satchanalai. Three bowl fragments with less standardised decorations and a celadon-like glaze might be slightly earlier than the others, but no cases were found of the apparently oldest category which features bold fish and floral designs (Richards et al., 1984; Brown, 1988:63-65).

The monochromes consisted mostly of the celebrated Sawankhalok celadons with their strongly green, transparent glazes, supplemented by nine pieces with murkier glazes ("subceladons"), and three jar fragments carrying a white glaze. Plates and bowls dominated the class but a wide range of other forms was also represented (Table B-35). Although the black speckled, light grey body is usually characteristic, there is some overlap with the highly variable Chinese celadons, and we tended to classify borderline cases as Chinese.

The Sukothai pieces generally stood out through the combination of a slip over a dark or reddish stoneware body generally full of ferruginous and quartz inclusions, and brownish to grey glaze colours (Table B-36). The Sukothai decorative repertoire is also distinctive, but most of SSPHAP's pieces carried only undiagnostic components. Examples of this trend are a Sukothai jar sherd (G.1.75.9) decorated only by the circumscribing lines found on Sukothai covered jars and closed vessels (see Brown, 1988:Plate 33),

and a small Sukothai plain sherd (G.62.13.49) which could well have originally come from a black-and-white rather than a whiteware. The great variety of SSPHAP's Sukothai bodies, notably the change between bodies largely free of inclusions (five percent) to bodies where inclusions and ground matrix appeared co-dominant at 50 percent (Table B-36), is a worry. Variability overlap between the Sukothai and Sawankhalok "mature export period" wares is negligible, but SSPHAP's Sukothai class possibly includes bits from the Sawankhalok "fish and flower" wares or from the northern Thai kilns.

B.4 Analysis With SSPHAP's Fine Tradeware Classes

B.4.1 Seriating the fine tradeware classes

Most seriation exercises involving ceramics use the proportions of ceramics recovered in excavated units from related sites to place all the excavated units along a single chronological scale (e.g. Irwin, 1985). The validity of the exercise is predicated on the chronological discreteness of the excavated units, and hence may not be applicable to surface assemblages which tend to be chronologically jumbled. To be sure, it might still be possible to seriate SSPHAP's assemblages of surface tradewares, aligning them according to whichever aggregation of tradewares dominates. However, this would restrict the interpretation of the sites to their apparent main phase of tradeware-related use, and ignore any formal demonstration of earlier origins or later use. Hence I prefer to seriate the tradeware classes so as to interpret all the chronological information contained in the assemblages.

SSPHAP's sample of 42,980 tradeware pieces includes around 84% identified only in the field and 16% with confirmed, corrected or original identifications made under laboratory conditions (B.1). Taken together, the 84% field identifications and 16% laboratory identifications are the most precise identifications available, and will be used in my first batch of seriation exercises. The possible logical inconsistencies in using identifications made under different

TABLE B-35. COMPOSITION OF SSPHAP'S THAI CLASSES

	---- Sawankhalok Monochromes ----				---- Sukothai ----		
	Sawankhalok Black-and-white	Sawankhalok Celadons	Sawankhalok Subceladons	Sawankhalok White	Sukothai Black-and-white	Sukothai Plain	Total Thai
Plates	0	60	0	0	12	1	73
Bowls	4	15	5	0	10	0	34
Dishes	0	1	0	0	0	0	1
"Open"	0	2	0	0	0	0	2
Boxes	164	2	2	0	0	0	168
Jarlets	2	5	0	0	0	0	7
Vases	1	6	0	0	0	0	7
Kendis	1	0	0	0	0	0	1
Bottles	0	1	0	0	0	0	1
Jars	0	2	2	3	0	1	8
Total	173	94	9	3	22	2	302

TABLE B-36. CHARACTERS OF THE THAI CLASSES (PERCENTAGES)

	Exterior Glaze			Interior Glaze		
Colour	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai
5BG 7/1	0	1 (11.1%)	0	1 (6.7%)	1 (16.7%)	0
5G 5/2	0	1 (11.1%)	0	0	1 (16.7%)	0
5G 6/2	0	2 (22.2%)	0	0	1 (16.7%)	0
5G 6/1	2 (6.9%)	2 (22.2%)	0	0	1 (16.7%)	0
5G 7/1	7 (24.1%)	0	0	1 (6.7%)	0	0
5Gy 6/1	1 (3.4%)	3 (33.3%)	0	2 (13.3%)	2 (33.3%)	0
5Gy 7/1	12 (41.4%)	0	1 (5.3%)*	5 (33.3%)	0	0
< 5Gy 7/1	0	0	1 (5.3%)	0	0	0
5y 5/1	0	0	0	1 (6.7%)	0	0
5y 6/1	1 (3.4%)	0	0	0	0	0
5y 7/1	1 (3.4%)	0	0	0	0	0
< 5y 7/1	1 (3.4%)	0	0	0	0	0
5Y 8/2	0	0	1 (5.3%)	0	0	1 (5.6%)
7.5YR 8/2	0	0	1 (5.3%)	0	0	2 (11.1%)
10YR 8/2	0	0	1 (5.3%)	0	0	3 (16.7%)
5YR 8/3	0	0	2 (10.5%)	0	0	2 (11.1%)
10YR 8/3	0	0	1 (5.3%)	0	0	0
5YR 7/1	0	0	0	1 (6.7%)	0	0
10YR 7/1	0	0	0	1 (6.7%)	0	0
5Y 7/1	0	0	0	0	0	1 (5.6%)*
7.5YR 7/2	1 (3.4%)	0	1 (5.3%)	0	0	1 (5.6%)
10YR 7/2	0	0	1 (5.3%)	0	0	1 (5.6%)
2.5Y 7/2	1 (3.4%)	0	1 (5.3%)	1 (6.7%)	0	1 (5.6%)
5Y 7/2	0	0	2 (10.5%)	0	0	2 (11.1%)
5YR 7/3	0	0	1 (5.3%)	0	0	1 (5.6%)
10YR 7/3	0	0	2 (10.5%)	0	0	2 (11.1%)
5Y 6/1	2 (6.9%)	0	1 (5.3%)	1 (6.7%)	0	1 (5.6%)
5YR 6/3	0	0	1 (5.3%)	0	0	0
2.5Y 4/2	0	0	0	1 (6.7%)	0	0
5YR 2.5/1	0	0	1 (5.3%)#	0	0	0

TABLE B-36. CHARACTERS OF THE THAI CLASSES (CONT.)

	Exterior Glaze			Interior Glaze		
Thickness	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai	Sawankhalok Black-and-white	Sawankhalok Celadons	Sukothai
1	1 (3.3%)	0	1 (5.3%)	1 (6.7%)	0	2 (11.1%)*
2	11 (36.7%)	0	13 (68.4%)*	11 (73.3%)	0	8 (44.4%)
3	15 (50.0%)	8 (88.9%)	5 (26.3%)#	3 (20.0%)	6 (100.0%)	8 (44.4%)
4	2 (6.7%)	1 (11.1%)	0	0	0	0
5	1 (3.3%)	0	0	0	0	0
Number						
1	30 (100.0%)	8 (88.9%)	19 (100.0%)*#	15 (100.0%)	5 (83.3%)	18 (100%)*#
2	0	1 (11.1%)	0	0	1 (16.7%)	0
	(29-30)	(9)	(19)	(15)	(6)	(18)

	Exterior Body Colour			Hardness			
> N8/-	1 (3.2%)	0	0	6	3 (9.7%)	0	2 (10.5%)
N7/-	14 (45.2%)	4 (44.4%)	0	7	12 (38.7%)	3 (33.3%)	7 (36.8%)
< N6/-	1 (3.2%)	0	0	8	13 (41.9%)	6 (66.7%)	9 (47.4%)*#
N6/-	5 (16.2%)	2 (22.2%)	0	9	3 (9.7%)	0	1 (5.3%)
N5/-	0	0	2 (10.5%)*				
N4/-	0	0	1 (5.3%)		% of Body Inclusions		
5YR 7/1	7 (22.6%)	3 (33.3%)	0				
7.5YR 7/1	1 (3.2%)	0	0	3	1 (3.2%)	0	0
10YR 7/1	1 (3.2%)	0	0	5	11 (35.5%)	5 (55.6%)	1 (5.3%)
5YR 7/2	0	0	1 (5.3%)	10	16 (51.6%)	2 (22.2%)	2 (10.5%)*#
5YR 7/4	0	0	1 (5.3%)	15	1 (3.2%)	2 (22.2%)	1 (5.3%)
7.5YR 6/2	1 (3.2%)	0	1 (5.3%)	20	2 (6.5%)	0	2 (10.5%)
5YR 6/3	0	0	1 (5.3%)	25	0	0	3 (15.8%)
10YR 6/3	0	0	1 (5.3%)#	30	0	0	8 (42.1%)
2.5YR 6/4	0	0	1 (5.3%)	35	0	0	1 (5.3%)
5YR 6/4	0	0	1 (5.3%)	50	0	0	1 (5.3%)
5YR 5/1	0	0	2 (10.5%)				
10YR 5/1	0	0	1 (5.3%)			Slipping	
10R 5/2	0	0	1 (5.3%)				
2.5YR 5/2	0	0	1 (5.3%)	None	31 (100%)	9 (100%)	0
5YR 5/2	0	0	2 (10.5%)	X & I	0	0	19 (100%)*#
5YR 5/4	0	0	1 (5.3%)				
5YR 4/1	0	0	1 (5.3%)		(31)	(9)	(19)
	(31)	(9)	(19)				

N.B. * tags the traits of the plain Sukothai piece and # tags the traits of the Sukothai jar. The Sawankhalok celadons include a "subceladon", none of whose traits distinguish it from the celadons. All bodies observed were opaque stonewares. The following variegated bodies were observed: one Sawankhalok celadon had outer and inner walls coloured N7/- and N5/- respectively; two Sukothai black-and-white wares had cores, one with its core 10YR 4/2 and its walls 10YR 5/1, and the other with its core 5YR 6/3 and its walls 5YR 7/4; the Sukothai jar had an outer wall coloured 10YR 6/3 and an inner wall coloured 10YR 6/1. The three studied bases of Sawankhalok black-and-white were unglazed. Two Sukothai black-and-white pieces had unglazed base and foot, while the glaze on a lower cavetto also stopped short of the foot; the Sukothai plain piece had glaze to its outer foot but unglazed base and inner foot; the glaze on the Sukothai jar stopped above the foot.

conditions, and the erection of broader, methodologically more robust classes, will be considered later (B.5.1). Seriation of the fine classes should be enacted first because the results will, among other effects, provide a guide on how classes should be pooled.

During fieldwork it was quite apparent that tradewares we believed to be of the same general antiquity tended to occur in the same surface assemblages. From the Law of Archaeological Association we would certainly expect pieces sharing the same stratified context to be of approximately the same age. By the same token those same relationships should be somewhat muffled in surface assemblages, owing to the noise introduced by the lack of stratigraphic control, for example the disturbance which must have occurred to bring buried artefacts to the surface. On top of that, further noise can be expected from factors which are independent of the lack of a statified context. Some classes are rare and so may show oddities in their associations; some classes were produced over several centuries; and the average time between production of the piece and its deposition in an archaeological context undoubtedly varied between the classes. In addition, socio-economic status of the original owners rather than simple chronological contemporaneity may be the main determinant behind some particular associations. Great care is obviously required to handle these sorts of obstacles effectively.

Now considering SSPHAP's available database (Appendix D), we see that the vast majority of SSPHAP's surveyed zones had low tradeware counts consisting of a depauperate selection of the 31 classes. To demonstrate patterns of mutual association we must accommodate technical difficulties such as the huge number of surveyed zones, the great range in the number of tradewares recorded per zone, and the dominance of "zero" as the recorded count. We could pool the zones into sites, but this would grant merely insubstantial relief, whilst ignoring the possibility that some sites (e.g. Benteng Tua) incorporate a mosaic of spatially and temporally discrete phases of use. Hence I follow another approach altogether, based on the point that all zones can be characterised either

as having or as lacking a particular tradeware class. If we take all the zones which have a particular tradeware class, and sum up the tradewares present in those zones, we have a precise calculation of the frequencies of the other tradewares associated with the tradeware class under consideration.

Table B-37 presents the results, to be read in the following way. The zones under consideration run along the rows, identified by the tradeware class whose acronym heads the row (i.e is shown in the first column). The tradewares present in those zones are shown in the other columns, as identified by the acronym which heads the column. The total tradewares present in those zones are shown in the last column. The total count of any particular tradeware class is, of course, the quantity found in those zones which include the tradeware class, as identified along the top-left to bottom-right diagonal. They are recited along the bottom row which also shows the total 42,980 pieces identified. For instance, in zones with early whitewares (top row) we find 120 early whiteware pieces, 181 early monochrome pieces, 28 Vietnamese monochrome pieces, and so on, with 5431 tradeware pieces in all.[34]

From inspecting the figures it is clear that the proportions of associated tradewares vary markedly with the tradeware class considered. To standardise this variation I use the "differences of proportions" statistic (Startup and Whittaker, 1982:110-112) to convert each and every cell in Table B-37 into a z-value. The positive z-values show that the tradeware class indicated by the column heading occurred at a greater than expected frequency in the zones having the tradeware class indicated by the row heading, and negative z-values show the reverse. Moreover the amplitude of the z-value shows the probability that the over-occurrence or under-occurrence was not due to chance. Hence it is possible to rank the z-values in the columns from "1" (the highest

[34] The frequencies given here differ slightly from those published previously (Bulbeck, 1989:87) where the early overglaze-decorated pieces were pooled with Ming Swatow, and where the Ming BW "hexagonal" wares had been left with the other Ming BW pieces.

TABLE B-37. FREQUENCIES OF TRADEWARES IN SSPHAP'S ZONES HAVING THE TRADEWARE SHOWN IN THE FIRST COLUMN

	EW	EM	VM	VH	EBW	EFV	JZ	SAN	VBW	MC	MW	SWH	SWM	SUK	YMC	SWR	MS	MBW	HEX	MFV	WLB	BL	LBW	WLW	SWT	QS	QBW	QC	ER	JPN	QPR	Sum
EW	120	181	28	3	7	6	3	6	58	13	8	32	21	7	21	229	487	228	10	7	117	3	100	4	679	477	1226	15	354	34	947	5431
EM	90	289	33	3	12	6	5	11	87	41	15	65	49	16	30	432	923	471	19	11	153	6	158	10	1380	879	2470	31	587	53	1652	9987
VM	40	110	63	3	9	5	1	5	54	17	9	29	18	11	12	204	497	210	12	7	109	3	87	4	559	450	1193	21	285	40	926	5093
VH	5	7	4	8	4	0	0	1	3	1	1	4	2	1	0	13	28	9	0	0	1	0	5	0	70	61	205	4	86	5	159	687
EBW	19	61	9	2	25	1	0	2	17	10	3	14	6	3	1	44	141	58	4	0	35	1	45	1	172	138	353	0	89	8	168	1430
EFV	21	31	10	0	1	17	1	2	23	2	9	12	2	1	6	133	316	159	4	5	106	3	50	4	284	229	542	7	232	20	296	2528
JZ	8	51	2	0	0	1	7	5	33	1	4	12	13	0	13	111	306	178	4	5	88	1	36	0	356	148	325	3	35	4	159	1909
SAN	8	52	5	1	2	1	3	16	40	8	6	33	18	2	5	121	373	192	5	5	93	1	57	2	377	164	481	5	53	4	238	2371
VBW	35	146	20	1	8	3	4	10	150	39	12	85	49	12	33	254	698	398	16	10	203	7	219	16	1020	656	1869	42	605	98	1362	8080
MC	14	76	12	1	4	2	1	5	54	90	9	47	38	11	27	203	479	252	7	7	39	2	117	12	904	700	1682	25	545	50	1149	6564
MW	8	29	9	2	3	4	1	3	30	14	30	31	11	2	9	136	347	189	3	5	112	2	74	6	349	239	665	7	348	20	476	3164
SWH	24	119	21	3	10	5	4	11	95	42	12	188	51	15	31	361	929	547	24	14	166	5	215	19	1348	912	2536	44	758	113	1846	10468
SWM	20	117	19	1	4	1	5	11	82	27	9	73	110	12	22	235	599	337	26	9	106	2	115	9	929	572	1505	26	490	38	1134	6645
SUK	8	30	12	1	2	1	0	2	22	13	5	29	15	24	7	69	136	61	3	3	26	1	53	7	229	104	310	7	83	3	150	1416
YMC	17	91	14	0	1	4	3	5	63	24	9	28	21	7	53	204	524	224	9	7	115	3	105	7	715	370	877	13	225	15	473	4226
SWR	83	237	39	5	16	10	7	14	111	57	16	110	65	17	38	755	1207	628	30	18	228	8	283	25	1983	1530	4390	99	1519	199	3750	17477
MS	47	192	39	6	16	7	7	15	122	72	19	125	82	16	41	590	1654	752	37	23	253	10	325	26	2432	2120	5485	131	2494	316	5697	23151
MBW	45	174	33	5	19	5	6	13	117	58	17	121	78	17	38	488	1253	921	41	19	254	9	326	30	2051	1612	4100	114	1830	171	4071	19135
HEX	10	46	11	0	3	3	1	3	28	12	4	27	22	7	6	59	185	70	75	8	11	1	41	6	410	337	741	20	467	46	771	3431
MFV	5	26	3	0	0	1	1	2	35	5	4	18	6	6	2	98	329	216	5	28	121	3	66	4	342	151	392	14	200	14	237	2334
WLB	24	77	10	1	11	4	2	7	58	19	15	68	23	5	13	233	624	390	11	15	299	7	220	18	826	483	1658	42	716	92	1337	7308
BL	17	52	6	0	2	3	1	2	30	2	7	14	4	1	5	127	319	197	1	7	148	13	111	9	343	131	403	15	116	8	393	2487
LBW	39	154	24	4	13	5	3	11	96	46	18	90	51	12	38	348	879	467	18	15	229	8	420	24	1444	1113	3558	94	1529	171	3115	13836
WLW	7	37	7	0	1	3	0	1	25	21	6	29	14	10	10	85	190	82	6	7	55	4	131	36	314	164	502	18	113	12	484	2374
SWT	60	201	44	5	15	12	7	16	129	79	23	159	87	20	48	659	1528	805	65	26	281	10	374	32	3250	2733	7791	241	4372	494	9529	33095
QS	45	181	41	6	16	9	7	14	123	72	23	113	69	18	48	601	1460	728	49	24	259	11	350	21	2703	3365	8099	241	4678	498	10287	34159
QBW	76	234	54	6	21	13	6	15	133	86	27	161	102	21	49	682	1539	813	62	27	274	12	400	33	3063	3240	9397	309	5899	627	13127	40508
QC	11	41	16	1	0	3	1	3	35	13	10	32	15	4	9	159	460	250	10	12	123	5	110	7	755	851	2448	324	2712	285	4569	13274
ER	56	177	45	6	13	9	6	10	109	47	21	98	66	14	39	494	1192	540	48	20	222	9	289	20	2339	2759	8039	306	6168	650	12679	36490
JPN	32	84	24	4	8	5	2	3	26	19	7	44	26	4	18	180	406	151	22	10	38	4	111	9	959	1477	4407	205	3559	689	7285	19818
QPR	86	222	50	7	14	11	6	14	123	67	25	130	76	19	48	628	1461	752	58	25	268	12	357	32	2832	3020	8641	297	5827	635	14396	40139
All	120	289	63	8	25	17	7	16	150	90	30	188	110	24	53	755	1654	921	75	28	299	13	420	36	3250	3365	9397	324	6168	689	14396	42980

EW = Early Whitewares; EM = Early Monochromes; VM = Vietnamese Monochromes; VH = Vietnamese Black-and-white; EBW = Early Blue-and-white; EFV = Early Overglaze-decorated; JZ = Jizhou; SAN = Sancai; VBW = Vietnamese Blue-and-white; MC = Ming Celadons; MW = Ming Whitewares; SWH = Sawankhalok Black-and-white; SWM = Sawankhalok Monochromes; SUK = Sukothai; YMC = Yuan-like Ming Celadons; SWR = Coarse Stonewares; MS = Ming Swatow; MBW = Ming Blue-and-white; HEX = Ming Blue-and-white "Hexagonal" Wares; MFV = Ming Red; WLB = Wanli Blue-and-white; BL = Bluewares; LBW = Late Ming Blue-and-white; WLW = Wanli Whitewares; SWT = Swatow; QS = Qing Swatow; QBW = Qing Blue-and-white; QC = Qing Monochromes; ER = European; JPN = Japanese; QPR = Qing White/Recent.

TABLE B-38. SPEARMAN'S RANK CORRELATION COEFFICIENTS (R_s) BETWEEN THE 31 TRADEWARE CLASSES

	EW	EM	VM	VH	EBW	EFV	JZ	SAN	VBW	MC	MW	SWH	SWM	SUK	YMC	SWR	MS	MBW	HEX	MFV	WLB	BL	LBW	WLW	SWT	QS	QBW	QC	ER	JPN	QPR
EW	0.83	0.85	0.48	0.69	0.76	0.35	0.45	0.53	0.26	0.64	0.30	0.35	0.46	0.35	0.62	0.44	0.37	0.37	0.24	0.50	0.46	0.35	0.24	0.26	0.07	0.00	-0.42	-0.46	-0.39	-0.19
EM		0.76	0.44	0.66	0.59	0.57	0.75	0.80	0.54	0.63	0.57	0.66	0.65	0.65	0.72	0.63	0.70	0.42	0.31	0.52	0.43	0.62	0.35	0.57	0.13	0.16	-0.65	-0.77	-0.64	-0.48
VM			0.56	0.71	0.72	0.28	0.43	0.49	0.50	0.53	0.43	0.57	0.69	0.41	0.55	0.43	0.33	0.48	0.17	0.27	0.36	0.42	0.33	0.31	0.26	0.16	-0.51	-0.48	-0.44	-0.27
VH				0.76	0.23	0.12	0.37	0.23	0.30	0.19	0.35	0.33	0.34	0.21	0.26	0.25	0.22	0.12	-0.14	0.14	0.07	0.26	0.12	0.15	0.23	0.33	-0.49	-0.35	-0.30	-0.22
EBW					0.47	0.22	0.53	0.42	0.46	0.41	0.54	0.52	0.53	0.30	0.45	0.44	0.32	0.49	0.20	0.32	0.39	0.42	0.43	0.35	0.29	0.42	-0.45	-0.51	-0.31	-0.39
EFV						0.24	0.21	0.41	0.30	0.79	0.31	0.23	0.44	0.37	0.63	0.43	0.36	0.40	0.48	0.57	0.59	0.43	0.43	0.22	0.02	-0.13	-0.37	-0.33	-0.36	-0.15
JZ							0.81	0.77	0.25	0.28	0.41	0.53	0.25	0.62	0.79	0.81	0.78	0.36	0.48	0.55	0.30	0.36	0.17	0.78	0.33	0.08	-0.65	-0.78	-0.66	-0.72
SAN								0.85	0.51	0.34	0.68	0.80	0.49	0.70	0.71	0.77	0.71	0.53	0.55	0.46	0.26	0.47	0.35	0.82	0.38	0.33	-0.72	-0.89	-0.67	-0.78
VBW									0.51	0.55	0.66	0.74	0.63	0.75	0.78	0.81	0.82	0.53	0.66	0.70	0.50	0.61	0.43	0.72	0.16	0.04	-0.60	-0.82	-0.70	-0.63
MC										0.38	0.76	0.79	0.79	0.62	0.40	0.49	0.37	0.49	0.27	0.14	0.41	0.72	0.71	0.66	0.49	0.34	-0.51	-0.66	-0.49	-0.60
MW											0.50	0.35	0.38	0.46	0.59	0.52	0.46	0.32	0.52	0.75	0.70	0.53	0.57	0.29	-0.15	-0.20	-0.35	-0.35	-0.41	-0.21
SWH												0.85	0.70	0.58	0.43	0.53	0.54	0.65	0.53	0.39	0.44	0.68	0.78	0.65	0.19	0.28	-0.45	-0.37	-0.40	-0.55
SWM													0.75	0.73	0.51	0.60	0.59	0.60	0.42	0.22	0.27	0.58	0.63	0.75	0.43	0.35	-0.58	-0.68	-0.58	-0.60
SUK														0.56	0.43	0.48	0.42	0.67	0.39	0.18	0.42	0.61	0.59	0.54	0.34	0.27	-0.41	-0.59	-0.48	-0.43
YMC															0.69	0.67	0.60	0.32	0.36	0.43	0.42	0.62	0.51	0.78	0.44	0.29	-0.66	-0.79	-0.70	-0.71
SWR																0.89	0.80	0.35	0.54	0.70	0.54	0.53	0.41	0.71	0.31	0.12	-0.76	-0.84	-0.77	-0.69
MS																	0.89	0.45	0.64	0.71	0.61	0.61	0.47	0.81	0.37	0.21	-0.65	-0.66	-0.65	-0.73
MBW																		0.38	0.62	0.72	0.55	0.68	0.43	0.73	0.24	0.03	-0.57	-0.78	-0.66	-0.33
HEX																			0.53	0.31	0.32	0.33	0.49	0.54	0.28	0.19	-0.25	-0.48	-0.26	-0.43
MFV																				0.73	0.66	0.53	0.65	0.50	0.20	-0.17	-0.18	-0.47	-0.33	-0.36
WLB																					0.78	0.52	0.46	0.42	-0.12	-0.17	-0.33	-0.48	-0.40	-0.44
BL																						0.71	0.69	0.39	-0.05	-0.07	-0.19	-0.50	-0.30	-0.40
LBW																							0.79	0.60	0.20	0.17	-0.35	-0.67	-0.51	-0.53
WLW																								0.57	0.13	0.24	-0.21	-0.33	-0.32	-0.46
SWT																									0.52	0.43	-0.64	-0.88	-0.68	-0.89
QS																										0.77	-0.53	-0.46	-0.45	-0.51
QBW																											-0.22	-0.29	-0.07	-0.51
QC																												0.76	0.69	0.67
ER																													0.79	0.83
JPN																														0.63

EW = Early Whitewares; EM = Early Monochromes; VM = Vietnamese Monochromes; VH = Vietnamese Black-and-white; EBW = Early Blue-and-white; EFV = Early Overglaze-decorated; JZ = Jizhou; SAN = Sancai; VBW = Vietnamese Blue-and-white; MC = Ming Celadons; MW = Ming Whitewares; SWH = Sawankhalok Black-and-white; SWM = Sawankhalok Monochromes; SUK = Sukothai; YMC = Yuan-like Ming Celadons; SWR = Coarse Stonewares; MS = Ming Swatow; MBW = Ming Blue-and-white; HEX = Ming Blue-and-white "Hexagonal" Wares; MFV = Ming Red; WLB = Wanli Blue-and-white; BL = Bluewares; LBW = Late Ming Blue-and-white; WLW = Wanli Whitewares; SWT = Swatow; QS = Qing Swatow; QBW = Qing Blue-and-white; QC = Qing Monochromes; ER = European; JPN = Japanese; QPR = Qing White/Recent.

N.B. The two values of 0.89 to two decimal places are distinct at the third decimal place, showing that Coarse Stonewares and Ming Swatow are the closest classes.

probability that the column tradeware class occurred at above-expected frequencies in the zones with the row tradeware class)[35] to "31" (the highest probability that the column tradeware class occurred at below-expected frequencies in the zones with the row tradeware class). The data are then in a suitable form to apply the Spearman's r_s rank correlation coefficient and construct a half-matrix of the degree of similarity between each pair of tradeware classes, whereby a value approaching +1 shows that the tradeware classes share the same pattern of co-associations, and a value approaching -1 shows that the tradeware classes have opposite patterns of co-associations (Table B-39).[36]

The usual seriation procedure at this stage would simply use the measures in Table B-39, but it would be flawed on two counts. Firstly, leaving aside the coefficients in the last six columns, we can see that certain classes show generally high coefficients, in sharp contrast with other classes whose coefficients are low almost throughout. The classes with high coefficients (e.g. MS, MBW, SWR, EM) tend to be the more common ones, while the classes with low coefficients (e.g. VH, BL, JZ, MFV) tend to be the rare ones (Table B-38). This "normatising effect", which promotes the similarities of the common classes at the expense of the rarer ones, constitutes noise which muffles chronological similarities involving rarer classes.[37]

[35] This of course usually occurred in cases involving the same tradeware class in both the column and the row heading. However, during the pooling process the most numerous of the "Ming" classes sometimes found their highest above-expected occurrence in zones defined on the basis of the presence of some other tradeware class, notably the early monochromes, than in zones defined on the basis of their own presence.
[36] For an example of the table of z-values leading to the Spearman's r_s distances, see my already published seriation based on 29 tradeware classes. The calculations discussed here were carried out using a Borland "Reflex" PC package.
[37] One of the reasons for my rather complex method of calculating measures of similarity is that it keeps the "normatising effect" in check to some degree. I have experimented with the computationally simpler Robinson coefficient, whose normatising properties are described by Irwin (1985:120) as a good quality, and found that the tendency of common classes to be similar with each other reaches tyrannical proportions.

Secondly, consider the main disturbances in the Bugis-Makassar countryside (antique looting; ploughing and tilling; sundry holes for wells, rubbish pits, building foundations and plants) which have brought buried artefacts to the surface. The passage of older, more deeply buried artefacts to the surface would have usually been accompanied by the passage of younger, stratigraphically higher artefacts, but the reverse obviously does not hold. Hence, as I show elsewhere from consideration of the z-values (Bulbeck, 1989:88,92), zones defined by the presence of some older tradeware class tend to have disproportionately large frequencies of later tradeware classes. As a result, older classes sometimes show spurious patterns of co-association with younger classes. However, the point specifically fails to apply to the "recent" classes, i.e. the Qing monochrome, Japanese, European and Qing white classes. In these cases it would seem that the majority had not been deposited long enough ago to have been buried over, except in disturbed areas where the disturbance would indeed act as a burying agent. Consequently "recent" pieces either dominate the surface assemblages in comparatively undisturbed zones or occur in specifically lower than expected frequencies in disturbed zones. Hence these classes show their strongest negative coefficients against the more common pre-Qing classes (e.g. MS, MBW, SWR, EM) rather than against those which are necessarily the oldest (Table B-38); partly as the statistical mirror image of the "normatising effect", partly because surface assemblages in disturbed zones will include the more common pre-Qing classes more often than the rarer classes.

Two procedures are mandatory to overcome these problems. Firstly, we have to pool tradeware classes to counteract the "normatising effect", and to abolish what we can of the spurious patterns of co-association between older and younger classes. Secondly, we have to seriate via immediate relationships rather than in terms of the total half-matrix of coefficients given in Table B-38. These procedures are reiterative clustering and down-the-line seriation.

As regards reiterative clustering, I hold that when any two "Operational Taxonomic Units" (OTUs) are joined in a hierarchical cluster, logically they become one pooled OTU. Not only might the general relationships of the new OTU differ significantly from the relationships shown by the original two OTUs, but also the the relationships among other OTUs might be affected. For instance, as shown in Table B-38, the first cluster involved Ming Swatow and coarse stonewares at 0.89. Hence I pooled them into a "Ming Swatow/coarse stoneware" class and recalculated Table B-38 on the basis of 30 classes. After that the highest coefficient, 0.89 again, occurred between "Ming Swatow/coarse stonewares" and Ming BW - an outcome which is not predictable from the original coefficients. After pooling them into a "Ming Swatow/coarse stoneware/Ming BW" class and recalculating the r_s coefficients based on 29 classes, early whitewares and Vietnamese monochromes joined at 0.86 - a slight improvement on their original 0.85 coefficient (Table B-38). And so on, in the order shown in Figure B-2. As also shown in Figure B-2, OTUs continued to cluster with coefficients greater than 0.8 right to the penultimate joins, involving classes which sometimes did not appear particularly similar in Table B-38. Analogously, the effects of pooling classes are generally most marked on the relationships involving rarer classes, thereby ameliorating the "normatising effect". Moreover, the procedure provides the statistical basis for choosing which classes to pool.

Down-the-line seriation utilises the sequence of half-matrices of r_s coefficients which had been steadily reduced to pool the classes, but in the reverse order. At the point when any two OTUs are pooled, they belong to a half-matrix which otherwise includes the OTUs depicted as stems at that level. For instance, when Qing Swatow (QS) joined the main cluster (labelled "B" for convenience) at r_S=0.9, there were six OTUs in a 5 by 5 half-matrix. Consideration of the other r_S values allows all the OTUs to be placed next to (and, where relevant, between) their most similar OTUs, producing the seriation "B":Qing Swatow:Qing BW:Japanese/Qing Monochrome:"A" (Figure B-2). With Qing

Swatow set next to the "B" cluster, the next split within "B" is seriated with respect to Qing Swatow; as further splits within "B" occur, so the seriations occur with respect to subsidiary stems within "B". The end result is the seriated order shown at the bottom of Figure B-2.

The advantages of seriated dendrograms over their unseriated counterparts are quite obvious, as also shown in my analysis of South Sulawesi lexicostatistical relationships (Appendix A). For instance, without seriation we might decide that Qing Swatow and Qing BW belonged to different clusters and hence were unrelated, whereas seriation proves their adjacency. However, a difficulty with down-the-line seriation is it tends to seriate with respect to marginal and hence rather anomalous OTUs (e.g. MFV and SUK in Figure B-2). To be sure, the anomaly becomes apparent because, at the point of splitting, both subsidiary OTUs would prefer to sit next to the same flanking OTU. With the lexicostatistics it was possible to resolve the tension by choosing the order which involved the least immediate stress, and the resulting seriation performed at almost maximum "goodness of fit" at the global level (A.5). But this option is not available with the tradewares because the r_S coefficients are not Euclidean measures. Instead what we can do, when the flanking OTUs would produce different seriated orders, is to consider the next OTUs immediately beyond and see if they would prefer one seriated order over the other. Every seriation step (bar two; see below) in Figure B-2 could be resolved by working outwards until the majority of the neighbouring OTUs determined the order: the two flanking OTUs when they agreed on the order; otherwise two out of three, or three out of four of the neighbouring OTUs, when the two flanking OTUs came into conflict.

B.4.2 Other seriations involving the fine classes

The seriated order shown in Figure B-2 conforms quite well with the chronological order that would be expected from my understanding of the classes (B.3). The main cluster of pre-Qing classes divides roughly into "Early" and "Ming" clusters, while Qing Swatow and Qing BW sit between the

"Ming" and "Recent" clusters. However, there are some anomalies. Early overglaze-decorated (EFV) and Ming whitewares (MW) should not be the oldest classes; the four classes between Ming BW hexagonal (HEX) and Wanli BW wares (WLB) should be middle to late rather than early Ming; while the seven classes between early monochromes (EM) and Ming celadons (MC) should be pre-Ming to early Ming rather than late Ming.

These anomalies did not characterise my original published seriation (Figure B-1, slightly adapted from Bulbeck [1989:Figure 24]). To read the seriating decisions, note that I there used the distances which create the r_s coefficients rather than the r_s coefficients themselves; either may be used, but with the former we of course seriate by the smallest distances (rather than by the highest coefficients). Note also that there were two cases, indicated by asterisks, when it was not possible to secure a majority seriation from the four flanking OTUs, and hence I have seriated by the smallest of the compared distances.[38] The crucial point is that Figure B-1 seriated only 29 classes, because "early overglaze-decorated" pieces (EFV) had been pooled with Ming Swatow, and Ming BW hexagonal pieces (HEX) had been left in the Ming BW class. The seriated order conforms marvellously well with the expected chronological order of the tradeware classes, and the few unexpected results resolved uncertainties I personally had. Vietnamese monochromes (VM) and Vietnamese BW (VB), for instance, appeared earlier than Demmanari and I had allowed, which supported the earlier datings of these classes to be found in the literature (e.g. Brown, 1988) rather than the later datings (e.g. Fraschė, 1976). Jizhou wares, supposedly a Yuan class (Medley, 1977), instead appeared early Ming, which agreed with their absence from SSPHAP's few clearly pre-Ming assemblages. And the "Yuan-Ming" celadons Demmanari and I dated to the 14th or the 14th-15th centuries appeared clearly Ming.

Rather than immediately reject the EFV and HEX classes, I redid the larger analysis without, however, including the

[38] As a further stylistic difference, I tried to give characterising labels to the pooled classes rather than the arbitrary capital letters used in Figure B-2.

coarse stonewares. Coarse stonewares are not a good chronological marker of any sort, since their dates would span the 2nd millennium AD, and the alacrity with which they joined Ming Swatow and Ming BW in Figure B-2 would appear to reflect the "normatising effect". And indeed the resulting seriation (Figure B-3) does remove some of the anomalies present in Figure B-2. Early monochromes find their place with the other pre-Ming classes; what I take to be specifically late Ming classes (WLB, BL, MBL and WLW) bunch together, even if in a middle rather than a late Ming position; and Ming red (MFV) takes up a chronologically more acceptably position. On the other hand, the classes between Yuan-like Ming celadons (YMC) and Ming whitewares (MW) appear too late, while Sukothai (SUK) and especially the hexagonal BW wares (HEX) appear too early.

The HEX class worried me because, even though it occurred fairly commonly, it was specifically absent from the Makassar palace assemblages (B.3.9). Puzzling over my results I also noticed that HEX and MFV pieces occurred together in only one zone (T.27.1). Because there were three MFV pieces (a rare class) to the one HEX piece (a more common class), the HEX row ranked high in the MFV column but not vice versa, and consequently HEX and MFV could not cluster. Moreover, because the HEX row generally ranked low in the columns involving "Ming" classes, MFV could not cluster anywhere until after HEX, obviously an anomalous class, had clustered (Figures B-2 and B-3). Having worked out that one lonely statistical quirk was disrupting the general clustering procedure, I redid the larger analysis with HEX pooled with the other Ming BW pieces (MBW).

The resulting analysis (Figure B-4) incurred one case, indicated by a double asterisk, where I had to use the smallest coefficient (0.54, between the "K" and "I" stems) to seriate the cluster split, because there was no single largest distance (the coefficient of 0.84 occurred on both sides of the fence). By using the lowest coefficient as the "ultimate seriating clause", a seriation decision can be made in virtually all conceivable circumstances, except when a

symmetrical half-matrix prevents seriation until the next step in the splitting process (as in Figure B-2).

The Figure B-4 seriation correctly joins MFV and MBW at an early stage, but is generally rather disappointing. The specifically late Ming classes (BL, WLB, LMB and WLW) fall far apart; what I take to be early Ming classes (SAN, VBW, SWM, YMC, MC, SUK and SWH) are spread far and wide; "early blue-and-white" and Vietnamese black-and-white (EBW and VHP) appear far too late; Swatow (SWT) appears too early. These disruptions from more the sensible pattern shown in Figure B-1 can be attributed to my recognition of the EFV class.

Nonetheless, all four seriations show the same primary structural organisation into "early", "Ming" "Qing" and "recent" groups. They also agree on details such as the early dating of Vietnamese monochromes and early whitewares, and the status of QPR as the most recent class. Maybe it is not surprising that the least consistency involves the 22 classes which crowd the interval between the c.14th and 17th centuries, given that the seriation is based on surface assemblages, that the recognition of some of the classes is biased by the conditions under which identifications were made (B.5.1), plus the other difficulties mentioned above. I will follow Figure B-1 as the best seriation even if I must then admit a certain element of luck in its "rectitude". I will also accept the combined results of Figures B-2 to B-4 showing my EFV class as early, even if these seriations were unsatisfactory in other respects.

B.4.3 Dating the classes

The present thesis adopts a general chronological scheme rounded off to 50 year intervals, primarily to simplify my standardised interpretations of the tradeware frequencies (B.4.4).[39] Hence I do not accept the Chinese reigns and dynasties as a chronological straitjacket binding on the Chinese tradewares, but only as a useful notation by which to refer to particular periods. All datings posited for the

[39] Including the present century which, although it had lasted only until the survey, is treated as though 1986 were the year 2000.

tradeware classes and categories are best estimates of the main distribution of the total chronological range, just as the classes themselves were recognised on the basis of trying to wrap up the total ceramic variability into cohesive packages.

Early whitewares and early monochromes. Some of these are clearly Song, especially the *Qingbai* bowls with thickened rims (cf. Lam, 1985). Some proportion of the early monochromes has almost certainly been deposited in Ming contexts (cf. Figure B-2), even though the export of Chinese celadons appears to have been largely phased out by the early 15th century (Guy, 1986:34). Rather than indulge in speculative splitting I consign both classes to a "Yuan" time slot, i.e. 13th-14th centuries, particularly because these centuries mark the origins of Makassar protohistory.

Vietnamese monochromes. Backdated by one century from whatever date Demmanari and I gave them (Table B-32), except for the few pieces we dated between the 12th and 14th centuries which are here all consigned to the 13th-14th centuries.

Vietnamese black-and-white. Guy (1986:45-46,110-111) suggests the 14th to early 15th centuries. Here I simplify the estimate to the 14th century.[40]

Early blue-and-white. The seriations indicate that Demmanari and I had identified an early group of Chinese BW wares. The evidence now suggests that Chinese potters adopted the technology by the early 14th century, initially for the Middle East market, and by around 1350 were exporting substantial quantities of BW porcelain to at least some Indo-Malaysian "countries" (Guy, 1986:25-28). Presumably South Sulawesi was caught in the "trickle-down" effect. AD 1350-1450 if we identified a piece as "Yuan"; 1400-1450 if we identified it as "early 15th century" or "Yunglo"; 1350-1450 for the other pieces (see Table B-7).

Early overglaze-decorated. 13th-14th or 14th-15th centuries, as originally identified (Table B-8).

[40] Elsewhere Guy (1988:233) suggests 'no later than the mid-sixteenth century' for four Vietnamese iron-decorated pieces excavated from Agop Atas, Sarawak, which Bellwood (1988b:231) interprets as no earlier than the 16th century.

Vietnamese blue-and-white. Figure B-2 strongly suggests a predominantly 15th century date, but the other seriations suggest that the major phase of the production of these wares for export lasted well into the 16th century (cf. Brown, 1988). For two reasons I will use a 15th century date. Firstly, the class was remarkably well represented at West Soppeng's original palace site of Tinco Tua (Kallupa et al., 1989) but very scarce at the Makassar palace sites. Secondly, the 16th century is well served by other classes, to be explained in due course.

Jizhou and Sancai. The Jizhou class consistently took up an early Ming, say 15th century, position in the seriations. The comments and dating outlined above for Vietnamese BW also apply to Sancai (cf. Guy, 1986).

Coarse stonewares. SSPHAP's identifications are not generally reliable, and even if they had been reliable the datings would have still been problematical (B.3.5). Attempting to date these pieces would only prejudice, distort or reify the dates derived from the other classes.

Sawankhalok and Sukothai. Figure B-1 strongly accords with the 15th-16th century date currently favoured by experts. These classes also enjoyed a more marked presence at Tinco Tua than at the Makassar palace sites. I do not believe the more recent dating for Sawankhalok suggested by Figures B-2 to B-4.

Ming whitewares and Ming celadons. Although Figure B-1 is our most reliable guide on these classes, it is interesting that Ming whitewares appeared "early Ming" or even "early" in the other seriations. There is no need to reject the dates assigned to these pieces, including the 14th-15th century date posited for some of the whitewares (Table B-13 and B-16). A default 15th-16th century date can be used when no finer estimate was ventured.

Yuan-like Ming celadons. The Ming credentials of this class appear unquestionable. Hence I bring the dates a century forward from whatever date Demmanari and I had preferred (cf. Table B-13). With this, I think the Chinese celadons as a whole are distributed fairly correctly through

time, with those dated too early or too late balancing each other out.

Ming Swatow. Approximately equivalent to Harrisson's (1979) "Simple" Swatow category, differing mainly by the inclusion of coarse examples of Harrisson's "Complex" Swatow category, and coarse pieces which Harrisson would presumably leave in undifferentiated Ming (B.3.11). So while Harrisson recommends a mid-16th century date for most "Simple" Swatow pieces, the dating of SSPHAP's "Ming Swatow" class can certainly be expanded to cover the whole 16th century. Some of the Ming Swatow pieces must be 15th century, but I cannot say which ones, and Ming Swatow pieces constitute inadequate grounds to infer use of a site before the 16th century.

Ming BW (including "hexagonal wares") and Ming Red. Remarks on chronology as with Ming Swatow, except that the monolithic 16th century date can be partly relieved by using the earlier dates sometimes suggested for the Ming BW pieces (see Table B-19).

Wanli. While Figure B-1 seriates the Wanli BW class according to prior expectations, the placement is unstable, and the class shifts to an "early Ming" position in the other seriations (cf. Bulbeck, 1989:94). The late Ming position of Wanli whitewares, at least, appears stable. Wanli's reign (1573-1619) is here interpreted as 1550-1650.

Bluewares. The dates we advanced for these pieces, ranging between the 16th and the 18th centuries (Table B-15), might as well be retained. The class is of no computational significance whatsoever.

Late Ming blue-and-white. The class consistently clusters with Wanli whitewares in a late Ming serial position.

Swatow. Approximately equivalent to Harrisson's (1979) "Complex" Swatow category, but also including finer wares decorated in the "Simple" style, and a reasonable proportion of monochrome pieces (B.3.11). Hence SSPHAP's Swatow class might appear at least no later than Harrisson's "Complex" Swatow category, which she dates to the reign of Wanli, except that it consistently seriates later than the classes SSPHAP associates with Wanli (Figures B-1 to B-3). Following Medley's dating of "Swatow" to cover the 16th and 17th

centuries, and noting that the 16th century is already well represented by SSPHAP's Ming Swatow class, we can date SSPHAP's Swatow class to the 17th century.

Qing Swatow. The seriations demonstrate the very early Qing affinities of the class. Given the tremendous popularity of Swatow-type wares leading into the Qing dynasty, it would indeed be most surprising if the tradition had not cast its shadow further forward in time. SSPHAP's Qing Swatow class probably also includes some late *Kraak porselein* wares (as conventionally understood). AD 1650-1750 is consistent with all these points.

Qing blue-and-white. The r_s coefficients (Table B-38) and seriations indicate very little chronological overlap between this class and the "recent" classes. This supports our finer classifications in which only around ten percent of Qing BW pieces were assigned to the 19th century (Table B-27). 19th century "Kitchen Ch'ing" wares were apparently a minor tradeware to South Sulawesi, compared to the earlier Qing BW categories, and (*pace* Kwan and Martin, 1985:79-80) a 19th century date for the class needs to be positively identified rather than assumed by default. Moreover, evidence for the continuity of the use of a site after the 18th century should be based on the presence of the "recent" classes rather than Qing BW pieces. Accordingly we can date Qing BW pieces (no closer identified) to 1650-1800; 1650-1750 if identified as Kangxi; 1700-1750 if identified as Yungzheng; 1750-1800 if identified as Qianlong; century datings if identified that way; and 1800-1900 for the few specimens identified as "Kitchen Ch'ing".

Qing monochromes. Demmanari and I posited a wide range of dates spanning the 17th to the 20th centuries, although with most dated to the 18th-19th centuries (Table B-14). Our estimates appear slightly too early and need to be generally brought forward. 1700-1800 if we identified a piece as 17th century; 1750-1800 if we identified it as Qianlong; 1700-1900 if we dated it to the 17th, 17th-18th or 18th centuries; 1800-1900 if we dated it to the 18th-19th or 19th centuries; 1900-1986 if we dated it to the 19th-20th or 20th centuries.

European. Kwan and Martin (1985:80) give good reasons for dating most of the European pieces found on Tioman island to the 19th and initial 20th centuries. Similarly, between the mid-19th and initial 20th centuries, the Netherlands Indies colonial government consistently expended more on its tradewares imported from Holland than from all other places combined (see the *Koloniale Verslagen*). As the 20th century is more than amply represented by the Qing white/recent class, we can restrict the European pieces to 1800-1900.

Japanese. Based on the same reasoning used to date the European pieces, I had previously dated the Japanese pieces found in South Sulawesi to the 19th century (Bulbeck, 1989:94). However, the Netherlands Indies' government survey of Chinese economic activity, undertaken in the early 20th century, singles out for comment the mass quantities of Japanese tradewares imported to Makassar (Ujung Pandang) by local Chinese traders (Vleming, 1926:274). Even if this reference also betokens whitewares, quite a few of the Japanese flowerwares we recorded were almost entire, suggesting very recent disposal. Hence I now apply a 19th-20th century date to the class.

Qing white/recent. All the seriations confirm a 20th century default dating for this class. However, I will retain earlier dates when these were posited (Table B-29), as these earlier dated pieces were collected mainly from sites which had been abandoned before the Dutch land-use maps were produced in the early 20th century.

Table B-39 shows how the 36,996 tradeware pieces identified during the Gowa survey are distributed by tradeware class and by 50- or 100-year interval. As often as not the number of tradewares in a class assigned to a particular interval include a fraction, reflecting the point that the recognised intervals cut across the dates posited for the tradewares. The cross-tabulated assignments are, after all, estimates of probability, no less than the posited datings are. To take one example, a single early whiteware piece is considered to have a probability of 0.5 that it dates to the interval 1200-1300, a probability of 0.25 that

TABLE B-39. FREQUENCIES OF THE 31 TRADEWARE CLASSES FROM THE GOWA SURVEY ASSIGNED BY 50 OR 100-YEAR PERIODS

	1200-1300	1300-1350	1350-1400	1400-1450	1450-1500	1500-1550	1550-1600	1600-1650	1650-1700	1700-1750	1750-1800	1800-1900	1900-1986	Total
EW	52	26	26	0	0	0	0	0	0	0	0	0	0	104
EM	96	48	48	0	0	0	0	0	0	0	0	0	0	192
VM	5	13.5	13.5	11.5	11.5	0	0	0	0	0	0	0	0	55
EFV	6.5	4.25	4.25	1	1	0	0	0	0	0	0	0	0	17
VH	0	3.5	3.5	0	0	0	0	0	0	0	0	0	0	7
EBW	0	0	5.5	15.5	0	0	0	0	0	0	0	0	0	21
MW	0	1.5	1.5	6	6	5	5	0	0	0	0	0	0	25
JZ	0	0	0	2	2	0	0	0	0	0	0	0	0	4
SAN	0	0	0	4.5	4.5	0	0	0	0	0	0	0	0	9
VBW	0	0	0	44	44	0	0	0	0	0	0	0	0	88
MC	0	0	0	12.5	12.5	9	9	0	0	0	0	0	0	43
YMC	0	0	0	6.75	6.75	4.25	4.25	0	0	0	0	0	0	22
SWH	0	0	0	36.5	36.5	36.5	36.5	0	0	0	0	0	0	146
SWM	0	0	0	16	16	16	16	0	0	0	0	0	0	64
SUK	0	0	0	3.75	3.75	3.75	3.75	0	0	0	0	0	0	15
MBW	0	0	0	2.25	15.75	391.25	386.75	0	0	0	0	0	0	796
HEX	0	0	0	0	0	32	32	0	0	0	0	0	0	64
MFV	0	0	0	0	0	12.5	12.5	0	0	0	0	0	0	25
MS	0	0	0	0	0	681	681	0	0	0	0	0	0	1362
BL	0	0	0	0	0	2	2	2.25	2.25	2.25	2.25	0	0	13
WLB	0	0	0	0	0	0	143.5	143.5	0	0	0	0	0	287
WLW	0	0	0	0	0	0	13	13	0	0	0	0	0	26
LBW	0	0	0	0	0	0	161.5	161.5	0	0	0	0	0	323
SWT	0	0	0	0	0	0	0	1305	1305	0	0	0	0	2610
QS	0	0	0	0	0	0	0	0	1484.5	1484.5	0	0	0	2969
QBW	0	0	0	0	0	0	0	0	2678.2	2888.95	2645.5	93.5	0	8306
QC	0	0	0	0	0	0	0	0	2	15.25	34.25	246.25	3	301
ER	0	0	0	0	0	0	0	0	0	0	0	5900	0	5900
JPN	0	0	0	0	0	0	0	0	0	0	0	332.5	332.5	665
QPR	0	0	0	0	0	0	0	22	25.5	14.5	14	19	12442	12537
Sum	159.5	96.75	102.25	162.25	160.25	1193.25	1506.75	1647.25	5497.45	4405.45	2695.95	6591.5	12777.5	36996

EW = Early Whitewares; EM = Early Monochromes; VM = Vietnam Monochromes; EFV = Early Overglaze; VH = Vietnamese Black-and-white; EBW = Early Blue-and-white; MW = Ming Whitewares; JZ = Jizhou; SAN = Sancai; VBW = Vietnamese Blue-and-white; MC = Ming Celadons; YMC = Yuan-like Ming Celadons; SWH = Sawankhalok Black-and-white; SWM = Sawankhalok Monochromes; SUK = Sukothai; MBW = Ming Blue-and-white; HEX = Ming Blue-and-white "Hexagonal" Wares; MFV = Ming Red; MS = Ming Swatow; BL = Bluewares; WLB = Wanli Blue-and-white; WLW = Wanli Whitewares; LBW = Late Ming Blue-and-white; SWT = Swatow; QS = Qing Swatow; QBW = Qing Blue-and-white; QC = Qing Monochromes; ER = European; JPN = Japanese; QPR = Qing White/Recent.

it dates to the interval 1300-1350, and the same probability as regards the interval 1350-1400.

B.4.4 Standardising the tradeware frequencies

Table B-39 shows very clearly that the various intervals are represented by wildly different numbers of pieces. Generally speaking the later the interval, the greater its representation, although the order is essentially reversed with the four intervals between 1650-1700 and 1800-1900.[41] The general pattern reflects some combination of (i) growing availability of tradeware over time; (ii) expanding population leading to a larger number of "target sites" (5.5.1) over time; (iii) systematic underrepresentation of the earlier classes still buried underground (B.4.1); and (iv) the datings I use for the classes, e.g. that the interval 1650-1700 happens to fall in the overlap between the three common classes Swatow, Qing Swatow and Qing BW.

Regardless of the precise factors responsible, use of the raw frequencies per interval is likely to lead to peculiar results. For instance, the almost ten-fold increase in the number of pieces assigned 16th century dates as opposed to 15th century dates would make detection of a predominantly 15th century site virtually impossible. In the report of the Soppeng sites (Kallupa et al., 1989) I used raw frequencies to construct "chronological histograms" of the sites, and only the most patently obvious inferences could be drawn, because the overall raw frequencies forced the histograms into a small number of basic shapes. Finer inferences, at the level which is conceivable given the fineness of the "Ming" datings, and certainly at the level which is desirable if the archaeology is to tell us anything about the history, were available only after standardising the histograms (Kallupa et al., 1989). Hence the present thesis uses only "standardised chronological histograms", also referred to as "tradeware profiles" for convenience.

[41] The period 1800-1900 has had more pieces assigned to it than to the three preceding intervals, but it represents 100 years whereas the three previous intervals only represent 50 years.

The standardisation procedure can be explained with a simple example, Pakkala Toa or "Takalar site 4" (11.7.4). 18 pieces were recorded but the two coarse stoneware pieces are excluded from the exercise. The other 16 pieces were identified as shown in the bottom row in Table B-40, and disributed across the various time intervals as shown in the columns. The number of pieces per time interval is summed up along the rows. These sums are then divided by the respective total frequencies shown in the bottom row of Table B-39, to standardise them, and expressed as a percentage (Table B-40; Figure 11-26).[42]

TABLE B-40. STANDARDISATION OF THE TRADEWARES AT PAKKALA TOA

	EW	MC	MBW	MS	SWT	QBW	ER	QPR	Sum	%
1200-1300	0.5								0.5	0.31
1300-1350	0.25								0.25	0.26
1350-1400	0.25								0.25	0.24
1400-1450		0.25							0.25	0.15
1450-1500		0.25							0.25	0.16
1500-1550		0.25	0.5	0.5					1.25	0.10
1550-1600		0.25	0.5	0.5					1.25	0.08
1600-1650					1				1	0.06
1650-1700					1	1.33			2.33	0.04
1700-1750						1.33			1.33	0.03
1750-1800						0.33			0.33	0.01
1800-1900							4		4	0.06
1900-1986								3	3	0.02
Total	1	1	1	1	2	3	4	3	16	0.04

N.B. Tradeware class acronyms as in previous tables. The Ming celadon piece was not dated specifically and so receives the default "15th-16th century" dating. The Ming BW piece was dated as 16th century. Two of the Qing BW pieces were identified as "Kangxi", i.e. 1650-1750, and the other merely as "Qing BW" (1650-1800). The Qing whiteware pieces receive the default dating 1900-1986.

B.4.5 Issues in interpreting the standardised histograms

The Pakkala Toa example brings out strengths and weaknesses in the technique, both generally speaking and particularly as

[42] Note that I standardise against all the tradewares recorded during the Gowa survey, even though the sites recorded during the south coastal survey, and along the Jeknekberang upstream from Bontona Songkolo, are not described in this thesis.

applied to a site with only a small tradeware sample. The single early whiteware piece can scarcely be used to prove two centuries of use of the site, but I have no particular grounds for preferring any point within the period 1200-1400. In the same vein 16 pieces can scarcely indicate 726 years of constant human presence, but it would be fair to say that the pieces have been dated to all ages, and there is no indication of any particular break. The raw frequencies generally increase from "early" (1) to "Ming" (5) to "Qing" (3) to "recent" (7), but the standardised frequencies generally decrease with less age. Assuming the identifications are correct, we can indeed say that the single early piece would appear to be more significant than the seven recent pieces, but we would be hard pressed to infer it is six times more significant than the European pieces and 15 times more significant than the Qing whiteware pieces.

Hence the apparent precision contained in the standardised chronological histograms does not imply that the site's history of tradeware-related use has been precisely captured. Rather it implies that if the identifications are correct and also representative of their dating (e.g. that the "early whiteware piece" correctly represents a larger population of pieces brought to the site throughout the 13th and 14th centuries), and if the Gowa survey's overall tradeware identifications and datings are also valid, then the standardised chronological histogram portrays the history of Pakkala Toa's share of tradeware-related activities by the standards of the other Gowa sites. As so few tradeware were recorded at Pakkala Toa, not a great deal of faith should be attached to the first assumptions, and the site interpretation is accordingly scaled back to a very general statement (11.7.4). However, we are obviously in a much better position to qualify our inferences on the site if we first understand what those inferences might be.

On the topic of inferences, the exercise of standardisation encompasses several conceptual difficulties which resist ready formulation. "Tradeware-related activities" in the Gowa survey area certainly include the

burial of tradewares as gravegoods and the use of tradewares in domestic contexts. The average period in circulation of the former may have differed from the average period in circulation of the latter, but the possible factors involved are imponderable. Given also that the various contexts cannot always be distinguished, Pakkala Toa being a case in point, I assume comparability whatever the context. I further assume that tradewares *per se* not only date human presence in the immediate vicinity, but have also been luxury items and thus represent wealth and status. But I have not factored in variable "status-loadings" for want of reasonable controls. The issues touched on here are addressed in many of the site descriptions in an impressionistic fashion, but against the backdrop of the general validity of my two general assumptions.

Population and wealth undoubtedly followed a trajectory of general increase between the origins of Makassar protohistory in the 13th-14th centuries, and the survey area's incorporation within the state of greater Gowa during the 17th century. However, I standardise against the same figure (100%) on every chronological interval. Therefore a real growth in tradeware-related activities during the period is likely to be dampened, nullified or even reversed in the tradeware profiles. A key examples is Gowa's core palace centre of Benteng Tua whose flat standardised chronological histogram during the period disguises what must have been a dramatic population increase (Chapter 6). For instance, in estimating population growth I used the number of sites with tradewares dated to a particular interval as a proxy for population size, which suggested a three-fold increase in population between the 14th and 17th centuries (13.3.2). Hence it would be possible to factor estimated general growth into the chronological histograms. e.g. if the 13th-14th century frequencies are standardised against 100%, then the 17th century frequencies could be standardised against 300%, thus suggesting a three-fold population increase at Benteng Tua during the period. However, I have not had time to experiment with the exercise or tackle whatever methodological difficulties might be involved.

In addition, an exercise like that would feed in interpretation at the level of data presentation, and so obstruct interpretation through the informal considerations which survey archaeology, and especially survey historical archaeology, regularly deals. On top of that, I would then have found myself removing or otherwise compensating for the data transformations fed into the histograms, so as to portray wider intersite patterns based on the relative proportions of the tradewares. For instance, Benteng Tua's flat tradeware profile between the 13th-14th and 16th-17th centuries stands beside an overall profile, shown by the other sites along the middle Jeknekberang, which dips over time (Chapters 7 to 9). Hence I was able to interpret Benteng Tua's flat histogram as signifying centralisation of population and wealth within the site's immediate social landscape. All in all, I doubt if my site interpretations could have proceeded without the standardised chronological histograms used in Chapters 6 to 12, and the inclusion of yet further, "transformed standardised chronological histograms" might have been excessive for writer and reader alike.

The histogram segments which are standardised against 18th to 20th century tradeware totals are less complex in their interpretation. Firstly, the pre-Islamic burial traditions which involved gravegoods had probably ceased by this juncture, and so tradeware pieces can be interpreted to represent occupation. Secondly, interpretation is assisted by the 20th century land-use maps (5.3.2). In particular, I am interested in whether the sites were occupied between the 18th and 20th centuries because of the possible consequences for understanding earlier use of the sites, not because I want to reconstruct 18th to 20th century settlement patterns, and so representativeness is a lesser concern.

B.5 Analysis With SSPHAP's Broad Tradeware Classes

B.5.1 Erection of broad tradeware classes

Around 84% of SSPHAP's tradeware pieces only have field identifications (FIs) by which they are assigned to field identification classes (FICs), and only 16% have laboratory

Table B-41. Composition of the Laboratory Identifications by Fieldwork Identifications

	Laboraty Identification Classes (LICs)																																
	JPN	SWH	SWR	QC	SWM	MC	YMC	SUK	VM	EW	EM	HEX	MBW	MS	SWT	VH	VBW	JZ	SAN	EBW	BL	MFV	MW	WLW	EFV	QBW	QS	LBW	WLB	QPR	ER	Sum
Field Identification Classes (FICs)																																	
Japanese (JPN)	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Sawankhalok Black-and-white (SWH)	0	131	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137
Coarse Stonewares (SWR)	0	2	246	2	2	0	0	0	0	0	7	0	0	0	2	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	264
Qing Monochromes (QC)	0	0	0	190	4	1	0	0	6	0	13	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	1	0	0	219
Sawankhalok Monochromes (SWM)	0	1	2	2	76	0	1	0	14	2	47	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	147
Ming Celadons (MC)	0	0	0	7	2	46	38	0	3	9	78	0	0	1	4	1	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	193
Yuan-like Ming Celadons (YMC)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sukothai (SUK)	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Vietnamese Monochromes (VM)	0	0	0	2	2	0	0	0	23	8	16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	52
Early Whitewares (EW)	0	0	0	0	0	3	0	0	2	67	3	0	1	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	2	0	0	82
Early Monochromes (EM)	0	0	2	0	1	1	0	0	1	2	55	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	64
Ming BW "Hexagonal" Wares (HEX)	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Ming Blue-and-white (MBW)	0	1	0	0	0	0	0	0	0	0	0	66	367	11	30	1	11	0	0	11	0	0	0	0	0	72	17	121	29	0	0	0	737
Ming Swatow (MS)	0	0	0	4	0	0	4	0	0	2	1	0	44	314	156	1	10	0	1	2	0	0	1	0	5	35	9	24	3	0	0	0	619
Swatow (SWT)	0	1	2	3	2	3	1	1	3	4	4	0	24	45	223	0	6	0	0	0	0	0	2	0	0	37	12	33	6	2	0	0	415
Vietnamese Black-and-white (VBW)	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Vietnamese Blue-and-white (VH)	0	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	73	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	78
Jizhou (JZ)	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	9
Sancai (SAN)	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Early Blue-and-white (EBW)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Bluewares (BL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6
Ming Red (MFV)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	6	0	0	0	3	0	0	0	0	0	0	11
Ming Whitewares (MW)	0	0	0	2	0	2	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	4	5	14	0	1	0	3	1	4	0	0	41

TABLE B-41. COMPOSITION OF THE LABORATORY IDENTIFICATIONS BY FIELDWORK IDENTIFICATIONS (CONT.)

Laboraty Identification Classes (LICs)

	JPN	SWH	SWR	QC	SWM	MC	YMC	SUK	VM	EW	EM	HEX	MBW	MS	SWT	VH	VBW	JZ	SAN	EBW	BL	MFV	MW	WLW	EFV	QBW	QS	LBW	WLB	QPR	ER	Sum
Wanli Whitewares (WLW)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Early Overglaze-decorated (EFV)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Qing Blue-and-white (QBW)	0	0	0	1	0	0	0	0	0	0	1	1	5	0	14	0	2	0	0	1	2	0	0	6	0	148	33	43	38	13	0	308
Qing Swatow (QS)	0	0	0	0	0	0	0	0	0	1	0	0	12	2	29	0	1	0	0	1	0	0	0	2	0	77	61	34	16	1	0	237
Late Ming Blue-and-white (LBW)	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	2	0	0	0	0	0	0	0	0	41	3	38	14	0	0	106
Wanli Blue-and-white (WBW)	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4	1	1	24	0	0	33
Qing White/Recent (QPR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	4	2	0	0	34	1	47
European (ER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	13	19
Total LICs given determinate FICs	11	140	252	213	89	56	44	22	52	96	227	74	461	374	472	7	107	6	12	17	8	14	10	28	14	431	139	297	131	57	15	3876
LICs given indeterminate FIs	0	0	1	3	1	1	0	0	3	5	8	1	0	0	0	0	0	0	0	0	0	0	4	0	1	1	0	0	0	0	0	29
Identified in field as earthenwares	0	0	21	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
Collected without any FI given	23	33	126	28	16	20	9	2	7	18	54	0	284	386	379	1	41	1	4	8	4	13	11	8	2	483	124	117	159	266	197	2827
Total identified in the laboratory	34	173	400	244	106	77	53	24	63	119	289	75	745	760	851	8	148	7	16	25	12	27	25	36	17	915	263	416	290	323	212	6754
Total (LICs + unchecked FICs)	635	188	755	324	110	90	53	24	63	120	289	75	921	1654	3250	8	150	7	16	25	13	28	30	36	17	9397	3365	420	299	14396	6168	42980

N.B. The small number of tradewares identified in the field as earthenwares were collected as decorated or otherwise unusual earthenwares. I have not done the necessary work to have any notion of how many further tradewares might lie among uncollected sherds identified in the field as earthenwares and so I will not consider that particular problem further.

identifications (LIs) by which they are assigned to laboratory identification classes (LICs). The reliability or otherwise of the former identifications is testable only by reference to those specimens identified under both circumstances.

Ideally, the test would proceed with collected examples drawn representatively from the population given FIs. However, SSPHAP's general policy on collecting focussed on items of highest perceived archaeological value and critical nature in substantiating the field records of the sites. Hence only the pieces given indeterminate FIs (e.g. "?"), assigned to the FICs considered diagnostic (e.g. Ming BW), or considered a likely source of confusion with diagnostic FICs (e.g. Qing monochromes) were regularly collected. They were otherwise supplemented by pieces which appeared valuable for their completeness or unusual appearance. Sometimes, also, the total tradeware assemblage from a site or subsite was collected as diagnostic when it provoked the hypothesis of abandonment during historical times, but these are obviously not representative of the general ruck of less interesting assemblages. To be sure, SSPHAP did make complete collections of several zones with the specific intention of testing general identifications made in the field, but these "grab samples" were not selected on a controlled basis. Notwithstanding the foregoing, the pieces assigned to a particular FIC and then collected remain my best guide to the likely behaviour of the total population of pieces given that particular FIC.

Table B-41 shows how the collected FICs were distributed across the various LICs. In all only 2196/3877 or 56.6% of the FIs remained unchanged when identified in the laboratory. However, the apparent reliability of the FIs varies greatly depending on the FIC considered, e.g. no Japanese FIs needed to be re-assigned, whereas nearly 90% of the Ming Whiteware FIs were re-assigned. In addition, the Japanese LIC seems to be very reliable because no non-Japanese FIs were assigned to it, whereas the Wanli Whiteware LIC is constituted primarily by FIs re-assigned from other FICs, notably Ming Whitewares.

This consideration introduces the simplest measure of performance:

Percentage of LIs correctly identified (%COR) - the number of pieces in the LIC also given the same FI, divided by the number of pieces in the LIC which were given an FI whether correct or not; expressed as a percentage.

Now unreliability of an FIC is not necessarily a problem in itself, as long as the FIC was regularly collected. For instance, from the bottom two rows we can work out that only five Ming Whitewares have been accepted on the basis of their FI alone. Scanning further up we see that 36/41 of the collected pieces within the Ming Whiteware FIC had been incorrectly identified. Hence our best estimate of the number of Ming Whitewares incorrectly accepted is 5 times (36/41) or 4.4 pieces, i.e. 14.6% of the total 30 accepted Ming Whitewares. Turning that into a measure of positive performance, 85.4% have probably been correctly assigned.

But a major difficulty arises with those FICs which were very rarely collected and not, apparently, very reliable. For instance, performing the same exercise on Qing Swatow pieces we calculate that of the 3102 pieces accepted on the basis of their FI alone, 74.3% (2304 pieces) have been incorrectly identified (as our best estimate). Hence of the total 3365 accepted as Qing Swatow, only 3365 minus 2304 or 31.6% have probably been correctly assigned. This then leads to our second measure of performance:

Percentage probably correctly assigned (%PCR) - the total number assigned to a class, minus the best estimate of the number of pieces incorrectly assigned to a class on the basis of a faulty FI, divided by the total number assigned to that class; expressed as a percentage.

As shown in Table B-42, the percentage of FICs checked (%CH) varies between 100% and 0.3%. In essence, the rarer FICs were collected more than 70% of the time; the middlingly common FICs (Ming Swatow and Coarse Stonewares) were collected approximately 40% of the time; Swatow FIs were collected 15% of the time; the late BW FICs (Qing Swatow, Qing BW and Japanese) 2-7% of the time; and European and Qing white/recent FIs less than 1% of the time. Here our enquiry

looks at the possible effects of allowing the unchecked FICs to be re-assigned to other classes on the basis of how the checked FICs were re-assigned.

Consider the case where we decide to re-assign uncollected FIs belonging to the rarer FICs which were collected at least 70% of the time. After the re-assignment, the effects on the estimated composition of the classes can be investigated in two ways.

Firstly, the unchecked re-assigned FIs represent a best estimate but one which is uncontrolled (owing to the lack of representative sampling). In contrast, the checked re-assigned FIs belonging to the same FICs are controlled since they have been positively identified in the laboratory. Considering any class, we can calculate the proportion of controlled identifications as the number of correctly identified LIs (see above) plus the number of controlled re-assigned FIs, divided by that sum plus the number of uncontrolled re-assigned FIs. Express this measure of performance as a percentage and call it % Controlled.

Secondly, after the redistribution we tally the number of pieces in the class and use it as the quotient by which to divide the number of pieces originally accepted in the class (as shown along the bottom row of Table B-41), and express the result as a percentage. This "% Correspondence" shows the degree to which the quantity used in the seriation exercise corresponds to the quantity we would estimate the class to have.[43]

Having done that we decide to continue re-assigning the uncollected examples of the less rare FICs, and carry out the above calculations. These results are then added to our table of performance measures (Table B-42). Specifically, the effects of re-assigning the rarer FICs are flagged as "70%", re-assigning them plus Ming Swatow plus Coarse Stonewares as

[43] Note that in the case of classes represented by FICs collected at least 70% of the time, the tally excludes the FIs now re-assigned to other classes, as well as including the FIs now re-assigned to the class under consideration from other classes. But as regards the classes represented by FICs collected less than 70% of the time, the tally is either augmented by the re-assigned FIs, or stays the same if no re-assigned FIs are re-assigned to it.

"40%", re-assigning them plus Swatow as "15%", re-assigning them plus the late BW FICs as "1%", and re-assigning the whole lot as "0.1%".

In Table B-42 the classes are arranged in approximate descending order of estimated reliability based on the performance criteria, excluding %COR which is a simple but not a useful measure. The three classes at the top appear very reliable by any perceptible standards, and a further 12 classes show percentages which hover around 80% or above. Below that the reliability of the classes drops steeply, especially when we consider the possible consequences of re-assigning the late BW, European and Qing white pieces left uncollected in the field. This particularly affects the Wanli classes whose LIs contain significant proportions of re-assigned Qing FIs.

To handle the unreliable classes, we pool the classes based on the criteria of (i) likely sources of confusion between FICs and LICs, based on the cross-tabulation in Table B-41, and (ii) approximate contemporaneity, based on the seriation exercises (B.4.1 and B.4.2).[44] To take an obvious example, join Qing Swatow and Qing BW into a pooled class with 12,762 pieces (cf. bottom row of Table B-41). What had previously been reclassifications, made in the laboratory, across the two former classes now become correct classifications made in the field, i.e. 319 of the 545 collected FIs (58.5%) conform to their LIs, and 319 of the 570 LIs (56.0%) were spotted in the field. Recalculating our performance measures demonstrates a marked improvement in the reliability of the pooled class, but still at unacceptable levels, so we look for other classes to join.

It is unneccesary to pool the most reliable classes (those scoring around 80% or better on all criteria) so these remain unchanged, apart from pooling the two conceptually similar Ming celadon classes, and also sinking "early overglaze enamelled" wares into early monochromes (Table B-43). The less reliable classes can be pooled into "Ming" and

[44] Note also that pooling rarely collected FICs should also improve the general reliability of our estimates of how the unchecked FIs would have been re-assigned during laboratory checking.

TABLE B-42. PERFORMANCE MEASURES OF THE UNPOOLED CLASSES

	% CH	% COR	% PCR	--- % Controlled--- 70%	40%	15%	1%	0.1%	- % Correspondence- 70%	40%	15%	1%	0.1%
JPN	2	100	100	100	100	100	100	100	100	100	100	100	100
SWR	43	90	96	99	99	95	95	95	103	103	102	102	102
SWH	91	94	100	98	97	94	94	94	101	99	96	96	96
JZ	100	57	100	83	86	86	86	86	100	88	88	88	88
SAN	93	75	100	83	86	86	86	86	100	89	89	89	89
VH	100	57	100	86	88	88	88	88	100	89	89	89	89
SWM	98	84	99	92	94	85	85	85	98	97	88	88	88
QC	73	88	96	95	95	89	80	80	104	101	96	89	89
SUK	100	50	100	91	91	77	77	77	96	96	79	79	79
MC	94	81	95	95	95	77	77	77	113	113	93	93	93
EM	98	23	100	90	89	83	76	76	96	93	86	80	80
VM	100	41	100	91	91	75	75	75	97	97	77	77	77
EW	99	66	100	91	91	77	77	72	99	97	82	75	75
YMC	-	-	100	83	81	75	75	75	95	85	78	78	78
ER	0.3	87	68	93	93	93	93	5	100	100	100	100	136
EFV	100	7	100	67	68	68	68	68	100	71	71	71	71
HEX	100	91	100	76	76	76	60	60	76	76	76	60	60
MFV	85	43	100	67	68	56	56	56	97	85	72	72	72
MS	41	84	71	87	87	58	56	56	100	135	111	109	109
MBW	75	80	92	95	92	67	47	47	106	99	86	86	86
VBW	98	68	100	78	77	64	47	47	97	88	73	55	55
MW	85	36	85	79	80	52	52	52	125	120	81	81	81
EBW	100	6	100	62	63	63	26	26	86	78	78	34	34
SWT	15	47	61	55	60	60	41	20	100	93	137	110	80
QBW	4	34	50	59	60	43	38	13	100	99	97	104	118
LBW	85	13	93	49	56	42	14	14	103	95	66	19	19
QPR	0.3	60	72	71	71	61	13	13	100	100	100	132	132
BL	86	75	100	75	75	75	13	13	100	100	100	19	19
QS	7	44	31	56	65	45	25	7	100	99	97	107	114
WLB	77	18	93	46	48	42	9	9	97	96	86	19	19
WLW	100	6	100	57	57	57	49	3	95	95	95	78	3

N.B. Acronyms as per Table B-41. Percentages, expressed to round figures, calculable from figures in Table B-41. Yuan-Ming celadons (YMC) is not a category recognised in the field.

TABLE B-43. PERFORMANCE MEASURES POOLED AND UNPOOLED CLASSES

	% PCR	--- % Controlled--- 70%	40%	15%	1%	0.1%	- % Correspondence- 70%	40%	15%	1%	0.1%
Japanese	100	100	100	100	100	100	100	100	100	100	100
Coarse Stone.	96	99	99	95	95	95	103	103	102	102	102
Swank H.	100	98	97	94	94	94	101	99	96	96	96
Jizhou	100	83	86	86	86	86	100	88	88	88	88
Sancai	100	83	86	86	86	86	100	89	89	89	89
Vietnam H.	100	86	88	88	88	88	100	89	89	89	89
Swank Monc.	99	92	94	85	85	85	98	97	88	88	88
Qing Monc.	96	95	95	89	80	80	104	101	96	89	89
Sukothai	100	91	91	77	77	77	96	96	79	79	79
"Ming Celadon" (MC/YMC)	96	92	91	78	78	78	105	101	87	87	87
"Early Monc." (EM/EFV)	100	88	88	82	75	75	97	91	85	79	79
Viet Monc.	100	91	91	75	75	75	97	97	77	77	77
Early White	100	91	91	77	77	72	99	97	82	75	75
"Ming" (MFV/ MW/MS/VBW/ MBW/HEX/EBW)	88	90	90	68	56	56	101	115	97	84	84
"Aggregate" (QBW/QS/WLW/ QPR/WLB/LBW/BL)	90	80	80	61	61	38	100	100	98	98	104
Swatow	61	55	50	60	41	20	100	93	137	110	80
European	68	93	93	93	93	5	100	100	100	100	136
Options											
"Ming"/Swatow	84	94	93	93	69	42	100	102	115	99	82
"Aggregate"/ Swatow	96	66	79	80	80	42	100	100	97	97	101
"Aggregate"/ European	90	80	81	62	62	62	100	100	100	100	109

N.B. Acronyms where used as in Table B-42. %CH and %COR not shown here as no longer relevant to the argument.

"Aggregate" megaclasses in which approximately 90% of the assigned specimens are correctly assigned, and the number recognised falls within 16% of the estimated probable number, even if our control over re-assigning the least collected FICs remains poor (Table B-43). Swatow and European are still quite unreliable, but it is not clear how they should be pooled. Pooling Swatow with "Aggregate" creates a reliable megaclass, although a pooled "Aggregate"/European megaclass would be nearly as reliable, and under tighter control overall. This would then allow Swatow to be pooled with "Ming", as would be the preferable course by comparison with the seriations, and create a "Ming"/Swatow megaclass with almost the same reliability that the "Ming" megaclass had shown (Table B-43).

As the best procedure of pooling is unclear, we take the 17 classes above "Options" in Table B-43 and subject them to reiterative clustering and down-the-line seriation, as described in section B.4.[45] Where comparable, the seriated order (Figure B-5) closely approximates the order in the main seriation with 31 classes (Figure B-1). Further, Swatow sits next to "Ming" and European sits next to "Aggregate", confirming that the pooling steps involving these respective pairs would have been more appropriate than pooling Swatow with "Aggregate". Indeed even these pooling steps are unnecessary because the seriation produces a comparable result. Hence the classes shown in Figure B-5 are recognised as SSPHAP's reliable "broad" classes.

[45] One adjustment, however, was necessary. Owing to the biasing effects of surface assemblages, or the small sample of Vietnamese black-and-white pieces, the "A" branch in Figure B-5 should strictly be placed next to Vietnamese black-and-white rather than next to Swatow, making the "A" branch appear very early rather than late (and having no effect on the order between Vietnamese black-and-white and Swatow). From our previous seriations we know that Swatow should be placed next to the post-Ming classes, and so the top three-way split is forced as shown in Figure B-5. The same effect could be achieved by simply sinking the Vietnamese black-and-white pieces into some other class, which I have not done because it is not clear how Vietnamese black-and-white should best be pooled.

B.5.2 Dating and standardising the broad tradeware classes

The unpooled pre-Qing "broad" or reliable classes can retain the same datings suggested previously (B.4.3). The pooled classes should be dated more generally than their individual constituents, and in a manner which reflects the seriated order in Figure B-5. Hence the early overglaze-decorated pieces are, like the early monochromes, all dated to the 13th-14th centuries; the "Ming celadons" (MC/YMC) are simply dated to the 15th-16th centuries; as indeed are the members of the "Ming" megaclass.

However, a problem arises with the "post-Ming" classes in that the expected order is more or less reversed, running from Japanese (19th-20th centuries), to Qing Monochromes (18th-19th centuries), to European (19th century) and on to "Aggregate" (which includes pieces dated to the 16th century onwards, even if 20th century pieces are in the majority). Now the pooling of pieces of such different ages into "Aggregate" expunges whatever controls we would have had to detect abandonment or main initial occupation of sites during the 18th to 20th centuries, which was the point behind trying to date the later pieces. Hence all the "post-Ming" classes can simply be dated to the 18th to 20th centuries. This procedure allows the relative proportions of the Swatow and "post-Ming" classes to act as a barometer of changes between the 17th and later centuries.

The 36,996 tradeware pieces identified during the Gowa survey and assigned to broad classes are distributed by 100-year intervals as shown in Table B-44. Standardisation of the frequencies at any particular site can then proceed as described for the fine classes (B.4.4).

Comparing the "standardised chronological histograms" for the fine classes and the broad classes (Chapters 6 to 12) produces the expected result that the latter are flatter, particularly during the middle-Ming (15th-16th) and post-Ming (18th to 20th) centuries. The latter tradeware profiles might appear sounder in the sense that I cannot really mark off the date of all the pieces to the degree that the fine tradeware profiles indicate. However, some major qualifications should be borne in mind.

Firstly, most of the confusion between FICs (as picked up by the LICs) was reciprocal (Table B-41) so that, as long as the FICs were collected at around the same regularity, the unchecked FIs should have swapped backwards and forwards. Hence our estimates of the performance of these classes (Table B-42) strongly overstates their unreliability, and indeed the seriations often demonstrate their distinctness (e.g. Swatow compared with Qing Swatow and Qing BW; or Qing Swatow and Qing BW compared with Qing white). Or to take the example of a poorly collected FIC which appears to include many pieces from another class according to Table B-41, e.g European compared against Qing Swatow and Qing BW, then the confusion of identifications should disguise a real chronological difference and not gratuitously create it. For these reasons I think that the seriated order of the Swatow and later classes shown in Figures B-1 to B-3 is correct.

Secondly, 15th century use of sites is difficult to detect by tradewares because the most numerous of the century's recognisable classes continued into the 16th century with an equal or greater emphasis (e.g. Watt, 1984:189). Undoubtedly SSPHAP's Ming Swatow and 16th century Ming BW pieces include a healthy proportion of 15th century pieces, but they are not identifiable. The only real control on distinguishing these centuries lies in the proportions of Vietnamese BW, Sancai, Jizhou, Ming celadon and Thai pieces (all comparatively rare) as compared with the proportions of Ming BW and Ming Swatow pieces. Greater than expected proportions of the former indicate a 15th century emphasis (e.g. Tinco Tua in Soppeng [Kallupa et al., 1989]), while greater than expected proportions of the latter indicate a 16th century emphasis (e.g. Somba Opu [11.3] and Benteng Tallok [12.2]). As long as large samples of tradewares are available at a site, the distinction is reliable. Indeed when the predominantly 15th century and predominantly 16th century BW/whiteware classes are bundled together, as with the reliable "Ming" megaclass, the tradeware profiles suggest patent nonsense, e.g. that Somba Opu's main period of occupation began in the 15th century (Figure 11-8).

Table B-44. FREQUENCIES OF THE 17 BROAD TRADEWARE CLASSES FROM THE GOWA SURVEY ASSIGNED BY 100-YEAR PERIOD

	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900	1900-1986	Total
Vietnamese Black-and-white	0	7	0	0	0	0	0	0	7
Vietnamese Monochromes	5	27	23	0	0	0	0	0	55
Early Whitewares	52	52	0	0	0	0	0	0	104
Early Monochromes/Overglaze	104.5	104.5	0	0	0	0	0	0	209
Sancai	0	0	9	0	0	0	0	0	9
Jizhou	0	0	4	0	0	0	0	0	4
Ming Celadons inc. Yuan-like	0	0	32.5	32.5	0	0	0	0	65
Sawankhalok Black-and-white	0	0	73	73	0	0	0	0	146
Sawankhalok Monochromes	0	0	32	32	0	0	0	0	64
Sukothai	0	0	7.5	7.5	0	0	0	0	15
"Ming" (MBW/MFV/MW/MS/HEX/VBW/EBW)	0	0	1190.5	1190.5	0	0	0	0	2381
Swatow	0	0	0	0	2610	0	0	0	2610
Japanese	0	0	0	0	0	221.67	221.67	221.67	665
Qing Monochromes	0	0	0	0	0	100.33	100.33	100.33	301
European	0	0	0	0	0	1966.67	1196.67	1196.67	5900
"Aggregate" (QPR/WLW/QBW/QS/BL/WBW/LBW)	0	0	0	0	0	8153.67	8153.67	8153.67	24461
Sum	161.5	190.5	1371.5	1335.5	2610	10442.33	10442.33	10442.33	36996

In summary, the broad tradeware classes and their standardised chronological histograms are useful particularly for sites with only a small sample of tradewares, either within a particular epoch or as a total sample, or for sites whose dating relies heavily on the most unreliable classes such as the Wanli classes. In other cases the fine tradeware classes are far superior.

B.6 Defining a "Historical Site" by Uncollected Tradewares

SSPHAP's self-imposed policy of regularly collecting only diagnostic tradeware classes, as identified in the field, would appear to have been misguided. I had been thinking along the lines of conserving cultural resources in the landscape, but my experience of revisiting tradeware-rich zones rather suggests that tradeware sherds in South Sulawesi are not a scarce resource. If there is indeed any danger of the sites being "picked over", which I doubt, then selecting only diagnostic classes not only removes the principal resources, but also leaves a biased record for posterity.

On the other hand, with 31 tradeware classes to choose from, and a reliability of identifications made in the field of just over 50 per cent (Table B-41), the fine chronological interpretations required for purposes of historical reconstruction are not always available from identifications made in the field. Representative sampling of the field identifications, e.g. collecting every tenth zone, would allow general data-fitting exercises but would probably still leave key questions of site interpretation hanging. These considerations suggest that, if at all possible, the tradeware contents of the sites should simply be collected in total. Of course, the 42,980 tradeware pieces recorded during SSPHAP's survey - maybe as much as a third of them of no apparent archaeological merit whatsoever - would impose a considerable strain on laboratory time and curation resources. But decisions on how to manage the tradeware identifications are best handled in the controlled atmosphere of the laboratory. And the tradeware pieces can always be returned to their original location at a later date. From the point of view of preserving an unbiased cultural resources

record at the sites, even a decision to throw out unwanted sherdage with the garbage would possibly be preferable to leaving that sherdage, robbed of its more diagnostic companions, clogging up historical sites.

I have argued that, even though tradeware pieces identified in the field were collected on an uncontrolled basis, the assumption of representativeness of those pieces paints too grim a picture of the reliability of the field identifications. The rarely collected fieldwork classes, which cause the most consternation in terms of conceivable re-identifications, are clearly distinguished chronologically by seriation (B.4 and B.5). Moreover, general collections made after field identifications had been assigned generally occurred when the assemblage suggested abandonment in historical times, with the consequence that the pieces identified as post-Ming in these assemblages are more likely to have been misidentified than would generally be the case. Hence the re-assignments which Table B-41 might indicate for uncollected pieces could well be a "worst case" scenario. Anyway, taking those as the only available standard, I wish to consider the probability that a piece given a particular identification in the field but not collected could represent a "historical site", where these are defined as sites containing Swatow or older sherdage (as per the seriations in Figures B-1 to B-3). Table B-45 lists the probabilities across the different classes as identified in the field.

Checked field identifications, listed between Sawankhalok black-and-white and Ming whitewares, were identified to a Ming class more than 80% of the time. Hence a single piece given one of these classifications in the field can be taken

TABLE B-45. PROBABLE TYPE OF LABORATORY IDENTIFICATION RESULTING FROM A GIVEN FIELDWORK IDENTIFICATION

Field Identification	Expected Laboratory Identification "Pre-Qing" ("Historical")	"Post-Ming"	Coarse Stonewares
Sawankhalok Black-and-white (137)	100%	0%	0%
Vietnamese Blue-and-white (78)	100%	0%	0%
Sancai (13)	100%	0%	0%
Sukothai (11)	100%	0%	0%
Ming BW Hexagonal wares (7)	100%	0%	0%
Vietnamese Black-and-white (6)	100%	0%	0%
Bluewares (6)	100%	0%	0%
Wanli Whitewares (2)	100%	0%	0%
Early Blue-and-white (1)	100%	0%	0%
Early overglaze-enamelled	100%	0%	0%
Early Monochromes (64)	96.9%	0%	3.1%
Sawankhalok Monochromes (147)	96.6%	2.0%	1.4%
Ming Celadons (193)	96.4%	3.6%	0%
Early Whitewares (82)	96.3%	3.7%	0%
Vietnam Monochromes (52)	96.2%	3.8%	0%
Jizhou (9)	88.9%	1.1%	0%
Ming Swatow (619)	92.2%	7.8%	0%
Ming Blue-and-white (737)	87.9%	12.1%	0%
Swatow (415)	86.5%	13.0%	0.5%
Wanli Blue-and-white (33)	84.8%	15.2%	0%
Ming Whitewares (41)	83.0%	17.0%	0%
Ming Red (11)	72.7%	27.3%	0%
Late Ming Blue-and-white (106)	58.5%	41.5%	0%
Qing Swatow (237)	41.4%	58.6%	0%
Qing Blue-and-white (308)	37.7%	63.3%	0%
Qing white/Recent (47)	12.8%	87.2%	0%
Qing Monochromes (219)	11.9%	88.1%	0%
European (19)	0%	100%	0%
Japanese (11)	0%	100%	0%
Coarse Stonewares (264)	6.1%	0.8%	93.2%

N.B. Coarse stonewares are not considered datable as a class.

as reliable identification of a SSPHAP "historical site". However, a single piece identified in the field as Ming red or Late Ming BW (Transitional BW) appears less convincing and should not be considered diagnostic.

Some proportion of the pieces identified in the field as Qing Swatow, Qing BW or Qing white/recent clearly would have found a pre-Qing identification in the laboratory, even though retention of a Qing classification would have been the more likely outcome. As these classes were rarely collected, probably there are considerably more "pre-Qing" pieces on the ground than have been allowed for. However, without closer attention to sampling I cannot say whether these extra

"pre-Qing" pieces were essentially restricted to zones already characterised as containing pre-Qing pieces, or whether comprehensive collection of the surface tradewares would have revealed significantly more "historical" zones and sites than I have recognised. Hence unchecked field identifications listed between Qing Swatow and Qing white/recent must, like the European and Japanese identifications, be interpreted as failing to provide evidence of a SSPHAP "historical site".

APPENDIX C. GAZETTEER OF SSPHAP'S SITES

During my fieldwork in South Sulawesi I provided my Indonesian sponsors with monthly reports. They summarised the state of progress of the investigations and included brief descriptions of the recorded sites, numbered consecutively by *kabupaten*. I now call this method of notation SSPHAP's "fieldwork sites", including the zones within them which pin-point the artefactual content recorded by SSPHAP (Appendix D).

Subsequent analysis of the results from the Gowa survey recommended a more thematic organisation of the historical sites into toponymic sites, point- and area-sites. Similarly the records of stone artefacts are organised into flaked stone sites, isolated flaked stone artefacts, and polished stone artefacts (Chapter 5). The purpose of this gazetteer is to cross-tabulate the types of sites according to the respective definitions used, while also summarising some key information relevant to the categories. For the sake of comparability, the fieldwork sites are here named as in my monthly fieldwork reports, the historical sites are named according to the associated kampung-like toponym, and the names of the point- and area-sites (used in the site hierarchy analyses) follow the figures in Chapters 6 to 12. The gazetteer concludes with a similar exercise for the Soppeng sites based on SSPHAP's final report (Kallupa et al., 1989).

To save space, certain contractions are used in the summary descriptions. "17B" refers to a burial ground with one or more Islamic grave markers apparently dating to the 17th century; "PIB" refers to a burial ground which apparently contained pre-Islamic burials; PIB/17B refers to a burial ground containing both. In cases of historical sites containing more than one example, the number will be shown in brackets behind "17B" or "PIB", whichever is relevant.[1] "M" indicates the remains of Makassar fortifications; "K"

[1] Note that the benchmark for recognising multiple Islamic burial grounds in close contiguity is that they carry different names, but since pre-Islamic burial grounds are not specifically named, I distinguish them on the criterion of association with a distinctive kampung-like toponym.

indicates *keramat* (holy) fixtures presumably in place by at least the 17th century; "T" indicates an identification with a pre-1667 toponym; while "E" indicates cases where identification as a SSPHAP historical site ultimately depends on the presence of Swatow or earlier tradeware sherdage. "FS" designates the occurrence of two or more flaked stone artefacts all within 50 metres of another example, i.e. a "prehistoric site" by the definition of the New South Wales National Parks and Wildlife Service; "FI" designates an isolated flaked stone artefact; and "PI" designates a polished stone artefact. "?" will show cases where some legitimate doubt attaches to the above identifications, while "??" will refer to cases which appear possible but are rejected on the balance of probabilities.

Site locations are given in degrees of latitude and longitude. Most of the forts are entered twice in the gazetteer, i.e. both as a fort and as a constellation of toponymic, point- and area-sites. Usually the gazetteer only gives the location of the fort, because the sites inside it are best found by going to the fort and following my site maps. Otherwise I usually give a separate location for every site by whatever definition.

FIELDWORK SITE			HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten No.	Location	Toponym	Zones	Features	Name	
Benteng Tua	Gowa 1/ UP10	119° 26' 47" E 5° 11' 36" S	Gowa	Those along or inside walls	M;T; PIB/17B(5); PIB(6); 17B(2)	Benteng Tua	FI(4); FS(2); PI
Kale Gowa	Gowa 1/ UP10		Kaballokang	72-73,75-76, 78-79,133,170	M; T; PIB/17B; EB	Kaballokang/ Lakiung/ Mangasa/ Bone-Bone (KLMB)	
" "	Gowa 1/ UP10		Lakiung	1-14,66-71, 127-149	M; T; PIB; 17B??; 17B		
" "	Gowa 1		Mangasa	15-26,28-30	M; T; PIB; 17B	" "	FI
" "	Gowa 1	119° 26' 42" E 5° 11' 40" S	Bone-Bone	150-156, 172,174-177	T; PIB	" "	
" "	Gowa 1		Kale Gowa	104-109	M?; T?; K	Kale Gowa/ Tamalate/	FS
" "	Gowa 1		Tamalate	44-56,99-103	M; K; T; PIB/17B	Datak Toa/ Sulengkaya/ Allamoncong/	FI (2)
" "	Gowa 1/ UP10	119° 26' 47" E 5° 11' 36" S	Datak Toa	91-98,123-126	K; T	Lonjo Boko (KTDSAL)	
" "	Gowa 1		Sulengkaya	40-43,57-61	M; T; 17B?	" "	
" "	Gowa 1		Allamoncong	36-38	F; PIB/17B	" "	
" "	Gowa 1		Lonjo Boko	35	PIB	" "	
" "	Gowa 1/ UP10		Bisei	65,121-122,160-168,180-183	M; T; PIB/17B	Bisei	FI
" "	UP10		Katangka Toa	111-115, 178-179	M; T; PIB	Katangka Toa	FS; PI

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL STONE AREA/POINT ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name
Benteng Anak Gowa	Gowa	2	119° 25' 59" E 5° 12' 36" S	Anak Gowa	Those along or inside walls	M; T; 17B??; PIB/17B	Benteng Anak Gowa
Anak Gowa	Gowa	2		Anak Gowa	1,9,11,12	M; T; 17B??; PIB/17B	Anak Gowa Utara
" "	Gowa	2		" "	15	M; T; E	Anak Gowa Selatan
Benteng Somba Opu	Gowa	3	119° 24' 12" E 5° 11' 34" S	Somba Opu	Those along or inside walls	M; T; PIB; 17B	Somba Opu
Somba Opu	Gowa	3	119° 24' 12" E 5° 11' 34" S	Sapirea	1-7	M; PIB; 17B	" "
" "	Gowa	3	119° 23' 55" E 5° 11' 30" S	Sarombe	3,8-10	M; E	" "
Kanjilo Lama	Gowa	6	119° 25' 12" E 5° 12' 44" S	Kanjilo	1	T; PIB	Kanjilo Lama Timur Laut
" "	Gowa	6		" "	5	T; E	Kanjilo Lama Barat Laut
" "	Gowa	6	119° 25' 04" E 5° 12' 50" S	Tangallak	15-25	T; PIB/17B	Kanjilo Lama Barat
" "	Gowa	6	119° 25' 10" E 5° 12' 58" S	" "	6-14	T; PIB/17B	Kanjilo Lama Timur Daya
" "	Gowa	6	119° 25' 07" E 5° 13' 05" S	" "	3	T; E	Kanjung Maek

Pattung	Gowa 4	119° 24' 12" E 5° 11' 47" N	Pattung	1-3	T; PIB/17B	Pattung		
Garassik	Gowa 5	119° 23' 43" E 5° 11' 47" N	Garassik	1-6,8-10, 13-16	M; T; PIB; 17B	Garassik	FS	
Kompleks Makam Gusung	Gowa 7	119° 25' 28" E 5° 11' 58" S	Gantarang	1-2	T; 17B; PIB?/17B	Gusung		
" "	Gowa 93	119° 25' 32" E 5° 11' 51" S	Kerasak (Mangasa??)	Not mapped	17B; T??	Makam Gelarang Mangasa		
Makam Campagaya	Gowa 8	119° 26' 15" E 5° 11' 57" S	Campagaya	1	T?; 17B?	Campagaya		
Bonto Tangnga	Gowa 9	119° 25' 28" E 5° 12' 13" S	Bonto Tangnga	2	PIB	Bonto Tangnga Utara		
Bonto Jalling	Gowa 10	119° 25' 38" E 5° 11' 53" S	Bonto Jalling	1-2	PIB/17B	Bonto Jalling	PI	
Bilaya Lama	Gowa 11	119° 24' 15" E 5° 13' 08" S	Bilaya	5	PIB/17B	Bilaya		
Tombolok Tua	Gowa 12	119° 26' 01" E 5° 13' 05" S	Tombolok	1	17B?/PIB	Makam Takbakka		
" "	Gowa 12	119° 26' 00" E 5° 13' 08" S	Sanrangang	2	PIB	Tombolok		
" "	Gowa 12	119° 26' 07" E 5° 13' 11" S	Parang Bone	3	17B	Makam Kocci Borong		
Makam Manyampang	Gowa 13	119° 26' 38" E 5° 12' 57" S	Manyampang	1	T?; PIB??/17B	Manyampang		

FIELDWORK				HISTORICAL			HISTORICAL	STONE
SITE				SITE			AREA/POINT	ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Bontoalak Complex	Gowa	14	119° 26' 38" E 5° 12' 38" S	Bonto Alak	1	PIB/17B	Lambengnge	
" "	Gowa	14	119° 26' 38" E 5° 12' 42" S	Lambengnge (Lembangi)	2	T; 17B	Dampang	
" "	Gowa	14	119° 26' 28" E 5° 12' 42" S	Gotong	3	PIB?	Gotong	
Makam Jingarak	Gowa	15	119° 25' 30" E 5° 12' 39" S	Jingarak	3-6	PIB/17B	Jingarak	
Pekallak Bua	Gowa	16	119° 27' 14" E 5° 14' 00" S	Pekallak Bua	1-2,4-5,9	PIB/17B	Pekallak Bua	
Bonto-manaik 2	Gowa	17	119° 25' 23" E 5° 13' 46" S	Bontomanaik	1	17B??/PIB	Bontomanaik 2	
Bonto Pakja	Gowa	18	119° 25' 10" E 5° 14' 10" S	Bonto Pakja	1	PIB	Bonto Pakja	
Pannu-juang	Gowa	19	119° 23' 08" E 5° 17' 09" S	Pannujuang	1-5,8	PIB	Mandallek/ Pannujuang	
Mandallek Toa	Gowa	20	119° 22' 52" E 5° 17' 14" S	Mandallek	1-10,12-14,16-17, 20-21,25,27	T; PIB	" "	FS; FI
Manjalling Lompoe/	Gowa	21	119° 23' 48" E 5° 17' 44" S	Manjalling	1-2	17B/PIB	Manjalling	
Borong Punaga	Gowa 21/ Gowa 23		119° 23' 41" E 5° 17' 54" S	Borong Punaga	G.21.12-13; G.23.1-11	PIB	Borong Punaga	
Kaledu Paya	Gowa	22	119° 26' 13" E 5° 12' 03" S	Kaledu Paya	4-10	PIB	Kaledu Paya	

Tala-borong	Gowa	24	119° 23' 57" E 5° 17' 44" S	Talaborong	1-8	PIB	Talaborong	
Bukit Bikuling	Gowa	25	119° 27' 46" E 5° 11' 36" S	Sero	3-5	K; PIB/17B	Sero	FS
Makam Kg Loe ri Sero	Gowa	26	119° 27' 43" E 5° 11' 31" S	" "	1,3-5,7-11	T; K; PIB/17B	" "	PI (2)
Makam Boccolaya	Gowa	27	119° 27' 44" E 5° 11' 33" S	" "	1,3	17B?; E	" "	
Makam Paccalaya	Gowa	28	119° 27' 30" E 5° 11' 52" S	Tombolok	1	17B	Paccalaya	FI
Makam Dg Bane	Gowa	36	119° 27' 46" E 5° 11' 41" S	" "	1-7	T; PIB/17B	Sampeang/ Tombolok	
Makam Sampeang	Gowa	37	119° 27' 49" E 5° 11' 45" S	Sampeang	1	17B	" "	
Bukit Manggarupi	Gowa	29	119° 27' 43" E 5° 12' 13" S	Not a Gowa historical site				FI (2); FS; PI
Saumata Lama	Gowa	30	119° 29' 23" E 5° 11' 48" S	Campaga Lomo	1-9, 27-28	PIB/17B	Saumata Lama	
Saumata Lama	Gowa	30	119° 29' 20" E 5° 12' 00" S	Saumata	10-26, 29-35	PIB; 17B (2)	" "	FI
Kuburan Romang Sapang	Gowa	31	119° 29' 04" E 5° 12' 13" S	Bontoa	1-2,6-7	PIB; 17B	Bontoa	
Kuburan Romang Polong	Gowa	32	119° 28' 56" E 5° 12' 22" S	Kadieng	2-7	PIB; 17B??	Kuburan Romang Polong	

FIELDWORK				HISTORICAL			HISTORICAL	STONE
SITE				SITE			AREA/POINT	ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Bero-anging	Gowa	33	119° 28' 54" E 5° 12' 38" S	Beroanging	1-5	T; 17B	Cambang Beroanging	
" "	Gowa	33	119° 28' 56" E 5° 12' 32" S	" "	10	T; PIB/17B	Beroanging Utara	
Romang Polong Barat	Gowa	34	119° 28' 40" E 5° 12' 07" S	Romang Polong	1	E	Romang Polong Barat	
Kasom-berang	Gowa	35	119° 27' 49" E 5° 11' 54" S	Kasomberang (Pakbineang)	5-6	PIB/17B T?	Kasomberang	
Kuburan Pao-Pao	Gowa	38	119° 27' 59" E 5° 11' 45" S	Pao-Pao	1-4	T; 17B	Pao-Pao	
Kampung Pao-Pao	Gowa	39	119° 27' 56" E 5° 11' 50" S	" "	1-7	PIB	" "	
Bukit Sulenta	Gowa	40	119° 28' 06" E 5° 11' 49" S	Paccinongang	1-2,4	17B	Paccinongang	FS
Kampung Paccinongang	Gowa	41	119° 28' 04" E 5° 11' 51" S	" "	1	T; PIB	" "	FI
Kuburan Paccinongang	Gowa	42	119° 28' 00" E 5° 11' 56" S	" "	1	17B	" "	
Kuburan Matoanging	Gowa	43	119° 22' 57" E 5° 17' 26" S	Matoanging	1,3-6	PIB/17B	Maroanging	FS; FI
" "	Gowa	43	119° 23' 16" E 5° 17' 28" S	Maccinik Kondo	8	PIB?	Maccinik Kondo	

Kampung Parebalang	Gowa	44	119° 22' 41" E 5° 17' 18" S	Parebalang	1	E	Parebalang	
Makam Kg Sabeng	Gowa	45	119° 30' 27" E 5° 12' 31" S	Malaklang	1-6,8	PIB/17B	Sabeng	FS
Lamuru	Gowa	46	119° 31' 52" E 5° 12' 29" S	Lamuru	1-8,13,15	PIB	Lamuru	FS
Kuburan Lamuru	Gowa	47	119° 32' 03" E 5° 12' 23" S	" "	1	17B	Kuburan Islam Lamuru	
Makam Kg Tassili	Gowa	48	119° 32' 43" E 5° 12' 16" S	Tassili	1-3	PIB/17B	Tassili/ Ganrang Jawa	
Kuburan Ganrang Jawa	Gowa	49	119° 32' 52" E 5° 12' 21" S	Ganrang Jawa	1-5,7-10	PIB/17B	" "	FS; PI
Makam Kg Talla-Talla	Gowa	50	119° 33' 36" E 5° 12' 45" S	Talla-Talla	1-9	PIB/17B	Talla-Talla	FS
Kuburan Sawagi	Gowa	51	119° 33' 30" E 5° 12' 08" S	Sawagi	2-3,5	PIB/17B	Sawagi	FI
Pattal-lassang Toa	Gowa	52	119° 34' 07" E 5° 12' 52" S	Pattallassang	1-5,7-20	T; 17B (2)/PIB	Pattal-lassang Toa	FS; FI
Teamate Asli	Gowa	53	119° 33' 52" E 5° 13' 00" S	Teamate	1-4	PIB/17B	Teamate Asli	FS
Palacini Tua	Gowa	54	119° 34' 30" E 5° 12' 47" S	Palacini	1-3	PIB/17B	Palacini Tua	FS; FI
Soppeng/ Bonto-sunggu Asli	Gowa	55	119° 31' 45" E 5° 12' 08" S 119° 31' 47" E 5° 12' 00" S	Soppeng Bonto Sunggu	1-4 6-11	PIB PIB/17B	Soppeng/ Bonto Sunggu	FS FI (2)

FIELDWORK				HISTORICAL			HISTORICAL AREA/POINT	STONE ARTEFACTS
SITE				SITE				
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Moncong-Moncong Lama	Gowa	56	119° 31' 54" E 5° 11' 10" S	Moncong-Moncong	1,6-7	17B	Kuburan Moncong-Moncong	FS
" "	Gowa	56	119° 32' 01" E 5° 11' 03" S	" "	12-14,16	PIB	Moncong-Moncong Lama	FS
Moncong-Moncong Baru	Gowa	56	119° 32' 14" E 5° 11' 01" S	Not a Gowa historical site	0			FI
Paccel-lekang Lama	Gowa	57	119° 33' 10" E 5° 11' 41" S	Paccellekang	1-3,5-6,8	T; PIB/17B	Paccellekang	FS
Pabun-dukang Tua	Gowa	58	119° 33' 25" E 5° 11' 34" S	Pabundukang	1-8	T??; PIB/17B	Pabundukang	
Gentung	Gowa	59	119° 34' 40" E 5° 12' 37" S	Gentung	1-5	PIB/17B	Gentung	FS
Teko	Gowa	60	119° 34' 58" E 5° 12' 19" S	Teko	1-2	PIB/17B	Teko	
Bonto Lakja	Gowa	62	119° 24' 31" E 5° 12' 08" S	Bonto Lakja	2,5-6	PIB	Bonto Lakja Selatan	
" "	Gowa	62	119° 24' 31" E 5° 12' 03" S	" "	8-10	PIB/17B	Bonto Lakja Utara	
" "	Gowa	62	119° 24' 20" E 5° 12' 00" S	" "	12	17B	Kuburan Tuan Said	
" "	Gowa	62	119° 24' 26" E 5° 12' 04" S	" "	13,15	E	Bonto Lakja Barat	

Saile Tua	Gowa 61	119° 34' 22" E 5° 12' 26" S	Saile	1-2	PIB/17B	Saile Tua	
Pattiro Tua	Gowa 63	119° 32' 16" E 5° 11' 24" S	Balang Sari	1-5	PIB/17B	Pattiro Tua	FS (2); PI
" "	Gowa 63	119° 32' 15" E 5° 11' 18" S	Pattiro	6-15	PIB/17B	" "	FS (2)
Biring Balang Tua	Gowa 64	119° 31' 28" E 5° 10' 41" S	Biring Balang	2-5	PIB/17B	Biring Balang	FS
Bangkala Tua/	Gowa 65	119° 31' 42" E 5° 11' 05" S	Bangkala	1-10,15	T?; PIB/17B	Bangkala/ Palembang	FS
Palembang Tua		119° 31' 33" E 5° 10' 55" S	Palembang	11-14	T??; E	" "	
Pandang-Pandang	Gowa 66	119° 26' 40" E 5° 12' 06" S	Pandang-Pandang	1	T?; PIB	Pandang-Pandang	
Borongloe	Gowa 67	119° 28' 00" E 5° 14' 15" S	Borongloe	1-11	T; PIB/17B	Borongloe	
Bado-Bado Tua	Gowa 68	119° 31' 44" E 5° 10' 42" S	Bado-Bado	1-3	PIB/17B	Bado-Bado	
" "	Gowa 68	119° 31' 49" E 5° 10' 47" S	Parang Bambe	4	17B?	Parang Bambe	
Tamarunang Tua	Gowa 69	119° 28' 54" E 5° 13' 50" S	Tamarunang	1,5-12,14	PIB	Tamarunang Tua	
Kabal-lokang	Gowa 70	119° 29' 53" E 5° 14' 24" S	Kaballokang	2	PIB/17B	Kaballokang	
Buta Didia Asli	Gowa 71	119° 28' 52" E 5° 13' 02" S	Buta Didia	1-4	PIB/17B	Buta Didia Asli	

FIELDWORK SITE				HISTORICAL SITE			HISTORICAL STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	AREA/POINT Name
Bossolok	Gowa	72	119° 30' 45" E 5° 12' 03" S	Bossolok	2-4,6	PIB/17B	Bossolok
Jeknek Madinging	Gowa UP	73/ 18	119° 30' 33" E 5° 10' 29" S	Jeknek Madinging	1-2,4	PIB/ 17B??	Jeknek Madinging
Bonto Ramba	Gowa	74	119° 28' 41" E 5° 13' 13" S	Bonto Ramba	Not mapped	PIB/17B	Bonto Ramba
Kuburan Takbakka	Gowa	75	119° 26' 56" E 5° 12' 39" S	Tompok Balang	Not mapped	17B	Tompok Balang
Borong	Gowa	76	119° 29' 40" E 5° 14' 00" S	Borong	1-2,8	E	Borong Timur FS
" "	Gowa	76		" "	5	17B?	Saukang Borong
" "	Gowa	76	119° 29' 18" E 5° 14' 00" S	" "	9	E	Borong Barat
Dampang	Gowa	77	119° 27' 39" E 5° 13' 24" S	Dampang	1-17	PIB/17B	Dampang
Cellaya	Gowa	78	119° 28' 02" E 5° 13' 52" S	Cellaya	1	PIB	Cellaya
Saukang Borong	Gowa	79	119° 28' 08" E 5° 14' 11" S	Borong	Not mapped	PIB	Saukang Borong
Saukang Boe	Gowa	80	119° 28' 15" E 5° 14' 22" S	Biring Kalorok	1-4	PIB	Saukang Boe FS
Patadang Toa	Gowa	81	119° 31' 08" E 5° 10' 11" S	Patadang	Not mapped	PIB/17B	Patadang Toa

Kuburan Borong Parang	Gowa 82	119° 30' 06" E 5° 14' 50" S	Borong Parang	Not mapped	17B?; E	Borong Parang	
Songkolo Asli	Gowa 83	119° 30' 23" E 5° 15' 21" S	Songkolo	3	PIB	Songkolo Asli	
Pammang-kulang Batua	Gowa 84	119° 30' 35" E 5° 17' 07" S	Not a Gowa historical site				FS
Bonto Ramba	Gowa 85	119° 29' 50" E 5° 17' 02" S	Bonto Ramba	1-15	PIB/17B	Likuloe	FS
Likuloe	Gowa 86	119° 29' 58" E 5° 17' 00" S	Likuloe	1-5	PIB	" "	FI
Bungung Ejaya	Gowa 87	119° 30' 00" E 5° 16' 32" S	Bungung Ejaya	1-2	PIB	Bungung Ejaya	FS
Kuburan Bontona Songkolo	Gowa 88	119° 29' 41" E 5° 15' 29" S	Bontona Songkolo	1	PIB/17B (?)	Bontona Songkolo	
Galoggoro	Gowa 89	119° 30' 00" E 5° 18' 11" S	Galoggoro	1	PIB	Galoggoro	FI
Tassili Baru	Gowa 90	119° 32' 40" E 5° 12' 20" S	Not a Gowa historical site	1			FS
Moncong-Moncong	Gowa 91	119° 27' 19" E 5° 11' 51" S	Not convincingly a historical site	1	E??		
Bonto Pakja	Gowa 93	119° 29' 08" E 5° 13' 00" S	Bonto Pakja	Not zoned	17B	Bonto Pakja	
Embung	Gowa 94	119° 31' 41" E 5° 10' 05" S	Embung	Not zoned	PIB/17B	Embung	

FIELDWORK				HISTORICAL				HISTORICAL	STONE
SITE				SITE				AREA/POINT	ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features		Name	
Bayoa 1	UP1		119° 23' 26" E 5° 11' 57" S	Bayoa	1-9,11-27, 29-30,32,34,36	M; PIB/17B		Bayoa	FS??; FI??
Benteng Paknakkukang	UP2		119° 23' 03" E 5° 11' 50" S	Paknakkukang	1-4	M; T; PIB/17B		Paknakkukang/ Pattukangang	
" "	UP2		119° 23' 08" E 5° 12' 18" S	Pattukangang	5-13	M; T; E		" "	
Benteng Barombong	UP3			Dinding Barombong	1-8	M; T; PIB; 17B		Barombong wall	
" "	UP3		119° 23' 02" E 5° 12' 26" S	Tangaya	6	M; T; E		Makam Tuan Biraeng	
" "	UP3		119° 23' 02" E 5° 12' 34" S	" "	1	PIB		Tangaya	
" "	UP3		119° 23' 01" E 5° 12' 39" S	Barombong	5	PIB		Patanna Parasangang	
" "	UP3		119° 23' 00" E 5° 12' 50" S	" "	2	17B		Barombong	
Kaccia Lama	UP4		119° 23' 55" E 5° 12' 21" S	Kaccia	1-3	PIB/17B		Kaccia	
Mamampang	UP5		119° 23' 31" E 5° 12' 16" S	Mamampang	1	T??; E		Mamampang	
Ujung Kassik	UP6		119° 23' 00" E 5° 13' 05" S	Ujung Kassik	1	PIB?		Ujung Kassik	
Bayoa 2	UP7		119° 24' 13" E 5° 12' 13" S	Bayoa	1	PIB		Bayoa	

Gotong	UP8	119° 24' 21" E 5° 12' 32" S	Gotong	1	PIB	Gotong	
Timbuseng	UP9	119° 24' 11" E 5° 12' 51" S	Timbuseng	1	E	Timbuseng	
" "	UP9	119° 24' 13" E 5° 12' 45" S	" "	2-3	17B	Makam Karaeng Papok	
Jipang Bidaraya	UP11	119° 26' 57" E 5° 11' 11" S	Bidaraya	1-3	PIB	Bidaraya	
Makam Jipang	UP12	119° 26' 54" E 5° 11' 05" S	Jipang	2,4	17B?; E	Jipang	
Karunrung	UP13	119° 26' 57" E 5° 10' 47" S	Karunrung	1,11-12	T; PIB/17B	Karunrung Selatan	FS; FI
" "	UP13	119° 26' 54" E 5° 10' 39" S	" "	4-5	T; 17B	Karunrung Utara	
Palampang Toa	UP14	119° 29' 41" E 5° 11' 34" S	Palampang	1-5,7	17B?/PIB	Palampang	
Kuburan Kassik Tengah	UP15	119° 29' 22" E 5° 11' 13" S	Kassik	1,3	PIB/17B	Kassik Tengah	
Kassik Utara	UP20	119° 29' 30" E 5° 10' 50" S	" "	2-15	PIB/17B	Kassik Utara	
Kajenjeng	UP16	119° 29' 38" E 5° 11' 15" S	Kajenjeng	1-9	PIB/17B	Kajenjeng	
Manggala Tua	UP17	119° 30' 03" E 5° 10' 21" S	Manggala	1-2	17B??; E	Manggala Tua	
Parinring	UP19	119° 28' 58" E 5° 11' 06" S	Parinring	1-3	PIB	Parinring	

FIELDWORK SITE			HISTORICAL SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten No.	Location	Toponym	Zones	Features	Name	
Benteng Tallok	UP25	119° 26' 25" E 5° 06' 20" S	Tallok	Those along or inside walls	M;T;PIB/17B(5); PIB(2);17B(1)	Benteng Tallok	
" "	UP25		Tallok Lama	Not zoned	PIB/17B	Makam Kg Katinting	
" "	UP25		" "	Not zoned	PIB/17B (2); T	Tallok Lama	
" "	UP25		" "	Not zoned	PIB/17B	" "	
" "	UP25		" "	Not zoned	K	Batu Pelantikan	
" "	UP25		Mangara Bombang	Not zoned	T; PIB/17B	Makam Mangara Bombang	
" "	UP25		Gampangcaya	1-2	PIB/17B	Tallok Utara	
" "	UP25		Agangpencara	Not zoned	PIB	" "	
" "	UP25		Makam Raja-Raja Tallok	3	K; 17B	" "	
" "	UP25		Bayoa	Not zoned	PIB	Bayoa	
Maccinik Sombala	UP23	119° 26' 05" E 5° 11' 28" S	Maccinik Sombala	1	PIB/17B?; E	Maccinik Sombala	
Bontomanaik	UP24	119° 26' 04" E 5° 11' 10" S	Bontomanaik (Barat ?)	Not mapped	T?; PIB/17B	Bontomanaik 1	

Bangkala	UP21	119° 28' 21" E 5° 10' 37" S	Ende	7-10	PIB/17B	Bangkala/ Ende	
" "	UP21	119° 28' 15" E 5° 10' 31" S	Bangkala	1-6	17B	" "	FI
" "	UP21	119° 28' 26" E 5° 10' 29" S	" "	12	17B	Kuburan Islam Bangkala	
Dampang Bira	UP22	119° 28' 08" E 5° 10' 29" S	Dampang Bira	2,4-11	PIB	Dampang Bira	FS (2)
Bontoa	UP26	119° 23' 25" E 5° 12' 41" S	Bungaya	Not mapped	T; 17B?	Bontoa	
Makam Bontolassang	Takalar 1	119° 32' 33" E 5° 18' 10" S	Bonto Lassang	1-7	PIB/17B	Bonto Lassang	FS; FI
Aengtoa	Takalar 2	119° 23' 10" E 5° 13' 24" S	Aengtoa	1-9	T; PIB/17B	Aengtoa	
Makam Pangkajeknek	Takalar 3	119° 23' 41" E 5° 13' 53" S	Pangka- jeknek	1	17B?	Pangka- jeknek	
Pakkala Toa	Takalar 4	119° 23' 57" E 5° 14' 18" S	Pakkala	1	17B?/K; E	Pakkala Timur	
" "	Takalar 4	119° 23' 50" E 5° 14' 16" S	" "	2,5	PIB(?)/ 17B	Pakkala Barat	
Jonggoa Batu-Batu	Takalar 5	119° 22' 51" E 5° 14' 02" S	Batu-Batu	Not mapped	T; 17B	Jonggoa Batu-Batu	
Makam Dengkang	Takalar 7	119° 22' 56" E 5° 25' 55" S	Dengkang	1-3,5	PIB/17B	Dengkang	

FIELDWORK				HISTORICAL				
SITE				SITE			HISTORICAL AREA/POINT	STONE ARTEFACTS
Name	Kabupaten	No.	Location	Toponym	Zones	Features	Name	
Benteng Sanrabone	Takalar	6	119° 13' 16" E 5° 26' 04" S	Benteng Sanrabone	Those along or inside walls	M;T;17B(1); PIB/17B(4)	Sanrabone	
" "	Takalar	6		Banyua-nyarak	1-4,32	M; T; PIB/17B	Sanrabone	
" "	Takalar	6		Bayoa	5-7	M; T/K; PIB/17B	" "	
" "	Takalar	6		Sanrabone (Utara)	9-11,13-16, 19,21-24,26	M; T; 17B/K; PIB/17B/K; PIB/17B	" "	
Batu Pute	Takalar	8	119° 22' 42" E 5° 26' 04" S	Batu Pute	Not mapped	17B?	Batu Pute	
Jeknek	Takalar	9	119° 22' 22" E 5° 26' 03" S	Jeknek	1-5	PIB/17B	Jeknek	
Sampu-lungang 2	Takalar	10	119° 22' 34" E 5° 15' 05" S	Sampulungang	2-4	17B; E	Sampulungang	
Jamarang Tua	Takalar	11	119° 22' 31" E 5° 15' 56" S	Jamarang	1,3-8	T; PIB/17B	Jamarang	
Makam Datu Bontolebang	Takalar	12	119° 23' 02" E 5° 15' 58" S	Bonto Lebang	1,2	17B; E; T??	Bonto Lebang	FI
Tabarin-gang Barat	Takalar	13	119° 23' 29" E 5° 15' 35" S	Tabaringang	1-4	T?; PIB	Tabaringang Barat	
Sawakong Toa	Takalar	15	119° 23' 25" E 5° 22' 31" S	Sawakong	1-4,8-11	PIB/17B	Sawakong	

Campagaya Lama	Takalar 14	119° 22' 29" E 5° 16' 55" S	Campagaya	1-2,4-8	T?; PIB/17B	Campagaya	FI
" "	Takalar 14	119° 22' 20" E 5° 17' 08" S	Taipanorang	9-12,14-17	PIB/17B	Taipanorang	
Manjal-ling	Takalar 16	119° 21' 25" E 5° 19' 30" S	Manjalling	1,6-15,18	PIB/17B	Kota Galesong	FS
" "	Takalar 16	119° 21' 32" E 5° 19' 28" S	Pakka Mukang	16-17	17B	" "	FS
Kaluku Bodo	Takalar 17	119° 21' 19" E 5° 19' 35" S	Kaluku Bodo	2-4	PIB/17B	" "	
Bulaenna Burakne	Takalar 19	119° 21' 41" E 5° 19' 32" S	Bulaenna Burakne	23-28	17B; E	" "	
Tabbun-cinik	Takalar 21	119° 21' 41" E 5° 19' 21" S	Tabbuncinik	41-55	PIB/17B; PIB; M?	" "	
Makam Bojangngo	Takalar 22	119° 21' 49" E 5° 19' 09" S	Lanna	56-60	17B; E	" "	
Bayoa 3	Takalar 20	119° 21' 24" E 5° 19' 19" S	Bayoa	29-33, 39-40,55	PIB; 17B (2)	" "	
" "	Takalar 20		" "	36-37	E; 17B??	Matinroe ri Lanna	
Makam Bokdia	Takalar 18	119° 21' 15" E 5° 19' 46" S	Bokdia	19,21	17B; E	Bokdia	
Paklalla-kang	Takalar 32	119° 21' 45" E 5° 19' 02" S	Paklallakang	69	E	Paklallakang	

FIELDWORK SITE Name	Kabupaten	No.	Location	HISTORICAL SITE Toponym	Zones	Features	HISTORICAL AREA/POINT Name	STONE ARTEFACTS
Makam Saro	Takalar	23	119° 21' 23" E 5° 20' 08" S	Manyampang	1,3	PIB/17B	Kuburan Islam Saro	
Tabun-cinik Timur	Takalar	24	119° 21' 50" E 5° 19' 32" S	Punceka	1	17B	Punceka	
" "	Takalar	24	119° 21' 57" E 5° 19' 24" S	" "	3	17B; E	Kuburan Boe	
Kuburan Bontoa	Takalar	25	119° 23' 44" E 5° 25' 46" S	Bontoa	Not mapped	17B	Bontoa	
Gontong	Takalar	26	119° 23' 48" E 5° 26' 41" S	Gontong	Not mapped	PIB/17B	Gontong	
Empang Sidayu	Takalar	27	119° 23' 37" E 5° 26' 40" S	Ujung	Not mapped	PIB	Empang Sidayu	
Solokoa Na Lassang	Takalar	28	119° 32' 02" E 5° 18' 29" S	Salekowa	1-5,7	PIB/17B	Solokoa Na Lassang	FS
Toata	Takalar	29	119° 32' 47" E 5° 18' 36" S	Toata	Not mapped	17B?/PIB	Toata	FS
Kalukuang	Takalar	30	119° 28' 05" E 5° 19' 37" S	Kalukuang	2-8	PIB	Kalukuang	
" "	Takalar	30		" "	Not mapped	PIB	Kalukuang Atas	FI
Katinting	Takalar	31		Not a Gowa historical site	1	T??		
Summanak	Takalar	33	119° 23' 53" E 5° 13' 32" S	Summanak	Not mapped	T; 17B	Summanak	

Karama	Takalar 34	119° 22' 55" E 5° 13' 38" S	Karama	Not mapped	PIB; 17B	Karama		
Kuburan Dusun Beba	Takalar 35	119° 22' 22" E 5° 16' 34" S	Bebak	Not mapped	T; 17B	Bebak		
Kuburan Tamasongok	Takalar 36	119° 22' 12" E 5° 17' 47" S	Tamasongok	Not mapped	T; 17B	Tamasongok		
Guanya Sampeang	Maros 1	119° 38' 10" E 4° 49' 39" S	Not a Gowa historical site	1				
Moncongloe Lappara	Maros 2	119° 30' 12" E 5° 09' 15" S	Moncongloe Lappara	2-7,9-10,12-25, 28-30,36-39	PIB/17B	Moncongloe Lappara	FS (2); FI	
Manyempang Toa	Maros 3	119° 31' 00" E 5° 09' 50" S	Manyempang	1-4	PIB/17B	Manyempang		
Makam Balang Patti	Maros 4	119° 31' 03" E 5° 09' 30" S	Balang Patti	1	17B	Balang Patti		
Moncongloe Bulu Tua	Maros 5	119° 35' 17" E 5° 08' 56" S	Moncongloe Bulu	2-3	PIB/17B	Moncongloe Bulu	FI	
Kuburan Diccekang	Maros 6	119° 33' 00" E 5° 09' 26" S	Diccekang	1	PIB/17B	Diccekang		
Makam Petta Cenranae	Soppeng 1	120° 01' 40" E 4° 15' 44" S	Batu Tanre	Not mapped	PIB?; E	Batu Tanre		
Ujung	Soppeng 2	119° 53' 15" E 4° 21' 20" S	Appung	2-3,5	17B?; E; T	Appung		
" "	Soppeng 2		Ujung	10-12	T; E	Ujung	FI	

FIELDWORK			HISTORICAL			HISTORICAL	STONE
SITE			SITE			AREA/POINT	ARTEFACTS
Name	Kabupaten	No. Location	Toponym	Zones	Features	Name	
Botto	Soppeng	119° 53' 12" E 4° 21' 03" S	Botto	1-7	T; E	Botto	
Laleng Benteng	Soppeng	119° 53' 05" E 4° 21' 02" S	Laleng Benteng	1-6	K; T; E	Botto	
Petta Langkanae	Soppeng	119° 51' 07" E 4° 21' 38" S	Sewo Tua	1-5	PIB; K; T	Sewo Tua	
Kuburan Sewo Tua	Soppeng	119° 51' 07" E 4° 21' 38" S	" "	Not enumerated	17B	" "	
Batu Taneng	Soppeng	119° 51' 23" E 4° 21' 56" S	Batu Taneng	Not mapped	K??	Batu Taneng	
Megalit Lawo	Soppeng	119° 51' 40" E 4° 19' 48" S	Lawo Barat	1-7	K??	Lawo Barat	Prehistoric rock art?
Lawo Timur	Soppeng	119° 52' 01" E 4° 19' 49" S	Lawo Timur	1-15	17B??; K??; T; E	Lawo Timur	
Bila	Soppeng	119° 52' 14" E 4° 20' 57" S	Makam Tua Bila	7-8	17B?; E; T	Makam Tua Bila	
" "	Soppeng		Jera Lompoe	1,11-12	17B; E; T; K	Sekitar Jera Lompoe	
" "	Soppeng		Bila	14-16	T; E; K??	Mesjid Bila	
" "	Soppeng		Sumpang Bila	18-22	PIB?; T	Sumpang Bila	

Tinco Tua	Soppeng 10	119° 52' 01" E 4° 19' 49" S		Tinco Tua	1-11,15-26	PIB; 17B; K; T	Tinco Tua	FS
" "	Soppeng 10			" "	13	E	Tinco Sentral	
" "	Soppeng 10			" "	14	E	Tinco Barat	
" "	Soppeng 10	119° 52' 23" E 4° 19' 35" S		La Kelluaja	12	PIB/K (2); K	La Kelluaja	
" "	Soppeng 10			Tinco Baru	27	E	Tinco Baru	
Petta Balubue	Soppeng 12	119° 53' 30" E 4° 14' 03" S		Sekkangnyili	1-4	PIB/K (2); T	Petta Balubue	
Salotungo	Soppeng 13	119° 53' 42" E 4° 21' 41" S		Salotungo Tua	Not enumerated	PIB; 17B; T	Salotungo Tua	
Bulu Matanre	Soppeng 14	119° 49' 09" E 4° 23' 45" S		Bulu Matanre	1-10	17B?; K?; E	Bulu Matanre	
Situs La Mata Esso	Soppeng 15	119° 52' 55" E 4° 20' 58" S		Botto	1	PIB; K	Situs La Mata Esso	
Tomanurung ri Gowarie	Soppeng 16	119° 57' 45" E 4° 29' 44" S		Gowarie/ Gattareng	Not mapped	K; T	Gowarie	

APPENDIX D. ARTEFACTUAL CONTENTS RECORDED AT SSPHAP'S SITES

This pages which follow present the raw data recorded by the South Sulawesi Prehistorical and Historical Archaeology Project (SSPHAP) during the 1986-7 field season. The records are to be read across adjoining pages.

The first column (ZONE) identifies the zones and sites, labelled serially by *kabupaten*, whereby "G" stands for Gowa, "M" stands for Maros, "U" stands for Ujung Pandang (Kotamadya), "T" stands for Takalar and "S" stands for Soppeng. Hence "G.1.1" designates the first zone recorded in the first site (Benteng Tua) recorded in Kabupaten Gowa, "G.1.2" designates the second zone in the same site, etc. Appendix C matches the labels to site names. Maps of the sites relevant to the origins of Gowa and Tallok are given in Volume 3 of this thesis, and the descriptions are provided in Chapters 6 to 12. The corresponding information on the Soppeng sites is provided elsewhere (Kallupa et al., 1989), and the sites from the Gowa survey not reported here will be detailed elsewhere (Bulbeck, in prep. b).

The second column (AREA) shows the area within the zone in square metres, and the third column (VIS) shows the estimated proportion of the ground surface which the site recorder considered to be visible. The fourth column (EXPOS) shows the area of exposure per zone, in square metres, calculated from the preceding figures.

The fifth volume (EWARE) gives the number of earthenware sherds counted in the zone, unless it is left blank, in which case no effort was made to count the earthenwares. The sixth to tenth columns provide the corresponding information on flaked stone artefacts (FLK), polished stone artefacts (PL), iron fragments (FE), bronze pieces (CU), and coins ($).

The remaining columns detail the tradeware classifications, according to the acronyms used in Appendix B. These are: QPR (Qing whiteware/recent); ER (European); JPN (Japanese); QC (Qing monochromes); QBW (Qing blue-and-white); QS (Qing Swatow); WLB (Wanli blue-and-white); LBW (Late Ming blue-and-white); SWT (Swatow); MS (Ming Swatow); MFV (Ming overglaze-enamelled); MBW (Ming blue-and-white); HEX (Ming blue-and-white with hexagon patterns); EBW (early

blue-and-white); EFV (early overglaze-enamelled); SWR (coarse stonewares); BL (bluewares); VBW (Vietnamese blue-and-white); VM (Vietnamese monochromes); SWH (Sawankhalok black-and-white); SWM (Sawankhalok monochromes); MC (Ming celadons); YMC (Yuan-like Ming celadons); EM (early monochromes); EW (early whitewares); MW (Ming whitewares); WLW (Wanli whitewares); VH (Vietnamese black-and-white); SUK (Sukothai); JZ (Jizhou); SAN (Sancai).

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.1.1	364	1	364	18	0	0	0	0	0	5	9	0	0	2	0	0	0	0	0
G.1.2	364	0.8	291.2	98	0	0	0	0	0	24	2	0	0	3	1	0	0	0	0
G.1.3	377	1	377	12	0	0	0	0	0	2	6	0	0	7	1	0	0	0	0
G.1.4	397	1	397	14	0	0	0	0	0	5	3	0	0	3	0	0	0	0	0
G.1.5	315	0.2	63	7	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.1.8	476	0.7	333.2	14	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0
U.10.72	713	0.8	570.4	5	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
G.1.71	1320	0.3	396	4	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.1.68	935	0.6	561	13	0	0	0	0	0	3	1	0	0	1	0	0	0	0	0
G.1.66	1748	0.6	1048.8	28	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0
G.1.9	358	0.7	250.6	16	0	0	0	0	0	0	0	0	0	3	3	0	0	2	0
G.1.11	300	0.6	180	8	0	0	0	0	0	2	0	0	0	0	3	0	0	2	0
G.1.12	507	0.6	304.2	31	0	0	0	0	0	21	4	1	0	9	5	0	0	0	0
G.1.14	308	0.6	184.8	15	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0
G.1.67	800	0.6	480	18	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0
G.1.70	1474	0.5	737	0	0	0	0	0	0	2	1	0	0	8	7	0	0	2	0
G.1.69	1386	0.4	554.4	14	0	0	0	0	0	5	0	1	0	2	3	0	0	0	0
G.1.7	1176	0.5	588	36	0	0	0	0	0	12	0	0	0	6	0	0	0	3	0
G.1.146	572	0.3	171.6	112	0	0	0	0	0	17	23	0	0	2	2	0	0	2	1
G.1.145	777	0.9	699.3	253	0	0	0	0	0	7	0	0	0	23	10	0	0	3	1
G.1.142	600	0.7	420	18	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.1.143	587	1	587	128	0	0	0	0	0	1	0	1	0	12	3	0	0	4	0
G.G.144	408	1	408	63	0	0	0	0	0	14	3	0	0	11	0	0	0	1	0
G.1.10	528	0.9	475.2	137	0	0	0	0	0	21	4	1	1	11	2	0	0	1	1
G.1.147	720	0.3	216	98	0	0	0	0	0	24	1	0	0	10	3	0	0	2	0
G.1.137	191	1	191	181	0	0	0	0	0	8	5	0	2	38	12	0	0	7	3
G.1.136	924	0.7	646.8	209	0	0	0	0	0	24	3	0	0	27	7	1	0	5	0
G.1.135	425	0.8	340	134	0	0	0	0	0	9	4	0	0	19	7	0	0	3	0
G.1.134	265	0.8	212	145	0	0	0	0	0	4	4	0	0	15	6	2	0	4	0
G.1.138	1820	0.9	1638	336	0	0	1	0	0	8	7	0	0	37	6	0	1	2	2
G.1.139	2232	0.4	892.8	200	0	0	0	0	0	5	3	0	0	20	5	0	0	4	0
G.1.140	1505	1	1505	144	0	0	0	0	0	4	2	0	0	11	5	0	0	0	0
G.1.141	470	1	470	103	0	0	0	0	0	6	1	0	0	5	3	0	0	2	0
G.1.149	650	1	650	93	0	0	0	0	0	34	2	0	0	3	4	0	0	2	0
G.1.148	468	0.4	187.2	0	0	0	0	0	0	9	0	0	0	4	1	0	0	0	1
G.1.127	1015	0.9	913.5	182	0	0	0	0	0	7	2	2	0	4	1	0	1	0	1
G.1.129	285	1	285	189	0	0	0	0	0	25	0	3	0	10	6	0	0	0	1
G.1.128	545	1	545	103	0	0	0	0	0	19	1	1	2	16	4	0	0	8	1
G.1.130	671	1	671	244	0	0	0	0	0	60	28	4	1	33	9	0	0	6	2
G.1.131	2491	0.9	2241.9	191	0	0	0	0	0	12	8	1	0	18	6	0	0	2	0
G.1.132	532	1	532	162	0	0	0	0	0	26	21	0	2	29	4	0	1	5	0
G.1.18	2072	0.5	1036	89	0	0	0	0	0	27	6	1	0	17	8	0	0	0	2
G.1.17	3420	0.3	1026	15	0	0	0	0	0	14	4	1	1	9	6	0	1	0	0
G.1.28	3172	0.8	2537.6	8	0	0	0	0	0	22	2	0	0	5	0	0	0	0	0
G.1.13	260	0.4	104	8	0	0	0	0	0	4	0	0	0	5	0	0	0	1	0
G.1.15	2046	0.7	1432.2	24	0	0	0	0	0	23	1	0	1	3	2	0	0	1	1
G.1.16	2520	0.6	1512	49	0	0	0	0	0	0	12	1	0	6	6	0	0	0	0
G.1.19	1920	0.5	960	78	0	0	0	0	0	12	10	0	0	9	3	0	0	0	0
G.1.20	1485	0.5	742.5	18	0	0	0	0	0	17	4	1	0	2	2	0	0	1	0
G.1.21	1800	0.5	900	27	1	0	0	0	0	24	3	0	0	4	7	0	0	2	0
G.1.22	252	0.7	176.4	6	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0
G.1.23	328	0.9	295.2	7	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0
G.1.24	250	0.6	150	23	0	0	0	0	0	28	0	0	1	0	0	0	0	0	0
G.1.25	3150	0.9	2835	109	0	0	0	0	0	120	31	2	0	107	35	0	0	18	3
G.1.29	3192	0.8	2553.6	35	0	0	0	0	0	66	3	0	2	74	29	1	0	2	3
G.1.30	702	1	702	19	0	0	0	0	0	94	5	0	1	74	38	0	2	10	1

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.1.26	1376	1	1376	21	0	0	0	0	0	1	1	0	1	15	3	0	1	4	0
G.1.27	1400	1	1400	11	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0
G.1.31	175	1	175	10	0	0	0	0	0	11	0	0	0	7	3	0	0	0	0
G.1.32	184	1	184	9	0	0	0	0	0	18	1	0	0	2	3	0	0	0	0
G.1.33	1365	1	1365	0	0	0	0	0	0	24	2	0	0	0	0	0	0	0	0
G.1.34	426	1	426	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.36	319	1	319	0	0	0	0	0	0	13	0	0	0	0	0	1	0	0	0
G.1.35	1856	0.7	1299.2	29	0	0	0	0	0	34	32	0	0	8	5	1	1	2	1
G.1.37	375	1	375	28	0	0	0	0	0	19	0	0	0	4	9	0	0	3	1
G.1.38	576	0.5	288	21	0	0	0	0	0	13	1	0	0	0	1	0	0	0	1
G.1.39	310	1	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.40	1088	0.7	761.6	39	0	0	0	0	0	49	1	5	0	4	5	0	0	1	0
G.1.41	952	0.8	761.6	45	0	0	0	0	0	0	3	0	0	3	0	0	0	1	0
G.1.42	480	0.7	336	21	0	0	0	0	0	0	4	0	0	3	3	0	0	0	0
G.1.0			0	8	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
G.1.44	160	1	160	77	1	0	0	0	0	5	1	0	0	13	15	1	3	25	15
G.1.45	1404	1	1404	25	0	0	0	0	0	3	1	0	0	3	2	0	0	2	1
G.1.46	1075	1	1075	11	0	0	0	0	0	2	1	0	0	1	3	0	0	0	2
G.1.47	490	1	490	33	0	0	0	0	0	2	1	0	0	16	5	0	1	2	2
G.1.48	441	1	441	8	0	0	0	0	0	0	2	0	0	5	0	0	1	3	2
G.1.49	1315	1	1315	142	0	0	0	0	0	6	1	0	0	6	4	0	0	7	5
G.1.50	960	1	960	124	0	0	0	0	0	21	2	0	0	12	7	0	0	5	4
G.1.51	1568	1	1568	107	0	0	0	0	0	9	0	0	0	5	9	0	0	3	3
G.1.52	1044	1	1044	38	0	0	0	0	0	9	2	1	0	2	4	0	0	2	1
G.1.53	506	1	506	34	0	0	0	0	0	1	3	0	0	5	2	0	0	2	2
G.1.55	1632	0.4	652.8	38	0	0	0	0	0	9	3	3	0	5	10	0	0	2	4
G.1.56	580	1	580	0	0	0	0	0	0	15	0	2	0	0	4	0	0	2	2
G.1.54	2212	1	2212	55	0	0	0	0	0	11	4	1	0	9	9	0	0	2	3
G.1.102	4373	0.9	3935.7	17	0	0	0	0	0	6	2	0	1	3	0	0	0	6	3
G.1.43	1158	0.8	926.4	124	0	0	0	0	0	49	3	2	0	17	15	0	0	3	3
G.1.57	3500	0.9	3150	227	0	0	0	0	0	38	22	0	0	75	30	0	0	30	5
G.1.58	924	0.9	831.6	31	0	0	0	0	0	1	0	0	0	2	6	1	0	3	1
G.1.59	2176	0.8	1740.8	41	0	0	0	0	0	0	0	0	0	8	7	0	1	6	0
G.1.60	1035	0.7	724.5	0	0	0	0	0	0	2	0	0	0	2	4	0	0	0	0
G.1.61	1760	0.8	1408	42	0	0	0	0	0	21	5	3	1	20	15	0	1	7	3
G.1.65	630	0.4	252	29	0	0	0	0	0	32	0	0	0	9	6	0	0	1	0
G.1.181	1225	0.4	490	35	1	0	0	0	0	2	1	0	0	4	0	0	1	0	2
U.10.180	496	0.5	248	57	0	0	0	0	0	0	0	2	0	7	0	0	2	1	0
U.10.122	1348	0.4	539.2	33	0	0	0	0	0	11	0	0	0	0	2	0	0	0	0
U.10.166	930	0.9	837	46	0	0	0	0	0	12	6	0	0	16	5	0	0	3	0
U.10.167	544	0.9	489.6	146	0	0	0	0	0	13	6	0	0	27	9	0	0	6	1
U.10.121	925	0.7	647.5	9	0	0	0	0	0	1	2	0	0	1	2	0	0	4	0
U.10.165	350	0.9	315	116	0	0	0	0	0	27	6	0	0	28	8	0	0	3	0
U.10.163	624	0.8	499.2	54	0	0	0	0	0	17	1	0	1	17	3	0	0	0	0
U.10.162	318	1	318	61	0	0	0	0	0	31	10	0	0	37	15	1	0	4	2
U.10.161	396	1	396	73	0	0	0	0	0	31	0	1	0	19	4	0	0	4	1
G.1.160	926	1	926	111	0	0	0	0	0	14	3	1	0	15	7	0	0	7	0
U.10.164	475	1	475	124	0	0	0	0	0	15	12	0	0	25	6	0	0	4	0
U.10.182	2958	0.5	1479	114	0	0	0	0	0	50	10	1	0	22	2	1	3	4	0
0.10.183	1168	0.6	700.8	520	0	0	0	0	0	73	10	2	0	108	9	1	1	24	5
U.10.169	624	1	624	160	0	0	0	0	0	46	10	3	1	53	14	0	0	8	9
U.10.168	306	0.8	244.8	97	0	0	0	0	0	23	6	2	0	18	9	0	0	5	0
G.1.62	12500	0.8	10000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.118	2030	1	2030	3	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0
G.1.64	1827	0.4	730.8	46	0	0	0	0	0	28	3	0	0	6	4	0	0	0	0
G.1.63	630	0.7	441	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	1	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
0	9	0	0	0	17	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	6	0	0	0	4	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
0	5	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	20	1	0	0	0	2	0	1	2	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0
0	1	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1	3	0	0	0	4	0	0	0	0	0	0	0
0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.10.119	105	1	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.157	1476	0.3	442.8	17	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
G.1.158	350	0.1	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.159	2460	0.4	984	43	0	0	0	0	0	5	1	0	0	2	0	0	0	0	0
U.10.120	414	0.6	248.4	5	0	0	0	0	0	9	1	0	0	4	0	0	0	0	0
U.10.117	295	1	295	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.10.116	355	1	355	13	0	0	0	0	0	14	2	0	0	6	0	0	0	0	0
G.1.126	296	0.9	266.4	23	0	0	0	0	0	16	2	1	0	2	2	0	0	0	0
U.10.81	1395	0.8	1116	80	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
U.10.80	1681	0.6	1008.6	24	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0
U.10.79	2400	0.7	1680	36	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
U.10.78	1364	0.6	818.4	43	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
G.1.87	950	0.6	570	28	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
G.1.88	1200	0.6	720	6	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.1.89	1088	0.6	652.8	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.1.86	408	0.6	244.8	31	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
G.1.84	468	0.6	280.8	12	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0
G.1.90	864	0.6	518.4	11	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
U.10.115	231	1	231	56	0	0	0	0	0	13	9	0	0	14	12	0	1	2	0
U.10.114	836	1	836	76	2	1	0	0	0	39	19	2	0	38	21	0	3	13	1
U.10.178	714	0.5	357	126	0	0	0	0	0	0	9	0	1	4	1	0	0	1	0
U.10.113	481	0.8	384.8	92	0	0	0	0	0	9	2	0	0	8	5	0	0	1	0
U.10.112	1440	0.8	1152	71	0	0	0	0	0	4	2	0	0	8	2	0	0	2	0
U.10.179	3000	0.3	900	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.1.76	1369	0.9	1232.1	42	0	0	0	0	0	0	0	0	0	20	8	0	0	7	1
G.1.75	1404	0.8	1123.2	185	0	0	0	0	0	0	0	0	0	13	11	0	0	3	0
G.1.170	1720	1	1720	30	0	0	0	0	0	1	1	0	0	1	1	0	0	2	1
G.1.171	1558	0.1	155.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.74	224	1	224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.133			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
U.10.73	224	0.5	112	24	0	0	0	0	0	3	2	0	0	5	5	1	0	3	0
G.1.150	704	1	704	43	0	0	0	0	0	37	8	0	1	36	7	0	0	3	2
G.1.151	658	1	658	48	0	0	0	0	0	26	18	1	0	37	9	0	1	6	2
G.1.172	1260	1	1260	30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.1.176	1295	0.1	129.5		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.173	924	1	924	17	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.1.174	952	1	952	43	0	0	0	0	0	1	0	0	0	4	0	0	0	0	0
G.1.175	714	0.3	214.2	31	0	0	0	0	0	0	0	0	0	3	1	0	0	1	0
G.1.177	1305	0.8	1044	238	0	0	0	0	0	73	20	0	0	24	11	0	0	6	1
G.1.155	863	0.5	431.5	96	0	0	0	0	0	7	4	0	0	20	4	0	0	1	0
G.1.154	840	1	840	241	0	0	0	0	0	39	21	0	0	66	7	0	1	4	3
G.1.153	276	0.9	248.4	113	0	0	0	0	0	9	3	1	0	23	6	0	0	2	0
G.1.152	312	0.3	93.6	103	0	0	0	0	0	12	3	1	0	31	4	0	0	2	0
G.1.156	713	0.1	71.3	0	0	0	0	0	0	0	1	0	0	3	3	1	0	4	0
G.1.94	462	1	462	19	0	0	0	0	0	19	2	0	1	7	4	0	0	3	1
G.1.93	1344	0.6	806.4	17	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.1.92	300	1	300	38	0	0	0	0	0	3	4	0	0	15	3	0	0	0	0
G.1.95	276	0.5	138	8	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0
G.1.96	962	0.6	577.2	32	0	0	0	0	0	3	8	0	0	19	8	0	0	2	0
G.1.97	612	0.5	306	15	0	0	0	0	0	3	1	0	0	7	3	0	0	0	0
G.1.98	1035	0.4	414	47	0	0	0	0	0	4	12	0	0	9	10	0	0	0	1
G.1.110	3276	0.3	982.8	32	0	0	0	0	0	8	2	0	0	6	2	0	0	3	0
G.1.99	1116	0.5	558	32	0	0	0	0	0	51	5	0	0	6	7	0	0	4	0
G.1.100	427	0.6	256.2	21	0	0	0	0	0	35	15	0	1	17	14	0	0	2	0
G.1.124	1755	0.8	1404	160	0	0	0	0	0	65	27	1	1	34	23	2	3	1	1
U.10.123	1300	0.7	910	0	0	0	0	0	0	5	4	1	0	2	3	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.10.125	1034	0.6	620.4	30	0	0	0	0	0	17	6	0	0	6	5	0	0	0	1
U.10.91	3452	0.7	2416.4	17	0	0	0	0	0	0	1	0	0	3	2	0	0	0	0
G.1.101	1070	1	1070	127	1	0	0	0	0	54	12	0	0	83	33	0	0	39	32
G.1.103	144	1	144	59	0	0	0	0	0	33	18	1	0	35	28	0	0	28	5
G.1.104	422	1	422	6	0	0	0	0	0	28	7	1	0	16	11	0	1	10	3
G.1.105	200	1	200	75	0	0	0	0	0	35	4	0	0	8	8	1	0	4	3
G.1.106	212	1	212	15	0	0	0	0	0	16	3	1	0	4	5	0	0	0	1
G.1.107	64	1	64	46	2	0	0	0	0	24	0	0	0	31	12	23	11	36	26
G.1.108	1652	0.2	330.4	226	0	0	0	0	1	42	1	0	0	31	4	25	15	17	9
G.1.109	984	0.8	787.2	12	0	0	0	0	0	7	0	0	0	5	4	0	1	3	0
G.1.6	595	0.6	357	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.111	1066	0.8	852.8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.83	1512	0.8	1209.6	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.82	2992	0.8	2393.6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.10.77	868	0.3	260.4	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.1.85	1023	0.6	613.8	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.16	11780	0.6	7068	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.2	790	1	790	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.3	650	1	650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.4	2350	1	2350	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.5	1740	1	1740	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.6	2010	1	2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.7	800	1	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.8	1020	1	1020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.1	2400	0.2	480	10	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0
G.2.9	12480	0.2	2496	26	0	0	0	0	0	1	1	0	0	8	20	0	0	1	0
G.2.10	4887	0.1	488.7	27	0	0	0	0	0	3	1	0	0	11	0	0	0	0	0
G.2.11	8625	0.8	6900	48	0	0	0	0	0	4	4	1	0	1	0	0	0	0	2
G.2.12	9687	0.1	968.7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.2.13	1170	0.9	1053	12	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.2.14	17953	0.6	10772	5	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
G.2.15	7500	0.8	6000	21	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.3.7	639	1	639		0	0	0	0	0	2	3	0	0	1	4	0	0	1	2
G.3.2			0		0	0	0	0	0	0	12	2	0	38	24	2	0	16	6
G.3.6			0		0	0	0	0	0	8	8	1	0	54	19	3	0	20	27
G.3.5			0		0	0	0	0	0	2	2	0	0	10	8	0	0	8	3
G.3.1	380	0.4	152	0	0	0	0	0	0	0	2	0	0	1	0	1	0	1	0
G.3.4	1740	1	1740	69	0	0	0	0	0	1	7	1	0	5	15	1	0	2	23
G.3.8	1094	0.8	875.2	265	0	0	0	0	0	4	4	0	0	19	20	0	0	33	27
G.3.3	1072	0.9	911.2	3149	0	0	0	0	0	21	0	0	0	155	74	0	0	182	123
G.3.3B			0	12	0	0	0	0	0	6	2	0	0	7	10	6	3	44	47
G.3.9	871	1	871	89	0	0	0	0	0	19	3	0	1	13	0	0	0	2	0
G.3.10	436	1	436	0	0	0	0	0	0	1	1	1	0	2	0	0	0	1	3
G.4.1	350	1	350	20	0	0	0	0	0	8	17	1	1	8	2	1	0	10	2
G.5.1			0	14	0	0	0	0	0	0	0	0	0	11	1	1	2	2	3
G.5.2	100	0.1	10	28	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
G.5.4	800	0.5	400	212	2	0	0	0	0	19	2	0	0	28	1	0	0	15	17
G.5.5	250	1	250	292	1	0	0	0	0	20	4	0	0	32	10	0	0	13	13
G.5.6	2200	0.4	880	389	1	0	0	0	0	20	12	0	0	76	31	0	1	14	26
G.5.6B	2200	0.4	880		0	0	0	0	0	10	30	0	0	84	2	2	5	28	18
G.5.14	577	0.9	519.3	24	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.5.3	580	1	580	55	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
G.5.13	528	0.1	52.8	12	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.5.15	1196	0.1	119.6	56	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1
G.5.16	100	0.5	50	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.5.7	1508	0.1	150.8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	15	0	0	0	4	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0
0	8	0	0	0	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
2	33	0	0	0	6	2	2	0	2	0	0	0	3	0	0	0	0	0	0	0
0	16	0	1	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.5.8	1746	0.7	1222.2	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.5.9	782	1	782	8	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.5.17	100	0.7	70	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.5.10	528	1	528	38	0	0	0	0	0	0	1	0	0	0	3	0	0	1	2
G.5.11	2210	0.9	1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.5.12	2590	0.9	2331	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.1	5512	0.1	551.2	1	0	0	0	0	0	6	0	1	0	0	0	0	0	0	0
G.6.5	1760	0.1	176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.15	392	0.8	313.6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
G.6.16	4305	0.6	2583	4	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.6.17	180	1	180	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.18	546	0.1	54.6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.19	4440	0.9	3996	7	0	0	0	0	0	4	0	0	0	1	0	0	0	1	1
G.6.23	5624	1	5624	48	0	0	0	0	0	3	0	1	0	0	1	0	0	0	0
G.6.20	5000	0.9	4500	21	0	0	0	0	0	0	2	0	0	0	4	1	0	4	4
G.6.21	10744	1	10744	69	0	0	0	0	0	0	0	0	0	1	3	0	0	0	1
G.6.22	650	0.8	520	8	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0
G.6.25			0	137	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.6.24	432	1	432	15	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
G.6.3	1522	0.8	1217.6	64	0	0	1	0	0	3	1	0	0	9	1	0	0	1	0
G.6.6	531	0.1	53.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.7	557	1	557	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.8	502	1	502	3	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
G.6.9	706	1	706	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.10	370	1	370	7	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0
G.6.11	1918	1	1918	67	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
G.6.12	1120	1	1120	4	0	0	0	0	0	1	1	0	0	2	2	0	0	1	0
G.6.13	1020	1	1020	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.6.14	1092	1	1092	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.1	420	0.1	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.2	1943	0.1	194.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.3	1490	0.2	298	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.7.4	971	1	971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.8.1	6420	0.3	1926	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0
G.9.1	10500	0.2	2100	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.10.1	4900	0.1	490	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.10.2	2077	1	2077	171	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
G.11.1	1222	0.1	122.2	5	0	0	0	0	0	13	8	0	0	0	0	0	0	0	0
G.11.2	922	0.7	645.4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.11.3	600	0.7	420	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.11.4	1660	0.7	1162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.12.1	1412	0.1	141.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.12.4	1200	0.9	1080		0	0	0	0	0	5	2	0	0	1	1	0	0	0	0
G.12.2	2827	0.1	282.7		0	0	0	0	0	8	2	1	0	0	0	0	0	0	1
G.12.3	2300	0.1	230	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.13.1	1482	0.4	592.8	2	0	0	0	0	0	3	1	0	0	2	0	0	0	0	0
G.14.1	419	0.6	251.4		0	0	0	0	0	5	2	0	0	1	0	0	0	0	0
G.14.2			0		0	0	0	0	0	1	11	0	0	2	2	0	0	0	0
G.14.3			0		0	0	0	0	0	9	2	0	0	0	0	0	0	0	0
G.15.1	9343	1	9343	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.15.2	2835	0.8	2268	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.15.3	877	0.6	526.2	3	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
G.15.4	1099	0.8	879.2	18	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0
G.15.5	1970	1	1970	7	0	0	0	0	0	0	1	0	0	4	1	0	0	3	0
G.15.6	237	0.1	23.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.16.1/2	475	0.8	380	29	0	0	0	0	0	45	2	0	0	3	0	0	0	2	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.16.3	480	0.7	336	78	0	0	0	0	0	35	10	0	1	4	0	0	0	0	0
G.16.4	3515	0.1	351.5	7	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0
G.16.5	1465	0.3	439.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.16.6	1009	0.1	100.9	14	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.16.7	1546	0.6	927.6	41	0	0	0	0	0	21	2	0	0	5	0	0	0	3	0
G.16.8	1346	0.5	673	76	0	0	0	0	0	35	3	0	0	1	0	0	0	0	0
G.16.9	757	0.7	529.9	214	0	0	0	0	0	37	15	2	0	10	1	0	0	3	0
G.17.1			0	31	0	0	0	0	0	0	1	0	0	0	1	0	0	0	4
G.18.1	314	1	314		0	0	0	0	0	20	2	0	0	0	1	0	0	0	1
G.18.2			0	5	0	0	0	0	0	0	4	1	1	2	0	0	0	0	0
G.19.1	3645	0.8	2916	15	0	0	0	0	0	1	2	2	0	3	0	0	0	5	1
G.19.2	6472	0.8	5177.6	91	0	0	0	0	0	4	1	0	0	6	4	0	0	2	0
G.19.7			0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0
G.19.3	2057	0.9	1851.3	0	0	0	0	0	0	4	2	0	0	0	1	0	0	2	0
G.19.4	1641	0.8	1312.8	28	0	0	0	0	0	3	1	0	0	11	3	0	0	11	0
G.19.5	1735	0.8	1388	5	0	0	0	0	0	2	1	0	0	1	1	0	0	1	0
G.19.6	838	0.8	670.4	79	0	0	0	0	0	1	0	0	0	4	5	0	0	0	0
G.19.8	2375	0.9	2137.5	10	0	0	0	0	0	3	10	0	0	1	3	0	0	1	0
G.20.01	500	0.5	250	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.20.02	1742	1	1742	60	0	0	0	0	0	7	0	0	0	8	5	0	0	13	2
G.20.04	1513	1	1513	37	0	0	0	0	0	0	2	0	0	0	1	0	0	1	1
G.20.05	1794	1	1794	58	0	0	0	0	0	5	0	0	0	5	5	1	0	5	1
G.20.19			0	0	0	0	0	0	0	5	2	2	0	2	0	0	0	0	0
G.20.09	821	0.1	82.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.20.20	1154	1	1154	417	1	0	0	0	0	3	3	0	0	7	2	1	0	13	4
G.20.21	1352	1	1352	136	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0
G.20.06	1760	1	1760	10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.20.07	2102	1	2102	77	0	0	0	0	0	2	0	0	0	2	1	0	0	1	0
G.20.08	1587	1	1587	71	0	0	0	0	0	4	2	0	0	1	8	0	0	3	1
G.20.23	793	1	793	24	0	0	0	0	0	0	2	0	0	3	1	0	0	0	0
G.20.24	1973	0.8	1578.4	29	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
G.20.25	2097	1	2097	1374	2	0	0	0	0	0	0	0	0	5	12	0	0	1	2
G.20.10	1602	0.7	1121.4	8	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
G.20.03	9553	1	9553	1402	0	0	0	0	0	29	2	1	2	34	27	0	1	31	22
G.20.11	149	1	149	0	0	0	0	0	0	0	0	0	0	13	11	0	0	0	0
G.20.12	2410	1	2410	216	0	0	0	0	0	58	63	0	3	48	49	0	0	8	1
G.20.13	1884	1	1884	17	0	0	0	0	0	14	13	0	0	8	3	0	0	2	0
G.20.14	3012	0.5	1506	124	0	0	0	0	0	0	38	3	1	20	25	0	0	0	1
G.20.16	4935	0.9	4441.5	0	0	0	0	0	0	0	3	2	0	0	6	0	0	0	1
G.20.15	2926	0.8	2340.8	41	0	0	0	0	0	12	2	1	0	2	0	0	0	0	0
G.20.17	2210	1	2210	11	0	0	0	0	0	52	29	2	0	9	16	0	0	2	0
G.20.22	1791	0.7	1253.7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.20.30	4882	0.7	3417.4	15	0	0	0	0	0	26	15	2	0	0	6	0	0	0	0
G.20.26	826	1	826	16	0	0	0	0	0	14	18	0	1	5	11	0	0	0	0
G.20.27	1288	1	1288	9	0	0	0	0	0	18	20	0	2	3	8	0	0	3	0
G.20.28	1589	1	1589	5	0	0	0	0	0	2	1	2	0	5	4	0	0	0	0
G.20.29	1882	1	1882	14	0	0	0	0	0	5	6	1	0	9	8	0	0	0	0
G.43.7	1600	0.6	960	3	0	0	0	0	0	18	20	6	0	7	2	0	0	0	0
G.43.1	3220	0.7	2254	24	1	0	0	0	1	2	1	0	0	1	0	0	0	0	0
G.43.2	632	1	632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.43.3	3244	0.7	2270.8	37	0	0	0	0	0	6	0	0	1	4	2	0	0	0	0
G.43.4	4360	0.9	3924	336	5	0	0	0	0	8	2	0	0	26	20	0	0	7	0
G.43.5	498	1	498	49	1	0	0	0	0	0	2	0	0	12	2	0	0	2	0
G.43.6	905	0.8	724	233	1	0	0	0	0	5	0	0	0	12	4	1	0	0	0
G.21.01	7865	0.5	3932.5	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0
G.21.02	7584	0.1	758.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.21.03	1505	0.8	1204	0	0	0	0	0	0	9	0	3	0	0	0	0	0	0	0
G.21.04	1786	0.7	1250.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.05	1156	0.9	1040.4	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
G.21.06	2995	0.9	2695.5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.21.07	2638	0.7	1846.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.11	3751	0.9	3384.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.08	2958	0.8	2366.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.21.10	642	1	642	1	0	0	0	0	0	1	0	0	0	2	0	0	1	0	0
G.21.12	1521	0.7	1064.7	2	0	0	0	0	0	8	3	0	0	3	5	0	1	1	0
G.21.13	1400	0.9	1260	1	0	0	0	0	0	11	23	0	0	12	18	0	1	3	0
G.23.01	4749	0.8	3799.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.02	2204	0.4	881.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.03	936	1	936	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.12	2121	0.9	1908.9	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
G.23.13	1600	0.6	960	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.23.14	936	1	936	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.04	2568	0.9	2311.2	48	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0
G.23.05	2240	0.8	1792	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.07	4180	0.8	3344	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.09	865	0.8	692	15	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
G.23.08	3324	0.9	2991.6	11	0	0	1	0	0	2	0	0	0	0	4	1	0	1	0
G.23.06	900	0.5	450	14	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G.23.10	1605	0.9	1444.5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.23.11	452	0.9	406.8	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
G.22.01	1026	1	1026	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
G.22.02	1446	1	1446	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
G.22.03	323	0.9	290.7	41	0	0	0	0	0	1	0	0	0	7	4	0	0	0	0
G.22.04	407	0.8	325.6	21	0	0	0	0	0	4	3	0	0	10	9	0	0	0	0
G.22.05	200	0.9	180	24	0	0	0	0	0	16	2	0	0	7	3	0	0	0	0
G.22.06	369	0.9	332.1	57	0	0	0	0	0	31	6	0	0	14	4	0	0	1	0
G.22.07	177	0.9	159.3	170	0	0	0	0	0	23	10	0	0	14	4	0	0	2	0
G.22.08	617	0.9	555.3	74	0	0	0	0	0	53	6	2	2	22	9	0	1	1	0
G.22.09	259	1	259	26	0	0	0	0	0	15	5	0	0	4	3	0	0	1	0
G.22.10	1067	0.1	106.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.01	2019	0.9	1817.1	10	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0
G.24.02	1715	1	1715	8	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0
G.24.03	2177	1	2177	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.05	1063	0.7	744.1	5	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0
G.24.06	1680	1	1680	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.07	2989	0.9	2690.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.08	2132	0.9	1918.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.04	1396	0.7	977.2	11	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0
G.24.09	2857	0.9	2571.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.24.10	2180	0.9	1962	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
G.25.1	57	1	57	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.25.2	145	0.9	130.5	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.25.3	338	0.6	202.8	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.25.4	450	0.7	315	25	1	0	0	0	0	0	0	0	0	0	0	2	8	2	2
G.25.5	1128	0.3	338.4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.05	736	1	736	336	0	1	0	0	0	1	1	0	0	3	1	0	0	8	1
G.26.06	796	0.2	159.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.07	2770	0.2	554	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.01	2109	0.2	421.8	54	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
G.26.02	1089	0.4	435.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.26.03	609	1	609	47	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.26.04	1107	1	1107	15	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	1	0	0	2	0	0	0	0	1	1	0	0	1	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	1	5	0	0	0	0	0	0	0	3	8	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0
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0	0	0	1	0	6	0	0	0	0	0	0	0	10	2	0	0	0	0	0	0
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0	10	0	1	0	0	0	1	0	6	1	0	0	0	2	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.26.08	1205	1	1205	117	0	0	0	0	0	4	4	0	1	5	2	0	0	3	1
G.26.09	1308	0.4	523.2	70	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0
G.26.10	252	1	252	134	0	0	0	0	0	22	18	2	1	1	0	0	0	4	0
G.26.11	529	1	529	224	0	1	0	0	0	47	29	1	2	2	1	0	1	5	2
G.26.12	1206	0.5	603	13	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.27.1	319	0.6	191.4	53	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
G.27.2	1074	0.8	859.2	43	0	0	0	0	0	17	4	0	0	0	1	0	0	0	0
G.27.3	4900	0.9	4410	25	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
G.28.1	4773	0.8	3818.4	10	1	0	0	0	0	5	9	1	0	3	0	1	0	0	0
G.91.1			0		0	0	0	0	0	4	0	0	0	4	5	0	1	0	0
G.29.01	550	0.9	495	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
G.29.02	450	0.6	270	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.29.03	1260	0.6	756	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
G.29.04	920	0.6	552	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.05	1400	0.6	840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.06	2620	0.6	1572	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.07	850	1	850	18	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.29.08	170	1	170	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.09	290	0.8	232	0	2	0	0	0	0	3	0	0	0	2	0	0	0	0	0
G.29.10	575	0.8	460	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.11	920	0.8	736	0	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0
G.29.12	550	0.7	385	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.13	360	0.8	288	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.14	1130	0.8	904	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G.29.15	1320	0.8	1056	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.16	1970	0.7	1379	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.17	760	0.9	684	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0
G.29.18	1650	0.6	990	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.19	970	0.7	679	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.29.20	1310	0.8	1048	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.29.21	1920	0.7	1344	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.22	2185	0.7	1529.5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.23	750	0.8	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.24	2040	1	2040	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.25	1320	0.6	792	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.26	4375	0.6	2625	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.27	2830	0.9	2547	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.29.28	1265	0.7	885.5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.29	3070	0.5	1535	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.30	1730	0.6	1038	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.31	3480	0.8	2784	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.29.32	680	0.7	476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.29.33	1970	0.2	394	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.30.01	3820	0.1	382	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.30.02	4210	0.7	2947	17	0	0	0	0	0	3	2	0	0	0	1	0	0	0	0
G.30.03	1700	0.9	1530	16	0	0	0	0	0	15	0	0	0	2	0	0	0	0	0
G.30.04	1260	0.9	1134	37	0	0	0	0	0	13	16	0	0	2	2	0	0	0	1
G.30.05	625	0.7	437.5	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
G.30.06	635	0.5	317.5	5	0	0	0	0	0	9	4	0	0	0	0	0	0	1	0
G.30.07	1665	0.5	832.5	43	0	0	0	0	0	8	8	0	0	2	3	0	0	0	0
G.30.08	1350	0.7	945	73	0	0	0	0	0	24	38	0	1	4	3	0	0	3	0
G.30.09	640	0.7	448	75	0	0	0	0	0	5	7	1	1	1	0	0	0	0	0
G.30.27	241	0.8	192.8	13	0	0	0	0	0	6	2	0	0	1	0	0	0	0	0
G.30.28	590	0.7	413	28	0	0	0	0	0	30	6	1	3	2	2	0	0	5	0
G.30.10	220	1	220	3	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.30.11	1100	0.7	770	121	0	0	0	0	0	35	2	0	0	2	0	0	0	1	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.30.12	3860	0.8	3088	6	0	0	0	0	0	5	0	1	0	0	0	0	0	0	0
G.30.36	1745	0.1	174.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.30.25	580	0.6	348	24	0	0	0	0	0	10	3	0	0	0	2	0	0	0	0
G.30.26	572	1	572	24	0	0	0	0	0	0	2	0	0	13	0	0	0	0	0
G.30.24	683	0.4	273.2	1	0	0	0	0	0	26	14	2	2	1	0	0	1	4	0
G.30.22	1234	0.6	740.4	49	1	0	0	0	0	35	2	0	1	2	1	0	0	1	0
G.30.23	609	0.6	365.4	22	0	0	0	0	0	11	4	4	0	0	2	0	0	3	0
G.30.13	333	1	333	16	0	0	0	0	0	12	9	1	2	0	1	0	0	0	0
G.30.21	3627	0.3	1088.1	41	0	0	0	0	0	24	2	0	0	0	1	0	0	3	0
G.30.14	195	1	195	13	0	0	0	0	0	21	0	0	0	1	0	0	0	7	0
G.30.15	710	0.7	497	28	0	0	0	0	0	24	0	0	0	0	0	0	0	5	0
G.30.16	185	1	185	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.30.20	1268	0.3	380.4	13	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
G.30.17	658	1	658	324	0	0	0	0	1	0	0	0	0	2	3	0	2	5	5
G.30.18	235	1	235	0	0	0	0	0	0	9	1	0	0	0	0	0	0	0	0
G.30.19	824	0.4	329.6	22	0	0	0	0	0	11	2	0	0	2	0	0	0	1	0
G.30.29	1028	0.8	822.4	71	0	0	0	0	0	5	1	0	0	1	0	0	0	1	0
G.30.30	265	0.8	212	10	0	0	0	0	0	11	0	0	0	0	2	0	0	0	0
G.30.31	274	0.8	219.2	8	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0
G.30.32	164	0.8	131.2	8	0	0	0	0	0	11	2	0	0	0	0	0	1	0	1
G.30.33	1948	0.4	779.2	74	0	0	0	0	0	9	2	0	0	1	0	0	0	1	0
G.30.34	2327	0.6	1396.2	48	0	0	0	0	0	13	6	0	0	2	0	0	1	0	0
G.30.35	2257	0.6	1354.2	37	0	0	0	0	0	17	8	0	0	3	0	0	0	0	0
G.31.1	557	0.8	445.6	45	0	0	1	0	0	47	11	1	2	11	3	0	1	0	0
G.31.2	2518	0.1	251.8	31	0	0	0	0	0	19	1	0	0	2	0	0	1	0	0
G.31.3	1767	0.6	1060.2	86	0	0	0	0	0	28	5	0	0	7	2	0	0	0	0
G.31.4	1030	1	1030	22	0	0	0	0	0	53	13	1	0	1	2	0	0	0	0
G.31.5	1893	0.7	1325.1	99	0	0	0	0	0	57	12	1	0	1	2	0	0	0	0
G.31.6	3430	0.1	343	2	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0
G.31.7	1587	0.6	952.2	174	0	0	0	0	0	82	20	1	0	1	4	0	0	0	1
G.32.1	2505	0.2	501	2	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
G.32.2	390	0.7	273	3	0	0	0	0	0	3	0	0	0	5	4	0	0	0	0
G.32.3	330	0.7	231	39	0	0	0	0	0	8	6	0	0	4	2	0	0	0	0
G.32.4	1200	0.4	480	48	0	0	0	0	0	26	8	0	0	14	3	0	0	0	0
G.32.5	490	0.8	392	29	0	0	0	0	0	5	3	0	0	4	1	0	0	0	0
G.32.6	640	0.6	384	49	0	0	0	0	0	24	2	0	0	0	0	0	0	0	0
G.32.7	1020	0.4	408	110	0	0	0	0	0	13	12	1	1	6	2	0	0	0	0
G.33.01	380	1	380	92	0	0	0	0	0	0	18	1	0	3	5	0	0	4	0
G.33.02	800	1	800	103	0	0	0	0	0	15	9	0	0	10	12	0	0	2	0
G.33.03	1900	0.2	380	11	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.33.04	900	0.2	180	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.33.05	1050	0.3	315	92	0	0	0	0	0	41	14	0	0	16	5	0	0	4	0
G.33.06	325	0.7	227.5	0	0	0	0	0	0	23	9	0	0	2	1	0	0	0	0
G.33.07	60	1	60	16	0	0	0	0	0	66	8	1	0	1	0	0	0	0	0
G.33.08	450	1	450	91	0	0	0	0	0	25	10	0	1	3	2	0	0	0	0
G.33.09	500	0.6	300	15	0	0	0	0	0	9	3	0	0	5	0	0	0	0	0
G.33.10	910	0.1	91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.34.1	740	0.7	518	22	0	0	0	0	0	5	0	0	0	2	1	0	0	1	0
G.34.2			0	0	0	0	0	0	0	6	6	2	0	2	0	0	0	0	0
G.34.3	2700	0.7	1890	51	0	0	0	0	0	20	9	1	0	11	0	0	0	0	0
G.34.4	2700	0.7	1890	10	0	0	0	0	0	5	19	0	1	4	9	0	0	0	0
G.34.5			0	0	0	0	0	0	0	6	1	0	0	1	3	0	0	0	0
G.35.1	1790	0.3	537	19	0	0	0	0	0	5	1	0	0	3	2	0	1	0	0
G.35.2	480	0.6	288	7	0	0	0	0	0	9	0	0	0	3	1	0	0	0	0
G.35.3	1860	0.8	1488	70	0	0	0	0	0	17	5	0	0	3	1	0	0	1	1
G.35.4	1425	0.6	855	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	5	0	0	1	0	0	0	0	9	2	0	0	0	0	0	0
0	0	0	0	0	3	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	1	0	0	0	0	3	3	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.35.5	2440	0.7	1708	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.35.6	600	0.7	420	27	0	0	0	0	0	6	4	0	0	2	0	0	0	0	1
G.36.1	2850	0.7	1995	304	0	0	0	0	0	44	23	0	1	15	10	0	0	3	0
G.36.2	1880	0.7	1316	47	0	0	0	0	0	30	8	0	0	3	6	0	0	1	0
G.36.3	1150	1	1150	43	0	0	0	0	0	11	7	0	0	10	0	1	1	0	0
G.36.4	970	0.7	679	25	0	0	0	0	0	16	4	0	0	3	2	0	0	0	0
G.36.5	5900	0.7	4130	8	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
G.36.6	1050	1	1050	25	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
G.37.0			0	1	0	0	0	0	0	3	193	23	8	124	66	0	1	24	12
G.37.1	2780	0.6	1668	77	0	0	0	0	0	16	0	2	0	7	3	0	0	0	0
G.37.2	1360	0.6	816	62	0	0	0	0	0	21	5	0	1	4	1	0	0	0	0
G.37.3	7310	0.4	2924	12	0	0	0	0	0	11	0	0	0	2	0	0	0	0	0
G.38.1	1800	0.7	1260	115	0	0	0	0	0	22	9	1	0	13	2	0	0	1	0
G.38.2	682	0.8	545.6	49	0	0	0	0	0	41	2	0	0	4	1	0	0	1	1
G.38.3	517	0.4	206.8	127	0	0	0	0	0	47	13	2	0	4	0	0	0	0	0
G.38.4	1480	0.7	1036	473	0	0	0	0	0	151	24	1	0	23	8	0	0	2	0
G.38.5	1515	0.6	909	137	0	0	0	0	0	37	7	0	0	8	2	0	0	0	0
G.38.6	1270	0.2	254	127	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.39.1	1175	0.8	940	617	0	0	0	0	0	42	24	1	4	21	6	0	0	5	2
G.39.2	605	0.6	363	239	0	0	0	0	0	18	13	1	1	10	3	0	0	1	0
G.39.3	320	0.8	256	62	0	0	0	0	0	6	2	0	0	4	1	0	0	0	0
G.39.4	570	0.7	399	27	0	0	0	0	0	15	8	0	0	11	4	0	0	2	0
G.39.5	810	0.6	486	45	0	0	0	0	0	6	24	2	0	15	2	0	1	0	0
G.39.6	900	0.6	540	47	0	0	0	0	0	5	0	0	0	3	0	0	0	4	2
G.39.7	700	0.6	420	171	0	0	0	0	0	21	6	0	0	19	8	0	0	4	0
G.39.8	1607	0.8	1285.6	26	0	0	0	0	0	10	3	1	0	1	1	0	0	1	0
G.40.1	247	0.7	172.9	11	1	0	0	0	0	2	5	0	0	0	3	0	0	0	0
G.40.2	534	0.4	213.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.40.3	283	1	283	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.40.4	190	0.9	171	12	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.40.5	185	0.9	166.5	14	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0
G.40.6	554	0.9	498.6	8	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.40.7	180	0.6	108	5	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.40.8	490	0.4	196	3	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0
G.41.1	7460	0.8	5968	537	1	0	0	0	0	156	39	1	0	34	7	0	0	5	2
G.42.1	2267	0.1	226.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.44.1			0	183	0	0	0	0	0	22	11	0	0	20	0	0	0	1	1
G.45.1	2250	0.8	1800	437	0	0	0	0	0	0	2	0	0	20	1	0	1	14	9
G.45.2	740	0.2	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.45.3	2950	0.3	885	21	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
G.45.4	3625	0.9	3262.5	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.45.5	113	0.5	56.5	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.45.6	770	0.9	693	142	1	0	0	0	0	7	1	0	0	1	1	0	0	4	2
G.45.7	1340	0.9	1206	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.45.8	620	0.9	558	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.46.01	500	0.7	350	24	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
G.46.02	1030	0.9	927	32	0	0	0	0	0	8	0	1	0	0	0	2	0	0	0
G.46.04	1320	0.9	1188	73	1	0	0	0	0	31	6	3	0	0	1	1	0	1	3
G.46.03	1225	0.9	1102.5	77	1	0	0	0	0	26	3	0	0	2	0	0	0	2	1
G.46.07	1800	0.9	1620	378	0	0	0	0	0	16	6	0	0	4	0	0	0	8	1
G.46.08	1685	0.7	1179.5	223	0	0	0	0	0	5	0	0	0	4	3	0	0	1	2
G.46.13	1400	0.7	980	329	1	0	0	0	0	11	1	1	0	24	9	0	0	15	4
G.46.15	1200	0.7	840	115	1	0	0	0	0	10	3	0	0	4	0	0	0	1	1
G.46.09	1637	0.6	982.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.46.10	1250	0.8	1000	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.46.11	1910	0.5	955	23	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	7	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.46.14	900	0.7	630	19	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
G.47.1	108	0.5	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.48.1	2026	1	2026	166	0	0	0	0	0	2	0	0	0	6	5	0	0	6	2
G.48.2	1100	0.2	220	15	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
G.48.3	210	0.2	42	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.49.01	1180	0.5	590	47	0	0	0	0	1	11	9	0	1	16	6	1	0	5	1
G.49.02	729	1	729	127	0	1	0	1	0	33	73	8	4	32	7	0	1	10	0
G.49.03	230	1	230	63	2	0	0	0	0	6	11	0	0	8	4	0	0	3	0
G.49.04	671	0.2	134.2	7	0	0	0	0	0	6	5	0	0	2	0	0	0	1	0
G.49.05	526	1	526	105	0	0	0	0	0	13	12	1	0	21	6	0	1	4	0
G.49.07	629	0.9	566.1	83	0	0	0	0	0	12	9	2	0	10	3	0	0	1	0
G.49.06	595	0.8	476	18	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.49.12	695	1	695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.49.08	2167	0.8	1733.6	57	0	0	0	0	0	3	6	0	0	2	0	0	0	1	0
G.49.09	138	1	138	37	0	0	0	0	0	0	0	0	0	2	3	0	0	2	0
G.49.10	795	0.1	79.5	0	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0
G.49.11	660	0.1	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.50.1	2050	0.6	1230	15	0	0	0	0	0	0	1	0	0	3	1	0	0	5	2
G.50.2	1434	0.7	1003.8	11	0	0	0	0	0	0	0	0	0	1	5	0	1	13	3
G.50.3	1026	0.7	718.2	6	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0
G.50.4	968	0.7	677.6	9	5	0	0	0	0	1	0	0	0	0	0	0	0	4	1
G.50.5	818	0.6	490.8	12	0	0	0	0	0	2	0	0	0	0	0	1	0	1	1
G.50.8	935	0.7	654.5	124	2	0	0	0	0	4	10	0	0	9	1	0	0	5	2
G.50.9	2070	0.7	1449	39	0	0	0	0	0	1	0	0	0	4	0	0	0	4	0
G.50.6	1270	0.4	508	33	1	0	0	0	0	0	1	0	0	0	1	0	0	0	2
G.50.7	98	0.3	29.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.51.1	2261	0.6	1356.6	44	0	0	0	0	0	1	7	0	0	5	0	0	0	0	0
G.51.2	2020	0.7	1414	63	0	0	0	0	1	6	8	1	0	19	8	0	1	6	1
G.51.3	1716	0.3	514.8	8	1	0	0	0	0	2	3	0	0	7	0	0	0	0	0
G.51.4	3032	0.2	606.4	20	0	0	0	0	0	1	10	1	0	0	0	0	0	0	0
G.51.5	2240	0.5	1120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.52.01	465	0.5	232.5	869	1	0	0	0	2	9	81	0	6	31	12	0	0	3	0
G.52.02	1060	1	1060	347	0	0	0	0	0	23	54	0	3	18	7	0	1	3	0
G.52.03	1185	1	1185	236	0	0	0	0	0	26	35	0	0	18	3	0	0	1	0
G.52.04	470	1	470	394	0	0	0	0	0	30	37	5	3	9	4	0	0	4	0
G.52.05	610	0.9	549	289	1	0	0	0	0	24	39	3	2	11	5	2	0	6	2
G.52.06	395	1	395	327	0	0	0	0	0	19	61	0	2	20	6	0	0	0	0
G.52.07	750	0.2	150	35	0	0	0	0	0	22	31	0	0	5	0	0	0	3	1
G.52.10	360	0.1	36	7	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
G.52.08	405	0.7	283.5	253	0	0	0	0	0	2	0	0	0	8	2	0	0	6	1
G.52.09	555	0.3	166.5	87	0	0	0	0	0	0	0	0	0	4	3	0	0	1	1
G.52.11	825	0.5	412.5	374	0	0	0	0	0	3	0	0	0	8	7	0	1	10	2
G.52.12	1625	0.3	487.5	203	0	0	0	0	0	0	2	0	0	2	4	0	0	4	0
G.52.13	646	1	646	40	0	0	0	0	0	1	0	0	0	0	0	1	0	5	0
G.52.14	655	1	655	89	1	0	0	0	0	0	0	0	0	1	2	0	1	4	4
G.52.15	335	0.2	67	33	0	0	0	0	0	0	0	0	0	0	2	0	0	6	1
G.52.16	341	1	341	274	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
G.52.17	490	1	490	248	0	0	0	0	0	6	0	0	0	16	4	0	3	5	2
G.52.18	1558	0.8	1246.4	287	0	0	0	0	0	8	0	0	0	13	0	0	0	6	0
G.52.19	1855	0.8	1484	239	0	0	0	0	0	0	2	0	0	6	2	0	0	4	0
G.52.20	515	0.1	51.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.52.21			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.53.1	809	0.5	404.5	47	2	0	0	1	0	22	5	0	0	1	1	0	0	2	5
G.53.2	1493	0.4	597.2	25	1	0	0	0	0	8	0	1	1	3	1	0	1	0	0
G.53.3	407	0.3	122.1	17	1	0	0	0	0	8	0	0	0	0	0	0	0	0	0
G.53.4	1183	0.5	591.5	5	2	0	0	0	0	38	8	0	4	2	2	0	0	0	2

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	`	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
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1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	3	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.54.1	2960	0.3	888	25	6	0	0	0	0	0	0	0	0	1	0	0	0	1	1
G.54.2	4265	0.2	853	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.54.3	260	0.1	26	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.54.4	130	0.1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.55.01	8406	0.3	2521.8	24	0	0	0	0	0	1	0	0	0	4	0	0	1	10	0
G.55.02	595	0.5	297.5	67	2	0	0	0	0	1	0	0	0	3	0	0	2	8	2
G.55.03	4588	0.1	458.8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.55.04	3440	0.4	1376	20	0	0	0	0	0	8	0	0	0	2	0	0	0	0	0
G.55.05	2473	0.1	247.3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.55.09	2052	0.9	1846.8	251	1	0	0	0	0	12	0	0	0	117	24	1	1	7	0
G.55.10	1940	0.2	388	72	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
G.55.11	60	0.9	54	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.55.06	6654	0.4	2661.6	128	0	0	0	0	0	55	28	5	0	17	4	0	0	10	3
G.55.07	6996	0.3	2098.8	35	0	0	0	0	0	12	6	0	0	5	0	0	0	4	1
G.55.08	926	0.5	463	149	1	0	0	0	0	31	30	0	0	30	2	1	1	10	6
G.56.01	1760	0.2	352	12	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1
G.56.02	60	0.6	36	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.56.03	50	0.6	30	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.56.04	45	0.6	27	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
G.56.05	70	0.6	42	4	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.56.06	70	0.6	42	23	1	0	0	0	0	4	9	0	0	7	6	0	0	1	0
G.56.07	78	0.6	46.8	12	0	0	0	0	0	1	1	1	0	2	1	0	0	1	0
G.56.08	78	0.6	46.8	4	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0
G.56.09	106	0.6	63.6	11	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0
G.56.10	166	0.6	99.6	7	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
G.56.11	109	0.6	65.4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.12	1520	0.2	304	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.15	922	0.6	553.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.13	1925	0.1	192.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.56.14	5238	0.7	3666.6	45	2	0	0	0	0	7	2	0	0	2	0	0	1	0	0
G.56.0			0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.57.1	800	0.5	400	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
G.57.2	1220	0.2	244	32	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0
G.57.3	824	0.2	164.8	51	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
G.57.4	1070	0.2	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.57.5	1015	0.6	609	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.57.6	812	0.6	487.2	18	2	0	0	0	0	0	0	0	0	1	3	0	0	1	2
G.57.7	5030	0.8	4024	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.57.8	460	0.8	368	51	2	0	0	0	0	2	0	0	1	3	0	0	0	4	2
G.58.1	1153	0.4	461.2	33	0	0	0	0	0	0	0	0	0	2	1	0	0	2	1
G.58.2	1552	0.1	155.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.58.3	1457	0.1	145.7	0	0	0	0	0	0	2	0	0	0	1	0	0	1	0	0
G.58.4	2542	0.1	254.2	6	0	0	0	0	0	3	3	0	0	1	0	0	0	0	1
G.58.5	2995	0.1	299.5	26	0	0	0	0	0	11	11	0	1	9	0	0	0	0	0
G.58.6	726	1	726	8	0	0	0	0	0	6	6	1	0	3	0	0	0	0	0
G.58.7	2436	0.1	243.6	10	0	0	0	0	0	7	7	1	3	12	0	0	0	1	0
G.58.8	736	1	736	23	0	0	0	0	0	29	14	2	0	0	0	0	0	0	0
G.59.1	7490	0.1	749	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.59.2	4800	0.4	1920	6	17	0	0	0	0	8	0	0	0	5	3	0	4	3	0
G.59.3	3270	0.6	1962	0	25	0	0	0	0	0	0	0	0	0	1	0	1	1	0
G.59.4	3700	0.4	1480	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0
G.59.5	2525	0.3	757.5	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	0
G.60.1	4551	0.2	910.2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
G.60.2	4506	0.1	450.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.60.3	3247	0.2	649.4	8	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.61.1	1370	0.1	137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.61.2	9295	0.1	929.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.61.3			0	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.62.04	8	1	8	27	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0
G.62.05	427	0.6	256.2	89	0	0	0	0	0	30	3	0	0	2	0	0	0	1	0
G.62.06	3015	0.7	2110.5	202	0	0	0	0	0	45	5	1	3	2	0	0	0	0	0
G.62.03	204	0.9	183.6	3	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.62.02	4375	0.5	2187.5	224	0	0	0	0	0	36	18	5	3	10	0	0	0	3	0
G.62.01	755	0.1	75.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.62.07	983	0.1	98.3	4	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
G.62.08	230	0.1	23	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0
G.62.09	277	0.1	27.7	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
G.62.10	1100	0.2	220	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1
G.62.12	628	0.7	439.6	0	0	0	0	0	0	37	6	1	0	5	1	0	0	0	0
G.62.11			0	0	0	0	0	0	0	0	0	1	0	5	0	0	2	1	0
G.62.13	2523	1	2523	668	0	0	0	0	0	9	2	0	1	28	20	19	13	53	27
G.62.14	2408	0.1	240.8	24	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
G.62.15	1922	0.2	384.4	131	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0
G.63.01	1095	0.4	438	1035	44	0	0	0	0	2	0	0	0	4	0	3	4	3	5
G.63.02	3060	0.3	918	632	7	1	0	0	0	3	0	0	0	4	1	5	2	11	2
G.63.03	500	0.2	100	307	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0
G.63.04	88	0.9	79.2	28	4	0	0	0	0	3	0	0	0	3	0	0	1	1	0
G.63.05	150	0.1	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.11	1906	0.2	381.2	6	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0
G.63.12	1102	0.1	110.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
G.63.13	1471	0.2	294.2	150	4	0	0	0	0	0	0	0	0	0	0	0	1	2	0
G.63.14	846	0.8	676.8	30	2	0	0	0	0	2	0	0	0	0	0	0	0	3	1
G.63.15	1180	0.1	118	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.06	2259	0.8	1807.2	59	0	0	0	0	0	8	0	1	1	1	1	1	3	3	4
G.63.17	255	0.1	25.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.07	820	0.1	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.63.08	818	0.2	163.6	165	10	0	0	0	0	1	0	3	0	0	0	0	0	1	1
G.63.09	1797	0.1	179.7	57	0	0	0	0	0	5	15	0	0	18	0	0	0	1	1
G.64.1	895	0.9	805.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.64.2	401	0.9	360.9	14	0	0	0	0	0	0	1	0	0	4	0	1	0	2	1
G.64.3	466	1	466	2955	2	0	0	0	0	11	2	0	0	87	16	19	49	27	10
G.64.4	1510	0.1	151	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
G.64.5	761	0.3	228.3	6	0	0	1	0	0	4	13	0	0	6	3	0	0	3	0
G.65.01	1049	0.7	734.3	19	3	0	0	0	0	2	0	0	0	3	0	0	0	2	0
G.65.02	1154	0.1	115.4	11	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
G.65.03	2790	0.1	279	13	0	0	0	0	0	11	0	0	0	4	0	0	0	0	0
G.65.04	1267	1	1267	204	0	0	0	0	0	95	56	3	0	109	31	0	1	30	5
G.65.05	5060	0.3	1518	138	0	0	0	0	0	26	28	1	0	35	4	0	0	0	0
G.65.06	922	0.3	276.6	69	0	0	0	0	0	22	21	0	0	42	8	1	0	11	0
G.65.07	1714	0.2	342.8	43	0	0	0	0	0	9	5	0	0	9	0	0	0	1	0
G.65.08	1450	0.1	145	5	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
G.65.09	1038	0.6	622.8	32	0	0	0	0	0	10	2	0	0	6	0	0	0	2	0
G.65.10	1034	0.4	413.6	17	0	0	0	0	0	7	4	0	0	4	0	0	0	0	0
G.65.15	1180	0.1	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.65.11	649	0.3	194.7	61	0	0	0	0	0	25	9	0	0	14	0	0	0	4	0
G.65.12	137	0.5	68.5	69	0	0	0	0	0	100	18	1	0	42	11	0	0	9	1
G.65.13	731	0.8	584.8	297	0	0	0	0	0	49	15	0	3	34	10	0	0	8	1
G.65.14	970	0.3	291	220	0	0	0	0	0	27	15	0	0	63	10	0	0	6	0
G.66.1	285	0.3	85.5		0	0	0	0	0	52	28	1	0	6	0	1	2	3	0
G.67.01	4608	0.1	460.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.02	596	0.6	357.6	225	0	0	0	0	0	9	0	0	0	3	0	0	0	0	0
G.67.03	1129	0.8	903.2	28	0	0	0	0	0	3	0	0	0	1	0	0	0	1	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	1	24	1	1	3	0	0	1	3	4	3	3	1	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1	10	1	0	0	4	0	1	0	5	1	1	0	1	0	0	1	0	2	0	0
0	6	0	0	0	5	0	1	0	3	0	0	0	0	1	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	4	1	4	0	3	0	0	0	0	0	0	6	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.67.04	4869	0.1	486.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.05	1189	0.1	118.9	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.06	2450	0.1	245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.07	1130	0.5	565	26	0	0	0	0	0	19	12	0	1	8	0	0	0	6	0
G.67.08	979	1	979	37	0	0	0	0	0	11	6	0	0	8	0	0	0	7	0
G.67.09	2368	0.4	947.2	23	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0
G.67.10	1859	0.9	1673.1	216	0	0	0	0	0	3	0	0	0	1	0	0	0	2	0
G.67.11	2739	0.1	273.9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.67.12	740	1	740	113	0	0	1	0	0	11	22	0	1	12	0	0	0	3	0
G.67.13	205	1	205	19	0	0	0	0	0	0	0	0	0	9	10	0	0	3	0
G.68.1	1882	0.2	376.4	203	0	0	0	0	1	19	7	1	0	3	0	0	0	3	0
G.68.2	3156	0.2	631.2	79	0	0	0	0	0	56	49	1	0	23	0	0	0	4	0
G.68.3	2224	0.1	222.4	9	0	0	0	0	0	3	2	0	0	1	0	0	0	0	0
G.68.4	494	0.2	98.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.01	699	0.4	279.6	168	0	0	0	0	0	4	3	1	0	13	0	0	0	7	2
G.69.02	349	0.7	244.3	11	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0
G.69.03	189	0.6	113.4	21	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
G.69.04	712	0.1	71.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.05	1328	0.4	531.2	6	0	0	0	0	0	3	2	0	0	3	0	0	0	5	6
G.69.06	2308	0.9	2077.2	27	0	0	0	0	0	3	0	0	0	2	0	0	0	5	1
G.69.07	72	0.9	64.8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.08	650	0.6	390	36	0	0	0	0	0	1	2	0	0	0	0	0	0	1	0
G.69.09	2857	0.1	285.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.10	228	1	228	267	0	0	0	0	0	0	1	0	0	6	0	0	0	6	4
G.69.11	1900	0.4	760	24	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
G.69.12	456	1	456	164	0	0	0	0	0	7	0	0	0	2	0	0	0	1	0
G.69.13	2330	0.1	233	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.69.14	7875	0.1	787.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.70.2	1600	0.2	320		0	0	0	0	0	3	0	0	0	13	0	0	0	5	1
G.72.1	395	0.8	316	2	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
G.72.2	515	0.3	154.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.72.3	334	1	334	33	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
G.72.4	310	0.9	279	17	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
G.72.5	490	0.8	392	42	0	0	0	0	1	32	3	0	0	0	0	0	0	0	0
G.72.6	1270	0.1	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.18.0	156	0.1	15.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.18.1	240	0.8	192	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.18.2	456	0.6	273.6	12	0	0	0	0	0	1	1	0	0	1	0	2	0	1	0
U.18.3	156	0.2	31.2	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
U.18.4	45	0.2	9	6	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
U.18.5	3835	0.9	3451.5	25	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0
U.18.6	240	0.6	144	9	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0
G.74.1	2127	0.8	1701.6	267	0	0	0	0	1	11	0	0	0	32	5	0	0	11	4
G.74.2	2200	0.5	1100	238	0	0	0	0	0	5	0	0	0	3	3	0	0	0	0
G.74.3	2210	0.1	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.74.4	71	0.1	7.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.75.1			0		0	0	0	0	0	58	7	0	0	4	0	0	0	0	0
G.76.01-	1257	0.5	628.5	18	7	0	0	0	0	10	4	1	0	0	0	0	0	1	0
G.76.08	260	0.6	156	16	0	0	0	0	0	30	6	0	0	6	0	0	0	3	0
G.76.07	245	0.5	122.5	18	0	0	0	0	0	31	13	0	0	16	0	0	0	0	0
G.76.06	218	0.1	21.8	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.76.04	386	1	386	34	0	0	0	0	0	37	7	1	0	1	0	0	0	0	0
G.76.03	66	0.5	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.76.09	231	0.5	115.5	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.76.10	1585	0.1	158.5	22	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.76.05	4900	0.9	4410	169	0	0	0	0	0	55	34	1	0	92	2	0	0	12	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.77.01	0.2	1	0.2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.02	0.2	1	0.2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.03	0.3	1	0.3	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.04	0.1	1	0.1	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.05	0.7	1	0.7	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.06	0.3	1	0.3	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.07	0.2	1	0.2	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.08	0.2	1	0.2	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.09	0.4	1	0.4	14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
G.77.10	0.7	1	0.7	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.19	2.1	1	2.1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.77.11	13141	0.1	1314.1	6	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.77.12	6777	0.2	1355.4	0	0	0	0	0	0	2	2	1	0	0	0	0	0	1	0
G.77.13	4760	0.3	1428	14	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.77.14	1910	0.4	764	33	0	0	0	0	0	9	1	0	1	0	0	0	0	0	0
G.77.15	2050	0.9	1845	71	0	0	0	0	0	4	2	0	0	0	0	0	0	3	1
G.77.16	1075	1	1075	24	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
G.77.17	480	0.9	432	24	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.78.1	3147	1	3147	13	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
G.78.2	4243	1	4243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.78.3	970	1	970	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.78.4	3962	1	3962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.80.1	7	1	7	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.80.2	1470	0.5	735	65	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.80.3	1564	0.1	156.4	10	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0
G.80.4	1846	0.1	184.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.82.1	12500	0.1	1250	0	0	0	0	0	0	2	2	0	0	0	0	0	0	1	0
G.83.1	1440	0.6	864	4	0	0	0	0	0	21	1	0	1	1	0	0	0	0	0
G.83.2	488	0.7	341.6	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.83.3	2704	0.1	270.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.83.4	2790	0.1	279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.01	1216	0.2	243.2	40	54	0	0	0	0	5	0	0	0	5	1	0	0	0	0
G.84.02	919	0.2	183.8	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.84.03	716	0.1	71.6	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0
G.84.04	940	0.8	752	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.05	585	0.9	526.5	6	14	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.84.06	219	1	219	0	42	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.84.07	300	1	300	0	105	0	0	0	0	2	1	0	0	0	0	0	0	0	0
G.84.08	679	0.4	271.6	3	118	0	0	0	0	8	0	0	0	0	0	0	0	0	0
G.84.09	398	0.8	318.4	3	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.10	873	0.2	174.6	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.11	805	0.7	563.5	0	26	0	0	0	0	3	0	0	0	0	0	0	0	0	0
G.84.12	896	0.5	448	0	15	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.84.13	347	1	347	0	12	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.84.14	787	1	787	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.84.15	331	1	331	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.85.10	144	1	144	262	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.85.01	4138	0.2	827.6	43	0	0	0	0	0	2	0	0	0	2	0	0	0	3	0
G.85.02	1550	0.9	1395	680	7	0	0	0	0	10	5	2	0	21	0	0	0	22	0
G.85.03	370	0.6	222	69	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0
G.85.04	81	1	81	25	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
G.85.05	188	0.2	37.6	5	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0
G.85.06	324	0.3	97.2	0	0	0	0	0	0	5	3	0	0	2	0	0	0	0	0
G.85.07	239	0.8	191.2	7	0	0	0	0	0	12	2	1	4	7	0	0	0	1	0
G.85.08	112	1	112	10	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
G.85.09	151	1	151	52	0	0	0	0	0	11	11	0	0	3	0	0	0	1	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
G.85.11	1435	0.8	1148	186	0	0	0	1	0	3	6	0	1	5	0	0	0	0	0
G.85.12	1523	0.7	1066.1	797	0	0	0	0	0	26	15	0	3	7	0	1	0	2	0
G.85.13	213	0.9	191.7	185	0	0	0	0	0	20	5	1	1	0	0	0	0	2	0
G.85.14	247	0.6	148.2	879	0	0	0	0	0	29	15	1	2	7	0	0	0	3	0
G.85.17	576	0.3	172.8	42	0	0	0	0	0	15	2	0	0	2	0	0	0	0	0
G.85.15	924	0.5	462	108	0	0	0	0	0	6	5	3	0	0	0	0	0	0	0
G.85.16	1245	0.5	622.5	92	0	0	0	0	0	40	1	0	0	1	0	0	0	0	0
G.86.1	200	1	200	83	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
G.86.2-3	372	1	372	284	0	0	0	0	0	5	0	0	0	1	0	0	0	1	2
G.86.5	3860	0.3	1158	507	1	0	0	0	0	4	2	1	0	3	0	0	0	3	0
G.86.4	1	1	1	256	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.87.1	4278	0.1	427.8	15	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.87.2	3320	0.4	1328	125	5	0	0	0	0	17	0	0	0	1	0	0	0	0	0
G.88.1	15400	0.1	1540	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.88.2	255	1	255	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.88.3	591	1	591	14	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.89.1	1905	0.4	762	514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.89.2	2124	0.2	424.8	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.89.3	2068	0.3	620.4	48	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.89.4	1550	0.3	465	87	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
G.89.5	1225	0.7	857.5	115	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
G.89.6	1550	0.6	930	139	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G.90.1			0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.29	13	1	13	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
M.2.30	2130	0.6	1278	80	0	0	1	0	0	27	6	0	0	16	2	1	0	7	0
M.2.28	442	0.6	265.2	8	0	0	0	0	0	1	2	0	0	2	0	0	1	0	0
M.2.31	185	0.9	166.5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.32	668	0.6	400.8	10	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
M.2.33	922	0.5	461	48	0	0	2	0	0	23	2	0	0	2	0	0	0	0	0
M.2.34	1548	0.5	774	25	0	0	0	0	0	9	0	0	0	1	0	0	0	0	0
M.2.35	44	1	44	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
M.2.40	358	0.5	179	52	0	0	0	0	1	11	0	0	0	0	0	0	0	0	0
M.2.41	175	0.3	52.5	21	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0
M.2.42	2342	0.3	702.6	14	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0
M.2.36	85	1	85	7	0	0	0	0	0	4	2	0	1	0	0	1	0	0	0
M.2.37	528	0.9	475.2	30	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
M.2.24	186	0.9	167.4	4	9	0	0	0	0	9	1	0	0	5	0	1	0	3	0
M.2.01	190	0.9	171	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.39	703	0.8	562.4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.38	862	0.3	258.6	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
M.2.02	127	0.9	114.3	6	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1
M.2.03	91	0.7	63.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
M.2.04	88	0.1	8.8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
M.2.05	1498	0.1	149.8	4	0	0	0	0	0	2	1	0	0	1	0	0	0	0	0
M.2.15	231	0.1	23.1	16	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
M.2.06	663	0.5	331.5	364	1	0	0	0	0	0	2	0	0	3	0	0	0	14	1
M.2.08	787	0.9	708.3	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.07	812	0.6	487.2	45	1	0	0	0	0	0	0	0	0	3	0	0	0	2	0
M.2.11	626	0.7	438.2	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.10	663	0.3	198.9	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.09	491	0.4	196.4	142	2	0	0	0	0	0	0	0	0	6	0	0	0	4	0
M.2.12	316	0.3	94.8	37	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0
M.2.13	474	0.4	189.6	23	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
M.2.14	850	0.4	340	67	0	0	0	0	0	1	2	0	0	3	0	0	0	3	1
M.2.21	1177	0.2	235.4	70	0	0	0	0	0	3	2	0	0	5	0	0	0	8	3
M.2.22	92	1	92	186	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	1	0	1	0	1	1	1	0	0	0	1	0	0	0	0	2	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
M.2.23	64	1	64	454	0	0	0	0	0	0	0	0	0	7	0	0	0	6	0
M.2.25	142	0.4	56.8	46	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
M.2.27	210	0.9	189	15	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0
M.2.26	316	0.3	94.8	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.2.17	152	0.5	76	8	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
M.2.20	143	0.5	71.5	18	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1
M.2.16	136	0.8	108.8	57	0	0	0	0	0	0	0	0	0	1	1	0	0	3	2
M.2.18	97	0.6	58.2	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
M.2.19	142	0.5	71	49	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0
M.3.1	847	0.1	84.7	17	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
M.3.2	1622	0.1	162.2	14	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0
M.3.3	1573	0.1	157.3	34	0	0	0	0	0	6	12	0	0	24	3	3	1	16	0
M.3.4	568	0.1	56.8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0
M.4.1	1500	0.1	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.4.2			0	3	0	0	0	0	0	0	3	0	0	0	2	0	0	3	0
M.5.1	600	0.8	480	106	1	0	0	0	0	0	3	0	0	32	3	0	0	0	0
M.5.2	2828	0.1	282.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.5.3	50	0.3	15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
M.5.4	50	1	50	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
M.6.1	6032	0.1	603.2	9	0	0	0	0	0	12	11	0	0	12	5	0	0	0	0
U.1.34	624	0.2	124.8	9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
U.1.35	2629	0.7	1840.3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.1.33	4650	0.9	4185	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
U.1.14	7882	0.7	5517.4	0	0	0	0	0	0	7	1	0	0	0	0	0	0	2	0
U.1.10	2422	0.9	2179.8	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
U.1.42	2086	0.7	1460.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.1.37	200	0.5	100	194	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
U.1.7	210	0.5	105	117	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
U.1.6	52	1	52	205	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.1.5	36	1	36	353	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
U.1.4	45	1	45	326	0	0	0	1	0	0	0	0	0	2	0	0	0	2	1
U.1.3	54	1	54	313	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
U.1.2	8	1	8	228	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
U.1.1	12	1	12	178	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
U.1.16	838	0.6	502.8	10	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
U.1.27	724	0.9	651.6	42	0	0	0	0	0	4	0	0	0	6	1	0	1	5	0
U.1.17	200	1	200	2	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
U.1.15	1370	0.2	274	22	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
U.1.22	1285	0.3	385.5	2	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0
U.1.18	1123	0.8	898.4	30	0	0	0	0	0	0	1	0	0	6	2	0	0	2	4
U.1.21	760	0.9	684	13	0	0	0	0	0	0	1	0	0	2	0	0	1	2	0
U.1.19	839	0.8	671.2	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1
U.1.30	1100	0.2	220	3	0	0	0	0	0	1	1	0	0	3	0	0	0	0	1
U.1.26	1395	0.9	1255.5	9	0	0	0	0	0	6	0	0	0	1	0	0	0	1	0
U.1.20	933	0.4	373.2	4	0	0	0	0	0	10	2	0	0	1	1	0	0	0	2
U.1.29	1457	0.8	1165.6	32	0	0	0	0	0	14	2	0	1	4	5	0	0	8	6
U.1.23	2047	0.7	1432.9	9	0	0	0	0	0	10	0	0	0	1	1	0	0	3	0
U.1.25	1585	0.9	1426.5	2	0	0	0	0	0	7	0	0	0	1	1	0	0	0	1
U.1.12	858	0.9	772.2	8	0	0	0	0	0	24	5	0	0	6	4	0	0	9	3
U.1.11	1042	1	1042	3	0	0	0	0	0	3	0	0	0	3	1	0	0	0	0
U.1.9	675	0.9	607.5	45	0	0	0	0	0	9	3	0	0	0	4	0	0	4	7
U.1.36	260	1	260	10	0	0	0	0	0	5	2	0	0	4	0	0	0	0	1
U.1.40	218	0.8	174.4	4	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3
U.1.32	1936	0.9	1742.4	3	0	0	0	0	0	30	1	0	0	6	4	0	0	6	5
U.1.31	2564	0.6	1538.4	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.1.28	959	0.9	863.1	11	0	0	0	0	0	11	0	0	0	2	2	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	8	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.1.24	1997	0.9	1797.3	3	0	0	0	0	0	4	1	0	0	0	0	0	0	0	1
U.1.13	900	0.9	810	52	0	0	0	0	0	13	1	0	0	0	2	0	0	1	2
U.1.8	2417	0.7	1691.9	27	0	0	0	0	0	3	3	0	0	2	0	0	0	3	1
U.2.1	9480	0.5	4740	36	0	0	0	0	0	23	8	2	3	11	3	0	2	2	1
U.2.2	3240	0.7	2268	81	0	0	0	0	0	22	10	1	1	66	11	0	4	3	0
U.2.4	10310	0.1	1031	9	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0
U.2.3	19995	0.1	1999.5	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
U.2.6	2587	1	2587	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
U.2.7	1308	1	1308	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
U.2.12	4189	1	4189	454	0	0	0	0	0	7	0	0	0	18	9	0	1	3	1
U.2.13	2957	1	2957	167	0	0	0	0	0	6	0	0	0	8	6	0	0	0	0
U.2.5			0	34	0	0	0	0	0	0	3	0	0	1	1	0	0	0	0
U.2.8	620	1	620	104	0	0	0	0	0	0	18	0	2	2	4	0	0	0	2
U.2.9	1836	1	1836	79	0	0	2	0	0	8	31	1	0	12	3	0	0	0	0
U.2.10	2350	1	2350	29	0	0	0	0	0	0	6	0	0	2	1	0	0	2	1
U.2.11	838	1	838	81	0	0	0	0	0	0	1	0	0	5	0	0	0	0	1
U.3.8	1600	0.5	800	52	0	0	0	0	0	5	5	0	0	1	4	0	0	0	0
U.3.6	2125	0.8	1700	97	0	0	0	0	0	36	15	1	0	6	1	0	1	1	0
U.3.7	883	0.5	441.5	172	0	0	0	0	0	17	22	1	0	10	0	0	0	4	0
U.3.5	1902	0.8	1521.6	430	0	0	0	0	1	78	38	6	7	37	7	1	5	1	1
U.3.4	3180	0.7	2226	684	0	0	0	0	0	44	24	3	3	32	1	0	0	0	0
U.3.2	2065	0.5	1032.5	41	0	0	0	0	0	183	25	3	6	14	1	0	2	1	0
U.4.1	1100	0.8	880	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
U.4.3	50	1	50	1	0	0	0	0	0	0	4	1	0	9	1	0	0	2	1
U.4.2	1200	0.7	840		0	0	0	0	0	6	25	3	0	23	11	1	0	5	0
U.5.1	10000	0.5	5000	39	0	0	0	0	0	1	2	1	0	0	0	0	0	2	0
U.6.1	2000	0.9	1800	0	0	0	0	0	0	1	5	0	0	3	0	0	0	0	0
U.6.2	1500	1	1500	86	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
U.7.1	1530	0.9	1377		0	0	0	0	0	0	3	1	0	3	0	0	0	1	0
U.8.1	5000	1	5000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.8.2	500	1	500	10	0	0	0	0	0	4	2	0	0	6	9	0	0	0	1
U.9.1	800	0.4	320		0	0	0	0	0	6	3	0	0	12	4	0	0	1	0
U.9.2	1600	0.7	1120		0	0	0	0	0	0	5	0	0	6	5	0	0	0	0
U.9.3	1200	1	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.11.1	3351	0.1	335.1	52	0	0	0	0	0	22	13	0	0	2	0	0	0	0	0
U.12.1	1215	1	1215	0	0	0	0	0	0	4	3	0	0	1	1	0	0	0	0
U.12.2	4356	0.4	1742.4	8	0	0	0	0	0	13	14	0	0	8	3	0	0	1	0
U.12.3	1080	0.8	864	71	0	0	0	0	0	49	15	0	1	16	5	0	0	0	0
U.12.4	351	1	351	0	0	0	0	0	0	6	0	0	0	1	1	0	0	0	0
U.13.03	1070	0.3	321	1	3	0	0	0	0	2	0	0	0	0	1	0	0	0	0
U.13.01	2704	0.6	1622.4	52	0	0	0	0	0	18	12	1	1	4	4	0	0	3	1
U.13.02	800	0.7	560	46	0	0	0	0	0	22	24	0	2	9	4	0	0	0	0
U.13.11	3334	0.6	2000.4	53	0	0	0	0	0	4	3	0	1	6	3	0	0	5	0
U.13.12	495	0.7	346.5	58	1	0	0	0	0	12	10	0	0	0	2	0	0	0	0
U.13.10	68	1	68	0	0	0	0	0	0	8	0	0	0	2	0	0	0	0	0
U.13.09	65	1	65	13	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
U.13.08	33	1	33	9	0	0	0	0	0	3	2	1	0	1	0	0	0	0	0
U.13.07	69	1	69	28	0	0	0	0	0	7	1	2	0	2	3	0	0	0	0
U.13.06	61	1	61	10	0	0	0	0	0	17	6	1	0	0	0	0	0	0	0
U.13.05			0	0	0	0	0	0	0	0	1	1	0	3	1	0	0	0	0
U.13.04	1071	0.4	428.4	12	0	0	0	0	0	9	1	0	0	0	1	0	0	0	0
U.14.7	903	0.6	541.8	27	0	0	0	0	0	14	3	1	0	1	0	0	1	0	0
U.14.1	243	1	243	124	0	0	0	0	1	9	25	0	2	16	9	0	0	2	0
U.14.2	1641	0.8	1312.8	103	0	0	0	0	0	29	32	2	0	8	3	0	0	0	0
U.14.3	948	0.8	758.4	56	0	0	0	0	0	7	9	0	0	15	6	0	0	0	0
U.14.4	379	0.6	227.4	30	0	0	0	0	0	3	0	0	0	0	1	0	0	2	0
U.14.5	1096	0.7	767.2	118	0	0	0	0	0	11	9	3	0	4	3	0	1	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VH	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.14.6	1372	0.7	960.4	56	0	0	0	0	0	10	4	0	0	0	0	0	0	0	0
U.15.1-2	995	0.5	497.5	73	0	0	0	0	0	20	1	0	1	1	0	0	0	0	0
U.15.3-4	480	0.1	48	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
U.15.5	1330	0.4	532	18	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
U.16.07	960	0.7	672	41	0	0	0	0	0	14	1	0	0	2	0	0	0	0	0
U.16.08	1424	0.7	996.8	81	0	0	0	0	0	15	4	2	2	5	2	0	0	1	0
U.16.06	2151	0.6	1290.6	59	0	0	0	0	0	36	24	3	3	24	5	0	0	8	2
U.16.05	1619	0.6	971.4	170	0	0	0	0	0	38	10	1	0	16	7	0	0	0	3
U.16.09	938	0.6	562.8	115	0	0	0	0	0	39	3	1	0	9	2	0	0	0	1
U.16.04	1037	0.7	725.9	128	0	0	0	0	0	33	2	1	2	6	0	0	0	0	0
U.16.10	1434	0.7	1003.8	72	0	0	0	0	0	24	7	0	0	3	3	0	0	0	0
U.16.03	259	1	259	46	0	0	0	0	0	17	4	0	1	3	1	0	0	0	0
U.16.02	1739	0.8	1391.2	93	0	0	0	0	0	6	2	0	2	6	0	0	1	2	1
U.16.11	1418	0.7	992.6	83	0	0	0	0	0	40	5	0	0	1	1	0	0	0	0
U.16.12	1058	0.7	740.6	63	0	0	0	0	0	25	3	2	3	3	1	0	0	0	0
U.16.13	1667	0.4	666.8	70	0	0	0	0	0	40	2	0	0	1	0	0	0	0	0
U.16.01	3164	0.7	2214.8	512	0	0	0	0	0	56	19	3	2	26	14	1	3	5	2
U.17.01	2270	0.8	1816	122	0	0	0	0	0	0	18	0	1	38	5	0	1	11	5
U.17.02	870	0.8	696	48	0	0	0	0	0	0	4	0	0	6	0	0	0	3	1
U.19.1	506	0.7	354.2	39	0	0	0	0	0	7	1	3	0	0	0	0	0	2	0
U.19.2	602	0.8	481.6	18	0	0	0	0	0	5	1	2	0	1	0	0	0	0	0
U.19.3	832	0.6	499.2	62	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
U.20.01	1330	0.1	133	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.20.02	620	0.7	434	45	0	0	0	0	0	5	1	0	0	2	1	0	0	0	0
U.20.03	2770	0.9	2493	59	0	0	0	0	0	26	8	2	1	6	0	0	0	4	0
U.20.04	1761	0.9	1584.9	127	0	0	0	0	0	39	25	5	1	13	4	0	0	2	0
U.20.05	1998	0.5	999	15	0	0	0	0	0	6	0	0	1	0	0	0	0	0	0
U.20.06	1927	0.9	1734.3	49	0	0	0	0	0	39	9	3	2	6	0	0	0	3	1
U.20.07	1600	0.7	1120	61	0	0	0	0	0	11	1	0	0	3	0	0	0	0	0
U.20.08	367	1	367	42	0	0	0	0	0	12	10	1	0	9	0	0	0	3	0
U.20.09	2312	0.6	1387.2	121	0	0	0	0	0	25	8	1	0	14	2	0	0	3	0
U.20.10	2623	0.3	786.9	141	0	0	0	0	0	7	10	0	0	3	0	0	0	0	1
U.20.15	557	1	557	136	0	0	0	0	0	15	6	0	0	16	7	0	0	9	4
U.20.14	1994	0.3	598.2	26	0	0	0	0	0	5	1	0	0	2	0	0	1	0	0
U.20.13	1533	0.3	459.9	47	0	0	0	0	0	15	3	0	0	5	0	0	0	2	1
U.20.12	2278	0.4	911.2	31	0	0	0	0	0	1	0	0	0	4	1	0	0	2	1
U.20.11	1426	0.4	570.4	84	0	0	0	0	0	3	0	0	0	3	0	0	0	8	6
U.21.07	635	0.3	190.5	24	0	0	0	0	0	24	23	1	2	7	0	0	4	0	0
U.21.09	588	0.3	176.4	13	0	0	0	0	0	5	2	0	0	0	1	0	0	0	0
U.21.08	290	0.4	116	0	0	0	0	0	0	3	0	1	0	5	1	1	0	0	0
U.21.06			0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
U.21.03-5	1537	0.7	1075.9	89	1	0	0	0	0	154	108	0	3	57	6	0	2	33	0
U.21.02	2027	0.5	1013.5	2	0	0	0	0	0	30	26	0	1	10	0	0	0	2	0
U.22.01	307	0.9	276.3	18	2	0	0	0	0	35	12	0	1	6	0	0	0	0	0
U.22.02	255	0.5	127.5	73	1	0	0	0	0	34	14	1	0	8	0	0	0	0	0
U.22.03	328	0.5	164	65	2	0	0	0	0	29	18	0	1	7	0	0	0	0	0
U.22.04	410	0.6	246	127	0	0	0	0	0	22	13	4	0	6	0	0	0	2	0
U.22.05	515	0.5	257.5	85	0	0	0	0	0	71	39	4	0	13	0	0	0	5	0
U.22.06	87	0.4	34.8	20	0	0	0	0	0	16	1	1	0	1	0	0	0	0	0
U.22.07	358	0.3	107.4	14	0	0	0	0	0	44	9	3	1	2	0	0	0	0	0
U.22.08	446	0.5	223	59	0	0	0	0	0	24	9	0	0	0	0	0	0	3	0
U.22.09	1150	0.6	690	122	2	0	0	0	0	50	52	2	2	9	0	0	0	0	0
U.22.10	1631	0.5	815.5	176	0	0	1	0	0	41	31	3	4	12	4	0	0	4	0
U.22.11	2168	0.4	867.2	204	0	0	0	0	0	78	13	3	3	29	6	0	1	5	0
U.23.1			0		0	0	0	0	0	19	17	2	0	5	1	0	0	1	0
U.25.1	7723	1	7723		0	0	0	0	0	18	23	0	3	100	21	85	31	179	246
U.25.2	1900	0.8	1520	574	0	0	0	0	0	27	24	3	4	60	7	5	8	24	21

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
U.25.3	2100	0.6	1260	24	0	0	0	0	0	0	5	0	0	7	0	0	1	1	0
T.1.8			0		1	0	0	0	0	0	0	1	0	3	0	0	0	1	0
T.1.7	132	0.2	26.4	17	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
T.1.4	298	0.1	29.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.2	238	0.1	23.8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.1	269	0.6	161.4	48	3	0	0	0	0	1	0	0	0	0	0	1	1	2	14
T.1.3	590	0.1	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.5	67	0.2	13.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.1.6	1312	0.3	393.6	16	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
T.2.9	3900	0.1	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.2.1	440	1	440		0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
T.2.2	2017	0.9	1815.3	30	0	0	1	0	0	17	2	0	1	12	9	0	0	1	7
T.2.3	1250	1	1250		0	0	0	0	0	2	14	2	0	15	13	0	1	0	11
T.2.5	4405	0.5	2202.5		0	0	0	0	0	8	9	1	0	11	0	0	0	0	0
T.2.4	1378	0.9	1240.2	153	0	0	0	0	1	23	48	0	1	28	6	0	0	8	2
T.2.8	434	1	434	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
T.2.6	200	0.8	160		0	0	0	0	0	4	8	1	1	10	6	0	0	0	0
T.2.7	1414	0.5	707		0	0	0	0	0	10	0	1	0	7	0	0	0	2	3
T.3.1	2500	0.3	750	8	0	0	0	0	0	3	3	0	0	1	0	0	0	0	0
T.4.1	2000	0.8	1600	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
T.4.4	690	1	690	10	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
T.4.5	4800	0.8	3840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.4.2	1200	1	1200	13	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1
T.4.3	640	0.2	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.4.6	3840	0.7	2688	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.5.1			0		0	0	0	0	0	4	3	2	1	3	0	0	0	0	0
T.6.1	2400	0.7	1680		0	0	0	0	0	3	0	0	0	6	7	0	0	4	8
T.6.2	2040	0.7	1428		0	0	0	0	0	5	6	4	0	15	10	1	0	1	2
T.6.32	6360	0.5	3180	86	0	0	0	0	0	37	10	7	0	20	5	0	0	1	0
T.6.3	8709	0.6	5225.4		0	0	0	0	0	20	11	8	0	37	33	0	1	3	1
T.6.4	5217	0.8	4173.6		0	0	0	0	0	18	8	6	0	14	11	0	0	1	0
T.6.7	60	1	60	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
T.6.5	7848	1	7848		0	0	0	0	0	9	2	1	0	30	16	1	9	4	3
T.6.6	2080	1	2080		0	0	0	0	0	5	0	0	0	9	6	0	0	1	6
T.6.8	1000	0.6	600	154	0	0	0	0	0	1	0	0	0	4	4	1	1	5	1
T.6.20	4324	1	4324	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.6.36	9600	1	9600	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.6.34	11260	1	11260	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
T.6.27	1520	0.6	912	15	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0
T.6.12	5080	0.7	3556	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.6.9	1840	1	1840	12	0	0	0	0	0	1	0	0	0	1	2	0	0	0	0
T.6.10	10000	1	10000	36	0	0	0	0	0	9	6	0	1	2	0	0	0	1	1
T.6.29	2793	0.5	1396.5	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
T.6.30	4550	0.7	3185	60	0	0	0	0	0	7	7	1	0	9	4	0	0	0	0
T.6.31	5382	0.9	4843.8	76	0	0	0	0	0	0	4	0	0	8	4	0	0	0	0
T.6.24	950	0.5	475	25	0	0	0	0	0	19	4	0	0	7	0	0	0	0	0
T.6.11	960	1	960	441	0	0	0	0	0	65	18	2	0	119	10	1	1	10	7
T.6.28	5166	0.6	3099.6	107	0	0	0	0	0	32	20	4	0	30	10	0	0	0	0
T.6.23	780	0.5	390	13	0	0	0	0	0	0	10	4	0	12	9	0	0	0	1
T.6.21	5684	0.4	2273.6	76	0	0	0	0	0	37	5	0	0	23	11	0	0	2	0
T.6.22	1345	0.7	941.5	33	0	0	0	0	0	36	29	10	0	47	5	0	4	1	0
T.6.14	1257	0.3	377.1	3	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0
T.6.16	5654	0.5	2827	156	0	0	0	0	0	128	49	14	0	42	7	0	1	1	2
T.6.15	2133	0.8	1706.4	15	0	0	0	0	0	9	5	1	0	0	3	0	0	0	2
T.6.13	1404	0.7	982.8	136	0	0	0	0	0	30	14	14	0	35	1	0	2	2	1
T.6.26	5653	0.7	3957.1	332	0	0	0	0	0	65	44	10	0	91	15	0	0	4	1
T.6.25	8900	0.7	6230	101	0	0	0	0	0	22	6	1	0	24	12	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	4	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
T.6.19	2870	0.5	1435	52	0	0	0	0	0	5	1	4	0	12	4	0	0	1	2
T.6.18	6724	1	6724	15	0	0	1	0	0	4	1	1	0	5	0	0	0	0	0
T.6.17	1290	0.5	645	29	0	0	0	0	0	5	7	0	0	9	1	0	0	0	0
T.7.1	362	0.8	289.6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
T.7.2	1143	0.6	685.8	11	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
T.7.3	2630	0.8	2104	25	0	0	0	0	0	0	1	2	0	4	1	0	0	1	0
T.7.4	362	0.8	289.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.7.5	808	1	808	113	0	0	1	0	0	15	0	0	0	4	0	0	0	0	0
T.8.1			0		0	0	0	0	0	26	5	3	0	19	6	0	0	0	0
T.9.1	360	1	360		0	0	0	0	0	8	1	2	0	0	0	0	1	0	0
T.9.3	1058	0.6	634.8		0	0	0	0	0	28	3	1	0	6	0	0	0	0	0
T.9.4	400	0.8	320		0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
T.9.2	4025	0.8	3220		0	0	0	0	0	30	3	1	0	11	1	1	0	1	2
T.10.1			0		0	0	0	0	0	9	2	0	1	2	1	0	0	0	0
T.10.2			0		0	0	0	0	0	4	0	0	0	2	0	0	0	0	0
T.10.3	300	1	300	5	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0
T.10.4	100	1	100	26	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
T.11.1	770	0.3	231	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
T.11.2	1021	1	1021	15	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0
T.11.3	1237	1	1237	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.7	480	1	480	20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
T.11.8	1230	0.2	246	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.6	3175	0.1	317.5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.5	174	1	174	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.11.4	675	1	675	18	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
T.12.3	90	1	90	0	0	0	0	0	0	2	2	0	0	2	0	0	0	0	0
T.12.1	8625	0.7	6037.5	4	1	0	0	0	0	5	5	0	0	6	0	0	0	0	0
T.12.2	300	0.7	210	4	0	0	0	0	0	0	1	0	0	12	1	1	2	1	1
T.13.1	1867	1	1867	63	0	0	0	0	0	63	13	3	0	3	1	1	0	0	0
T.13.2	3060	0.7	2142	48	0	0	0	0	0	24	2	3	0	0	1	0	1	1	1
T.13.3	1248	0.4	499.2	23	0	0	0	0	0	21	3	5	1	0	0	0	0	0	1
T.13.4	2137	0.3	641.1	34	0	0	0	0	0	31	4	0	0	2	1	0	0	0	0
T.14.03	3330	1	3330	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
T.14.01	3188	0.6	1912.8	7	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
T.14.02	500	1	500	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0
T.14.04	3238	0.8	2590.4	33	0	0	0	0	1	1	0	0	0	2	2	1	0	3	0
T.14.05	650	1	650	7	0	0	0	0	0	3	0	0	0	1	0	0	0	0	4
T.14.06	3145	1	3145	12	0	0	0	0	0	11	1	1	1	11	5	0	0	3	1
T.14.07	4209	1	4209	21	0	0	0	0	0	7	0	0	0	4	0	0	0	0	1
T.14.08	2845	1	2845	8	0	0	0	0	0	12	0	0	0	2	0	0	0	0	0
T.14.17	1115	1	1115	6	0	0	0	0	0	3	1	0	0	0	4	0	0	3	1
T.14.09	148	1	148	143	0	0	0	0	0	4	3	0	1	5	8	0	1	2	2
T.14.15	169	1	169	51	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
T.14.16	906	1	906	16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
T.14.14	1000	1	1000	33	0	0	0	0	0	13	0	0	0	3	5	1	0	6	1
T.14.10	900	1	900	87	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
T.14.11	1828	1	1828	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.14.12	1668	1	1668	33	0	0	0	0	0	13	1	0	0	2	0	0	0	1	0
T.14.13	2896	1	2896	40	0	0	0	0	0	0	3	2	0	2	0	0	0	0	0
T.15.15	3243	1	3243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.15.11	1090	1	1090	25	0	0	0	0	0	4	0	0	0	1	1	0	0	3	6
T.15.14	2750	0.8	2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.15.01	2930	0.6	1758	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
T.15.03	2170	1	2170	4	0	0	0	0	0	2	0	0	0	1	1	0	0	2	1
T.15.02	1460	1	1460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.15.04	9458	0.4	3783.2	31	0	0	0	0	0	1	1	0	0	3	0	0	0	7	1
T.15.05	1642	0.9	1477.8	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
T.15.06	1885	0.9	1696.5	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
T.15.07	2030	0.8	1624	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
T.15.08	1522	0.8	1217.6	11	0	0	0	0	0	1	0	0	0	2	3	1	1	2	1
T.15.09	2315	1	2315	1	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0
T.15.10	4419	0.3	1325.7	19	0	0	0	0	0	0	5	0	0	1	1	0	0	0	0
T.15.12	5418	0.4	2167.2	13	0	0	0	0	0	3	6	2	0	3	0	0	0	0	0
T.16.16	1760	0.7	1232	103	1	0	0	0	0	0	1	0	0	6	3	0	0	5	0
T.16.17	3686	1	3686	861	281	0	0	0	0	208	147	13	0	319	117	0	0	21	13
T.16.01	7140	0.9	6426	92	2	0	0	0	0	2	0	1	0	1	1	0	0	0	0
T.16.18	1615	0.8	1292	343	0	0	0	0	0	63	35	6	4	11	14	0	0	2	2
T.16.15	317	1	317	30	0	0	0	0	0	8	4	0	2	5	4	0	0	1	0
T.16.14	1514	0.9	1362.6	44	0	0	0	0	0	9	3	0	0	4	1	0	0	0	0
T.16.13	544	1	544	31	0	0	0	0	0	0	2	2	0	4	3	0	0	0	0
T.16.12	4630	0.2	926	33	0	0	0	0	0	8	6	1	0	4	4	0	0	0	0
T.16.10	1746	0.8	1396.8	11	0	0	0	0	0	51	16	3	1	13	6	0	1	0	0
T.16.08	768	0.1	76.8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.16.11	2082	0.4	832.8	8	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0
T.16.07	1640	0.6	984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.16.06	2968	1	2968	29	0	0	0	0	0	8	3	0	0	4	7	0	1	0	0
T.16.09	2032	1	2032	36	0	0	0	0	0	11	30	1	0	31	20	0	0	0	0
T.17.02	3976	0.6	2385.6	607	0	0	0	0	0	3	0	0	0	2	1	0	0	0	1
T.17.03	1660	0.8	1328	47	0	0	0	0	0	17	6	0	1	7	4	1	0	1	0
T.17.04	1930	0.6	1158	24	0	0	0	0	0	2	2	0	0	1	1	0	0	0	0
T.17.05	4528	1	4528	5	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0
T.18.19	1690	0.9	1521	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
T.18.21	1200	0.9	1080	8	0	0	0	0	0	0	3	6	0	22	8	0	0	1	0
T.18.20	1125	0.9	1012.5	7	0	0	0	0	0	4	12	6	0	3	0	0	0	0	0
T.18.22	1075	0.9	967.5	4	0	0	0	0	0	5	1	0	0	1	0	0	0	0	0
T.19.25	1330	0.9	1197		0	0	0	0	0	3	10	0	0	9	4	0	0	1	1
T.19.23	3070	0.8	2456		0	0	0	0	0	20	4	0	0	14	2	0	0	2	1
T.19.24	1050	1	1050		0	0	0	0	0	66	13	0	0	17	7	0	0	1	0
T.19.26	798	1	798		0	0	0	0	0	61	12	2	0	14	4	0	0	7	0
T.19.28	462	1	462	11	0	0	0	0	0	29	9	4	0	13	1	0	0	6	4
T.19.27	1141	1	1141		0	0	0	0	0	12	9	0	0	7	0	0	1	0	0
T.20.73	200	1	200	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0
T.20.29	2200	1	2200	15	0	0	0	0	0	6	1	1	1	3	1	0	0	0	2
T.20.30	205	1	205	38	0	0	0	0	0	12	0	0	0	3	4	0	0	1	0
T.20.31	1895	1	1895	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
T.20.32	3395	1	3395	227	0	0	0	0	0	97	30	3	2	50	19	0	1	14	1
T.20.33	2880	1	2880	217	0	0	0	0	0	30	21	4	4	39	11	0	0	9	1
T.20.38	1920	1	1920	32	0	0	0	0	0	0	25	7	3	37	28	0	0	7	10
T.20.34	513	1	513	21	0	0	0	0	0	3	1	1	0	2	1	0	0	0	0
T.20.35	507	1	507	17	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0
T.20.36	390	0.9	351	790	0	0	0	0	0	0	8	2	10	7	6	0	1	1	2
T.20.37	189	1	189	68	0	0	0	0	0	13	2	1	0	3	0	0	0	0	0
T.20.40	735	1	735	500	0	0	0	0	0	104	68	8	20	51	6	0	0	9	0
T.20.39	532	0.6	319.2	227	0	0	0	0	0	22	13	2	2	17	4	0	0	4	0
T.32.69	3638	1	3638	944	0	0	0	0	0	265	120	38	4	50	3	0	0	7	1
T.21.48	2204	0.4	881.6		0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
T.21.50	4069	0.5	2034.5	16	0	0	0	0	0	48	31	3	2	36	6	0	0	0	1
T.21.49	2282	0.7	1597.4		0	0	0	0	0	36	30	3	0	12	11	0	0	0	0
T.21.47	2339	0.8	1871.2		0	0	0	0	0	27	3	1	0	3	2	0	0	0	0
T.21.46	1465	1	1465		0	0	0	0	0	30	27	3	0	11	8	0	2	0	0
T.21.44	3470	1	3470	12	0	0	0	0	0	0	2	1	0	1	0	0	0	1	3
T.21.43	3984	1	3984	27	0	0	0	0	0	31	7	7	1	8	6	0	0	4	2
T.21.45	2475	1	2475		0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
T.21.42	2477	1	2477		0	0	0	0	0	0	0	0	0	1	0	0	0	2	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	24	0	0	3	0	0	0	0	2	2	1	0	0	0	0	0
0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
T.21.41	1080	0.7	756		0	0	0	0	0	7	0	0	0	0	5	0	0	0	0
T.21.52	3806	1	3806	3	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
T.21.51	2970	0.1	297	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
T.21.53	3470	0.8	2776	97	0	0	0	0	0	5	5	2	1	3	7	0	2	0	4
T.21.55	3638	0.9	3274.2	23	0	0	0	0	0	8	19	3	0	25	8	3	0	10	8
T.21.54	1000	1	1000	80	0	0	1	0	0	4	0	0	0	3	3	0	1	4	0
T.22.56	2108	1	2108	61	0	0	0	0	0	1	1	1	0	4	0	0	0	1	0
T.22.60	2825	1	2825	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
T.22.57	3345	0.9	3010.5	8	0	0	0	0	0	2	1	0	0	0	0	0	0	1	3
T.22.58	2456	0.4	982.4	27	0	0	0	0	0	1	2	1	0	2	0	0	0	1	0
T.22.59	1702	1	1702	24	0	0	0	0	0	38	20	4	2	32	9	0	0	3	1
T.24.1	2800	1	2800	52	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
T.24.2	138	0.5	69	30	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
T.23.1	4650	0.1	465	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.23.2	1426	0.4	570.4	32	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
T.23.3	1080	0.2	216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.25.1	5360	0.4	2144		0	0	0	0	0	38	11	6	0	5	2	0	0	1	0
T.26.1	15000	0.5	7500		0	0	0	0	0	44	128	41	12	37	0	1	0	1	0
T.27.1	300	1	300		0	0	0	0	0	11	11	5	0	16	8	0	0	2	0
T.28.6	275	0.2	55	0	1	0	0	0	0	8	1	0	0	0	0	0	0	0	0
T.28.5	365	1	365	228	14	0	0	0	0	14	47	2	2	27	0	0	0	15	3
T.28.7	3690	0.1	369	131	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0
T.28.4	174	1	174	61	30	0	0	0	1	44	10	1	2	12	0	0	0	4	0
T.28.1	172	1	172	28	504	0	0	0	1	34	4	0	0	6	0	1	0	3	3
T.28.2	164	1	164	15	100	0	0	0	0	13	1	0	0	2	0	0	0	3	0
T.28.3	867	0.8	693.6	0	9	0	0	0	0	3	0	0	0	0	1	0	0	0	0
T.29.1			0		0	0	0	0	0	0	0	0	0	3	0	1	0	7	1
T.29.2			0		2	0	0	0	0	3	2	0	0	2	0	0	0	0	0
T.30.01			0	16	1	0	0	0	0	10	3	2	0	12	0	1	2	0	1
T.30.02	2079	0.4	831.6	255	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
T.30.03	1090	0.5	545	496	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0
T.30.04	540	0.3	162	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.05	1290	0.8	1032	157	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
T.30.06	600	0.6	360	178	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
T.30.07	3050	0.3	915	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.08	139	0.5	69.5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.09	2025	0.1	202.5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.30.10	1228	1	1228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T.31.1			0		0	0	0	0	0	35	32	0	0	1	3	0	0	0	0
S.2.1	459	1	459	126	0	0	0	0	0	13	4	2	0	6	0	0	0	0	0
S.2.2	1107	0.7	774.9	161	0	0	0	0	0	140	9	1	0	46	15	0	1	5	2
S.2.3	582	0.5	291	47	0	0	0	0	0	39	2	2	0	11	3	0	1	2	0
S.2.13	172	0.8	137.6	19	0	0	0	0	0	9	2	0	0	1	0	0	0	0	0
S.2.4	1320	0.1	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.2.5	1908	0.1	190.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.2.6	191	0.6	114.6	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
S.2.8	6	1	6	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.2.7	1943	0.1	194.3	4	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
S.2.9	2310	0.2	462	0	1	0	0	0	0	9	4	0	0	1	0	0	0	0	0
S.2.10	1365	0.4	546	0	0	0	0	0	0	12	0	0	0	2	0	0	0	1	1
S.2.11	490	0.7	343	0	0	0	0	0	0	0	1	0	0	4	0	0	2	5	0
S.2.12	340	0.1	34	0	0	0	0	0	0	0	0	0	0	3	1	0	1	1	0
S.3.1	1375	0.9	1237.5	137	0	0	0	0	0	46	12	0	0	21	7	0	0	4	0
S.3.2	735	0.4	294	48	0	0	0	0	0	15	0	0	0	2	0	0	0	0	0
S.3.3	780	0.1	78	26	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0
S.3.4	974	0.5	487	67	0	0	0	0	0	11	0	0	0	5	0	0	1	3	0
S.3.5	890	0.2	178	12	0	0	0	0	0	7	0	0	0	1	0	0	0	0	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
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0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
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3	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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0	3	0	2	0	3	1	1	1	0	0	0	0	25	11	0	0	0	0	0	0
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0	0	0	0	0	1	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	0	0	0	4	3	0	0	0	0	0	0
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0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	$	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
S.3.6	79	0.4	31.6	59	0	0	0	0	0	0	0	0	0	5	3	0	0	3	0
S.3.7	400	0.5	200	25	0	0	0	0	0	11	1	0	0	2	0	0	1	0	0
S.3.8	1315	0.4	526	20	0	0	0	0	0	6	2	0	0	13	0	0	0	0	0
S.3.9	260	0.2	52	4	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0
S.4.2	120	0.2	24	6	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.4.3	706	0.4	282.4	43	0	0	0	0	0	27	0	0	0	23	3	0	0	8	1
S.4.4	142	0.9	127.8	159	0	0	0	0	0	15	0	0	0	28	9	0	1	12	4
S.4.5	91	1	91	49	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
S.4.6	910	0.7	637	58	0	0	0	0	0	29	0	0	0	11	3	0	0	4	0
S.4.7	135	0.9	121.5	23	0	0	0	0	0	5	2	1	0	1	0	0	0	0	0
S.4.1	226	1	226	61	0	0	0	0	0	42	5	0	1	5	2	0	0	0	0
S.5.1	127	0.1	12.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.5.2	750	1	750	31	0	0	1	0	0	2	0	0	0	4	4	0	3	5	3
S.5.3	115	0.6	69	38	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1
S.5.4	1634	0.8	1307.2	343	0	0	0	0	0	8	0	0	0	22	9	3	12	19	12
S.5.5	262	1	262	216	0	0	0	0	0	9	0	0	0	11	13	0	7	10	3
S.5.6	240	0.1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.7.1	200	0.5	100	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
S.8.1	906	0.4	362.4	24	0	0	0	0	0	13	0	0	0	1	0	0	0	0	0
S.8.2	498	0.5	249	45	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.8.3	466	0.3	139.8	20	0	0	0	0	0	3	0	0	0	1	0	0	0	1	0
S.8.4	1075	0.2	215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.8.5	720	0.4	288	50	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0
S.8.6	1883	0.6	1129.8	39	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0
S.8.7	2083	0.3	624.9	33	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
S.8.8	910	0.5	455	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.8.9	3650	0.1	365	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
S.8.10	1306	0.5	653	6	0	0	0	0	0	36	0	0	0	2	0	0	0	0	0
S.9.1	613	0.5	306.5	17	0	0	0	0	0	9	1	0	0	5	3	0	0	0	0
S.9.2	400	0.5	200	16	0	0	0	0	0	19	3	0	0	2	0	0	0	0	0
S.9.3	552	0.3	165.6	12	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
S.9.4	194	0.4	197.6	44	0	0	0	0	0	40	2	0	0	5	2	0	0	4	0
S.9.5	477	0.1	47.7	3	0	0	0	0	0	4	2	0	0	1	0	0	0	0	0
S.9.6	929	0.7	650.3	89	0	0	0	1	0	39	1	0	1	3	2	0	0	0	0
S.9.7	245	1	245	22	0	0	0	0	0	50	6	0	1	16	7	0	1	6	0
S.9.8	575	0.8	460	137	0	0	0	0	0	39	13	1	1	24	10	0	0	9	2
S.9.9	345	0.9	310.5	139	0	0	0	0	0	44	6	0	0	14	3	0	1	4	1
S.9.10	86	1	86	35	0	0	0	0	0	30	8	1	0	14	2	0	0	5	1
S.9.11	463	0.5	231.5	65	0	0	0	0	0	17	4	0	0	2	2	0	0	2	0
S.9.12	772	0.8	617.6	70	0	0	0	0	0	21	5	0	0	13	4	0	0	1	0
S.9.13	324	1	324	15	0	0	0	0	0	5	4	0	0	4	0	0	0	1	0
S.9.14	323	0.8	258.4	21	0	0	0	0	0	5	5	0	0	3	1	0	0	1	0
S.9.15	844	0.3	253.2	36	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0
S.10.11	3164	0.9	2847.6	5450	1	0	0	0	0	44	4	2	0	152	84	0	3	111	24
S.10.09	1465	0.9	1318.5	1477	0	0	0	0	0	2	0	0	0	11	8	1	1	21	11
S.10.15	561	0.9	504.9	2130	0	0	0	0	0	44	1	0	0	48	23	0	2	40	23
S.10.18	617	0.9	555.3	2773	0	0	0	0	0	31	6	1	0	105	33	0	7	57	46
S.10.16	285	0.9	256.5	809	0	0	0	0	0	3	0	0	0	8	2	0	0	14	5
S.10.19	401	0.9	360.9	1016	1	0	0	2	0	31	2	0	0	42	16	0	5	32	25
S.10.17	374	0.7	261.8	1489	0	0	0	0	0	1	2	0	0	13	6	0	1	6	2
S.10.20	428	0.9	385.2	1056	0	0	0	0	0	0	3	0	1	10	2	0	1	6	5
S.10.07	729	0.9	656.1	403	0	0	1	0	0	10	2	0	0	62	22	0	2	33	17
S.10.08	329	0.9	296.1	192	0	0	0	0	0	3	0	0	0	11	2	0	0	5	2
S.10.22	2435	0.6	1461	3718	0	0	0	0	0	4	0	0	0	20	8	0	7	18	30
S.10.06	1178	0.9	1060.2	862	1	0	0	0	0	1	2	0	0	44	14	0	10	35	13
S.10.05	885	0.5	442.5	305	0	0	0	0	0	0	1	0	0	3	0	0	1	3	1
S.10.04	1307	0.6	784.2	264	0	0	0	0	0	3	0	0	0	7	3	0	0	2	0

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	2	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
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0	2	0	1	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	9	0	0	0	18	0	5	0	1	4	1	10	14	3	0	0	0	0	1	0
0	2	1	0	0	4	0	2	0	0	1	1	0	4	0	0	0	0	0	0	0
0	2	4	0	0	11	0	4	0	2	3	0	2	16	2	0	0	0	0	1	2
0	1	1	1	0	7	0	4	2	2	2	4	1	13	1	0	1	0	0	0	0
0	3	0	0	0	6	0	0	0	0	1	0	0	5	0	0	1	0	1	0	0
0	0	0	0	0	7	0	5	1	4	1	2	2	5	0	0	0	0	1	0	1
0	0	0	0	0	8	0	2	2	0	2	2	1	2	0	0	0	0	0	0	0
0	2	0	0	0	0	0	1	0	1	1	1	1	1	0	0	0	0	0	0	0
0	3	0	1	0	2	0	3	1	0	2	1	0	5	2	0	0	1	0	0	1
0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	8	0	2	0	1	0	0	1	4	1	0	1	0	1	0	0
2	5	1	0	0	6	0	11	1	1	2	2	1	3	2	0	1	0	4	0	0
0	0	0	0	0	2	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0

ZONE	AREA	VIS	EXPOS	EWARE	FLK	PL	FE	CU	S	QPR	ER	JPN	QC	QBW	QS	WLB	LBW	SWT	MS
S.10.03	853	0.6	511.8	258	0	0	0	0	0	9	0	0	0	14	11	0	0	12	2
S.10.02	731	0.8	584.8	369	0	0	0	0	0	3	0	0	0	11	5	0	2	10	4
S.10.01	411	0.8	328.8	461	0	0	0	0	0	2	5	0	0	3	1	0	2	6	3
S.10.23	1080	0.1	108	297	0	0	0	0	0	1	1	0	2	0	1	0	1	4	0
S.10.24	1686	0.9	1517.4	789	0	0	0	0	0	0	0	0	0	4	0	1	2	1	1
S.10.21	942	0.5	471	66	0	0	1	0	0	11	0	0	5	4	1	0	0	0	0
S.10.25	47	1	47	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
S.10.26	381	0.1	38.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.10.13	763	0.7	534.1	340	0	0	0	0	2	64	16	2	3	3	1	0	0	0	0
S.10.14	365	0.3	109.5	161	0	0	0	0	0	55	1	0	1	0	0	0	0	2	0
S.10.27			0		0	0	0	0	0	37	4	3	0	2	0	0	0	1	0
S.10.12	531	0.4	212.4	44	0	0	0	0	0	0	0	0	0	0	1	3	0	19	7
S.11.08	172	1	172	106	0	0	0	0	0	55	19	0	1	9	0	0	0	2	0
S.11.07	826	0.5	413	59	0	0	0	0	0	9	9	0	2	6	0	0	0	0	0
S.11.06	866	0.8	692.8	78	0	0	0	0	0	47	10	1	0	4	0	0	0	0	0
S.11.05	270	0.7	189	25	0	0	0	0	0	26	1	0	0	3	0	0	0	0	0
S.11.04	155	0.5	77.5	71	0	0	0	0	1	14	4	0	0	6	1	0	0	0	0
S.11.03	183	0.4	73.2	80	0	0	1	0	0	9	2	0	0	0	0	0	0	0	0
S.11.02	494	0.3	148.2	2	0	0	0	0	0	5	1	0	0	1	0	0	0	0	0
S.11.01	193	1	193	47	0	0	0	0	0	20	0	1	0	1	2	0	0	0	1
S.11.09	506	0.2	101.2	8	0	0	0	0	0	26	2	1	0	1	0	0	0	0	0
S.11.10	128	1	128	0	0	0	0	0	0	24	4	2	0	10	0	0	0	0	0
S.11.11	506	0.9	455.4	117	0	0	0	0	0	24	32	2	2	21	1	0	1	5	2
S.11.12	219	1	219	0	0	0	0	0	0	2	6	0	0	3	2	0	0	1	0
S.11.13	107	1	107	24	0	0	0	0	0	8	1	0	0	2	0	0	0	0	0
S.11.17	127	0.3	38.1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.11.14	1706	0.5	853	73	0	0	0	0	0	32	6	0	0	10	2	0	0	1	0
S.11.15	436	0.5	218	60	0	0	0	0	0	52	8	1	0	9	1	0	0	1	3
S.11.18	566	0.9	509.4	18	0	0	0	0	0	25	3	0	0	7	1	0	0	3	0
S.11.16	1080	0.4	432	120	0	0	0	0	0	91	0	0	1	11	4	0	0	7	2
S.11.19	155	0.8	124	22	0	0	0	0	0	9	3	0	0	8	1	0	0	2	1
S.11.20	694	0.4	277.6	12	0	0	0	0	0	28	0	0	0	4	0	0	0	0	2
S.11.21	882	0.5	441	15	0	0	0	0	0	15	0	0	0	7	1	0	0	0	0
S.11.22	848	0.9	763.2	28	0	0	0	0	0	29	0	0	0	12	3	0	0	2	2
S.15.1	446	0.5	223	0	0	0	0	0	0	0	0	0	0	5	2	0	4	5	3
S.12.1	17	1	17	7	0	0	0	2	0	0	1	0	0	0	0	0	0	0	2
S.12.2	9	1	9	5	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
S.12.3	358	0.9	322.2	278	0	0	0	0	0	1	0	0	0	2	0	0	0	3	2
S.12.4	162	0.9	145.8	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.13.1	1782	0.3	534.6	7	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
S.13.2	559	0.6	335.4	9	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
S.13.3	617	0.5	308.5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.13.4	1632	0.9	1468.8	11	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
S.13.5	2082	0.2	416.4	13	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0
S.13.6	412	0.7	288.4	59	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
S.14.06	1197	0.4	478.8	5	0	0	0	0	0	0	0	0	1	2	2	0	2	1	2
S.14.05	254	0.4	101.6	0	0	0	0	0	0	0	0	0	0	4	4	1	1	9	2
S.14.04	95	0.4	38	4	0	0	0	0	0	0	0	0	0	1	1	1	1	6	1
S.14.03	397	0.4	158.8	16	0	0	0	0	0	0	0	0	0	15	5	0	4	16	3
S.14.02	1025	0.1	102.5	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
S.14.01	216	0.1	21.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.14.07	425	0.4	170	3	0	0	0	0	0	0	0	0	0	1	7	0	0	0	1
S.14.08	491	0.4	196.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
S.14.09	94	0.3	28.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
S.14.10	652	0.5	326	0	0	0	0	0	0	0	0	0	0	1	1	0	0	5	2
S.14.11	372	0.1	37.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S.16			0	1	0	0	0	1	0	0	0	0	0	2	0	2	5	6	6

MFV	MBW	HEX	EBW	EFV	SWR	BL	VBW	VM	SWH	SWM	MC	YMC	EM	EW	MW	WLW	VH	SUK	JZ	SAN
0	0	1	0	0	0	0	1	0	0	1	2	0	1	1	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
0	3	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	14	0	0	0	7	0	3	0	1	2	0	0	2	0	0	0	0	0	1	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	8	0	0	0	2	0	2	0	1	0	1	2	5	0	0	0	0	0	0	0
0	11	0	0	0	2	0	5	0	4	2	1	0	0	0	1	0	0	0	0	0
0	10	0	0	0	4	0	2	0	3	7	2	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
0	4	0	1	0	1	0	0	1	1	0	4	0	1	0	0	0	0	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	0	0	0	6	0	1	0	12	5	2	0	3	0	2	2	0	1	0	1

APPENDIX E. OVERVIEW OF THE BRICK AND MASONRY BLOCK DATA

E.1 Background

E.1.1 Scope of the work

Originally, SSPHAP's research grant from the Australian Myer Foundation was to be spent on a sub-project, co-ordinated with Sonny Wibisono of the Indonesian National Research Centre for Archaeology, dealing with the coastal fortifications defending Makassar entrepôt (Figure E-1). Following the return of Drs Wibisono to Jakarta, SSPHAP's regular team surveyed further coastal and hinterland fortifications, measured bricks at unfortified sites, and recorded masonry quarrying at Pammangkulang Batua (Photo E-1), thus paving the way for SSPHAP's review of greater Gowa's late 17th century fortifications (Bulbeck, 1990). In all, 1381 bricks and brick fragments were measured from nine fortified sites and twelve non-fortified sites. 90 masoned stones were measured at Tallok and seven partly masoned blocks were measured at Pammangkulang Batua. In addition, signs of earthen fortifications were recorded at four sites (Bayoa 1, Garassik, Paknakkukang, and Kota Galesong).

The individual sites which provided SSPHAP's brick and masonry samples are depicted in Figure E-2. The samples north of Sampulungang are documented in the chapters dealing with the Gowa-Tallok sites (Chapters 6 to 12). Measurements of the brick samples from the sites between Sampulungang and Sanrabone are given in Table E-1. Of these sites, Sanrabone (E.1.3) and Galesong (E.1.4) were fortified.

E.1.2 Methodological considerations in measuring the bricks

The Makassar texts (Chapter 2) provide an incomplete record of the chronology of construction and, after the 1667 Makassar War, demolition of greater Gowa's fortifications. The fortifications themselves range from the almost undisturbed fortress of Anak Gowa, to sites where virtually no original brickworks remain intact. Especially in the more disturbed sites there has been considerable recycling of

bricks, while several of the fortified sites enclose structures made from 18th century and later bricks. One isuue, then, is whether certain metrical parameters can distinguish the fortification bricks from later bricks. The second issue is whether patterns in brick size open a window on the sequence of Gowa fortifications.

To answer these questions, controlled probabilistic samples would have obviously been preferable, but SSPHAP's sampling procedures were necessarily opportunistic owing to the highly variable availability of loose bricks and measurable *in situ* bricks. Except at Somba Opu and to a lesser degree at Sanrabone, which were recorded while I was still in the process of formulating an appropriate sampling procedure, we documented the variability of brick size by taking samples spaced along the remnant walls, giving particular attention to any loci where a change in construction style was evident. Bricks from other structures such as graves and wells were also measured at the fortified sites and a sample of unfortified sites. Where a large number of bricks occurred at a locus, a sample size of 30 bricks was considered adequate (cf. Constandse-Westermann, 1972), selected on the basis of completeness and accessibility. However, smaller sample sizes frequently had to be accepted.

The bricks were measured with a three-metre metal tape by placing the tip at one end and measuring to the nearest 0.5 cm mark at the other end. The only exceptions were six bricks from Bayoa measured using sliding callipers with one mm gradations. Analysing the data I have noticed that the 0.5 cm gradients were faithfully observed for the thicknesses, especially with the thinner bricks up to about 5 cm thick. However, the lengths and the breadths are strongly biased towards whole numbers, suggesting that a fractional value was recorded only when the measurement landed on the 0.5 cm mark. My analysis retains the fractional values except in the graphic cross-tabulations where, to condense the data, lengths and breadths with a 0.5 cm fraction (or higher, at Bayoa) are converted to the next whole centimetre.

The original data were entered into the Borland/Analytica (1987) "Reflex: The Analyst" PC programme. A hard copy has

been sent to Sonny Wibisono as well as to Bahru Kallupa of Suaka, amd is available from me on request.

E.1.3 Benteng Sanrabone (Takalar 6)

Benteng Sanrabone has approximately 2.2 km of brick wall enclosing 21 hectares (Figure E-3). Evidently the fort had not been built by 1667, as Andaya (1981) does not mention Sanrabone in his comprehensive account of the Makassar War and the Bungaya Treaty which followed. But according to Ibrahim (1985:47), in 1668 the kingdom of Sanrabone was obliged to sign a renewed version of the Bungaya Treaty which included a provision demanding the demolition of Benteng Sanrabone (which may or may not have been carried out). Sanrabone had been without a raja since 1658, and it was only in 1668 that Hasanuddin's son Kg Campagaya (later Sultan Abdul Jalil) was installed (4.6). Hence we can infer that he built his Sanrabone palace in 1668, and that it immediately came to the attention of the Dutch.

Note that even after being installed as Gowa's sultan, Abdul Jalil (r. 1677-1709) initially kept the Gowa regalia at Sanrabone, and his land holdings (at least as recognised by the Dutch) remained confined to Sanrabone as late as 1688 (Andaya, 1981:199,264). The later report by Stavorinus (1798:211), that Sanrabone had been built at around the same time as Tallok and Somba Opu, could be interpreted as support for a 17th century construction date, and need not imply exact contemporaneity of the three forts.

The archaeological evidence confirms a c.1668 construction date. The brick samples around the fortress walls show very little metrical variation (Table E-1), indicating a single event of construction by specialists with considerable prior experience in building brick walls. As observed at several points (e.g. Photo E-2), the walls were built with two vertically standing lines of brick, plus earth packed between the brick lines and on either side. This construction method of "double brick-walls" also characterises most of Benteng Tua's walls (6.4). In addition, Sanrabone's tradeware profile shows a pronounced emphasis on pieces dated to the late 17th and 18th centuries (Bulbeck, in prep. b).

TABLE E-1. FURTHER BRICK SAMPLES NOT DESCRIBED IN CHAPTERS 6 TO 12 (MEASUREMENTS IN CM)

BENTENG SANRABONE	Inner Wall				Outer Wall				Total Bricks			
	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range
Station I												
Length	10	24.80	0.98	(24-26)	10	25.30	0.68	(24.5-26)	20	25.05	0.88	(24-26)
Breadth	10	14.75	0.75	(14-16)	10	15.60	0.88	(14-16)	20	15.18	0.93	(14-16)
Thickness	10	3.50	0.0	(3.5)	10	3.50	0.24	(3-4)	20	3.5	0.16	(3-4)
Station II												
Length					3	24.33	0.47	(24-25)	3	24.33	0.47	(24-25)
Breadth					3	13.67	0.47	(13-14)	3	13.67	0.47	(13-14)
Thickness					3	3.67	0.24	(3.5-4)	3	3.67	0.24	(3.5-4)
Station III												
Length	8	25.64	1.08	(23-26.5)	10	26.00	0.22	(25.5-26.5)	18	25.64	1.08	(23-26.5)
Breadth	8	14.63	1.05	(13-16)	10	14.60	1.28	(12-16)	18	14.61	1.19	(12-16)
Thickness	10	3.30	0.33	(3-4)	10	3.75	0.25	(3.5-4)	20	3.53	0.37	(3-4)
Fortress Wall												
Length	18	24.97	1.24	(23-26.5)	23	25.48	0.74	(24-26.5)	41	25.26	0.96	(23-26.5)
Breadth	18	14.69	0.90	(13-16)	23	14.91	1.23	(12-17)	41	14.81	1.09	(12-17)
Thickness	20	3.40	0.25	(3-4)	23	3.63	0.27	(3-4)	43	3.52	0.26	(3-4)
	Wall Surrounding Gaddonga Graveyard				Makam Datu Paddada				Sanrabone Old Well			
Length	10	24.90	0.73	(24-26)	10	26.20	0.46	(25.5-27)	4	23.89	1.34	(22.5-26)
Breadth	10	14.10	0.44	(13-14.5)	10	16.85	0.55	(15.5-17.5)	9	15.61	3.44	(12.5-24)
Thickness	10	3.25	0.34	(3-4)	10	5.40	0.49	(4.5-6)	10	4.50	1.11	(3.5-6.5)
	East Royal Kobang				West Royal Kobang				Total Sanrabone Royal Graves			
Length	10	24.25	0.51	(23-25)	20	25.23	0.54	(24-26.5)	30	24.90	0.79	(23-26.5)
Breadth	10	12.75	0.40	(12.5-13)	20	12.68	0.40	(12-13.5)	30	12.70	0.40	(12-13.5)
Thickness	10	4.35	0.23	(4-4.5)	20	3.90	0.37	(3.5-4.5)	30	4.05	0.34	(3.5-4.5)

TABLE E-1. FURTHER BRICK SAMPLES NOT DESCRIBED IN CHAPTERS 6 TO 12 (CONT.)

BRICKS LACKING MODERN DIMENSIONS

	Manjalling graves, Galesong				Sampulungang large bricks				Jamarang broad bricks			
	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range
Length	9	28.00	0.88	(26.5-29)	5	28.30	0.60	(27.5-29)	31	26.77	2.84	(22-33)
Breadth	18	17.22	1.50	(14-19.5)	14	17.39	1.06	(15-20)	34	16.43	0.74	(15-17.5)
Thickness	18	4.75	0.73	(3.5-6)	14	5.07	0.56	(4.5-6.5)	31	5.32	1.00	(4-9)

BRICKS WITH MODERN DIMENSIONS

	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range	(n)	Mean	S.D.	Range
	Bungung Barania, Galesong				Sampulungang small bricks				Jamarang thin bricks			
Length	10	23.45	0.47	(22.5-24)	5	23.30	0.75	(22-24)	34	26.44	0.42	(26-27.5)
Breadth	15	10.77	0.60	(9.5-11.5)	6	12.25	0.25	(12-12.5)	34	12.04	0.32	(11-12.5)
Thickness	15	4.67	0.24	(4.5-5)	6	4.67	0.24	(4.5-5)	34	5.15	0.44	(4.5-6.5)
	Makam Datu Bonto Lebang				Campagaya Lama				Jeknek well			
Length	24	25.27	1.31	(21.5-26.5)	15	25.80	0.95	(24.5-27.5)	2	23.75	-	(23,24.5)
Breadth	28	11.94	0.60	(10.5-13)	15	12.73	0.57	(12-14)	2	11.75	-	(11,12.5)
Thickness	23	5.15	0.27	(4.5-5.5)	15	7.77	0.73	(6-9)	1	4.5	-	(4.5)

N.B. Three rounded bricks were also recorded in the Jeknek well, with an average length of 16.3cm, average breadth of 7.7 cm, and average thickness of 5.2cm. Presumably they are modern bricks shaped to fit the well's contours, resulting in their diminished breadth. They are included in the total brick sample (Table E-2) but are excluded from any groups broken down during analysis.

The other brick structures at Sanrabone have bricks with quite different dimensions from those of the fortress bricks (Table E-1), except for the low wall built around the Gaddonga Graveyard Complex (Photo E-7). All the marked graves and tombs in the complex belong to old styles, notably that of Labbu Kopo which is oriented east-west (Table F-1). Although the names now ascribed to the graves (Table F-1) fail to match the names recorded for Sanrabone's rajas (4.6), it is hard to interpret the complex as anything other than Sanrabone's royal cemetery up to when Kg Campagaya (Abdul Jalil) ascended Sanrabone's throne. As the wall around the complex was apparently built at the same time as the fortress walls, its function was probably to mark off the burial ground associated with Sanrabone's former rulers.

In the early 18th century Abdul Jalil was succeeded as Sanrabone's raja by another Gowa aristocrat, Bahauddin Kg Mamampang, who in turn was succeeded by his son Kg Barombong. In 1734 local rule appears to have been restored with the installation of Salahuddin Kg Alluk (4.6). Although the royal brick *kobang* (Photo E-3; Table F-1) were probably built after Kg Alluk's installation, their association with a mosque in the heart of the fortress (Figure E-3) follows the same plan as Abdul Jalil's Datak palace in Benteng Tua (6.7), reflecting Gowa's profound influence on Sanrabone.

E.1.4 Kota Galesong fortifications

Historical evidence of fortification works at Kota Galesong comes only from the records on Galesong's capture by the Dutch and Arung Palakka (Sahaduddin) during the Makassar War. Summarising the records, Andaya (1981:87-89) describes it as a 'fortified city' and makes it clear that there were numerous "forts". Matching archaeological evidence, however, is slight (see Figure E-4).

Zone 14 in Manjalling contains five rectangular, razed brick structures (Photo E-4), whose north-south orientation and lack of connecting brickworks suggest that they used to be grave markers. Indeed in terms of average size and shape, the Manjalling bricks compare slightly better with old bricks from unfortified sites, such as Sampulungang and Jamarang

(Table E-1), than with known fortification bricks (Tables E-23 to E-26). We also observed patches of brick rubble along the road at the north of Kota Galesong (Photo E-5). But they occur at a peripheral location of Galesong, and are moreover suspiciously close to a former Islamic cemetery (Kompleks Makam Matinroe ri Suli) which has been largely demolished during housing developments (Bulbeck, in prep. b). So these also would appear to have been brick grave markers.

However, Kota Galesong is centred on a series of raised earthen features parallel with the coastline (Figure E-4). Their natural defensive potential could have been readily enhanced by the construction of timber palisades, earthworks or the like. A good example is Makam Takbakka whose original surface has been incised by the passing road. The banks reveal brick and stone rubble which could well have been included as support for an earthen wall (Photo E-6). So the defensive works at Galesong were probably restricted to a network of palisades and stockades.

E.2 Analysis of the Brick Measurements

E.2.1 "Brick Standards" and "Brick Seriation Types"

The total sample of measured bricks and fragments shows great variability in size and shape (Table E-2). However, most of the variability can be accommodated by positing two distinct ways in which particular bricks are related to each other.

TABLE E-2. MEASUREMENTS IN CM OF ALL MEASURED BRICKS (n=1381)

	(n)	Mean	S.D.	Range
Length	782	27.14	6.42	(16-49)
Breadth	1212	15.20	3.47	(7.5-26)
Thickness	1236	4.68	1.51	(2-10)
Breadth/Length	687	56.66%	8.35	(38.5-92.4%)
Thickness/Length	641	17.59%	4.44	(8.0-37.5%)
Thickness/Breadth	1068	31.02%	8.30	(14.3-80.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.75
Thickness:Length Correlation Coefficient Pearson's r = 0.66
Thickness:Breadth Correlation Coefficient Pearson's r = 0.64

The first relationship involves "brick standards" which can be defined as any group of bricks of similar manufacture and dimensions. Their metrical variation should be due to slight straying from the standard, leading to small standard deviations for the dimensions and shape indices, but moderate to low correlation coefficients between dimensions.

The second relationship involves "brick seriation types", i.e. groups of bricks of similar manufacture and shape but variable size. Standard deviations are large for the dimensions but small for the shape indices, while the correlation coefficients between dimensions are high. Moreover, a brick seriation type should itself be divisible into several groups of similarly size bricks which will behave mathematically like brick standards.

Preliminary study of the data suggested that the original database covers brick standards which are unrelated to the fortification bricks, and that the latter constitute a brick seriation type. To demonstrate the point, it should be possible to identify the extraneous brick standards and remove them from the database whose remaining bricks should then show greater standardisation in shape.

At the Islamic graveyards of Datu Bonto Lebang and Campagaya Lama we observed only one type of brick (Table E-1) and noted that it appeared to have the same fabric as the bricks used in Ujung Pandang's modern housing developments. The very standardised dimensions of these bricks are virtually indistinguishable from those of the bricks assembled in "Kale Kundrulu's grave", Benteng Tua, even though the latter were reportedly produced by the first Dutch brickworks in Makassar (Photo 6-7). The smaller bricks at Sampulungang, Jamarang (Table E-1) and Moncongloe Lappara (10.6.3) have similar dimensions, as do the bricks from the well at Jeknek and the supposedly old well called Bungung Barania at Bayoa, Galesong (Figure E-4; Table E-1).

Altogether these bricks show greatly reduced size and shape variability compared with the total sample, and considerably lower inter-measurement correlation coefficients, indicating that they can be assigned to a "brick standard" (Table E-3). I call it the "Dutch brick

standard" as the available clues point to its introduction by the Dutch. Removing them from the database leaves a remainder of "other bricks" (Table E-4) which, compared to the original total sample (Table E-2), are if anything more variable in size, but more standardised in shape as shown by the reduced ratio standard deviations and the higher correlation coefficients. Note also that the "other bricks" are rather longer and notably less thick than the "Dutch standard bricks", as shown by the shape ratios.

TABLE E-3. SIZE IN CM OF "DUTCH STANDARD BRICKS" (n=112)

	(n)	Mean	S.D.	Range
Length	90	25.22	1.46	(21-27.5)
Breadth	112	11.90	0.82	(9.5-13.5)
Thickness	107	5.04	0.47	(4-7)
Breadth/Length	90	47.57%	2.86	(42.3-54.5%)
Thickness/Length	86	21.12%	1.89	(17.0-29.2%)
Thickness/Breadth	108	42.55%	3.84	(32.0-53.8%)

Breadth:Length Correlation Coefficient Pearson's r = 0.60
Thickness:Length Correlation Coefficient Pearson's r = 0.35
Thickness:Breadth Correlation Coefficient Pearson's r = 0.39

TABLE E-4. MEASUREMENTS IN CM OF "OTHER BRICKS" (n=1269)

	(n)	Mean	S.D.	Range
Length	692	27.39	6.77	(16-49)
Breadth	1100	15.55	3.46	(7.5-26)
Thickness	1129	4.64	1.57	(2-10)
Breadth/Length	593	57.99%	8.04	(38.5-92.3%)
Thickness/Length	555	17.20%	4.59	(8.0-37.6%)
Thickness/Breadth	957	29.60%	7.34	(14.3-72.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.78
Thickness:Length Correlation Coefficient Pearson's r = 0.68
Thickness:Breadth Correlation Coefficient Pearson's r = 0.71

The "other bricks" include not only fortification bricks but also bricks used in various *keramat* (holy) structures and at Sanrabone's "old well". Wherever I noted the fabric, it appeared to be redder and fired at a lower temperature compared to the "Dutch standard bricks". At the fortified sites, only Sanrabone's *in situ* wall bricks (including those from the wall built around the Gaddonga Graveyard Complex)

had such small dimensional variation that they could be readily distinguished on the basis of size alone from the old-style bricks used in the graves and wells (Table E-1). Elsewhere there was total overlap, either because the other structures and the fortress were built at the same time, such as the Hasanuddin Complex remnant brickworks and the lining to the Bissu's Well at Benteng Tua (6.4), or because the fortress bricks have been recycled. Apart from Sanrabone, then, I identify old-style fortification bricks (Table E-6) as those found at the fortified sites, and the other old-style bricks (Table E-5) as those at the unfortified sites. Admittedly, my sample of fortification bricks possibly includes some old-style bricks postdating the fortifications, while some of the unfortified sites, particularly those close to the forts, probably include bricks made during the defense works and subsequently recycled from the fortifications. However, if the point of the exercise is to distinguish between these two groups of bricks by their metrical patterns, then it would be circular reasoning to classify them in the first place on the basis of measurements rather than location.

The "other old-style bricks" constitute neither a "brick standard" nor a "brick seriation type". Although the standard deviations on the measurements are less than shown by the total "other bricks" (Table E-4), the ratios show high standard deviations and the correlation coefficients are low. Their ratios which involve breadth are similar to the ratios of the Gowa fortification bricks, but their thickness:length ratio resembles the "Dutch standard". These patterns probably represent some combination of (i) inclusion of at least some fortification bricks, (ii) some influence of the "Dutch standard" on the later manufactured examples, (iii) the bricks' use in a variety of structures, and (iv) a lengthy period of manufacture within communities operating in comparative isolation from one another.

The Gowa fortification bricks, compared with the total "other bricks" (Table E-4), have slightly larger standard deviations on the measurements, but considerably reduced standard deviations on the ratios and higher correlation

TABLE E-5. SIZE IN CM OF OTHER OLD STYLE BRICKS (n=212)

Site and Structure	Reference	Apparent Age
Bukit Bikuling brick sepulchre	7.1.2	17th century?*
Makam Karaeng Campagaya *kobang*	7.3.1	17th century?#
Makam Kg Tompok Balang platform	8.5.3	Undated
Moncongloe Lappara grave platform	10.6.3	Modern; restored?*
Bonto Lakja grave platform	11.4.3	17-18th centuries
Sampulungang old brick graves	Photo E-8	17-18th centuries
Jamarang old grave brick props	Photo E-9	17-19th centuries
Manjalling old brick graves	Photo E-4	17-18th centuries
Sanrabone *kobang*	Photo E-3	18th century
Makam Datu Paddada, Gaddonga	Table E-1	17-18th centuries
Sanrabone "old well"	Table E-1	Undated

* Cases where at least some of the bricks have similar dimensions to bricks at nearby fortifications.

Variably sized owing to construction requirements, but with a usual type similar to Benteng Tua's "smaller bricks".

	(n)	Mean	S.D.	Range
Length	161	26.46	3.16	(20.5-45)
Breadth	201	15.97	2.84	(9.5-24)
Thickness	191	5.18	1.30	(3-9)
Breadth/Length	156	59.87%	10.83	(43.2-92.3%)
Thickness/Length	145	20.42%	5.57	(12.5-37.5%)
Thickness/Breadth	178	33.29%	9.56	(18.9-72.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.42
Thickness:Length Correlation Coefficient Pearson's r = 0.31
Thickness:Breadth Correlation Coefficient Pearson's r = 0.36

Table E-6. SIZE IN CM OF FORTIFICATION BRICKS (n=1053)

	(n)	Mean	S.D.	Range
Length	527	27.75	7.48	(17-49)
Breadth	895	15.48	3.56	(7.5-26)
Thickness	934	4.53	1.60	(2-10)
Breadth/Length	432	57.31%	6.65	(38.5-81.3%)
Thickness/Length	406	16.09%	3.55	(8.0-31.8%)
Thickness/Breadth	772	28.76%	6.43	(14.3-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.86
Thickness:Length Correlation Coefficient Pearson's r = 0.81
Thickness:Breadth Correlation Coefficient Pearson's r = 0.78

coefficients. These points indicate that they indeed constitute a "brick seriation type", with the production of similarly shaped bricks having been maintained by a co-ordinating authority.

E.2.2 Large bricks and smaller fortification bricks

The available measurements of the Gowa fortification bricks essentially fall into a bimodal distribution involving large and smaller bricks. For instance, a length of 34 cm was not recorded once, and lengths between 31 and 37 cm occurred very infrequently. Hence when length is available, 34 cm can be used as an unambiguous sectioning point between the large and the smaller bricks.

To see whether other measurements similarly divide the brick sample, consider those 365 fortification bricks for which all three dimensions were measured, plotting the measurements two at a time (Tables E-7 to E-9). The bottom rows in Tables E-8 and E-9 demonstrate a bimodal distribution in the breadths and thicknesses corresponding to the more strongly bimodal distribution of the lengths.[1] Since these bricks have already been classified as "large" or "smaller", based on their length, we can test whether definitions which exclude length arrive at a comparable classification.

Classifying on the basis of breadth alone, the most satisfactory result comes from defining smaller bricks as those less than 17.5 cm broad. This definition correctly classifies 318/329 (96.7%) of the smaller bricks and 34/36 (94.4%) of the large bricks, or 352/365 (96.4%) of the total (Table E-7). When thickness alone is considered, the best result comes from defining smaller bricks as those 6 cm or thinner (Table E-8). While this definition correctly classifies 325/329 (98.8%) of the smaller bricks and 352/365 (96.4%) of the total, it appears less than satisfactory with the larger bricks, correctly classifying only 27/36 (75%).

[1] Quite an expectable result given that the total sample of Gowa fortification bricks showed high correlation coefficients between the dimensions (Table E-6). Indeed the few bricks which lie well off the main axes of covariation (e.g. Tables E-7 to E-9) may reflect errors in measurement and transcription rather than anomalous products.

But when both breadth and thickness are available we achieve excellent discrimination by classifying smaller bricks as those below the stepped line shown in Table E-9. 326/329 (99.1%) of the smaller bricks are correctly identified, as are 34/36 (94.4%) of the large bricks and 360/365 (99.4%) of the total.

These then are our definitions. Large bricks are those longer than 34 cm, or above the stepped line shown in Table E-9 if length is the only measurement missing, or broader than 17 cm or thicker than 6 cm if only breadth or thickness is available. The rest are smaller bricks. The large bricks, whose statistics are given in Table E-10, behave mathematically like a "brick standard". The smaller bricks,

TABLE E-7. LENGTH AND BREADTH OF FORTIFICATION BRICKS WITH THREE MEASUREMENTS

LENGTH	BREADTH															
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM
45 cm												1	1	1		3
44 cm												1	1	1		3
43 cm												3	2	1		6
42 cm									1	1				2		4
41 cm										1	1		1			3
40 cm								1		1	1	5				8
39 cm									1		1	2			1	5
38 cm								1	1				1			3
37 cm												1				1
36 cm																
35 cm																
34 cm																
33 cm							1	1					1			3
32 cm								1			1					2
31 cm							2									2
30 cm							1	2		2	1			1		6
29 cm						1	4	3								8
28 cm				2			4	4								10
27 cm			2	4	4	8	5	12	1							36
26 cm			2	13	9	13	16	5	3			1				62
25 cm		2	3	18	10	4	8	2								48
24 cm		2	6	11	11	9	3									42
23 cm		1	5	13	10	4										33
22 cm	1	4	6	4	10	2										27
21 cm	1	4	11	3	2	1										22
20 cm		3	12	3		1										19
19 cm	1	2	2	1		1										7
18 cm		1														1
17 cm				1												1
SUM	3	19	49	73	56	44	44	32	7	5	5	14	7	6	1	365

TABLE E-8. LENGTH AND THICKNESS OF FORTIFICATION BRICKS WITH THREE MEASUREMENTS

LENGTH	THICKNESS															
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	SUM
45 cm										1		2				3
44 cm										1	1	1				3
43 cm							1		1	1	2				1	6
42 cm													2	2		4
41 cm												1	2			3
40 cm						1			1		2	3		1		8
39 cm						1			1	1	1			1		5
38 cm							1		1						1	3
37 cm			1													1
36 cm																
35 cm																
34 cm																
33 cm						1	1		1							3
32 cm						1	1									2
31 cm					1	1										2
30 cm			1	1	2		3									7
29 cm				2	2	2		1	1							8
28 cm			1	3	1	1	3		1							10
27 cm			4	4	8	9	4	6	1							36
26 cm			6	16	14	5	3	10	5		2	1				62
25 cm	1		4	15	12	6	7	1	1							47
24 cm	2	2	7	20	5	3	2	1								42
23 cm	3	2	15	8	1	1	2	1								33
22 cm	1	1	4	13	4	1	1		1		1					27
21 cm		5	9	5	2	1										22
20 cm		5	10	2	1		1									19
19 cm		2	4			1										7
18 cm			1													1
17 cm				1												1
SUM	7	17	67	90	53	35	30	20	15	4	9	8	4	4	2	335

TABLE E-9. BREADTH AND THICKNESS OF FORTIFICATION BRICKS WITH THREE MEASUREMENTS

BREADTH	THICKNESS															
	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	SUM
24 cm						1										1
23 cm				1						1		1		2	1	5
22 cm									1	1	2	1	1		1	7
21 cm			1			1	1		2	2	2	4		1		14
20 cm							2		1		1	1				5
19 cm							2				1		2			5
18 cm						2	1	2					1	1		7
17 cm			2	3	7	4	3	5	6		1	1				32
16 cm			4	17	6	8	6		2		1					44
15 cm		1	8	11	10	4	7	2			1					44
14 cm	1	1	11	26	8	2	3	3	1							57
13 cm	2	4	15	19	15	9	2	7								73
12 cm	4	7	17	10	5	2	3		1							49
11 cm		4	7	2	2	2		1	1							19
10 cm			2	1												3
SUM	7	17	67	90	53	35	30	20	15	4	9	8	4	4	2	365

which are relatively broader than the large bricks and indeed show the lowest thickness:breadth ratio of any category (Table E-11), behave more like a "brick seriation type".

These two sizes of bricks were unevenly distributed across the five types of brick wall recognised by SSPHAP's survey (cf. Figure E-1). The demonstration considers those *in situ* bricks for which at least two dimensions are available - so their size can be classified by the breath-thickness definition (Table E-9) if length was not measured - and calculates the percentage frequency of large and smaller bricks in each type of wall (Table E-12). "Single wall" refers to the walls of Benteng Anak Gowa which were made of a single central line of bricks supported on each side by heaped earth. "Central wall" differs in that the central line was flanked on both sides by lateral lines of brick, here

TABLE E-10. SIZE IN CM OF LARGE FORTIFICATION BRICKS (n=229)

	(n)	Mean	S.D.	Range
Length	111	41.12	2.84	(35-49)
Breadth	176	21.05	1.70	(16.5-26)
Thickness	196	7.09	1.08	(3-10)
Breadth/Length	67	50.48%	4.42	(42.5-64.9%)
Thickness/Length	77	16.93%	8.61	(8.1-22.9%)
Thickness/Breadth	134	34.08%	4.67	(24.4-47.2%)

Breadth:Length Correlation Coefficient Pearson's r = 0.33
Thickness:Length Correlation Coefficient Pearson's r = 0.29
Thickness:Breadth Correlation Coefficient Pearson's r = 0.12

TABLE E-11. SIZE (CM) OF SMALLER FORTIFICATION BRICKS (n=824)

	(n)	Mean	S.D.	Range
Length	414	24.16	2.87	(17-33)
Breadth	717	14.09	2.34	(7.5-23)
Thickness	736	3.84	0.83	(2-7.5)
Breadth/Length	364	58.57%	6.22	(38.5-81.3%)
Thickness/Length	328	15.87%	3.68	(8.0-31.8%)
Thickness/Breadth	636	27.62%	6.01	(14.8-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.73
Thickness:Length Correlation Coefficient Pearson's r = 0.40
Thickness:Breadth Correlation Coefficient Pearson's r = 0.41

called "side wall", in addition to the earth fill. This type of brick wall was found along certain sections of Benteng Tua. "Double wall", found at Sanrabone (Photo E-2) and Tallok, has two lines of bricks with earth between them and on either side.[2] "Coastal wall" refers to the brick wall built along the coastline, which would have stretched almost continuously from Ujung Tana to Barombong according to my reconstruction of Makassar, but which was amenable to survey only between Garassik and Barombong.

TABLE E-12. BRICK SIZE TYPES AND WALL TYPES

	Large Bricks >34 cm long, or B-T large	Smaller Bricks <34 cm long, or B-T small
Single Wall	100%	0%
Central Wall	98.8, 100%	0, 1.2%
Side Wall	0%	100%
Double Wall	1.3, 4.3%	95.7, 98.7%
Coastal Wall	5.8, 15.0%	85.0, 94.2%

N.B. Two values are presented in those cells where the two definitions of brick size used here yield different results.

Large bricks were used for the single and central walls. The single apparent exception, from Benteng Tua, is only just excluded from the large bricks by the breadth-thickness definition. Smaller bricks were used in making the side and double walls, except for a small number at Tallok. The coastal wall bricks were also usually short (< 34 cm) but, suspiciously, included a comparatively high proportion of large bricks by the breadth-thickness definition. This last point leads naturally to a more detailed consideration of the southern fortifications which used to guard Makassar entrepôt (see Figure 11-2).

E.2.3 Somba Opu and the coastal wall

Somba Opu was the fortress least well documented by SSPHAP's survey for two reasons. Firstly, our direct observations on

[2] As discussed in E.2.3, the type of wall at Benteng Somba Opu is not fully clear and so the fortress is excluded from this comparison.

the site finished on 14 November 1986, before we were aware of the issues (posed by our later investigations at Benteng Tua) of multiple events in wall construction, and the use of variable brick sizes in the same fortress. Secondly, the visible wall line consisted of either a linear scatter of brick rubble or the half-demolished wall at the west, neither offering any readily available sections. The one small section we could clear at the outer west wall showed the construction method as "one-on-two"[3] and provided some measurements of *in situ* bricks, which appeared to constitute adequate documentation then. Suaka's (1986/87) survey of Somba Opu, which confirmed SSPHAP's site plan (Figure 11-9), seemed at the time to wrap the matter up.

The fortress walls have since been subjected to major excavations by Suaka and reconstruction led by Mukhlis (Hasanuddin University). I imagine that one or more reports have resulted from this work, but I have been unable to track any down either as copies or as titles. Personal communications from Peter Spillett and Anthony Reid, who have visited the site recently, indicate that the fortress wall consisted of a single brick wall. All the photographic evidence I have seen (Photos 11-4 to 11-6) also suggests a single brick wall, one of several metres thickness which would have obviated the need for subsidiary wall lines or additions of heaped earth. A journalist's report (*Minggu*, 13-9-89) describes fully vertical faces for the walls inside and outside, except on the west and south walls whose interior faces slope at 75°-80° from the horizontal. The description possibly suggests two or more lines of brick, at least within the west and south walls, but is inconclusive. Ian Caldwell (as reported in Reid and Caldwell, 1990:89) mentions a single brick-wall around the fortress except along the north which had a single central line of large bricks, two less solid lateral lines of smaller bricks and packed earth fill. The latter method of construction would intriguingly recall Benteng Tua's major walls (6.4). Although the article by Reid and Caldwell (1990) is not designed to

[3] i.e. each brick was laid transversely across the two bricks in the course below.

handle the full complexities of the fortification archaeology, I will follow it as the only published description to which I have access. In any case, all the Somba Opu bricks measured by SSPHAP were found at the southern and western walls which, according to the evidence available to me, apparently had single brick-walls.[4]

By the definitions given in E.2.2, 11 of the 12 *in situ* Somba Opu bricks measured at the outer west wall are "smaller" and only one is "large". Superficially, this might seem to go against the pattern at Benteng Anak Gowa whose single brick-wall (Figure 8-2) had been built of large bricks (Table E-12). However, it is possible that the appropriate analogy for Somba Opu's very thick walls of brick along its western face is the triple brick-wall along the fort's northern face. That is, Somba Opu's west wall might also be made up of lateral additions of wall made of smaller bricks and a central line made of large bricks. But in this particular case the lateral lines had been built to touch the central line, rather than having remained separated by packed earth fill.

As a further complication, all eight of the 12 bricks which could be measured for both breadth and thickness fall very close to the stepped line separating "large" and "smaller" bricks in Table E-9. The same is true of the larger two of the ten Somba Opu bricks measured by Sonny Wibisono.[5] Moreover, one of the two larger bricks reported by Nurhadi et al. (1980:10) measured 34 cm long - the very length SSPHAP failed to record - while the other, 22 cm broad by 6 cm thick, would scrape in as a "large" brick (cf. Table E-9). These points suggest that the larger type of brick used at Somba Opu was intermediate in size between the "large" and the "smaller" bricks as used at the other palaces.[6] The summary statistics of SSPHAP's sample of Somba Opu's

[4] Note that my computerised database, compiled before any descriptions of the excavations at Somba Opu had appeared, classifies the Somba Opu bricks as "double-wall" bricks.
[5] Included in SSPHAP's database of brick sizes on a data-sharing arrangement.
[6] Indeed, the main reason why SSPHAP's sample of fortification bricks shows such a clear bimodal distribution may well be SSPHAP's poor sampling of Somba Opu with its intermediate-sized bricks.

TABLE E-13. SIZE (CM) OF SOMBA OPU INTERMEDIATE BRICKS (n=14)

	(n)	Mean	S.D.	Range
Length	6	29.83	0.41	(29-30)
Breadth	11	19.50	0.58	(19-20.5)
Thickness	14	4.96	0.50	(4-6)
Breadth/Length	2	65.00%	-	(63.3,66.7%)
Thickness/Length	3	17.22%	1.00	(16.7-18.3%)
Thickness/Breadth	10	25.38%	2.67	(21.1-30.0%)

Breadth:Length Correlation Coefficient Pearson's r = 0.35

N.B. In this table and those that follow, where we are often dealing with small sample sizes, inter-measurement correlation coefficients will be shown only when there are at least ten specimens measured for both dimensions.

"intermediate" bricks, given in Table E-13, clearly suggest a "brick standard", notwithstanding the small sample size.

As these "intermediate" bricks overlap in size with the largest "smaller" bricks at Benteng Tua (Table 6-1) and Tallok (Table 14-1), the Somba Opu examples are clearly distinct only because they alone constitute a solid cluster of data. Further, their shorter length alone clearly distinguishes them from the "large" fortification bricks; breadths are particularly inadequate in this regard (cf. Table E-10).[7] Hence to recognise the same brick standard at another fortified site, it must be represented by a distinct cluster of bricks scarcely straying from 30 X 19.5 X 5 cm. This condition is met by four bricks at Garassik whose lengths, 32 to 33 cm, fall well beyond the range of lengths of Garassik's other bricks (Table E-14).[8] A few bricks of the required specifications also occur at Paknakkukang, and may represent the same type, but at that site are interpreted more parsimoniously as the big end of the range of "smaller" bricks (see below). Only Garassik clearly shares the Somba Opu brick standard, just as Garassik is closest to Somba Opu.

[7] Accordingly, the derived breadth:length index also usefully distinguishes the "intermediate" and "large" bricks.
[8] These four bricks include four of the five previously classified as the longest within the range of "smaller" bricks in the bivariate plots (Tables E-7 and E-8), further confirming their intermediate size.

TABLE E-14. SIZE IN CM OF GARASSIK INTERMEDIATE BRICKS (n=4)

	(n)	Mean	S.D.	Range
Length	4	32.63	0.48	(32-33)
Breadth	4	18.50	2.80	(16-22)
Thickness	4	5.13	0.63	(4.5-6)
Breadth/Length	4	56.71%	8.56	(48.5-66.7%)
Thickness/Length	4	15.71%	1.87	(13.6-18.2%)
Thickness/Breadth	4	27.84%	1.94	(25.6-30.3%)

TABLE E-15. SIZE IN CM OF SOMBA OPU SMALLER BRICKS (n=8)

	(n)	Mean	S.D.	Range
Length	6	23.83	1.60	(21-25)
Breadth	8	15.19	1.93	(11-17)
Thickness	7	3.43	0.53	(3-4.5)
Breadth/Length	6	61.65%	5.24	(62.4-68.0%)
Thickness/Length	6	14.84%	3.36	(12.0-21.4%)
Thickness/Breadth	7	25.38%	7.71	(18.8-40.9%)

Table E-16. SIZE IN CM OF GARASSIK SMALLER BRICKS (n=42)

In situ wall	(n)	Mean	S.D.	Range
Length	1	23	-	(23)
Breadth	13	13.77	2.67	(7.5-17)
Thickness	17	3.56	0.48	(3-4.5)
Breadth/Length	1	65.20%	-	(65.2%)
Thickness/Length	1	13.00%	-	(13.0%)
Thickness/Breadth	13	26.78%	7.90	(19.4-46.7%)

Thickness:Breadth Correlation Coefficient Pearson's r = 0.21

Ex situ bricks	(n)	Mean	S.D.	Range
Length	13	24.00	2.47	(20-28)
Breadth	25	13.02	2.13	(11-17)
Thickness	25	4.25	1.23	(3-7)
Breadth/Length	13	55.58%	9.50	(44.0-75.0%)
Thickness/Length	13	18.70%	5.72	(11.1-31.8%)
Thickness/Breadth	25	33.46%	8.99	(17.6-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = -0.03
Thickness:Length Correlation Coefficient Pearson's r = -0.20
Thickness:Breadth Correlation Coefficient Pearson's r = 0.01

Total sample	(n)	Mean	S.D.	Range
Length	14	23.93	2.35	(20-28)
Breadth	14	13.28	2.31	(7.5-17)
Thickness	42	3.97	0.93	(3-7)
Breadth/Length	14	56.27%	9.75	(44.0-75.0%)
Thickness/Length	14	18.29%	6.03	(11.1-31.8%)
Thickness/Breadth	38	31.17%	8.62	(17.6-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = -0.06
Thickness:Length Correlation Coefficient Pearson's r = -0.15
Thickness:Breadth Correlation Coefficient Pearson's r = -0.02

"Smaller" bricks are also recognisable at both sites. SSPHAP's sample of Somba Opu smaller bricks (Table E-15) appears typical of the smaller fortification bricks in general (Table E-10). As regards Garassik's smaller bricks, no self-evident pattern of bimodality or multimodality in dimensions presents itself, but a contextual distinction can be made between those *in situ* along the stretch of coastal wall passing the site (Figure 11-3a), and those *ex situ* present as rubble or recycled in other contexts. The *in situ* bricks have average dimensions and shape indices similar to those of the smaller bricks in general, whereas the *ex situ* bricks appear on average to be distinctly narrower and thicker (cf. Tables E-16 and E-10). Moreover the Garassik *ex situ* bricks show very low inter-measurement correlation coefficients or, indeed, a pattern in which the longer bricks are the less thick (Table E-16). Let us entertain the hypothesis that Garassik's *in situ* and *ex situ* bricks might somehow represent different types, whilst noting that should we later attribute the metrical contrasts to sampling error, then the total sample of Garassik's "smaller" bricks would generally resemble the *ex situ* "smaller" bricks (Table E-16).

The next closest samples of bricks is from Bayoa, presumed to represent the coastal wall which had run through the site, but comparable to Garassik's *ex situ* bricks as none of the Bayoa bricks was measured *in situ*. And indeed the average dimensions and shape indices at Bayoa (Table E-17) are very similar to those of Garassik's *ex situ* bricks. The Bayoa correlation coefficients are also unusual inasmuch as the broader bricks tend to be the thinner.

Table E-17. Bayoa Bricks: All *Ex Situ* and "Smaller" (n=26)

	(n)	Mean	S.D.	Range
Length	10	24.27	2.52	(19-28)
Breadth	25	14.04	2.56	(10.3-18)
Thickness	26	4.45	0.71	(3-5.5)
Breadth/Length	9	55.27%	8.43	(42.2-64.1%)
Thickness/Length	10	18.34%	2.86	(13.0-21.7%)
Thickness/Breadth	25	32.64%	9.11	(17.6-51.4%)

Thickness:Length Correlation Coefficient Pearson's r = 0.63
Thickness:Breadth Correlation Coefficient Pearson's r = -0.18

The next site to consider is Paknakkukang at the mouth of the Sungai Garassik (Jeknekberang). Here SSPHAP's survey recorded a line of brick wall, which I interpret as coastal wall, terminating at Paknakkukang's earthen enceinte (Figure 11-3b). In addition to a sample of *in situ* bricks along this wall, we measured 31 bricks from a *saukang* platform which have presumably been recycled from the coastal wall.

The Paknakkukang bricks are unusual; despite an apparent bimodality between long (37-39 cm) and shorter (19-31 cm) bricks, these two groups overlap indiscriminately in their breadths and thicknesses. On top of that, the bricks with lengths around 30 cm cannot be consigned to the Somba Opu "intermediate" type because the great majority are narrower and less thin than would be required. After having experimented with the data from various angles, I can see no parsimonious procedure other than to apply the definitions of "large" and "smaller" bricks given above (E.2.2), even though the action effectively draws a sectioning line through what is a cloud of data points. As a result the sample of "large" Paknakkukang bricks is rather small by general standards whilst the "smaller" Paknakkukang bricks are rather large by general standards (cf. Tables E-18 and E-10, Tables E-19 and E-11). The "large" bricks, moreover, are highly variable in shape, with a tendency for the broader examples to be the thinner ones (Table E-18).

As regards Paknakkukang's "smaller" bricks, when treated individually the *saukang* sample and the *in situ* sample appear different from each other or from any other sample yet considered (Table E-19). However, the overriding observation would seem to be the contrast beween the *ex situ* bricks, where breadth and thickness are correlated, and the *in situ* bricks whose thicknesses fail to correlate with either length or breadth (Table E-19). As this pattern precisely reverses the contrast between Garassik's "smaller" *ex situ* and *in situ* bricks (Table E-16), any justification for using context as a classificatory criterion for the "smaller", coastal wall bricks is shattered. Rather, the alternative procedure which ascribes the apparent differences to sampling error receives additional support from the combined sample of Paknakkukang's

"smaller" bricks (Table E-19). Their mean dimensions and sahpe indices do not differ clearly from those of the Bayoa (Table E-17) and combined Garassik samples (Table E-16), and the Paknakkukang examples highlight the trend for thickness to be negatively correlated with length and breadth. Hence all the Paknakkukang, Garassik and Bayoa "smaller" bricks are most parsimoniously cast in the same light.[9]

TABLE E-18. SIZE IN CM OF PAKNAKKUKANG LARGE BRICKS (n=13)

In situ wall	(n)	Mean	S.D.	Range
Length	2	37.50	-	(37,38)
Breadth	3	19.50	1.79	(17-21)
Thickness	4	5.75	0.43	(5-6)
Saukang platform	(n)	Mean	S.D.	Range
Length	2	39.00	-	(39)
Breadth	9	20.94	0.68	(20-22)
Thickness	9	5.94	0.44	(5-6.5)
Total sample	(n)	Mean	S.D.	Range
Length	4	38.25	0.96	(37-39)
Breadth	12	20.58	0.96	(17-22)
Thickness	13	5.88	0.44	(5-6.5)
Breadth/Length	3	50.81%	5.26	(44.7-53.8%)
Thickness/Length	4	16.01%	0.56	(15.4-16.7%)
Thickness/Breadth	12	28.68%	3.29	(22.7-35.3%)

Thickness:Breadth Correlation Coefficient Pearson's r = -0.16

TABLE E-19. SIZE IN CM OF PAKNAKKUKANG SMALLER BRICKS (n=63)

In situ wall	(n)	Mean	S.D.	Range
Length	16	24.41	2.31	(19-30)
Breadth	25	16.06	1.28	(13-19)
Thickness	34	4.66	0.63	(4-6)
Breadth/Length	5	63.14%	5.55	(57.6-72.3%)
Thickness/Length	13	20.52%	3.59	(13.6-26.3%)
Thickness/Breadth	22	28.81%	5.32	(21.0-42.9%)

Thickness:Length Correlation Coefficient Pearson's r = 0.12
Thickness:Breadth Correlation Coefficient Pearson's r = -0.04

[9] Some of the Paknakkukang bricks here classified as "large" may belong to this group as well.

TABLE E-19. SIZE IN CM OF PAKNAKKUKANG SMALLER BRICKS (CONT.)

Saukang platform	(n)	Mean	S.D.	Range
Length	3	30.33	0.94	(29-31)
Breadth	22	16.86	1.86	(14.5-20)
Thickness	22	4.52	0.38	(4-5)
Breadth/Length	3	52.26%	2.65	(50.0-55.2%)
Thickness/Length	3	14.31%	1.32	(12.9-15.5%)
Thickness/Breadth	22	27.03%	2.99	(22.5-33.3%)

Thickness:Breadth Correlation Coefficient Pearson's r = 0.43

Total sample	(n)	Mean	S.D.	Range
Length	19	25.34	2.09	(19-31)
Breadth	47	16.43	1.55	(13-20)
Thickness	56	4.61	0.53	(4-6)
Breadth/Length	8	59.06%	7.16	(50.0-72.3%)
Thickness/Length	16	19.36%	4.10	(12.9-26.3%)
Thickness/Breadth	44	27.92%	4.41	(21.0-42.9%)

Thickness:Length Correlation Coefficient Pearson's r = -0.12
Thickness:Breadth Correlation Coefficient Pearson's r = -0.34

TABLE E-20. SIZE (CM) OF BAROMBONG BRICKS: ALL SMALLER (n=84)

Bastion	(n)	Mean	S.D.	Range
Length	6	27.00	1.26	(26-29)
Breadth	27	15.60	2.42	(11-19.5)
Thickness	30	4.40	0.57	(3-5)
Breadth/Length	4	58.47%	8.09	(48.1-67.3%)
Thickness/Length	6	16.67%	2.11	(13.5-19.2%)
Thickness/Breadth	27	28.80%	6.34	(19.4-40.9%)

Thickness:Breadth Correlation Coefficient Pearson's r = -0.06

Wall	(n)	Mean	S.D.	Range
Length	3	21.83	4.07	(19-26.5)
Breadth	31	13.60	1.44	(11.5-18)
Thickness	54	4.07	0.78	(3-6)
Breadth/Length	2	57.20%	-	(45.3,69.1%)
Thickness/Length	3	22.33%	5.77	(18.9-28.9%)
Thickness/Breadth	30	29.37%	8.20	(19.4-48.0%)

Thickness:Breadth Correlation Coefficient Pearson's r = -0.02

Total sample	(n)	Mean	S.D.	Range
Length	9	25.39	3.07	(19-29)
Breadth	58	14.54	4.35	(11-19.5)
Thickness	84	4.20	0.72	(3-6)
Breadth/Length	6	58.04%	9.81	(45.3-69.0%)
Thickness/Length	9	18.55%	4.35	(13.5-28.9%)
Thickness/Breadth	57	29.10%	7.32	(19.4-48.0%)

Thickness:Breadth Correlation Coefficient Pearson's r = 0.09

Skipping over Pattukangang temporarily brings our focus to Barombong. Here is no need to distinguish between the *in situ* and *ex situ* bricks because both were restricted to the line of wall rubble. A slight difference can be discerned between the bricks from the apparent bastion at the far south of the wall, and the bricks to the bastion's north, in that the former are significantly larger on all dimensions (Table E-20).[10] But the differences are small and involve no perceptible effects on shape, so the Barombong bricks can be analysed as a single sample.

These Barombong bricks do more than simple resemble their Bayoa, Paknakkukang and Garassik counterparts in terms of mean dimensions and shape indices; they bridge the interval between the Paknakkukang and Bayoa/Garassik examples. The lack of a clear correlation between breadth and thickness carries the same import. Hence it may be inferred that the Garassik, Bayoa, Paknakkukang and Barombong "smaller" bricks, all ascribable to wall built between 1634 and 1635 (Table E-28), can be pooled into a single sample of usual coastal wall bricks.

Returning to the Pattukangang wall (as I label it), which appears in the records as the wall built south of Benteng Paknakkukang in 1661 after the Dutch had temporarily occupied the fort (LB:124), we have a very sparse documentation which covers only nine brick pieces.[11] Nonetheless they include the single thickest brick measured during the fieldwork and three other very thick bricks, and show the thickest shape indices of any of the samples. They also seem to be anomalously broad for their length (Table E-21). Thus the Pattukangang bricks appear set apart, which accords with the isolation of the wall's construction within the chronology of greater Gowa's fortifications programme, and may also reflect the haste with which this wall had to be erected.

[10] Student's t-test for small samples $p < 0.1$ to $p < 0.005$.
[11] Including three measured by Sonny Wibisono.

TABLE E-21. SIZE IN CM OF PATTUKANGANG BRICKS (n=9)

	(n)	Mean	S.D.	Range
Length	5	25.60	1.96	(22-28)
Breadth	7	17.64	3.23	(11-21)
Thickness	7	7.07	2.21	(4-10)
Breadth/Length	5	67.55%	12.68	(50.0-80.8%)
Thickness/Length	3	21.63%	6.25	(17.9-28.8%)
Thickness/Breadth	5	35.51%	5.40	(30.3-43.9%)

TABLE E-22. SIZE IN CM OF LARGE FORTIFICATION BRICKS (n=223)

	(n)	Mean	S.D.	Range
Length	111	41.12	2.84	(35-49)
Breadth	170	21.08	1.74	(16.5-26)
Thickness	190	7.09	1.04	(3-9)
Breadth/Length	67	50.48%	4.42	(42.5-64.9%)
Thickness/Length	77	16.93%	8.61	(8.1-22.9%)
Thickness/Breadth	130	34.24%	4.53	(24.4-47.2%)

Breadth:Length Correlation Coefficient Pearson's r = 0.33
Thickness:Length Correlation Coefficient Pearson's r = 0.29
Thickness:Breadth Correlation Coefficient Pearson's r = 0.21

TABLE E-23. SIZE OF INTERMEDIATE FORTIFICATION BRICKS (n=18)

	(n)	Mean	S.D.	Range
Length	10	30.95	1.50	(29-33)
Breadth	14	19.21	1.50	(16-22)
Thickness	18	5.00	0.51	(4-6)
Breadth/Length	6	59.48%	7.96	(48.5-66.7%)
Thickness/Length	10	16.34%	1.45	(13.6-18.3%)
Thickness/Breadth	14	26.08%	2.67	(19.4-46.7%)

Thickness:Length Correlation Coefficient Pearson's r = 0.18
Thickness:Breadth Correlation Coefficient Pearson's r = 0.48

TABLE E-24. SIZE IN CM OF SMALLER PALACE BRICKS (n=606)

	(n)	Mean	S.D.	Range
Length	347	23.86	2.99	(17-32)
Breadth	536	13.80	2.43	(7.5-23)
Thickness	512	3.61	0.88	(2-7)
Breadth/Length	316	58.60%	5.77	(38.5-81.3%)
Thickness/Length	266	15.27%	3.59	(8.0-29.6%)
Thickness/Breadth	456	26.76%	5.66	(14.8-51.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.78
Thickness:Length Correlation Coefficient Pearson's r = 0.47
Thickness:Breadth Correlation Coefficient Pearson's r = 0.41

TABLE E-25. SIZE IN CM OF USUAL COASTAL WALL BRICKS (n=209)

	(n)	Mean	S.D.	Range
Length	52	24.76	2.41	(19-31)
Breadth	168	14.71	2.08	(7.5-20)
Thickness	208	4.30	0.71	(3-7)
Breadth/Length	37	56.92%	8.88	(42.2-75.0%)
Thickness/Length	49	18.70%	4.44	(11.1-31.8%)
Thickness/Breadth	165	30.04%	7.19	(17.6-54.5%)

Breadth:Length Correlation Coefficient Pearson's r = 0.52
Thickness:Length Correlation Coefficient Pearson's r = 0.09
Thickness:Breadth Correlation Coefficient Pearson's r = 0.02

E.2.4 Overall appreciation of the Gowa fortification bricks

The foregoing discussion distils three new brick classes: an intermediate-sized brick, recognised only at Somba Opu and Garassik; the usual coastal-wall brick; and the anomalously short, fat bricks at Pattukangang. Our subdivision of the "smaller" bricks into those along the coastal wall and those at the palaces suggests that Paknakkukang's large bricks should also be treated separately from the large palace-bricks. But the Pattukangang examples presumably represent stray imports, and in any case only a small sample is involved. Thus a final appreciation of the fortification bricks divides them into the five classes shown in Tables E-21 (Pattukangang) to E-25.

The statistics of the "large fortification bricks" are affected only slightly as few bricks were reclassified. The main change involves the breadth:thickness relationship whose index variability is now reduced and whose correlation coefficient now resembles the other two (Table E-22; cf. Table E-10). Like the large bricks, the "intermediate" bricks also conform well with the expectations of a "brick standard" (Table E-23).

As regards the "smaller fortification bricks" (Table E-11), their subdivision into palace and coastal-wall specimens brings out several subtle distinctions. The palace bricks are smaller and, in particular, thinner than the coastal-wall examples (cf. Tables E-24 and E-25). Moreover

the palace "smaller" bricks retain and indeed enhance the "brick seriation type" traits of the larger sample from which they were drawn. This last point may support the historical evidence that they were produced over a period lasting more than half a century (E.4). On the other hand the coastal-wall examples, when treated as a single sample, stand out convincingly as a "brick standard".

The preferential use of particular brick types in designated construction works stands out almost as clearly as in the earlier comparison (Table E-12). My interpretation of SSPHAP's sample of Somba Opu bricks as single-wall bricks lends the single-wall bricks a variable composition, but as explained above I am unsure about Somba Opu's brickworks. And the unruly metrics of the coastal-wall bricks, noted previously, becomes explicable in light of the four classes of brick represented (Table E-26).

TABLE E-26. COMPOSITION OF THE FORTIFICATION STRUCTURES BY BRICK TYPE (n=1053)

	Large Bricks	Inter-mediate Bricks	Palace Smaller Bricks	Usual Coastal Bricks	Pattu-kangang Bricks
Central Wall	146	0	3	0	0
Single Wall	50	14	8	0	0
Double Wall	12	0	456	0	0
Side Wall	0	0	94	0	0
Coastal Wall	13	4	0	209	9
Internal Structures	2	0	45	0	0

E.3 Masonry Measurements

SSPHAP recorded stone masonry measurements only at Benteng Tallok, in a context which suggests an early 17th century construction date (12.2.3). Otherwise, the Dutch rebuilt Fort Rotterdam (as Speelman rechristened the earlier Makassar fort of Ujung Pandang) with masonry walls, beginning in 1673 (Reid and Reid, 1988:45). Even though Maros is widely reputed as the source of Fort Rotterdam's stone (e.g. Reid, 1990:68), the information we received at Pammangkulang Batua, *kampung* Bonto Ramba, was that it had been quarried to build Fort Rotterdam. At this Karaeng Demmanari affirmed that Bonto Ramba was indeed reputed as one source of Fort Rotterdam's

stone. He was presumably thinking of the rumour which identifies this rôle with Balang Mawang near Bonto Ramba on the Ujung Pandand-Malino highway (Pabbitei, 1976:2). If in fact Pammangkulang Batua had provided some of Fort Rotterdam's stone, then the two Bonto Ramba kampung could have easily become confused over time; but since SSPHAP's survey merely touched on one shore of Balang Mawang (Chapter 9), I cannot dismiss the possibility that a suitable quarry could lie there.

The only published data on the size of Fort Rotterdam's stone are the measurements reported by Pabbitei (1976:2) for its "largest" and "smallest" blocks.[12] The implied ranges fall well within the ranges of block size recorded by SSPHAP at Tallok. The midpoints between the Fort Rotterdam "extremes" hardly differ from the Tallok averages, and length:breadth:thickness proportions of around 3:1.7:1 appear to characterise both data sets (Table E-27). However, the strength of these comparisons is debilitated by Pabittei's scant documentation which does not show that more than two Fort Rotterdam blocks were necessarily measured.

The comparative data from Pammangkulang Batua (Photo E-1) are also very restricted as only seven almost completed blocks had been left at the quarry. These fall into two groups. The two shorter blocks have lengths and breadths similar to the Tallok means and within the reported range at Fort Rotterdam. The five larger blocks, however, are all longer than any block yet reported from a fortress. At the same time the shape indices of the Pammangkulang Batua blocks fall within the Tallok ranges; and the single Pammangkulang Batua block measured on three dimensions coincides in shape with that of Fort Rotterdam's reported midpoint (Table E-27). Nor is it that far-fetched to suggest that Pammangkulang Batua's remnant blocks might represent a larger pre-form which was subsequently whittled back for insertion in the fortress walls.

The suggestive echoes of comparability between these three data sets recommend further attention to the issue. A

[12] Pabittei unjustifiably ascribes this masonry work to Gowa's Sultan Alauddin.

statistically adequate record of Fort Rotterdam's masonry would be easily organised. More complex projects would include the identification and recording of the rumoured Maros quarry sites, and the compilation and analysis of the dimensions of the masonry blocks associated with Makassar graves dated to the 17th century. The project could investigate whether Fort Rotterdam's masonry conforms in its dimensions with greater Gowa's precolonial masonry works, with useful implications for understanding how the Dutch organised the Makassar masons in setting them to work.

TABLE E-27. SIZES IN CM OF RECORDED MASONRY BLOCKS

Fort Rotterdam	"Largest"	"Smallest"	Midpoint
Length	62	44	53
Breadth	34	21	27.5
Thickness	20	10	15
L:B:T ratio (T = 1)	3.1:1.7:1	4.4:2.1:1	3.5:1.8:1

Benteng Tallok	(n)	Mean	S.D.	Range
Length	90	48.60	11.80	(25-70)
Breadth	90	28.77	6.22	(12-48)
Thickness	67	18.87	4.72	(10-30)
Breadth/Length	90	57.70%	14.95	(35.7-100%)
Thickness/Length	67	38.08%	11.44	(17.9-76.9%)
Thickness/Breadth	67	62.28%	14.22	(39.5-100%)
L:B:T ratio (T = 1)		2.6:1.6:1		1.3:1:1 to 4.7:2.5:1 or 5.6:2.3:1

Pammangkulang Batua longer blocks	(n)	Mean	S.D.	Range
Length	5	76.00	2.45	(75-80)
Breadth	5	35.40	2.07	(32-37)
Thickness	1	20	-	(20)
Breadth/Length	5	46.90%	3.78	(42.0-51.3%)
L:B:T ratio (T = 1)		3.7:1.75:1		

Pammangkulang Batua small blocks	(n)	Mean	S.D.	Range
Length	2	49.50	-	(49,50)
Breadth	2	34.00	-	(34)
Breadth/Length	2	68.69%	-	(68.0,69.4%)

E.4 An Overview of Greater Gowa's Fortifications

The descriptions of the various fortification works given in the respective chapters and E.1.3, and the general review of the statistical data adumbrated above, are synthesised in Table E-28. Particular fragilities in the database should be admitted such as SSPHAP's lack of direct survey in Ujung Pandang's urbanised areas and SSPHAP's scant documentation of Somba Opu. As important data from Somba Opu have presumably been collected and may even be available within Ujung Pandang, the general scheme offered here may have to be corrected accordingly at some future date.

The technologically simplest fortification, walls of heaped earth, had appeared by the early 16th century, and continued to be practised into the early 17th century and beyond. During his mid-16th century reign Tunipalangga introduced the simplest form of brick wall consisting of a central line of bricks flanked by lateral additions of heaped earth (e.g. Figure 8-2). This design also appears to have characterised the long stretches of coastal wall built during the 1630s and 1660s. A more sophisticated fortress wall, consisting of two parallel lines of brick sandwiching earth fill and flanked bilaterally by heaped earth, appears to have been introduced by Abdullah at Tallok at around 1615 (Figure 12-3). Application of the new technology to walls previously strengthened by a central line of bricks resulted in triple brick-walls at Benteng Tua (Figure 6-8) and along Somba Opu's north face, although the effects at Somba Opu's south and west faces may have merely been a thickening of the single brick-wall. The most recent palace, Sanrabone, epitomises the technology of double brick-walls (Photo E-2).

Abdullah's other innovation at Tallok, masonry fortifications, does not appear to have been more widely applied until the Dutch built Fort Rotterdam's walls.

The bricks produced by greater Gowa generally decreased in size over the 120-year period involved. This trend did not occur isometrically with the changes in wall construction: as interpreted here, the transitional intermediate-sized bricks may have constituted Somba Opu's earliest brick walls; while

TABLE E-28. SUMMARY OF GREATER GOWA'S FORTIFICATION PROGRAMME

Fortification Work	Sponsoring Ruler	Date	Brick Type	Average Brick Dimensions		
				Length	Breadth	Thickness
Benteng Tua's earth walls	Tumapakrisik Kallona	Before 1547				
Benteng Tua's central brick-walls	Tunipalangga	c.1550	Large	42.7-40.5 (41.2)	21.1-20.2 (20.7)	7.0-6.9 (7.0)
Anak Gowa's central brick-walls	Tunipalangga	c.1550	Large	44.1	21.9	7.75
Somba Opu's central brick-walls	Tunipalangga	c.1550	Intermediate	29.8	19.5	5.0
Tallok's double brick-walls	Abdullah	1615	Large	39.2	22.1	6.25
" "	" "	" "	Smaller	26.4-20.8 (23.1)	16.9-11.7 (13.8)	5.2-3.3 (3.6)
Tallok's masonry superstructure	Abdullah	1615				
Benteng Tua's double and side brick-walls	Alauddin	1615-8	Smaller	25.0-21.1 (23.1)	14.9-12.5 (13.7)	3.9-3.4 (3.7)
Ujung Tana to Somba Opu brick wall	Abdullah	1634	Unknown			
Paknakkukang to Somba Opu brick wall	Abdullah	1634	Large	38.25	20.6	5.9
" "	" "	" "	Intermediate	32.6	18.5	5.1
" "	" "	" "	Coastal	25.3-23.9 (24.6)	16.4-13.3 (14.8)	4.5-4.0 (4.4)

TABLE E-28. SUMMARY OF GREATER GOWA'S FORTIFICATION PROGRAMME (CONT.)

Fortification Work	Sponsoring Ruler	Date	Brick Type	Average Brick Dimensions		
				Length	Breadth	Thickness
Benteng Ujung Pandang (probably earth)	Abdullah	1634				
Benteng Paknakkukang, Bayoa, Garassik (earth)	Alauddin (?)	c.1634				
Barombong coastal brick-wall	Alauddin (?)	1635	Coastal	25.4	14.5	4.2
Somba Opu town gate	Abdullah	1635	Not recorded			
Pattukangang coastal brick-wall	Hasanuddin	1661	Pattukangang	25.6	17.6	7.1
Barombong second wall	Hasanuddin	1662	Not recorded			
Sanrabone double brick-walls	Abdul Jalil	1668	Smaller	25.3	14.8	3.5

N.B. Where a range of brick sizes conforming to a clear directional trend was observed at a particular work, this table shows the range of means of the samples, and the means of the combined sample in brackets below.

a few large bricks were included in Tallok's double brick-walls. The general trend may have resulted from a growing realisation that smaller bricks were easier to work with, particularly in rounded structures such as bastions, or because detritus tended to adhere to the the sides of the molds. In any case, the trend matches the steadily decreasing size of Roman bricks observed by studies on Roman brickworks (Meiggs, 1973:542-543; Wilson, 1975:15).

My preferred scenarios of the construction sequences at Benteng Tua (6.4), Tallok (12.2.3), and to some degree the Paknakkukang-Somba Opu coastal wall (11.1.1), rely on the notion of gradual decrease in average brick size. However, when we consider the palace walls built of smaller bricks over the 50-year interval between Tallok and Sanrabone, scarcely any trend in average dimensions can be observed. Rather the oldest such walls, in Tallok, show the greatest variability in average brick dimensions at different stations along the wall; followed by Benteng Tua in this regard (Table E-28); while Sanrabone's bricks were very standardised (Table E-1). Presumably this pattern reflects some combination of fortress size, greater scope for renovations and additions at the older palaces, and improved technical standards. We may also infer that a conscious decision to produce the same size of bricks was made in each case, either by working from a mold which served as a blueprint for the molds used during construction, or by re-creating a mold of the same size from previously fabricated bricks. But these same points would also allow a reversal of my original notion to suggest that brick size gradually increased during any particular works. On balance I prefer my original inference, given the general trend towards smaller bricks, and the particular trend of the large bricks towards reduced size.

Rigorous application of this inference would suggest that the undated brickworks at Anak Gowa preceded even Benteng Tua's. I can see no good reason to dismiss this implication, particularly given the vulnerability of Gowa's southern flank during the mid-16th century (8.2.1).

APPENDIX F. INVENTORIES OF MARKED GRAVES AT GOWA-TALLOK SITES

Suaka's first chief, Hadimuljono, developed the typology of styles of Makassar Islamic graves which has since been followed in Suaka's cultural resource surveys. As reported by Kallupa (1985:49-50,59 and examples), the system recognises tombs (Type A), markers of masonry slabs (Type B), and markers which include curved surfaces as well as slabs (Type C). SSPHAP's typology covers these styles within a more complicated and comprehensive classificatory system. Further, the surveys by Suaka continue the tradition (inaugurated prior to Indonesian independence) of concentrating on the cemeteries of the high aristocracy. Most have accordingly been gazetted, described to varying degrees, and sometimes even treated to maintenance and restoration programs.[1] Hence I did not consider it as necessary, in my attempt to reconstruct the Makassar social landscape, to focus SSPHAP's attention on these best known complexes as on previously overlooked graveyards.

Ambary (1985) studied four cemeteries restored by Sauka (in Soppeng, Bone, Bantaeng and Jeknekponto), and analysed aristocratic Islamic grave styles in terms of concerns with pre-Islamic origins. A further result of this line of investigation has it that the main South Sulawesi styles were adopted in surrounding regions which came to fall under the sway of the various Bugis-Makassar sultanates (Ambary, pers. comm.). In contrast to Ambary's global perspectives, however, the counterpoints on SSPHAP's canvas are only local in scope. The issue of syncretic Islamic burial practices revolves around SSPHAP's attempt to trace continuities between pre-Islamic burial grounds (recognised primarily by evidence of looted antiques) and Islamic cemeteries (recognised primarily by marked graves). Similarly, style is related to

[1] For instance the Sultan Hasanuddin, Arung Palakka and royal Tallok complexes were first restored in part by the Dutch Oudheidkundige Dienst (1949:7), with major restorations commissioned by Suaka in recent decades. Nurhadi et al. (1980) give some descriptions of the tombs in the Sultan Hasanuddin and Arung Palakka complexes, used here in compiling Table F-1.

cultural influence mainly in terms of areal styles and local centre-periphery relationships.

Style is also the only usual means to date the Islamic graves, but here SSPHAP faced the following difficulties. (i) Particular styles, e.g. stone arrangements, have probably been employed for centuries. (ii) Inventorisation of the graves, and hence the available typology of styles, very much evolved as a process during fieldwork. Also, there was insufficient time to check the consistency of our classifications during any individual inventorisation or across graveyards. Given also that styles graduated and overlapped rather than conform to clear-cut types, SSPHAP's classifications may not be highly reliable. (iii) Many of the earlier marked graves, if not the vast majority, have survived steady deterioration over time only if they have been restored by the local community. These restorations may of course lend a spuriously modern appearance.

Given also spatial variability, any attempt to seriate grave styles would appear doomed at the outset. Rather I here try to tabulate my available information using flexible categories which circumvent as far as possible the uneven nature of the records (both written and photographic), as it were codifying their rather impressionistic composition. In the end, dating has to depend on comparisons with the rare cases of interred individuals of known year of death;[2] circumstantial evidence such as a spatial association with a pre-Islamic burial ground; unusual orientations, either badly astray from an accurate north-south axis, or clearly east-west; consistent relationships of major styles with particular building materials; and our on-site impressions of how old the marked graves looked.

As detailed below, the various styles can be shown by a combination of cardinal numerals standing for the type of material used, and capital letters standing for the style of marked grave. Main variations within particular styles are

[2] As implied by the site descriptions the errors which can result when information relies solely on oral transmission, including the effects of overlays of local interpretation, often obstruct the attempt to relate particular Makassar nobles mentioned in the historical texts to particular graves associated with a "known" (named) ancestral figure.

shown by Roman numerals in brackets, and additional descriptions are codified in small letters.

The code for the types of material used is:

0. "Modern" (i.e. graves noted as modern but no further described; presumably cement in most cases)
1. Masonry;
2. Unmasoned stone;
3. Brick;
4. Old-looking Cement;[3]
5. New-looking Cement;
6. Tiled (on a cement basis);
7. Wood or bamboo;
8. Earth (usually referring to recent graves which have not yet received any permanent marking; but also referring to baked clay and earthen matrix fabrics);
9. Iron.

A component containing two or more materials, or whose material was not clearly recorded as per the above, can be indicated with slashed categories. E.g. bricks plastered with modern cement can be expressed as 3/5; fabrics described merely as "cement" can be denoted as 4/5. Of course, many marked graves contain multiple components built with different materials, and these can be shown by alphanumerical combinations in which the letter symbolises the "style".

At the broadest level, style can be divided into structures marking the presence of a grave in the ground, above-surface structures containing a burial (here called sepulchres), and structures protecting a grave's location. The first category can be further divided into isolated

[3] I do not know precisely when cement was first produced in Makassar, but some clues in Seger (1987) suggest a date very early in the 20th century. Already manufactured in Java by 1889 (p.45), cement was imported into the other islands by 1901 (p.191), and its consumption exceeded its importation (i.e. it was locally manufactured) in the other islands by 1913 (p.193). While the early 20th century production outside of Java occurred primarily in Sumatra's West Coast (p.186), Makassar probably also played a part, given the comparatively advanced status of the manufacturing sector in "Celebes" by 1930 (employing 91,127 workers, i.e. the second highest figure for any residency in Netherlands India [pp.85-87]).

markers, arrangements and grave markers. Protective structures can be divided into tombs, shelters and corrals. The more elaborate graves contain all sorts of conceivable combinations of these basic elements, defined below.

Isolated markers. Single elements, or paired elements at the head and foot of the grave. The same letters are used when these elements occur enclosed in a structure. Their code is:

R: A single stone or clump of stones, usually at one end of the grave;
S: Paired stones or paired clumps of stones, at either end of the grave;
T: Isolated *nisan*;[4]
U: Paired *nisan* at either end of the grave.

Arrangements. Clusters of objects, usually natural stones but also possibly bricks or blocks of cement, which have not been bonded together. Designated by O, with two main variants:

O(i): Arrangement defining outline of grave, with no infill;
O(ii): Arrangement covering grave, or at least comprising a substantial pile of objects.

Grave markers. Surface structures, made in either one or a few pieces, or from components bonded together, marking where the corpse had been buried in the ground. Denoted P.

Sepulchres. Elevated structures, filled with earth, of sufficient dimensions and solidity to suggest that the corpse was interred above the prevailing ground level. Denoted Q.

The various styles of P and Q suggested a typological classification based on the shape when viewed from above and the degree of elaboration of the sides. These are:

Case-tops. Ground-level surface constructions, usually cement, enclosing a narrow rectangular space.

[4] *Nisan* could be loosely translated in English as "worked gravestone(s)", except that other materials besides stone can be employed. Most of the Makassar examples serve as architectural accoutrements to the marked grave.

Slabbed. Low structures enclosing a space which is broader than the side of the structure. The structure itself might have rounded or right-angled relief.

Boxes. Differ from the above by being taller and dominated by perpendicular angles. Also enclose a space broader than the side of the structure.

Slab-sided. Characterised by thin sides, usually tall, which enclose a space much broader than the width of the sides.

Cases. Structures of perpendicular angles which enclose an aperture more narrow than the side of the structure.

Simple. Unelaborated examples of the above.

Relieved. Examples of the above which contain bevelled edges, footings, concave silhouettes, or other minor elaborations.

Stepped. Examples of the above with a stepped silhouette leading up to the top aperture.

Combinations of the above are shown with capital letters:

	Case-tops	Slabbed	Boxes	Slab-sided	Cases
Simple	A	B	C	D	E
Relieved	-	F	G	H	I
Stepped	-	J	K	L	M

There are two additional types of marker not included in the above. One, denoted V, is ramped along its long axis, low at the foot but rising gradually or in steps towards the head. The other, denoted W, is a cuboid structure lacking any enclosed aperture.

Markers and sepulchres are often constructed as one piece with *nisan*, usually at head and foot but occasionally just at the head. Such cases are denoted by N.

Whether isolated, enclosed, or part of a structure, *nisan* show a basic range of forms, designated by Roman numerals.

(i) "Simple", recorded in the cemetery inventories as "*nisan umum*" (usual *nisan*). Most are pentagonal in shape, or roughly

semi-circular with basal studs or an apical stud, but others can rise in steps to an apex or incorporate slight crenulations. Very much a default class for unexceptional examples.

(ii) Crenulated. Triangular in general shape but with fancy relief along the sides leading to the apex.

(iii) Handle-shaped. Covers a wide range of tall *nisan* with a narrow stem supporting a complex head with a convex silhouette.

(iv) Sceptres. Tall, narrow-stemmed *nisan* gradually widening towards the top; either rounded or right-angled sides.

(v) Tablets and pegs. Cuboid *nisan*, including variants rounded at the edges. Usually a very simple *nisan*, further distinguished from (i) by being small. They grade into:

(vi) Staffs. Distinguished from standing stones by greater length and masonry work (e.g. polished finish). Either cylindrical or cuboid.

(vii) Dollop-shaped. A lone *nisan* at Benteng Tallok which cannot be grouped with the other forms. It is shaped like three slightly flattened balls placed on top of each other.

Types of protective structures can now be detailed.

Tombs. Grave shelters of very solid materials and construction presenting the main visual spectacle, shrouding the grave in darkness or even preventing a clear view. Designated as X, with nine variants recognised here.

(i) The variant with a multi-tiered slabbed roof, found at the Sultan Hasanuddin, Arung Palakka and Tallok Raja complexes (Table F-1) where it is associated with known dates of death between 1639 and 1724.

(ii) Similar to (i) but with less-developed tiering of the roof. Associated with a known date of death of 1650.

(iii) Similar to (ii) but with a true arch at the entrance rather than a corbel arch. Associated with a known date of death of 1742.

(iv) *Kobang* tombs - igloo-shaped domes with four externally visible arched trusses, atop a square- or rectangular-walled base, usually with prominent corner pillars. The word *kobang*, which would be related to Indonesian *kubah* (cupola, dome), appears to be a local term for this style, and was applied in the Dutch colonial reports (Oudheidkundinge Dienst, 1949:7). I very rarely investigated the interiors of these tombs. Associated with known post-Islamisation dates of death from 1654 onwards.

(v) A variant of the above in which the walls rise well above the junction with the cupola. Unique to or at least best developed with the tomb of Sultan Sahaduddin (died 1696) and his wife Daeng Talele (died 1725).

(vi) Mosque-like tombs, differing from the *kobang* owing to a fully rounded dome without externally visible arched trusses.

(vii) House-like tombs with architectural features stamping the construction as peculiarly South Sulawesi in style.

(viii) House-like tombs built in the European style.

(ix) Suspected or reported tomb but with only the vertical walls (including the prominent corner pillars) still extant.

Shelters. Designated Y. These grade into the tombs but as a class are distinguished by less solid construction and more open sides. Sometimes the roof is supported only by a frame.

Corrals. Designated Z. Distinguished by a lack of evidence of roofing.

Additional descriptions are shown with the following small letters:

ns: Grave oriented along a north-south axis.
ew: Grave oriented along an east-west axis.
c: Decorated with ceramics, either inset or perched on top.
d: Carved decorations not contributing to shape, e.g. floral panels, Makassar or Arabic script, vertical runnels. Not including attached plaques.
p: Platforms extending well beyond the precise location of the grave or its protective structure, even linking two or more graves or protective structures.

In the tables below, the cemetery, cemetery component or (occasionally) isolated grave is placed in a numbered column, and the styles are placed in lettered rows. Further notes to the descriptions, at the bottom of the tables, are identified by the respective numerical or alphanumerical designator. Specific counts are given where available; presence where noted but not counted is indicated by "x". Cases of possible presences of a grave style, e.g. in a poorly recorded cemetery, are indicated "?". "-" indicates that the category of grave style is irrelevant to the inventory, e.g. when a broad description (which cannot be refined for the more poorly recorded cemeteries included in the same table) is contained by a well-recorded cemetery but within more tightly defined descriptions. Summaries of the number of marked graves and probable dating are given in the main text.

TABLE F-1. GAZETTED ROYAL CEMETERIES

	Benteng Tua (Gowa 1)			(UP25)	Benteng Sanrabone (Tak6)	
	1. Kompleks Makam Sultan Hasanuddin	2. Kompleks Makam Arung Palakka	3. Kompleks Makam Katangka	4. Kompleks Makam Raja² Tallok	5. Kompleks Makam Gaddong	6. Kompleks Makam Raja² Sanrabone
a. Masonry tombs, vertical walls with arched ceiling, multi-tiered slab roofs.1BPUX(i)ns.	7	3	0	2 (1 "2p")	0	0
b. Masonry *kobang*. 1 X(iv) ns.	-	2	6 (1c)	-	0	0
c. Cement-plastered masonry *kobang*. 1/4/5 X(iv) ns.	1	0	0	2	0	0
d. Masonry *kobang* with raised walls. 1G(d)N(ii)U(iv)/4IQ/X(v) ns.	0	1	0	0	0	0
e. Brick *kobang*. 3 X(iv) ns.	0	1	0	1	0	2
f. Stepped brick tombs. 3X(iii) ns.	0	0	0	0	3	0
g. East-west oriented, footed modern cement box marker with simple *nisan*, enclosing paired stones, under shelter with wooden frame and tin roof.5GPN(i)2S 7/9Y ew.	0	0	0	0	1 (Makam Labbu Kopo Kg Jawaya)	0
h. Masonry slab-sided sepulchres enclosing paired *nisan*. 1HQU ns.	3	4	0	0	0	0
i. Masonry flanged box sepulchre enclosing paired *nisan*.1GQ(d)U ns.	0	1	0	0	0	0
j. Masonry platform under stepped masonry box sepulchre with decorated *nisan* enclosing handle-shaped *nisan*. 1KQN(ii)c U(iii) 1p ns.	0	0	0	1 (Tumenanga ri Jawaya)	0	0
k. Cobble platform under stepped and bevelled masonry sepulchre enclosing paired sceptre *nisan*. 1MQU(iv)2p ns.	0	0	0	1 (Duta ri Bima)	0	0
l. Stepped masonry sepulchres with paired *nisan*. 1 K/L/M QU ns.	0	0	?	5	0	0

TABLE F-1. GAZETTED ROYAL CEMETERIES (CONT.)

	Benteng Tua (Gowa 1)			(UP25)	Benteng Sanrabone (Tak6)	
	1. Kompleks Makam Sultan Hasanuddin	2. Kompleks Makam Arung Palakka	3. Kompleks Makam Katangka	4. Kompleks Makam Raja[2] Tallok	5. Kompleks Makam Gaddong	6. Kompleks Makam Raja[2] Sanrabone
m. Other stepped masonry sepulchres. 1 K/L/M Q ns.	0	0	?	x	0	0
n. Masonry slabbed markers.1B/FPns.	0	6	0	x	0	1
o. Footed box marker with crenulated *nisan* enclosing paired staff-like *nisan*. 1 GPN(ii,d) U(vi) ns.	0	0	0	1 (I Sawerannu)	0	0
p. Stepped box marker enclosing paired staff *nisan*. 1 KPU(vi) ns.	0	0	0	1	0	0
q. Stepped case marker enclosing paired sceptre *nisan*. 1 MPU(iv) ns.	0	0	0	1	0	0
r. Other masonry box markers with *nisan*. 1C/G/K PN ns.	0	18	x	x	0	x
s. Stepped, bevelled box marker enclosing standing stone. 1KP 2R ns.	0	0	0	0	1	0
t.Masonry slab-sided markers. 1DPns.	0	21	0	0	0	0
u. Masonry box markers. 1 C/K P ns.	0	-	?	x	6	?
v. Paired masonry *nisan*. 1U ns.	0	1	?	0	0	?
w. Flat brick grave structures. 3WP ns; one is 3WP 1U(v) ns.	0	0	0	0	11	0
x. "Old graves restored with cement". 4/5 ns.	0	2	0	0	0	?
y. Cement box sepulchres with simple *nisan*. 4/5 CQU(i) ns.	0	0	x	0	0	x
z. Cement box markers with simple or crenulated *nisan*.4/5CPU(i,ii)ns.	0	0	x	0	0	x

aa. Tiled cement box markers with simple nisan. 6CPU(i) ns.	0	0	x	0	0	?

1a. Roofs usually crowned with *nisan* at head and foot. Corbel arch entrance. Tombs house masonry slabbed markers enclosing finely masoned paired *nisan* which include handle (iii) and sceptre (iv) styles.

1c. Includes two north-south directed, masonry box markers with crenulated *nisan* enclosing stones at head and foot. The one ascribed to Tunibatta has floral decoration, hence TCN(ii) R(d) ns. The companion grave has a sloping ramp to the box marker, hence 2GN(ii) Rns.

1h. These include the sepulchre of the Bone noble Arung Lamoncong who reportedly brought Tunibatta's corpse back from Bone (Nurhadi et al., 1980:8).

2d. Walls rise above junction with cupola forming a cubicle shape, plus a walled-in annex. Housing two finely masoned crenulated *nisan*-box markers enclosing masonry head and foot stones atop cased cement sepulchres. Sceptre-style *nisan*.

2h. Further description: include square blocks at corners, possibly to form inset wedges to support a now-lost wooden or other superstructure.

2i. The strongly flanged rim singles this sepulchre out, possibly according with its imputed association with a foreigner "the man from Madura". Its superbly carved leafy decorations are elsewhere duplicated on a piece recovered by Nurhadi et al. (1980:41) from the Arung Palakka Complex, a *nisan* used as part of the doorstep for a house in zone 16 (Mangasa), and the decorated, slabbed marker at Kaballokang.

5f. The largest, ascribed to Data Paddada Tumenanga ri Ratekna, is crowned with masonry handle-shaped *nisan*, and protected by a shelter with wooden frame and tin (3 X[ii] 1U[iii]; 7/9Y ns). The other two are ascribed to Tumenanga ri Tobakna and Tumenanga ri Saluara Puena (Ibrahim, 1985:37).

6e. The fully intact *kobang* includes a masonry stepped and bevelled box marker with finely decorated, crenulated *nisan* (1 KN[ii,d]), ascribed to Tumenanga ri Masigina, an 18th century Sanrabone raja (Ibrahim, 1985:50).

TABLE F-2. CEMETERIES CONTAINING ISOLATED TOMBS LIKE THOSE IN THE ROYAL CEMETERIES

	1. Kompleks Syech Yusuf (G.1.67-69)	2. Makam Paccalaya (G.28)	3.Makam Tinggi Maek	4. Sitti Maemunah (G.35.5)	5. Makam Campagaya (G.8)	6. Makam Takbakka south (G.75)	7. Makam Kg Katinting (UP.25)
a. Masonry tomb, vertical walls with arched ceiling, corbel arch entrance, slab roofing. 1X(ii)/3p ns.	0	1	0	0	0	1	1 (7/9Y)
b. As above but true arch entrance. (Empty inside). 1X(iii).	0	0	0	1	0	0	0
c. Masonry *kobang*. 1X(iv).	2 (1c)	0	2	0	0	0	0

TABLE F-2. CEMETERIES CONTAINING ISOLATED TOMBS LIKE THOSE IN THE ROYAL CEMETERIES (CONT.)

	1. Kompleks Syech Yusuf (G.1.67-69)	2. Makam Paccalaya (G.28)	3.Makam Tinggi Maek	4. Sitti Maemunah (G.35.5)	5. Makam Campagaya (G.8)	6. Makam Takbakka south (G.75)	7. Makam Kg Katinting (UP.25)
d. Brick *kobang*. 3X(iv).	0	0	0	0	1	0	0
e. Cement-plastered brick mosque-shaped tomb. 3/5X(vi).	0	1	0	0	0	0	0
f. House-like tomb with concave wooden roof and crossing eaves.X(vii).	1	0	1	0	0	0	0
g. Stepped and bevelled box marker supporting vertical slab on top with *bas*-relief panels, enclosing paired standing stones. 1KPd 2S ns.	0	0	0	0	0	0	1
h. Masonry slabbed marker. 1BP ns.	x	0	1	0	1	1	0
i. Masonry slabs encasing stone arrangement covering grave, including rectangular outline of large stones enclosing a large stone at north; cement shelter.1E/2O(i,ii)PR ns/3p/4Y.	0	0	0	0	0	1	0
j. Masonry slab-sided marker enclosing paired standing stones. 1DP 2S ns.	0	0	0	0	0	0	x
k. Masonry slab-sided marker with some old-style (thin) bricks.1/3HP ns.	0	1	0	0	?	0	0
l. Masonry box markers enclosing paired standing stones. 1CP 2S ns.	0	0	0	0	0	0	x
m. Masonry box markers with simple paired *nisan*. 1CN(i)P ns.	?	0	?	0	?	x	x
n. Stone box markers with simple paired *nisan*. 2CN(i)P ns.	x	2	x	0	?	0	0
o. Markers of rectangles of arranged stones. 2 O ns.	?	15	?	0	?	0	0

p. Old cement case-marker with simple *nisan* enclosing standing stones at head and foot. 4IN(i)P 2S/7Y/ns.	0	0	0	0	1	0	0
q. Masonry case sepulchres with *nisan* enclosing paired masonry *nisan*. 1MNQ 1U ns.	?	0	x	0	0	0	0
r. Slab-sided sepulchre with nisan enclosing paired stone *nisan*. DNQ 1U ns.	x	0	x	0	0	0	0
s. Cement box sepulchres with paired simple *nisan*. 4CN(i)Q ns.	?	0	x	0	0	0	0
t. Cement and tile stepped-box sepulchres with paired simple *nisan* decorated with plates. 6KN4/5Qc ns.	x	0	0	0	0	0	0
u. Box sepulchres with crenulated, paired stone *nisan*. G2N(ii)P ns.	x	0	?	0	?	0	0
v. Cement stepped-case sepulchre with simple paired *nisan*. 4MN(i)Q ns.	?	0	?	0	0	x	0
w. Brick markers. 3P ns.	?	0	?	0	?	x	0
x. Cemented-over brick markers with paired cement simple *nisan*. 3/4N(i)P ns.	?	0	?	0	?	x	0
y. Cement box markers with simple paired *nisan*. 4/5 C/G N(ii)Q ns.	x	3	x	0	?	0	0

2a. Houses masonry slabbed marker with simple *nisan*: 1BN(i) ns.

2e. Houses a cement case marker with simple *nisan* enclosing paired wooden *nisan* (5IN(i)P 7U(v) ns), and a cement box marker with paired simple nisan (5CN(i)P ns). Cement plastering on tomb provided by Suaka.

5. Other marked graves in Makam Campagaya were recorded only as a further 18 being "old" and 12 as "new".

6a and 6i. The graves of "Kg Tompok Balang" and "Minassa Dg Sunggu", both connected by the same platform of old red bricks.

TABLE F-3. OTHER CEMETERIES, BENTENG TUA

	1. Along south edge of Arung Palakka Complex (G.1.17)	2. Makam Kale Kundrulu (G.1.13)	3. Makam Kg Alla-moncong (G.1.38)	4. Graves opposite Katangka (G.1.123)	5. Makam Tompo Bataya (G.1.9,10, 147,148)	6. Kuburan Islam Kaballokang (U.10.73)
a. Old cement box marker with simple *nisan* enclosing 3 head and 2 foot stones; brick platform and remnant shelter. 4GN(i)P/2R/Y/3p ns.	0	1	0	0	0	0
b. Cement box markers with simple *nisan* enclosing single stone at head and foot. 4GN(i)P/2R 3/5p ns.	0	0	6 (3X)	0	0	0
c. Cement box marker with simple *nisan* enclosing masonry *nisan* at head and foot. 4GN(i)P/1U(iv) 3/5p ns.	0	0	1(X)	0	0	0
d. Masonry slabbed markers. 1BP ns.	0	1	0	0	0	1
e. Masonry slabbed marker with fine carved decorations. 1FP(d) ns.	0	0	0	0	0	1
f. Masonry case-top markers. 1AP ns.	0	0	0	0	4	0
g. Stepped masonry case marker. 1MPns.	0	0	0	0	1	0
h. Masonry slabbed marker with low triangular *nisan*. 2FN(i)P ns.	0	0	1	0	0	0
i. Finely crenulated masonry *nisan* joined by pebble lines. 1U(ii)/2O(i)ns.	0	0	2	0	0	0
j. Masonry box marker enclosing paired masonry *nisan*. 1CPU(iii) ns.	0	0	0	0	1	0
k. Masonry box markers with simple *nisan*. 1CPN(i) ns.	7	0	0	x	x	0

l. Masonry paired *nisan*. 1U ns.	0	0	0	0	x	0
m. Arranged pebble markers. 2O(i) ns.	0	0	0	0	0	10
n. "Stone graves". 1/2P ns.	13	-	-	-	-	-
o. "Piles of bricks". 3PU.	0	2	0	0	0	0
p. Cement-plastered brick box markers enclosing *nisan*. 3/5PU ns.	0	0	0	0	5	0
q. Tomb with only vertical walls still extant. X(ix) ns.	0	0	0	1	0	0
r. Old-cement box with Makassar script at south. 4C(d)P ns.	0	0	0	0	1	0
s. "Old cement". 4P ns.	-	3	-	-	-	3
t. New cement box markers with simple *nisan*. 5CN(ii)P ns.	0	0	0	x	x	28
u. Modern cement. 5P ns.	8	0	0	-	-	0
v. Markers with wooden *nisan*. 7NP ns.	0	0	0	x	x	9
w. "Modern". 0P ns.	4	0	0	-	-	-

3b and 3c. Cement-plastered brick house-like tomb, corrugated iron roof with four straight trusses rising from corners to a central point, houses four of these graves; reportedly, there used to be a celadon plate on the apex (3/5/9X[viii]c). All seven graves on a cement-plastered brick platform.

5p. More precisely, constituting a small family graveyard within the family's yard which is flanked by Makam Tompo Bataya, along with a similar grave marker of only cement. Modern.

5r. Not observed in more detail, and northern part of box removed by the passing road.

TABLE F-4A. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT

	1. Makam Kgloeri Sero (G.26)	2. Makam Boccolaya (G.27)	3. Bukit Bikuling (G.25)	4. Makam Dg Bane (G.36)	5. Makam Nakku Dekda (G.36)	6. Makam Sampeang (G.37)	7. Makam Kasomberang
a. Tiled cement box with paired simple *nisan*, enclosing single stone at north. 5/6 CN(i)P 2R ns/5Y.	1	0	0	0	0	0	0
b. Old cement boxes with paired simple *nisan*, enclosing paired wooden *nisan*. 4CN(i)P 7U(iv) ns/5Y.	2	0	0	0	0	0	0
c. Old-cement box with paired simple *nisan*, around two slab-sided masonry sepulchres enclosing stones at head and foot.4CN(i) 1DQ 2S ew(4/5Y).	0	0	0	0	0	2	0
d. Slabbed and box masonry markers lacking *nisan*. 1C/DP ns.	20	7	5	0	9	11	0
e. Box masonry markers with simple *nisan*. 1C/KN(i)P ns.	0	0	2 (stepped - K)	0	2 (normal - C)	1 (C)	0
f. Rectangular markers of arranged stones enclosing paired sceptre-style masonry *nisan*. 2 O(i) 1U(iv) ns.	0	0	0	0	0	0	3
g. Rectangular markers of arranged stones. 2 O(i/ii) ns.	22	52	21	5	17	59	56
h. Stepped-box brick sepulchre enclosing masonry *nisan* in "handle" and "tablet" styles. 3KQU(iii,v)ns.	0	0	1	0	0	0	0

	1. Makam Kgloeri Sero (G.26)	2. Makam Boccolaya (G.27)	3. Bukit Bikuling (G.25)	4. Makam Dg Bane (G.36)	5. Makam Nakku Dekda (G.36)	6. Makam Sampeang (G.37)	7. Makam Kasom-berang (G.35.2)
i. Brick markers. 3P ns.	5	0	0	3 ("3/5Y")	1	0	3
j. Old cement box markers lacking *nisan*. 4CP ns.	29	0	0	0	0	0	1
k. Old cement box markers enclosing stone *nisan*. 4CP(N?) 2S ns.	14	0	0	0	0	0	1
l. Old cemented-over brick box-markers with simple paired cement *nisan*. 3/4CP 4N ns.	0	0	0	6	0	0	0
m. Old cement box markers with paired simple *nisan*. 4CNP ns.	22	18	0	4 (3 "3/5/9Y")	4	24 (1c)	13
n. Modern cement. 5P ns.	84	6	0	3 (1 "3/5/9Y")	2	21	14
o. Wooden *nisan*. 7U ns.	18	0	0	0	0	0	8

4i, 4m and 4n. "3/5/9Y" refers to a shelter with a brick basis, cement floor, and cement pillars supporting a tin roof. The sheltered graves are slightly above the prevailing ground surface and so should possibly be classified as sepulchres.

TABLE F-4B. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT (CONT.)

	1. Makam Pao-Pao (G.38.6) (north group)	2. Makam Pao-Pao (G.38.6) (east group)	3. Small graveyard, Pao-Pao (G.38.3)	4. Bukit Sulenta (G.40)	5. Makam Pacci-nongang (G.42)	6. Kampung Pacci-nongang (G.41)	7. Bukit Mangga-rupi (G.29)
a. Rectangular markers of arranged stones enclosing head and foot stones. 2 O(i) S ns.	1 (7Y)	41	36	1	0	0	0
b. North-south rectangular markers of arranged stones. 2 O(i) ns.	3			4	51	0	0
c. East-west rectangular markers of arranged stones. 2 O(i) ew.	0	0	1	0	0	0	0
d. Paired standing stones. 2S ew.	0	0	1	0	0	0	0
e. Paired standing stones. 2S ns.	1	0	1	2	0	0	0
f. Isolated standing stone. 2R.	3	0	0	0	12	0	0
g. Masonry slabbed marker enclosing single standing stone. 1BP 2R ns.	0	0	1	0	0	0	0
h. Masonry slabbed marker. 1BP ns.	0	2	2	1	27	0	0
i. Masonry box. 1CP ns.	0	0	2			0	0
j. Masonry slab-sided marker.1DPns.	0	0	0	1	0	0	0
k. Masonry box with paired simple *nisan*. 1CN(i)P ns.	25	5	10	0	155	0	0
l. Isolated masonry *nisan*. 1T.	0	0	0	2	1	0	0
m. Paired masonry *nisan* in "Aceh" (handle) style. 1U(iii) ns.	0	0	0	0	0	0	0
n. Long east-west cement case-top markers connecting paired simpled masonry *nisan*. 5AP 1U(i) ew: 7/9Y.	0	0	0	0	2	0	0

o. Rectangular marker of arranged stones and bricks. 2/3 P ns.	0	0	0	2	0	0	0
p. Brick arrangement. 3 O/P ns.	1	0	0	1	3	0	0
q. Stone arrangement enclosing wooden *nisan*. 2 O/7U ns.	0	5	0	0	0	0	0
r. Wooden *nisan*. 7T/U.	8	4	0	0	39	0	0
s. Modern cement box marker with simple *nisan* enclosing paired wooden *nisan*. 5CN(i)P 7U ns: 7/9Y.	0	0	0	1	0	0	0
t. Isolated old cement *nisan*. 5T ns.	0	0	1	0	0	0	0
u. Old cement slabbed marker. 4BPns.	0	0	0	0	1	2	0
v. Old cement box or case with simple paired *nisan*. 4C/EN(i) P ns.	5	9	0	0	176	0	x
w. Modern cement. 5P ns.	21	19	0	0	124 (5Y)	0	x
x. Box markers with simple *nisan*, of very white stone - soapstone? 1GN(i)P ns (modern).	0	0	0	0	1	0	1

1v. The cement of one of these is speckled with numerous tradeware pottery sherds.

4s. Makam Tu Baranae. The shelter is metal sheets on a wooden frame and has a carved wooden water buffalo head above the entrance.

5b. Include six "piles of stones" which are presumably deranged examples.

5n. Both shelters have a wooden frame covered mostly or entirely with metal sheeting.

5v. One of these bears the date 1953.

7w. Includes three cement case markers with simple *nisan* (5EN(i) ns) beneath Japanese World War 2 shelter.

TABLE F-4C. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT (CONT.)

	1. Makam Jipang (U.12.2)	2. Makam Karunrung (U.13.11)	3. Makam Sanro Karunrung (U.13.1)	4. Bonto-manaik 1 (U.24)	5. Makam Karaeng Bungaya (G.7.1)	6. Makam Karaeng Mangasa (G.93)	7. Makam Bonto Jalling (G.10)	8. Taeng Sundry
a. Old cement tombs with only pillars and vertical walls extant. 4X(ix).	3	0	0	0	0	0	0	0
b. Wooden boxes with double paired *nisan* on cement sepulchre. 5IQ/7GN(ii,d)P 7U(iv) ns/Y.	0	0	0	0	2	0	0	0
c. Masonry stepped-box sepulchre with crenulated *nisan* enclosing paired sceptre-like *nisan*, atop a modern cement sepulchral case. 5EQ/1KQN(ii)/1T(iv)ns.	0	0	0	0	0	1 (Kg Mangasa II)	0	0
d. Masonry slabbed marker with crenulated *nisan* enclosing masonry handle-shaped *nisan*. 1BN(ii)P 1U(iii) ns.	0	0	0	0	1 (Kg Bontojai)	0	0	0
e. Masonry box marker with crenulated *nisan*. 1CN(ii)P ns.	0	0	0	0	1 (Kg Gantarang)	?	?	?
f. Masonry slabbed markers. 1B/FN(i)P ns.	0	5	0	0	0	?	?	1
g. Masonry slabbed markers with simple *nisan*. 1B/FN(i)P ns.	5	0	2	0	0	?	?	?
h. Masonry box markers with simple *nisan*. 1CN(i)P ns.	21	2	3	0	x	?	?	?
i. Isolated masonry *nisan*. 1T.	1	0	0	0	?	?	?	?
j. Rectangle of arranged stones with roughly masoned table-like *nisan* at north. 2O/1T(v) ns/7Y.	0	0	0	1	0	?	?	?
k. Rectangular marker of arranged stones. 2 O ns.	0	1	0	0	?	?	?	?

l. Modern cement box-marker enclosing stone arrangement and wooden *nisan*, enclosing paired stones. 5C/7T/20Sns: 7/9Y.	0	0	1 (Sanro Karunrung)	0	0	0	0	0
m. Brick structure forming isolated *nisan*. 3T.	1	0	0	0	?	?	?	?
n. Rubble piles/arrangements (mainly bricks). 3 0/P ns.	0	3	1	0	?	1	?	1
o. Brick sepulchres cases cemented over, one with simple old cement *nisan*. 3/4IQ ns.	0	2 (1 N[i])	0	0	0	0	0	0
p. Old cement slabbed markers with simple *nisan*. 4FN(i)P ns.	5	0	0	0	| | |	?	?	?
q. Old cement box markers with simple *nisan*. 4CN(i)P ns.	1	| 9	0	0	x | |	?	?	?
r. Cement stepped cases.4/5PMns.	0	|	0	0	|	?	x	?
s. Cement box markers with crenulated *nisan*. 4/5N(ii)P ns.	0	0	0	0	0	x (2 d)	x (1 cd)	?
t. Modern cement case sepulchres with simple *nisan* enclosing wooden *nisan* or paired stones. 5IQN(i) 2S/7U ns/(several c).	0	0	0	0	0	0	x	0
u. Modern cement, ramped box marker bearing plaque at north. 5VP ns.	0	0	0	0	0	0	1 (Kg Mangasa I)	0
v. Modern cement. 5P ns.	12	21	46	0	x	?	?	0
w. Wooden *nisan*. 7U ns.	14	4	8	0	?	?	x	?
x. Box marker with simple *nisan*, of very white stone (soapstone?).	0	0	0	0	1	?	?	0

TABLE F-4C. OTHER CEMETERIES, CHAPTER 7 OF MAIN TEXT (CONT.): NOTES

3v. Some are of cement which looks "slightly old".

5b. Makam Kg Bungaya. Mainly iron shelter on modern-cement sepulchral encasement built up to two wooden box markers with crenulated *nisan* and carved with Makassar script, enclosing paired sceptre-style wooden *nisan*. The markers and nisan are presumably restorations imitating the original masonry.

5x. Encloses stones at head and foot. 1CN(i)P 2S ns (modern or recently restored).

6s and 7s. Decorations are pattern like veins of a leaf on inside of *nisan*, plus the remnant hole of where a plate had been with the Bonto Jalling example.

8f. "Makam Tua Gantarang". My records give no further details except that it was not far from Makam Kg Mangasa. Apparently an old (17th-18th century?) style.

8n. The marker of old bricks at Makam Tompok Balang (Photo 7-39). The location of this cemetery's other marked graves was mapped but no further details recorded other than the cemetery has been abandoned.

TABLE F-5A. OTHER CEMETERIES, CHAPTER 8 OF MAIN TEXT

	1. Anak Gowa northeast cemetery (G.2.9)	2. Makam Jingarak (G.15.6)	3. Bonto Tangnga Utara (G.9)	4. Kanjilo Timur Daya (G.6.6)	5. Makam Karaengta Jawa (G.12.1)	6. Makam Kocci Borong (G.12.3)
a. Stone-marked, raised earthen feature. 2P 8Q ns.	0	0	1	0	0	0
b. Masonry slab-sided marker enclosing paired stones. 1HP 2S ns.	0	0	0	2	0	x
c. Box-marker of piled masonry slabs enclosing sceptre-like *nisan* at north. 1CPT(iv): 3Z 7/9Yns.	0	0	0	1	0	0
d. Slabbed marker of old bricks, some wedged upright, enclosing masonry *nisan* of a decorated sceptre-style at south and a tablet-style at north. 3BP 2U(iv,d;v) ns.	0	1	0	0	0	0

e. Paired masonry *nisan* in wooden corral. 1U/7Z ns.	0	0	0	1	0	0
f. Masonry case markers.1EP ns.	0	0	0	0	0	x
g. Miscellaneous masonry markers. 1P/U ns.	0	-	0	-	x	x
h. Sepulchre case of old bricks, crowned by masonry box marker with crenulated *nisan*. (Kgta Jawa). 3IQ 2CN(ii)P ns.	0	0	0	0	1	0
i. Rectangular stone arrangements enclosing paired stones. 2O(i)S ns.	0	0	0	0	0	x
j. Rectangular markers of arranged, old bricks. 3CP ns.	0	0	0	4	0	?
k. Brick arrangement over grave.3O(ii) ns.	0	0	0	0	0	1
l. Old cement box markers with simple *nisan* enclosing paired stones. 4CN(i)P 1S ns.	x	0	0	0	0	x
m. Old cement box markers with simple *nisan*. 4CN(i)P ns.	-	14	0	17	0	x
n. Old cement sepulchral case with simple *nisan*. 4E/IN(i)Q ns.	0	1	0	2	0	?
o. Modern cement. 5P ns.	-	1	0	0	0	x
p. Wooden *nisan*. 7U(i) ns.	-	0	1	0	x	x

4c. Brick-and-mortar corral is ruined, and may have been the walls to a shelter. Present shelter is a peaked roof of corrugated iron supported on a skeletal wooden frame.

11. Observed as the predominant style; presumably other styles also present. One example had the cement speckled with tradeware fragments, and a ceramic plate decorating the *nisan* (c). Strongly different orientations among the graves (noted but not measured) indicates fair longevity of the cemetery's use.

3p. Marking the child of the site's single occupant. The child had died two years before our survey.

TABLE F-5B. OTHER CEMETERIES, CHAPTER 8 OF MAIN TEXT (CONT.)

	1. Makam Manyampang (G.13)	2. Makam Tua Labengnge (G.14.1)	3. Makam Karaeng Dampang (G.14.2)	4. Gotong (G.14.3)	5. Kuburan Takbakka, north area (G.75)	6. Bonto-manaik 2, near holes	7. Bonto Pakja (G.18)
a. Modern cement and brick tomb with tin roof on a platform of old bricks, sheltering a cement box with simple *nisan* enclosing paired standing stones. 5CN(i)P 2S ns:3/4/9X(viii)/3p.	0	1	0	0	0	0	0
b. Modern cement and brick tomb with tin roof, sheltering a cement box with *nisan*, one simple and one crenulated, enclosing paired handle-shaped masonry *nisan*.4CN(i,ii)P 1U(iii)ns:3/4/9X(viii).	0	0	1	0	0	0	0
c. Raised earthen feature, some large stones present. 2O 8Q (?).	0	0	0	2	0	0	0
d. Ramped box marker of plastered-over bricks with one simple cement nisan enclosing a stone. 3/4VN(i)P R ew.	0	0	0	0	1	0	0
e. Ramped box marker of bricks with cement casing. 3/4VP ew.	0	0	0	0	2	0	0
f. Stones arranged into a rectangular marker. 2O(i) ns.	3	0	0	0	0	0	5
g. Cement atop stones arranged into a rectangular marker. 2O(i) 4/5P ns.	1	0	0	0	0	0	0
h. Pile of cobbles. 2 O(ii) ns.	0	0	0	0	1	0	?
i. Standing single stone. 2R.	0	0	0	0	x	0	?
j. Masonry stepped box marker with paired simple *nisan*, under a crude wooden-frame shelter with tin roof. 1KN(i)P ns/7Y.	0	0	0	0	0	1	0
k. Masonry block marker. 1P ns.	1	0	0	0	0	1	?

l. Brick foundation with masonry step. 1/3M(?)P ns.	1	0	0	0	0	0	0
m. Stepped bricks with masonry step, cemented-over, encasing cement slab marker with simple *nisan*. 1/3/4MP 4BN(i)P ns.	1	0	0	0	0	0	0
n. Brick markers. 3P ns.	5	0	0	0	x	2	?
o. Piles of cadged bricks. 3O(ii) ns.	3	0	0	0	0	0	?
p. Marker with old cement over brick. 3/4P ns.	?	0	0	0	x	0	?
q. Sheltered, cemented sepulchre encasing two stepped cement boxes with simple *nisan*. 4IQ/4KN(i)ns:4/7Y.	1	0	0	0	0	0	0
r. Old cement slabbed marker with paired simple *nisan* under wooden shelter. 4FN(i)P ns/7Y.	1	0	0	0	0	0	0
s. Old cement box markers with simple *nisan*. 4C/G N(i)P ns.	x	0	x	0	x (1d)	0	x
t. Old cement cases. 4EP ns.	?	0	0	0	x	0	x
u. Old cement sepulchres encasing old cement box markers with simple *nisan*. 4IQ 4C/GN(i)P ns.	x	0	2	0	0	0	0
v. Modern cement sepulchres encasing lime-plastered cement box markers with simple *nisan*. 5MQ 5CN(i)P ns.	x	0	0	0	0	0	0
w. Modern cement ramped marker. 5V ns.	0	0	0	0	x	0	0
x. Tiled cement, ramped marker. 5/6Vns.	0	0	1	0	0	0	0
y. Modern cement cuboid. 5W ns.	1	0	0	0	0	0	0
z. Miscellaneous modern cement. 5Pns.	x	0	x	0	x	0	x
aa. Sunken earth feature, i.e. a grave as yet unmarked. 8 ns.	1	0	1	0	0	0	?

TABLE F-5B. OTHER CEMETERIES, CHAPTER 8 OF MAIN TEXT (CONT.): NOTES

1n. Two were recorded as "old bricks", one with a stone at the north (3P 2R). Three recorded as more modern bricks: one with a baked-clay, simple *nisan* enclosed by cement *nisan*, 3P 8U(i) 4/5N(i)P; another of a similar style but the baked-clay *nisan* was of a handle style, 3P 8U(iii) 4/5N(i)P.

1q. Makam Kg Barombong. Fabric of sepulchre beneath cement restoration, and contents within the cement boxes, not investigated. Shelter has cement pillars, wooden frame, wooden water buffalo carving at entrance, thatchwork walls and corrugated iron roof.

1r. The venerated grave around 60 metres north of the main graveyard, presumably a restoration of a possibly very old grave.

4c. Possibly a grave style, by analogy with the clearer example at Bonto Tangnga Utara (G.9).

6n. Heavily disturbed through use of the track passing over them.

7f. Immediately north of reportedly looted area; main cemetery lies across the road.

TABLE F-6A. CEMETERIES, CHAPTER 9 OF MAIN TEXT

	---- Saumata Lama (Gowa 30) ----				--Bonto Ramba Tua (Gowa 74)--		
	1. Zones 12 and 36	2. Makam Takbakka	3. Campaga Lomo (Z.1)	4. Private graveyard (Z.27)	5. South graveyard	6. Just north of sunken fields	7. North cemetery
a. Rectangular arrangements of stones. 2 O(i,ii) ns.	51	1	34	0	x	2	0
b. Rectangular arrangements of stones enclosing paired standing stones. 2 O(i)S ns.		6		0		0	0
c. Rectangular stone arrangement enclosing paired sceptre-like iron *nisan*. 2 O(i) 9U(iv)ns.	0	1	0	0	0	0	0
d. Pile of stones and some bricks. 2/3 O(ii) ns.	0	1	0	0	0	0	0
e. Slabbed masonry marker.1BPns.	0	0	5	0	0	0	0

f. Rectangular stone arrangement enclosing slabbed marker with crenulated *nisan* enclosing paired roughly-masoned stones. 2 O(i) 1BN(ii)P 1S ns.	0	0	1	0	0	0	0
g. Slabbed masonry marker enclosing paired standing stones. 1BPS ns.	0	0	2	0	0	0	0
h. Stepped masonry box markers with single or paired, simple *nisan*. 1KN(i)P ns.	0	0	0	0	x	0	6
i. Masonry box markers with simple *nisan*. 1CN(i)P ns.	0	2	0	0	x	0	0
j. Sheltered brick sepulchre encasing three old-cement case-markers with simple *nisan*. 3EQ 4EN(i)P 7/9Y ns.	0	1	0	0	0	0	0
k. Old cement box marker with handle-shaped *nisan*. 4CN(iii)Pns.	0	1	0	0	0	0	0
l. Old cement box marker with simple *nisan*. 4CN(i)P ns.	0	1	107	x	x	0	5
m. Modern cement stepped-case marker with simple or crenulated *nisan*. 5MN(i/ii)P ns.	0	2	|	2	-	0	-
n. Modern cement cases. 5EP ns.	0	0	176	0	-	0	-
o. Miscellaneous modern cement. 5 P/Q ns.	0	0	|	0	x	0	36
p. Modern cement box marker with simple *nisan* under cement shelter with wooden and tin roofing. 5CN(i)P ns: 5/7/9Y.	0	0	1	0	0	0	0
q. Wooden *nisan*. 7P/U ns.	0	0	14	0	?	0	0

TABLE F-6A. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.): NOTES

2d. The grave of the medecine-woman, next to the mosque.

3p. The restoration of the grave of "Karaeng Samata".

4l. These are enclosed within solid cement walls with a triangular prominence along the east wall, as though to take roofing. Apparently a cement-walled tomb in construction, 5X(viii).

TABLE F-6B. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	Beroanging (Gowa 33)							
	1. Small graveyard (Z.1)	2. Cambang Beroanging and family (Z.3)	3.At north of Cambang Beroanging (Z.3)	4.Makam Parang (Z.3)	5.Makam Balang Tonjong (Z.3)	6.Makam Bero-anging (Z.4)	7.Bero-anging Utara (Z.10)	8. Bonto Pakja (G.93)
a. Pile of stones and cement blocks. 2/4O(ii) ns.	0	0	1	0	0	0	0	0
b. Stone pile. 2 O(ii) ns.	0	0	5	6	4	38	0	x
c. Rectangular arrangements of stones. 2 O(i,ii) ns.	3	2	29				15	x
d. Rectangular arrangements of stones enclosing standing stones. 2 O(i) R/S ns.	0	0		0	0	0		?
e. Paired standing stones. 2Sns.	0	0	0	0	0	0	1	x
f. Paired stones inside slabbed masonry marker. 1FP 2S ns.	0	0	0	0	0	1	0	?
g. Slabbed masonry marker. 1B/FP ns.	0	0	1	0	0	1	0	x
h. Paired stones inside restored cement marker. 4/5P 2S ns.	3	0	0	0	0	0	0	0

i. Paired stones inside masonry marker on flat surface of large masonry blocks, within cement modern-style tomb. 1P2Sns/4Y.	0	0	0	0	0	0	0	1
j. Paired stones inside modern cement box-sepulchres with simple *nisan*. 5GN(i)Q 2S ns.	0	2	0	0	0	0	0	0
k. Masonry box markers with simple or peg-like *nisan*. 1CN(i,v)P ns.	0	3	0	2	0	4	0	0
l. Old cement box markers with simple *nisan*. 4CN(i)P ns.	0	0	0	4	4	8	0	0
m. Box markers of bricks covered with old cement, supplied with simple *nisan*. 3/4 C/G N(i)P ns.	0	7	0	2	0	23	0	0
n. Modern cement boxes and cases, markers and sepulchres, with simple *nisan*.5C/G E/I N(i)P/Q ns.	0	25 (1c)	0	32	13	42	0	0
o. Modern masonry markers of speckled stone (soapstone?).1Pns.	0	0	0	1	0	5	0	0
p. Wooden nisan. 7U ns.	0	0	0	3	1	5	0	0
q.Earth heap in bamboo corral (not yet permanently marked). 8ns/7Z.	0	0	0	0	0	1	0	0

2j. The sepulchres of Cambang Beroanging and his wife.

2n. One example decorated with a "willow-pattern" plate (1c). All of the *nisan* in rows m and n are strikingly similar, as per the *nisan* of Cambang Beroanging and his wife (Photo 9-13).

8i. The tomb of Karaeng Bonto Pakja (poorly recorded), which includes a rectangle of arranged cobbles marking the burial of Kg Bonto Pakja's companion.

TABLE F-6C. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	1. Kuburan Romang Sapang (G.31.6)	2. Kuburan Romang Polong (G.32.1)	3. Makam Palampang Toa (U.14.2)	4. Makam Daeng Kajenjeng (U.16.1)	5. Makam Kassik Tengah (U.15.3-5)	6. Makam Kassik Utara (U.20.5,11)	7. Kuburan Islam Tamangapa (U.20.1)
a. Paired stones. 2S ew.	0	0	0	0	0	1 (zone 2)	0
b. Cement case-top in locked cement tomb. 5A 1R 7U(v) ew: 7/9X(viii).	0	0	0	0	0	1	0
c. Cement box enclosing fine masonry sceptre-style *nisan* in a cemented-over brick shelter with tin roof. 4GP 1U(iv) ns 3/4/9Y.	0	0	0	1 (Daeng Kajenjeng)	0	0	0
d. Rectangular arrangements of stones. 2 O(i,ii) ns.	30	212	0	0	26	>> 9	12
e. Paired stones. 2S ns.			0	0			27
f. Slabbed masonry marker enclosing standing stone. 1BP 2R ns.	1	0	0	0	0	0	0
g. Ridged masonry cases. 1IP ns.	0	4	0	0	0	0	0
h. Ridged masonry case with simple *nisan*. 1IN(i)P ns.	1		0	0	0	0	0
i. Slab-sided markers. 1DP ns.	0	0	0	0	0	0	2
j. Masonry box markers. 1CP ns.	5	10	0	2	5	0	0
k. Masonry boxes with simple *nisan*. 1CN(i)P ns.		0	7	20	78	0	0
l. Masonry case-top marker. 1AP ns.	0	0	0	1	0	0	0
m. Brick markers. 3P ns.	0	28	0	0	3	0	0

n.Cement box markers enclosing simple masonry *nisan*. 4/5CP 1T/U(i) ns.	0	12	0	2	?	16	5
o. Old cement box markers with simple *nisan*. 4CN(i)P ns.	-	32	0	0	?	20	32
p. Modern cement sepulchral boxes enclosing single or paired stones. 5CN(i)Q 2R/S ns.	0	0	2	0	0	0	0
q. Cement markers. 4/5P ns.	6	-	-	-	124	-	-
r. Modern cement box markers and sepulchres with simple *nisan*. 5 C/G/K N(i) P/Q ns.	-	208	0	3	|	?	?
s. Modern cement markers lacking *nisan*. 5P ns.	-	0	0	0	0	48	-
t. Modern cement markers enclosing wooden *nisan*. 5P 7U ns.	0	0	0	0	0	4	0
u. Wooden *nisan*. 7 P/U ns.	0	36	0	0	9	0	2
v. Modern. 0P ns.	0	-	0	-	-	-	28

5d. Most of these incorporated prominent stones at head and foot. Presumably the same condition also occurred among the 1d and 2d marked graves.

5i and 5l. Restricted to zones 3 and 4 respectively. Zone 3 otherwise had one of the 5d marked graves, and zones 3 and 4 together apparently constituted one of the oldest parts of the cemetery.

5k. 19 of these appeared "old" and 59 appeared "*umum*" (usual).

6b. Makam Karaeng Kassik. Full description: cement case-top enclosing single stone at west, plus two wooden pegs at east and one wooden peg at west concreted into the cement.

6s. As recorded, although the description might have meant without enclosed *nisan*.

7d. 11 of these enclosed stones at head and foot: 2 O(i,ii)S ns.

TABLE F-6D. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	1. Ende (U.21.7)	2. Makam Karaeng Bangkala (U.21.2)	3. Kuburan Islam Bangkala (U.21.1)	4. Bossolok (G.72.2)	5. Makam Karaeng Sabeng (G.45.2)	6. Kuburan Islam Borongloe (G.67)	7. Kabal-lokang (G.70)
a. East-west rectangular arrangement of stones. 2 O(i) ew.	1	0	0	0	0	0	0
b. North-south rectangular arrangement of stones.2 O(i,ii)ns.	4	1	| 129	16	0	| x	x
c. Rectangular stone arrangement enclosing paired stones.2 O(i)S ns.	0	0	|	6	0	|	?
d. Rectangular stone arrangement enclosing wooden *nisan*.2 O(i)7U ns.	0	0	0	1	0	0	0
e. Rectangular stone arrangement enclosing stone on cobble-enclosed square earth heap; wood & tin-roof shelter. 2O(i)R 2O/8Q ns: 7/9Y.	0	1 (Kg Bangkala)	0	0	0	0	0
f. Isolated or paired standing stones. 2R/ Sns.	0	0	21	0	1 (?) (possible S ns)	?	x
g. Paired standing stones inside cemented-over brick box with simple cement nisan, enclosed by brick platform cemented-over, tin-roof shelter. 3/4C4N(i)P 2S ns 3/4p 7/9Y.	0	0	0	0	0 (Kg Sabeng)	0	0
h. Masonry slabbed markers enclosing paired standing stones. 1BPS ns.	0	0	2	0	0	?	?
i. Masonry slabbed markers, some with simple *nisan*. 1BP ns [/U(i)].	0	0	14	0	0	?	x

j. Slabbed masonry marker inside masonry box marker, brick shelter. 1BN(ii,iii)P 1GN(iii)P ns 3Y.	0	0	0	0	0	1 (Karaeng Borongloe III)	0
k. Masonry box markers. 1CP ns.	0	0	9	0	0	?	x
l. Masonry box markers with simple *nisan*. 1CN(i)P ns.	0	0	8	0	0	?	?
m. Stepped masonry box markers with simple *nisan*. 1KN(i)P ns.	0	2	5	0	0	?	0
n. Stepped masonry cases. 1MP ns.	0	0	4	0	0	?	0
o. Masonry cases with ridged top, some with single peg-like nisan. 1IP ns (T[v]).	0	0	0	0	0	x	0
p. Decorated masonry cuboid.1W d,ns.	0	0	1	0	0	0	0
q. Isolated masonry *nisan*. 1T(i).	0	0	1	0	0	?	0
r. Paired masonry *nisan*. 1U(i) ns.	0	0	1	0	0	?	0
s. Old cement box markers with simple *nisan*. 4CN(i)P ns.	0	0	5	0	0	?	0
t. Old-cement stepped case.4MP ns.	0	0	1	0	0	?	0
u. Modern cement markers. 5P ns.	0	0	21	0	0	x	0
v. Wooden *nisan*. 7U ns.	0	0	10	0	0	?	0
w. Earth heap, i.e. not yet permanently marked. 8P ns.	0	0	1	0	0	1 (7Z)	0

6j. Full description: Marker of arranged masonry slabs with crenulated *nisan* and handle-shaped *nisan*, within bordered masonry box marker with crenulated *nisan*, beneath brick shelter (roofing not recorded).

TABLE F-6E. CEMETERIES, CHAPTER 9 OF MAIN TEXT (CONT.)

	1. Makam Borong Parang (G.82.1)	2. Makam Songkolo Asli (G.83.4)	3. Makam Bontona Songkolo (G.86.1)	4. Saukang Boe (G.80.3)	5. Makam Garassik (G.16.1)	6. Makam Pekallak Bua (G.16.4)	7. Dampang (G.77)
a. Asymmetrical case of old cement enclosing rounded boulder at east, inside brick corral. 4EP/2Rew 3Z.	0	0	0	2	0	0	0
b. Single standing stone. 2R.	11	1w	0	0	0	0	1 (4/7/9Y)
c. Paired standing stones. 2Sns.	1	0	0	0	0	62	0
d. Rectangular arrangements of stones. 2 O(i,ii) ns.	28	3w	6a, 118b	0	18	12 (1 "7/9Y 7Z")	0
e. Rectangular stone arrangement enclosing wooden nisan. 2 O(i)7U ns.	0	1w	0	0	0	0	0
f. Stone arrangement border enclosing ridged masonry box marker with decorated crenulated nisan. 2 O(i) 1GN(ii,d) P ns.	0	0	1a	0	0	0	0
g. East-west slabbed masonry marker with triangular nisan. 1BN(i)P ew.	0	0	1a	0	0	0	0
h. Slabbed masonry marker with crenulated nisan. 1BN(ii)P ns.	0	0	4a (1d)	0	0	0	0
i. Slabbed masonry marker, decorated with crosses, inside slabbed masonry marker. 1B(d) 1BP ns.	0	0	3a	0	0	0	0
j.Other slabbed masonry markers.1BPns.	0	0	9a	0	0	0	0
k. Masonry box markers. 1 C/G P ns.	5	1w	0	0	2	4	0
l. Slab-sided masonry markers.1DP ns.	1	0	0	0	0	1	0
m. Slab-sided masonry marker with crenulated nisan. 1D N(ii)P ns.	0	1w	0	0	0	0	0
n.Paired cylindrical nisan.1U(vi) ns.	0	0	0	0	1	0	0

o. Masonry cases with ridged top and usually paired simple *nisan*. 1IN(i)P ns.	123	61e	1a, 91b	0	0	4	0
p. Brick markers. 3P ns.	2	0	0	0	0	0	0
q. Markers of pebbles embedded into an earth matrix. 2/8P ns.	0	93e	0	0	0	0	0
r. Old cement box markers with simple *nisan*. 4 C/G/K N(i)P ns.	13	37e	204b	0	0	93	0
s. Modern cement. 5P ns.	103			0	0	142	0
t. Modern markers. 0P ns.		-	-	0	0	-	x
u. Wooden *nisan*. 7T/U ns.	23	0	0	0	0	16	0
v. Heaped earth marker, i.e. not yet permanently marked. 8P ns.	0	3e	0	0	0	0	0

1o. A wide range of nisan, including faintly crenulated examples (N[ii]) and a circum-incised peg-style (N[v,d]) which we did not record elsewhere.

2. The apparently older marked graves in the western section are suffixed with "w", and the apparently more modern marked graves in the eastern section are suffixed with "e".

3. Graves in the central, elite section of the cemetery are suffixed with "a", and the others with "b".

4a. Makam Karaeng Boe is somewhat more elaborate, with a flat boulder on top of the cement case and two rounded boulders at the east (2R 4EP/2Rew 3Z). These marked graves accentuate the possibility that some number of the similar east-west stone arrangements at Borongloe, Tamarunang Tua, Borong and Saukang Borong could also mark graves.

5d. Western group oriented 330° to 340° from north; eastern group oriented 305° to 320° from north.

5k, 6c, 6k-l and 6o. Generally oriented around 330o from north.

5n. Oriented 315° from north.

6d. Include the sheltered grave, Makam Toa Makni. Generally oriented around 330° from north.

6r, 6s and 6u. Oriented almost precisely north-south, up to 20° from north.

TABLE F-7A. CEMETERIES, CHAPTER 10 OF MAIN TEXT

	1.Palacini Tua (G.54.4)	2.Gentung (G.59)	3.Saile Tua (G.61.2)	-- Pattallassang Tua (G.52) -- 4. Dg Malotteng (Z.20)	5. East, abandoned graveyard near Z.19	6.West graveyard still in use (Z.9 and 10)	(west of Z.10)	-Teamate Asli- 7. On hilltop (G.51.1)	8. Near sawah (G.51.3)	9. Makam Karaeng Talla² (G.50.7)
a. Rectangular arrangements of stones. 2 O(i) ns.	9+	18	2+	0	67	82	x (1 "7/9Y")	9	10	0
b. Isolated or paired stones. 2 R/S ns.	0		0	0	0	0	?			1
c. Rectangular arrangements of stones enclosing a single or paired stones. 2 O(i)R/Sns.	0	0	0	0	54	50	x	0	0	10
d. Rectangular arrangements of stones enclosing a wooden nisan.2 O(i) 7T/Uns.	0	0	0	0	0	0	0	0	0	
e. Arranged rectangle of masonry blocks enclosing triangular *nisan*, under shelter. 1 O(i) T(i) ns: 7/9Y.	0	0	0	1 (Dg Malotteng)	0	0	0	0	0	0
f. Arranged rectangle of masonry blocks. 1 O(i) ns.	0	0	0	1	0	0	0	0	0	0

g. Arranged rectangle of masonry slabs and blocks, enclosing a stone, under shelter. 1 O(i)/B R ns: 7/9Y.	0	0	0	0	0	0	2	0	0	0
h. Masonry slabbed marker enclosing paired standing stones. 1BPS ns.	0	0	0	0	0	0	0	0	0	1
i. Masonry slabbed markers. 1BP ns.	0	0	0	0	0	0	0	0	0	2
j. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	0	0	0	0	0	0	1
k. Brick box sepulchre crowned by a brick box marker enclosing simple masonry *nisan*. 3GQ 3CP 1N(i) ns.	0	0	0	0	0	0	1	0	0	0
l. Cement markers with simple *nisan*. 4/5PN(i) ns.	0	0	0	0	4	19	x	0	0	0
m. Wooden *nisan*.7P/U ns.	0	0	0	0	0	1	?	0	0	0

5. Only half of the area of this graveyard was sufficiently untramelled by regrowth for inventorisation.

7g. The conjoined, marked graves of Tetta Rulcha and Tetta Bolong.

9i. Include the grave of Karaeng Talla-Talla.

TABLE F-7B. CEMETERIES, CHAPTER 10 OF MAIN TEXT

	1.Makam Karaeng Tassili (G.48.2)	2.Makam Ganrang Jawa (G.49.11) North body	2.Makam Ganrang Jawa (G.49.11) South extension	3.Makam Sawagi (G.51.5)	--- Paccellekang Lama --- 4.Makam Paccel-lekang (G.57.1)	5.Unnamed graveyard (G.57.5)	-- Pabundukang Tua -- 6.Unnamed graveyard (G.57.6)	7.Makam Pabun-dukang (G.58.2)	8.Other graves (G.58.3,5 8;sawah)
a. East-west masonry box marker with simple *nisan* enclosing paired stones. 1 CN(i) 2S ew.	1	0	0	0	0	0	0	0	0
b. Paired standing stones inside rectangular arrangement of large old bricks, side by side under wooden shelter with tin roof. 2Sns/3 O(i): 7/9Y.	2	0	0	0	0	0	0	0	0
c. Other pairs of standing stones. 2S ns.	0	0	0	6	4	0	2	0	0
d.Isolated standing stones.2R.	0	1	1	0		0	0	0	0
e. East-west rectangles of arranged stones. 2 O(i)ew.	0	0	0	0	1	0	1	2?	0
f. Rectangular stone arrangement under wooden shelter with tin roof.2 O(ii)ns:7/9Y.	1	0	0	0	0	0	0	0	0
g. Rectangular stone arrangements enclosing one or paired standing stones.2 O(i)R/S ns.	66	19	5	110	48	0	0	0	0
h. Other rectangular stone arrangements. 2 O(i) ns.						8	4	42	x
i. Stone arrangements over grave with one or paired standing stones.2 O(ii)R/Sns.	47	7	0		0	0	0	0	0

j. Other stone arrangements covering grave. 2 O(ii) ns.	77	7	4	|	0	0	0	6	x
k. Isolated masonry staff-like *nisan*. 1T (vi).	0	0	0	0	0	0	0	0	1
l.Slabbed masonry marker with a masonry staff-like *nisan* under shelter.1BPT(vi) ns/7Y.	0	0	0	0	0	0	0	0	1
m. Slabbed masonry marker enclosing rectangular stone arrangement and two large headstones. 1BP 2O(i) ns 2R.	0	0	0	0	1	0	0	0	0
n. Slabbed masonry markers. 1BP ns.	6	0	0	0	0	0	0	0	0
o. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	5	0	0	0	10	0
p. Small masonry case marker enclosing single headstone. 1EP 2R ns.	0	1	0	0	0	0	0	0	0
q. Ridge-topped masonry case enclosing two simple cement *nisan*. 1IP 5U(i) ns.	0	0	0	2	0	0	0	0	0
r.Arrangement of loose bricks covering grave. 3 O(ii) ns.	0	0	0	1	0	0	0	0	0
s.Painted carved wooden *nisan* under carved wooden shelter with tin roof inside corral of arranged stones. 7T(vi)d:7(d)/9Y;2Z.	0	0	0	1 (Jerak Lompo)	0	0	0	0	0

TABLE F-7B. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

		1.Makam Karaeng Tassili (G.48.2)	2.Makam Ganrang (G.49.11)		3.Makam Sawagi (G.51.5)	--- Paccellekang Lama --- 4.Makam Paccel-lekang (G.57.1)	5.Unnamed graveyard (G.57.5)	6.Unnamed graveyard (G.57.6)	-- Pabundukang Tua -- 7.Makam Pabun-dukang (G.58.2)	8.Other graves (G.58.3,5 8;sawah)
			Jawa North body	South extension						
t. Raised earth feature with rectangular stone arrangement enclosing peg *nisan*, one of wood and one of masonry. 8P/2O(i) 1/7U(v) ns: 7/9Y.	1	0	0		0	0	0	0	0	0
u. Other wooden *nisan*. 7 T/U.	x	2	0		1	6	0	0	0	1
v. Brick sepulchres. 3Q.	1	0	0		4	0	0	0	0	0
w. Brick marker with simple, cement *nisan*. 3P 5N(i) ns.	0	0	0		0	0	0	0	3	0
x. Brick marker covered with old cement. 3/4P ns.	0	1	0		2	0	0	0	0	0
y. Other old cement stepped box markers with simple *nisan*. 4KP N(i) ns.	20	0	0		22	9	0	0	32	0
z. New cement stepped boxes with simple *nisan*.5KPN(i)ns.	19	6	1		17	26	0	0	6	0
aa.Raised earth feature.8Pns.	-	1	0		0	0	0	0	0	0

1b. Karaeng Tassili and his wife. 1f. Daeng Tallo. 1t. Under same shelter with Daeng Tallo.

1 and 2. Probably further examples, beyond those accounted for here, hidden among the regrowth.

3q. One of these, ascribed to Daeng Sekre, is reportedly the oldest grave here, but does not look particularly old.

4e and 5e. Only the due east-west example is counted here, although five others were closer to an east-west than to a north-south orientation.

4m. Reportedly the oldest grave here, ascribed to an unknown karaeng (Photo 10-18).

8u. Paired metre-high posts under a wooden shelter. 7U(vi) 7Y ns.

TABLE F-7C. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

				----- Balang Sari/Pattiro Tua (Gowa 63) -----				
	1. Lamuru (G.46.3)	2. Makam Tua Lamuru (G.47)	3. Bonto Sunggu (G.55.11)	4. Makam Pallapa Barambang (G.63.3)	5. Makam Pattiro (around zone 12)	6. Northeast graves (near zone 6)	7. North graves (G.63.15)	8. North-west graves (G.63.7)
a. East-west rectangle of arranged stones covering grave. 2 O(ii) ew.	0	0	0	1	0	0	0	0
b. Other stone arrangements covering grave. 2 O(ii) ns.	0	4	0	0	0	0	0	0
c. East-west rectangles of arranged stones. 2 O(i) ew.	0	0	0	0	2	0	0	0
d. Simple rectangles of arranged stones. 2 O(i) ns.	2	7	5	0	7	0	0	12
e. Rectangles of arranged stones enclosing standing stones. 2 O(i) S ns.	0	0	0	0	56	0	0	1

TABLE F-7C. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

				Balang Sari/Pattiro Tua (Gowa 63)				
	1. Lamuru (G.46.3)	2. Makam Tua Lamuru (G.47)	3. Bonto Sunggu (G.55.11)	4. Makam Pallapa Barambang (G.63.3)	5. Makam Pattiro (around zone 12)	6. Northeast graves (near zone 6)	7. North graves (G.63.15)	8. North-west graves (G.63.7)
f. Arranged stone rectangles enclosing simple masonry *nisan*. 2 O(i) 1T/U(i) ns.	0	1	0	0	3	0	0	12
g. Arranged stone rectangles enclosing standing stone and wooden *nisan*. 2 O(i)S/7T ns.	0	0	0	0	9	0	0	0
h. Arranged stone rectangles enclosing wooden *nisan*. 2 O(i) 7T/U ns.	0	0	0	0	2	0	0	0
i.2R/2 O(i) 1U(i) ns/ 2p: 7/9Y: 3X(ix).	0	0	0	1 (2 graves)	0	0	0	0
j. Arranged stone rectangles inside modern cement sepulchre. 2 O(i) ns/5Q.	0	1 (2 graves)	0	0	0	0	0	0
k.Arranged rectangle of stone and bricks enclosing pair of old cement *nisan* with standing stones. 2 O(i) 2S/4U(i) ns/Y.	0	1 (Makam Takba)	0	0	0	0	0	0
l. Square stone arrangement enclosing three east-west isolated or paired standing stones. 2 O(i) 2 R/S ew.	0	1	0	0	0	0	0	0
m.Isolated standing stones.2R.	0	3	0	0	14	0	0	0

n.Paired standing stones.2Sns.	0	1	0	0	7	x	1	3
o.Rectangles of arranged rough masonry cuboid blocks. 10(i)ns.	0	0	0	0	0	x	12	0
p. Isolated simple triangular *nisan* facing east. 1T(i) ew.	0	1 (3Z)	0	0	1	0	0	0
q. Masonry marker with simple *nisan*. 1PN(i) ns.	0	2 (1 "/2R")	0	0	0	0	0	0
r.Sheltered old cement marker with simple *nisan*, enclosing standing headstone.4PN(i)R ns.	0	1 ("Somba Garassik")	0	0	0	0	0	0
s. Old cement marker with simple *nisan*. 4PN(i) ns.	0	8 (1 Y)	0	0	1	0	0	0
t. Modern cement marker enclosing standing stones. 5P 2S ns.	0	2	1	0	0	0	0	0
u. Other modern cement. 5Pns.	2	4	0	0	22	0	0	0
v. Wooden *nisan*. 7T/U ns.	0	5 (1 "7Z")	0	0	2	0	0	0
w. Modern masonry marker, painted. 1 P ns/p.	0	1	0	0	0	0	0	0

1d and 1u. Family of our informant in Lamuru; grave types respectively dated to middle 1960s and late 1970s.

4i. Makam Parappa Barambang. Large stone inside one of two arranged stone rectangles (the wife's) which enclose roughly masoned triangular *nisan*, surrounding by platform of laid stones, protected by tomb with modern brick walls and tin roof supported by a wooden frame attached to the inside walls.

5p. Actually on the road to the northwest of Makam Pattiro.

TABLE F-7D. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	1.Makam Moncong-Moncong (G.56.1)	2.Makam Bangkala Tua (G.65.2)	3.Makam Bangkala Baru (G.65.3)	4.Makam Biring Balang (G.64.4)	5.Makam Bado-Bado Tua (G.68.3)	6.Makam Parang Bambe (G.68.4)	7.Kg Jeknek Madinging (G.73)	8.Man-ggala Tua (U.17)	9.Makam Patadang Toa (G.81)	10.Makam Tua Embung (G.94)
a. Brick and cement box markers with simple *nisan*, in brick house-like tomb.	2	0	0	0	0	0	0	0	0	0
b. Standing stone at north inside masonry box marker with spiky triangular *nisan*; within cement tomb with tin roof. 1CPN(ii)2R; 5/7/9P X(viii)	0	0	0	0	0	0	2	0	0	0
c. Brick tomb with cement floor and tin roof (grave undescribed).3/5/9X(viii).	0	0	0	0	0	0	0	0	1	0
d. Rectangular stone arrangement enclosing staff-like *nisan*, within bamboo shelter. 2 O(i) T(vi) ns/7Y.	0	0	0	0	0	0	0	0	1	0
e. Rectangular stone arrangements enclosing standing stones. 2 O(i,ii) R/S ns.	100 (1 "7Z")	0	0	8	|	11	0	| x |	x	x
f.Other rectangular stone arrangements.2 O(i,ii)ns.	97	0	8	18	19 |	7	0	|	x	x
g. Isolated standing stones. 2R.	0	0	1	5	|	0	0	0	?	?
h. Paired standing stones. 2S ns.	0	0	0	0	0	0	0	x	?	?

i. Rectangular arrangements of masonry slabs and cuboid blocks.10(i)ns.	0	127	0	0	0	0	0	0	0	0
j. Slabbed masonry markers. 1BP ns.	0	12	0	5	0	3	0	0	x	?
k.Rectangular arrangements of masonry blocks with simple triangular nisan. 1BP N(i) ns.	0	7	0	3	0	4	0	0	x	?
l.Masonry box markers with simple nisan. 1CPN(i) ns.	0	3	4		0		0	x	x	x
m. Masonry box markers with spiky triangular nisan. 1CPN(ii) ns.	0	0	0	0	0	0	0	0	0	2
n. Masonry box markers with tablet-like nisan. 1CPN(v) ns.	0	0	0	0	0	0	0	0	0	2
o. Old cement case marker. 4EP ns.	0	0	1	0	0	0	0	0	0	?
p. Old cement box markers with simple nisan. 4CPN(i)ns.	14	0	1	10	0	6	0	0	0	x
q. Modern cement markers. 5P ns.	28	0	2	2	0	16	0	0	0	x
r. Wooden nisan. 7T/U ns.	5	0	1	0	0	0	0	0	0	x

1a. The graves of associated with Moncong-Moncong's former boss. Full description of his grave: peg-like masonry nisan with grooved top and surrounding stones enclosed at north of stone arrangement within brick-and-mortar box marker with cement top surfaces and simple cement nisan, surrounded by platform of bricks arranged flat, inside brick tomb enclosing wooden frame supporting tin roof. 2R/1T(vi,d) 3/5GP 5N(i) 3p ns: 3/7/9Y. Accompanying grave lacks headstone, i.e. 3/5GP 5N(i) 3p ns: 3/7/9Y.

2i. Some of these comprise both inner and outer arranged rectangles.

7b. Makam Karaeng Jeknek Madinging. 9c. Makam Karaeng Patadang.

TABLE F-7E. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.) - MONCONGLOE LAPPARA (MAROS 5)

	1. South group, zone 5	2. Other graves, zone 5	3. Graves west of zone 5	4. Zone 38	5. Zone 21	6. Graves west of zone 21	7. Zone 42	8. South of zone 24
a. Octagonal mosque-like tomb. X(vi).	0	1	0	0	0	0	0	0
b. Paired peg-like masonry *nisan* inside modern cement box markers with crenulated *nisan*, under new cement shelter with tin roof and platform of large bricks. 5CN(ii)P 1U(v) ns: 3p: 5/9 Y.	0	1 (2 graves)	0	0	0	0	0	0
c. Paired peg-like masonry *nisan* circumscribed with cord marks, inside modern cement box marker with stepped *nisan*, under new cement shelter with tin roof and cobble platform. 5CN(i)P 1U(iv,d) ns: 1p: 5/9Y.	0	1	0	0	0	0	0	0
d. Paired peg-like masonry *nisan* in wooden shelter with tin roof. 1U(v) ns: 7/9Y.	0	0	0	0	0	1	0	0
e. Masonry stepped box markers with paired knobbly triangular *nisan*. 1 KPN(ii) ns.	7	0	0	0	0	0	0	0
f. Masonry box markers with wavey triangular *nisan*.1 C/GPN (ii) ns.	4	0	0	0	0	0	0	1
g. Masonry box markers with simple *nisan*. 1 CPN(i) ns.	0	5	48	0	0	1	0	10

h. Masonry box marker surrounded by rectangular arrangement of rough masonry blocks. 1 O(i)CP ns.	1	0	0	0	0	0	0	0
i.Other masonry box markers.1CPns.	5	0	0	0	0	0	0	0
j. Masonry slab-sided marker with simple *nisan*.1 DPN(i) ns.	1	0	0	1	0	0	0	0
k.Masonry slab-sided marker.1DPns.	5	0	0	0	1	4	0	6
l. Masonry slabbed markers with peg-like *nisan*. 1BPN(v) ns.	6	9	1	0	0	0	0	5
m. Masonry slabbed marker.1BP ns.	0	3	0	0	0	0	0	0
n. Isolated masonry tablet *nisan*. 1T(v)ns.	1	0	0	0	0	0	0	1
p. Paired masonry *nisan*. 1Uns.	0	0	0	0	0	0	0	1
q. Rectangles of arranged stones and masonry slabs on side. 1DP/2O(i) ns.	4	0	0	0	0	0	0	0
r. Rectangular stone arrangements. 2 O(i) ns.	0	14	0	0	3	10	7	6
s. Stone arrangment enclosing standing stones. 2 O(ii) R ns.	0	1	0	0	0		0	0
t. Stone piles. 2 O(ii) ns.	1	0	0	4	0		0	0
u. Isolated standing stone. 2R.	0	2	1		0		0	1

TABLE F-7E. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.) - MONCONGLOE LAPPARA (MAROS 5)

	1. South group, zone 5	2. Other graves, zone 5	3. Graves west of zone 5	4. Zone 38	5. Zone 21	6. Graves west of zone 21	7. Zone 42	8. South of zone 24
v. Old cement marker enclosing paired standing stones. 4P 2S ns.	0	2	1	0	0	0	0	0
w. Old cement sepulchre topped by cement box marker with stepped *nisan*. 4Q 4CPN(i) ns.	0	0	1	0	0	0	0	0
x. Marker of old cement over bricks with simple *nisan* of new cement. 3/4P 5N(i) ns.	0	0	2	0	0	0	0	1
y. Old cement marker with simple *nisan*. 4P N(i) ns.	0	0	0	0	0	0	0	1
z.Modern cement markers.5PN(i)ns.	0	7 (3 "7Z")	3	0	0	0	0	17
aa. Raised earth feature. 8 ns.	0	0	1	0	0	0	0	1
bb. Wooden *nisan*. 7T/U.	0	0	(7U/8 ns)	0	0	0	0	3

1e. "Elite graves" as shown on site map (Figure 10-28). One case is also T(iv).

1f. These fall in a straight line due east of the "elite graves".

2a. Makam Karaeng Moncongloe. Contents not inspected as tomb is kept under lock and key.

6. The cemetery is heavily overgrown and further marked graves are probably present.

TABLE F-7F. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	Manyempang Toa			-- Makam Diccekang (M.6) --			
	1. North graveyard (M.3.4)	2. South graveyard (M.3.1)	3. Makam Balang Patti (M.4)	4. West graveyard	5. Central graveyard	6. East graveyard	7. Moncong-loe Bulu (M.5.2)
a. East-west box marker made of positioned masonry slabs. 1CP ew.	1	0	0	0	0	0	0
b. Masonry box markers with paired spiky or undulating triangular *nisan*. 1 CPN(ii) ns.	14	3	6	0	1	0	0
c. Masonry box marker with paired simple *nisan* enclosing paired sceptre-like *nisan*. 1CPN(i)U(iv) ns.	1	0	0	0	0	0	0
d. Masonry box markers with simple *nisan*. 1CPN(i) ns.	21	2	26	1	5	0	0
e.Stepped masonry box marker enclosing paired standing stones. 1KP 2S ns.	1	0	0	0	0	0	0
f. Stepped masonry box marker with simple *nisan*. 1 KPN(i) ns.	0	1	0	0	0	0	0
g. Other masonry box markers, 1CP ns.	0	11 (7*)	5*	0	0	0	0
h. Masonry slab-sided marker with simple *nisan*. 1DPN(i) ns.	1*	0	0	0	0	0	0
i. Masonry slab-sided marker enclosing standing stone at south. 1DP 2R ns.	1	0	0	0	1	0	0
j. Masonry slab-sided marker. 1DP ns.	9	10 (1*)	0	0	0	0	0

TABLE F-7F. CEMETERIES, CHAPTER 10 OF MAIN TEXT (CONT.)

	Manyempang Toa		-- Makam Diccekang (M.6) --				
	1. North graveyard (M.3.4)	2. South graveyard (M.3.1)	3. Makam Balang Patti (M.4)	4. West graveyard	5. Central graveyard	6. East graveyard	7. Moncong-loe Bulu (M.5.2)
k. Slabbed masonry markers 1BP ns.	12 (10*)	2	45	0	1*	0	0
l. Masonry case made from single block. 1EP ns.	2	0	0	0	0	0	0
m. Stones and masonry blocks arranged into a rectangle. 1/2 O(i) ns.	2	2	0	2*	1	0	0
n. Masonry box marker with simple *nisan*, enclosed by rectangular stone arrangement. 2 O(i) 1CPN(i) ns.	0	0	0	0	1	0	0
o. Paired standing stones enclosed by rectangular stone arrangement.2O(i)Sns.	1	2		7	26	0	x
p. Rectangular stone arrangements. 2 O(i) ns.	19 (1*)	3	12	16	52 (3*)	5	x
q. Stone splatter. 2 O(ii).	0	1		0	0	0	0
r. Isolated standing stones. 2R ns.	4 (2*)	1*		0	0	1	0
s. Paired standing stones. 2S ns.	0	0	0	0	0	0	x
t. Paired standing stones inside old cement box marker with simple *nisan*, in shelter with cemented-over brick 4CPN(i) 2S ns: 3/4/7/9 Y.	1	0	0	0	0	0	0

u. North standing stone inside old cement box marker with stepped *nisan*, in shelter with wooden frame, tin walls, wooden frame and tin roof. roof and cemented-over brick floor. 4CPN(i) 2S ns: 7/9 Y: 3/4p.	1	0	1	0	0	0	0
v. Stacked bricks. 3 O(ii) ns.	0	0	0	0	1	0	0
w. Modern cement. 5P ns.	6	0	7	1	20	0	0
x. Wooden *nisan*. 7T/U.	0	0	7	3	3	3	0
y. Raised earth feature in bamboo corral. 8P 7Z ns.	0	0	0	0	2	0	0

*. Designates cases recorded as made from limestone.

2b. One of these has the spiky *nisan* only at the north.

3u. Actually, the manufacture of the shelter is undescribed by my notes, but the style of marked grave fits the description.

4w. Bears the date 1978.

5k and 5p. *Nenek moyang* graves, side-by-side in a shelter with walls of old cement and bricks, wooden frame and corrugated iron roof (3/4/7/9 Y).

5o. Include the marked grave under the *saukang*.

TABLE F-8a. CEMETERIES, CHAPTER 11 OF MAIN TEXT

	Benteng Somba Opu			Kaccia Lama (UP4)			----- Bonto Lakja -----		
	1. G.3.1	2. Near mosque	3.Makam Sarombe (G.3.3)	4. South	5. North	6. Bayoa (UP7)	7.Makam Umum (G.62.1)	8.Makam Nenek moyang (G.62.8)	9. Tuan Said (G.62.12)
a. Cement box marker with tablet *nisan* enclosing stone at north, under tin-roofed cement shelter with brick floor.5CPN(v)R:3/7/9X(viii)ns.	1	0	0	0	0	0	0	0	0
b. Masonry slab-sided sepulchre enclosing paired blocky "tablet" *nisan*. 1HQ U(v) ns.	0	1	0	0	0	0	0	0	0
c. Stone arrangement at north of rectangular arrangement of bricks under tin shelter on a brick platform. 2R 3O(i) ns/9Y/3p.	0	0	0	1	0	0	0	0	0
d.Standing stone at north of casetop silhouette within brick arrangement under bamboo shelter on a brick platform. 2R 3A/O(ii) ns/7Y/3p.	0	0	0	1	0	0	0	0	1 (Tuan Said)
e. Bas-relief incised slab-sided marker with carved crenulated *nisan* enclosing paired standing stones. 1D(d)N(ii,d)P 1S; 3p ns.	0	0	0	1	0	0	0	0	0
f. Cement stepped box-marker with winged *nisan* enclosing opposed handle-shaped and crenulated masonry *nisan*. 5KN(i)P 1U(ii[d],iii[d])/3p ns.	0	0	0	1	0	0	0	0	0
g. Paired masonry staff-like *nisan*. 1U(v)/3p ns.	0	0	0	1	0	0	0	0	0
h. Masonry slabbed markers. 1BP ns.	0	0	0	1 (3p)	?	0	0	0	1
i. Masonry case markers. 1EP ns.	0	0	0	?	x	0	0	0	6 (4 are 3p)

j. Single stones at north or south on a brick platform. 2R ns/3p.	0	0	0	0	0	0	0	5	0
k. Masonry box markers. 1CP ns.	0	0	0	?	x	0	0	0	1
l. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	x	x	0	30	4	21
m. Paired carved masonry staff-like *nisan*. 1U(v,d) ns.	0	0	0	0	0	0	1	0	0
n. Paired standing stones. 2S ns.	0	0	0	?	?	0	13	1	0
o. Paired standing stones inside cement markers. 2S 4P ns.	0	0	0	0	0	0	2	0	0
p. Piles of brick. 3O(ii) ns.	0	0	0	?	?	0	4	1	0
q. Cement-plastered brick marker with simple *nisan*. 3/5PN(i) ns.	0	0	0	0	0	0	1	0	0
r. Old cement case marker. 4EP ns.	0	-	0	?	?	0	0	1	0
s. Old cement box markers with simple *nisan*. 4PN(i) ns.	0	-	x	x	x	0	29	17	11
t. New cement box markers with simple *nisan*. 5PN(i) ns.	0	-	x	x	x	0	17	5	1
u. Cement marked graves. 4/5P ns.	0	1	-	-	-	0	-	-	-
v. Paired upright wood *nisan*. 7U ns.	0	0	?	?	?	1	13	13	5

1a and 2b. Marked graves possibly associated with Ralle Dg Paikak and Dg Manarai Kg Mamampang.

4c, e to h. Together at the north of the cemetery on a raised brick terrace (3p).

7m. Reportedly the grave of the *dukun* (medecine-person) and the oldest grave here, but not dated really.

7o. Cement enclosures inscribed with the dates 1949 and 1956.

8j. Makam Pętta Sakga.

9i. The four specimens tagged 3p are on the same brick platform with Tuan Said.

TABLE F-8B. CEMETERIES, CHAPTER 11 OF MAIN TEXT (CONT.)

	1. Benteng Garassik (G.5.16)	2. Bayoa 1 (U.1.22)	3. Paknak-kukang (U.2.4)	4. Makam Kg Papok (U.9.2)	5. Makam Bilaya (G.11.1)	6. Makam Tangaya (U.3.7)	7. Makam Barombong (U.3.2)
a. East-west directed masonry slabbed marker. 1BP ew.	0	1	0	0	0	0	0
b. East-west directed masonry box markers with thickened edges. 1GP ew.	0	2	0	0	0	0	0
c. Tiled cement box marker, enclosing masonry peg-like *nisan* circumscribed with cord mark, in modern cement tomb. 5/6CP 1U(v,d) 5X(viii) ns.	0	0	1	0	0	0	0
d. Tiled cement box marker enclosing arranged stones in modern cement tomb. 5/6C 2R/S 5X(viii) ns.	0	0	1	0	0	0	0
e. Modern cement box marker with wide sloping skirtings enclosing paired masonry peg-like *nisan*, in a bamboo shelter with one tin wall and a tin roof. 5GP 1U(v): 7/9Y ns.	0	0	1	0	0	0	0
f. Old cement (1928) stepped box marker with simple *nisan* enclosing wooden staff *nisan* on brick platform under tin shelter. 4GN(i)P 7T(v,d) 9Y/3p ns.	0	0	0	1	0	0	0
g. Old cement (1928) stepped box marker with simple *nisan* enclosing wood sceptre *nisan*, but excluding wooden handle-shaped *nisan*, on brick platform under tin shelter.4GN(i)P 7U(iii,iv,d) 9Y/3p ns.	0	0	0	1	0	0	0
h. Masonry box marker with simple *nisan* enclosing stone at north, under skeletal wooden shelter with tin roof. 1CN(i)P 2R ns: 7/9Y.	1	0	0	0	0	0	0

i. Paired stones enclosed by old cement case marker with simple *nisan*, enclosed by platform of arranged bricks, enclosed by brick and cement corral, under skeletal wooden shelter with tin roof. 4EN(i)P 2S ns:3p:3/4Z:7/9Y.	1	0	0	0	0	0	0
j. Masonry sceptre-like *nisan* in stone arrangement on brick platform under shelter with cement-plastered brick footings, bamboo frame and tin roof. 2 O(i) T(iv) 3p 3/4/7/9Y ns.	0	0	0	0	1	0	0
k. Cement stepped box marker with wavey *nisan* enclosing standing stone at north, under thatch shelter with tin roof. (Makam Salekowa). 5KN(i)P 2R 7/9Y ns.	0	0	0	0	0	0	1
l. Masonry case markers. 1EP ns.	0	0	0	0	x	0	0
m. Masonry case markers with crenulated *nisan*. 1EP N(ii) ns.	0	0	0	0	x	0	0
n. Masonry box marker with crenulated *nisan*. 1CN(ii)P ns.	0	0	0	0	0	0	1
o. Marker enclosing masonry peg *nisan*. P 1N(v) ns.	0	0	0	0	1	0	0
p. Rectangular arrangements of bricks. 3 O(i) ns.	0	x	?	0	1	0	?
q. Cement markers with simple *nisan*. 4/5P N(i) ns.	0	x	x	0	x	x	x

3c and 3d: the marked graves of the "man from London" and his wife, respectively. 3e: the grave of the former "owner" of unremembered name.

TABLE F-8c. CEMETERIES, CHAPTER 11 OF MAIN TEXT (CONT.)

	1.Makam Bontoa (UP26)	2.Aengtoa (T.2)	3.Karama (T.34)	4.Jonggoa Batu-Batu (T.5)	5.Summanak (T.33)	Pakkala Toa 6.Barat (T.4.5)	Pakkala Toa 7.Timur (T.4.1)
a. Paired standing stones oriented east-west. 2S ew.	0	0	0	1	0	0	1
b. Masonry box marker oriented east-west. 1CP ew.	0	0	0	0	0	1	0
c. Masonry stepped box with simple *nisan* enclosing standing stone, in bamboo corral. 1KN(i)P 2R 7Z ns.	1	0	0	0	0	0	0
d. Masonry box marker with simple *nisan* enclosing standing stone, skirted by slabs. 1GN(i)P 2R ns.	1	0	0	0	0	0	0
e. Other masonry box markers with simple *nisan*. 1CN(i)P ns.	x	x	0	x	x	0	0
f. Masonry stepped box markers lacking *nisan*. 1KP ns.	?	?	x	x	x	0	0
g. Other masonry box markers lacking *nisan*. 1CP ns.	?	?	x	x	?	x	0
h. Masonry slabbed markers lacking *nisan*. 1BP ns.	?	x	x	x	x	x	0
i. Sceptre-like *nisan*. 1T/U (iv).	1	?	0	0	?	0	0
j. Isolated and paired simple masonry *nisan*. 1T/U(i) ns.	x	x	?	?	x	0	0
k. Masonry slabbed marker with some arranged bricks. 1C/3O P ns.	0	0	0	0	0	x	0
l. Brick sepulchre beneath wooden shelter with tin roof. 3Q 7/9Y ns.	0	1	0	0	0	0	0
m.Modern and cement brick corral.3/5Z.	0	0	0	1	0	0	0

n. Cement markers with simple *nisan*. 4/5P N(i) ns.	x	x	x	x	x	0	0
o. Modern cement box markers with simple *nisan* inside bamboo picket corral. 5CN(i)P 7Z ns.	0	x	0	0	0	0	0
p. Wooden *nisan*. 7N(i) ns.	?	?	?	x	0	x	0

TABLE F-9. OTHER CEMETERIES, BENTENG TALLOK (CHAPTER 12)

	1. Makam Tallok Lama	2. Makam Takbakka	3. Makam Mangara Bombang	---- Makam Bunting Berua ---- 4. West	5. Central	6. Bastion	7.East
a. Box marker of masonry blocks enclosing masonry dollop-shaped *nisan*, under tin shelter. 1BPN(vii) ns 7/9Y.	1	0	0	0	0	0	0
b. Slab-sided masonry marker with crenulated *nisan* enclosing handle-shaped masonry *nisan*, under wood and tin shelter with platform of masonry blocks. 1DPN(ii) 1T(iii) ns 7/9Y 1p.	0	1 (Makam Takbakka)	0	0	0	0	0
c. Masonry slab-sided markers. 1DP ns.	0	5	12	5	2	5	0
d. Masonry box markers. 1 CP ns.	0	|	(2 are 7/9Y)	|	|	|	0
e. Stepped masonry cases. 1MP ns.	0	0	0	0	0	2	0
f. Bevelled masonry box marker with coarse simple nisan. 1GPN(i) ns.	0	0	0	0	0	1	0
e. Masonry box markers with crenulated nisan. 1CPN(ii) ns.	0	0	0	0	0	13	1
f. Masonry box markers with simple *nisan*. 1CPN(i) ns.	0	0	0	0	0	6	2
e. Cement marked graves. 4/5 P ns.	0	50	x	10	0	0	0
f. Wooden paired *nisan*. 7 U(i) ns.	0	|	x	|	0	0	0

APPENDIX G. IRON FRAGMENTS, COINS AND STONE ARTEFACTS

This appendix lists the iron fragments, coins and flaked stone artefacts recorded at the Gowa-Tallok sites described in Chapters 6 to 12. The captions to the associated photographs (Photos G-1 to G-12) describe the three stone hatchets, two fragments from polished stone tools, and the hammerstone recorded at the Gowa-Tallok sites, as well as the polished stone adze which was found independently of SSPHAP's survey at a Gowa-Tallok site (Maccinik Sombala). The remaining two polished stone artefacts (a disc with a hole, and two rim fragments from a stone box), the three bronze pieces, two stone pestles and one stone mortar (*lesung batu*) also found at the Gowa-Tallok sites are described in Chapters 6 to 12 or depicted in the associated photographs.

G.1 Iron Fragments

G.1.138.9	Iron fragment (no further described)
G.6.3.1	Modern painted iron fragment
G.29.11.6	Modern iron spike
G.31.1	Iron fragment (no further described)
G.62.4.1	Pierced iron disc (diameter 26.5 mm)
G.64.5	Modern iron fragment
G.67.12	Garden fork tooth fragment
M.2.30.9	Modern iron pot fragment
M.2.33	Two iron fragments (no further described)
U.2.9	Two modern iron fragments
U.22.10	Iron fragment (no further described)
T.2.2.8-9	Iron slag (joining fragments)

G.2 Coins

G.1.108.79	Coin dated 1970
G.30.17	Coin (no further described)

G.48.2.2	Netherlands India coin
G.49.1.5	Copper coin, early 1900s?
G.51.2.6	Netherlands India coin
G.52.1.2	Netherlands India coin dated 1914
G.52.1.3	Copper coin dated 189x (?)
G.68.1	Coin (no further described)
G.72.5	Coin (no further described)
G.74.1.4	Netherlands India coin
M.2.40.1	Coin dated 1952
U.3.5	5 rupiah coin dated 1970
U.14.1	Coin (no further described)
T.2.4.5	Netherlands India coin dated 1819

G.3 Flaked Stone Artefacts

Only a small proportion of the flaked stone artefacts collected during SSPHAP's survey were brought back to Canberra. The rest were drawn in Ujung Pandang by Iwan Sumantri, and students in archaeology Agustiawan, Budianto H., Andi Said Cam, and Alam, all with the Department of Archaeology, Hasanuddin University. I also described the artefacts according to the categories used by Chapman (1981, 1986).

As the records on the artefacts are quite detailed, it is possible to classify them into the categories currently recognised by most Australian archaeologists (e.g. Hiscock, 1989), as I have used myself in consultancies (Bulbeck and Boot, 1990a, 1990b, 1991). Current definitions of artefact measurements, notably the use of flake length to refer to the length along the axis of flake detachment, can also be applied.

The descriptions which follow include the type of stone used. Although there are undoubtedly errors in these determinations, especially as I generally have to rely on my notes made in Ujung Pandang, the broad indications (e.g. fine-grained siliceous) would be reliable, and the range of

stone used would probably also be correctly identified. The colour of the stone is given as the Munsell name of the main colour found on the flaked surfaces. Cortex colours, and colour variations on flaked surfaces, were recorded but are not included here. The presence of cortex on the artefact is indicated by "Yes" in the column headed "Cortex?". In addition, all measurements are given in mm, and the weights are given in grams.

The last column includes additional information on cases of apparent phytolith gloss (cf. Chapman, 1986) or possible usewear; observations of broken artefacts; and some finer classifications than those given under the column "Artefact Type" (e.g. whether a backed blade would also rank as a geometric microlith; and finer divisions among the retouched flakes).

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.1.21.1	Red	Chert	Blade Core	40	19	16	12	No	
G.1.44.45	Very Dark Grey	Agate	Core	29	25	22	19	Yes	
G.1.101.19	Light Brownish Grey	Chert	Bipolar Flake	24	21	8	4	No	
G.1.107.1	Pink	Chert	Flaked Piece	16	11	11	2	Yes	Chunk
G.1.107.2	Red	Jasper	Flake	17	13	3.5	1	Yes	
U.10.114.2	Dark Reddish Brown	Chert	Core	55	54	39	106	Yes	
U.10.114.3	Very Dusky Red	Obsidian	Core	32	14	12	6	No	
G.1.181.4	Reddish Brown	Chert	Flaked Pebble	41	41	20	26	Yes	
G.5.4.1	Redish Yellow	Chert	Flaked Piece	61	32.5	26	44	Yes	Strike-a-light
G.5.4.2	Red	Chert	Flake	31	21.5	7	6	Yes	
G.5.5.1	Light Grey	Chalcedony	Retouched Flake	40	35	11	19	No	
G.5.6.88	Pale Red	Chert	Retouched Flake	21	18	7	3	No	
G.5.9.2	Black	Chert	Flake	19	25	5	2	No	
G.25.1.1	White	Flint	Flake	72	38	16		Yes	
G.25.1.2	White	Flint	Maros Point	28	16	5		No	
G.25.1.3	White	Flint	Flaked Piece	24	18	6		No	
G.25.1.4	White	Flint	Flake	46	25	7		Yes	
G.25.1.5	White	Flint	Blade	36	13	6		Yes	Retouched?
G.25.1.6	White	Flint	Retouched Flake	46	24	12		No	
G.25.1.7	White	Flint	Retouched Flake	33	18	6		No	
G.25.1.8	White	Flint	Blade	39	11	9		No	
G.25.1.9	White	Flint	Flake	23	21	8		Yes	Snapped
G.25.1.10	White	Flint	Retouched Flake	30	19	9		No	Fine-edged Scraper
G.25.1.11	White	Flint	Flake	33	41	7		Yes	
G.25.1.12	White	Flint	Blade Core	38	27	9		Yes	
G.25.1.13	White	Flint	Blade	27	13	3	1	No	Broken
G.25.1.14	White	Flint	Blade	29	12	5		Yes	
G.25.1.15	White	Flint	Backed Blade	20	10	3	1	No	Geometric Microlith
G.25.1.16	Light Grey	Flint	Blade	22	10.5	4	1	Yes	
G.25.1.17	White	Flint	Bipolar Flake	19	16	6		No	
G.25.1.18	White	Flint	Flake	19	17	6		No	Snapped
G.25.1.19	White	Flint	Blade	44	21	11.5	10	Yes	
G.25.1.20	White	Flint	Retouched Flake	25	29	9		No	
G.25.1.21	White	Flint	Flake	45	29	8	10	Yes	
G.25.1.22	Pinkish White	Flint	Flake	17	17	3.5	1	No	
G.25.1.23	White	Flint	Blade	30	12	5	2	No	Bipolar
G.25.1.24	White	Flint	Flaked Piece	34	34	10		No	
G.25.1.25	White	Flint	Core	32	23	12		Yes	
G.25.1.26	White	Flint	Blade	39	15	11		Yes	
G.25.1.27	White	Flint	Flake	22	27	6		No	
G.25.1.28	White	Flint	Flake	26	20	6		No	
G.25.1.29	White	Flint	Retouched Flake	25	35	7		Yes	
G.25.1.30	White	Flint	Flake	26	19	5		No	
G.25.1.31	White	Flint	Flake	25	34	9	7	Yes	
G.25.1.32	White	Flint	Bipolar Flake	17	10	6	1	No	
G.25.1.37	White	Flint	Blade	20	11	4	1	No	Snapped
G.25.1.34	White	Flint	Retouched Flake	32.5	19	5	2	Yes	Point
G.25.1.35	White	Flint	Flake	22	23	4		Yes	
G.25.1.36	White	Flint	Flake	23	27	5	3	Yes	Snapped
G.25.1.33	White	Flint	Flaked Piece	28	20	7		Yes	
G.25.1.38	White	Flint	Flake	18	25	5		Yes	
G.25.1.39	Light Grey	Flint	Flake	19	14	3	1	No	Snapped
G.25.1.40	White	Flint	Flaked Piece	21	16	5		No	
G.25.1.41	White	Flint	Flake	16	23	6		No	
G.25.1.42	White	Flint	Flake	18	19	5		No	
G.25.1.43	White	Flint	Flake	24	18	4		Yes	
G.25.1.44	White	Flint	Flake	13	13	3.5	1	No	
G.25.1.45	White	Flint	Flake	13	21	5		No	
G.25.1.46	White	Flint	Flake	18	13	5		Yes	

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.25.1.47	White	Flint	Flake	11	17	4		Yes	Snapped
G.25.1.48	White	Flint	Blade	20	10	4		Yes	
G.25.1.49	White	Flint	Flake	13	16	3		Yes	
G.25.1.50	White	Flint	Flake	15	21	9	2	No	Usewear?
G.25.1.51	Pinkish White	Flint	Retouched Flake	16	21	4	1	No	Thumbnail Scraper
G.25.1.52	White	Flint	Flake	10	15	2		No	
G.25.1.53	Pinkish White	Flint	Maros Point	26	15	5	2	No	Unfinished
G.25.1.54	White	Flint	Flake	22	32	6.5	4	Yes	
G.25.1.55	White	Flint	Flake	11	17	5		Yes	
G.25.2.1	White	Flint	Flake	43	34	10		No	
G.25.2.2	White	Flint	Flake	17	15	4		No	
G.25.2.3	White	Flint	Backed Blade	18	9	5		Yes	Geometric Microlith
G.25.2.4	White	Flint	Blade	18	9	4		No	
G.25.2.5	White	Flint	Flake	17	19	12		No	Chunky
G.25.2.6	White	Flint	Flake	30	23	8		Yes	
G.25.2.7	White	Flint	Flake	22	19	6		No	Snapped
G.25.2.8	White	Flint	Retouched Flake	17	18	3		No	
G.25.2.9	White	Flint	Flake	13	18	3		No	
G.25.2.10	White	Flint	Flake	19	20	7		No	
G.25.2.11	White	Flint	Flake	12	9	5		Yes	
G.25.2.12	White	Flint	Retouched Flake	15	13	3		No	Snapped too
G.25.2.13	White	Flint	Flake	11	21	4		No	
G.25.2.14	White	Flint	Flake	11	16	4		No	
G.25.2.15	White	Flint	Core	49	25	18		Yes	
G.25.2.16	White	Flint	Flake	14	9	3		No	Snapped
G.25.2.17	White	Flint	Flaked Piece	11	9	3		Yes	
G.25.2.18	White	Flint	Core	34	34	28	15	Yes	
G.25.2.19	White	Fkint	Core	43	32	23		Yes	
G.25.2.20	White	Flint	Blade	46	22	10		Yes	
G.25.2.21	White	Flint	Blade	38	18.5	14		Yes	
G.25.2.22	White	Flint	Flake	31	31	11		No	
G.25.2.23	White	Flint	Core	24	17	12		Yes	
G.25.2.24	White	Flint	Flake	16	24	3		No	Snapped
G.25.2.25	White	Flint	Blade	32	14	5		Yes	Retouched, Burin?
G.25.2.26	White	Flint	Flake	26	21	6		Yes	Snapped
G.25.2.27	White	Flint	Retouched Flake	50	29	10		Yes	Fine-edged Scraper
G.25.2.28	White	Flint	Flake	40	24	7		No	
G.25.2.29	White	Flint	Flake	18	20	9		No	
G.25.2.30	White	Flint	Flaked Piece	27	18	5		No	
G.25.2.31	White	Flint	Flake	23	29	10		No	
G.25.2.32	White	Flint	Retouched Flake	19	21	5		No	
G.25.2.33	White	Flint	Flake	29	25	6		No	
G.25.2.34	White	Flint	Flake	27	21	4		No	
G.25.2.35	White	Flint	Flake	17	10	9		No	
G.25.2.36	White	Flint	Flaked Piece	24	17	6		No	
G.25.2.37	White	Fkint	Flaked Piece	19	18	8		No	
G.25.2.38	White	Flint	Flake	18	18	6		No	
G.25.2.39	White	Flint	Flake	21	16	5		No	Snapped
G.25.2.40	White	Flint	Flake	13	13	3		No	
G.25.2.41	White	Fossil Bone	Fluted Point	37	22	8	5	No	cf. Maros Point
G.25.2.42	White	Flint	Retouched Flake	22	13	4		No	
G.25.2.43	Pinkish White	Flint	Flake	12	16	4	1	Yes	
G.25.2.44	White Flint	Flake	Flake	12	17	3.5	1	No	
G.25.2.45	Very Pale Brown	Chert	Flake	32	22	8	5	Yes	Snapped Tip
G.25.2.46	White	Flint	Blade	26	13	3	2	No	Snapped
G.25.3.1	White	Flint	Flaked Piece	11	18	5	1	Yes	
G.25.3.2	White	Flint	Flaked Piece	16	14	4	1	No	Snapped
G.25.3.3	Very Pale Brown	Flint	Flake	13.5	17	4	1	No	Snapped
G.25.3.4	White	Flint	Flaked Piece	16	13	4	1	Yes	Retouched

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.25.3.5	White	Flint	Flake	16.5	17	3	1	No	
G.25.3.6	White Flint	Blade	Blade	29	14.5	6	2	No	Retouched; Snapped
G.25.3.7	White	Flint	Flake	24	17	4	3	Yes	
G.25.3.8	Very Pale Brown	Flint	Flake	17	20	5	2	Yes	
G.25.3.9	White	Flint	Flake	20	24	7	4	Yes	
G.25.3.10	Grey	Quartz	Bipolar Flake	16	24.5	7	4	No	
G.25.3.11	White	Flint	Flaked Piece	24	18	7	2	Yes	Truncated
G.25.3.12	White	Flint	Retouched Flake	26	15	5	2	Yes	
G.25.3.13	White	Flint	Retouched Flake	34	28	9.5	6	Yes	Point
G.25.3.14	White	Flint	Flaked Piece	28	17	10	4	Yes	
G.25.4.1	White	Flint	Retouched Flake	14	16	5	1	Yes	Thumbnail Scraper
G.28.1.1	Light Grey	Flint	Retouched Flake	24	13	5	2	No	
G.29.1.1	Light Grey	Banded Chert	Flake	16	22	7	3	No	Usewear?
G.29.6.1	Light Grey	Chert	Flaked Piece	22	15	5	2	No	Retouched; Burin?
G.29.6.2	Pink	Flint	Flake	18	22	9.5	2	Yes	
G.29.6.3	White	Flint	Retouched Flake	16.5	24	6	2	No	
G.29.6.4	Red	Quartzite	Flake	50	57	20	51	Yes	Pebble Flake
G.29.6.5	Redish Brown	Volcanic	Flake	45	51	12	24	Yes	
G.29.7.1	Light Grey	Chalcedony	Blade	32	12	3	2	No	
G.29.7.3	Pinkish Grey	Chalcedony	Flake	15	15	3.5	1	No	Snapped; Usewear?
G.29.7.4	Pinkish Grey	Chert	Flake	24	27	9	8	Yes	
G.29.7.5	Light Grey	Chert	Flake	21	20	10	3	Yes	Usewear?
G.29.8.1	Pinkish Grey	Chert	Flake	15	13	3	1	No	Snapped
G.29.8.2	Light Grey	Chert	Flake	16	13	5	1	Yes	
G.29.8.3	Light Grey	Chalcedony	Flaked Piece	15	11.5	2	1	No	
G.29.8.4	Pinkish Grey	Chalcedony	Flake	27.5	18	5	2	Yes	Usewear?
G.29.8.5	Pinkish Grey	Flint	Flake	13	14	8	2	No	
G.29.8.6	Very Pale Brown	Flint	Core	37	25.5	17.5	11	Yes	
G.29.9.1	Grey	Agate	Retouched Flake	28	19	4	2	No	Point
G.29.9.2	Pinkish Grey	Chalcedony	Flaked Piece	20	19	7	2	Yes	
G.29.10.1	Reddish Yellow	Obsidian	Retouched Flake	37	21.5	7	6	No	Point
G.29.10.2	Pink	Chalcedony	Blade Core	24	13	10	2	No	
G.29.10.3	Light Brownish Grey	Chert	Flake	16.5	21.5	5	2	Yes	
G.29.11.1	Pinkish White	Flint	Flaked Piece	24	14	8	3	No	
G.29.11.2	Pinkish Grey	Chalcedony	Flake	29	25	8	6	Yes	
G.29.11.3	Plae Brown	Chalcedony	Flake	29	21	6	4	Yes	
G.29.11.4	Pink	Flint	Bipolar Flake	22.5	15	7.5	3	Yes	
G.29.11.5	Pinkish Grey	Chalcedony	Blade	44.5	18	6	4	Yes	
G.29.12.1	Pink	Chalcedony	Core	27	19	19	8	Yes	
G.29.13.1	Pinkish White	Flint	Core	25.5	16	15	5	No	
G.29.13.2	Pinkish White	Flint	Flake	24	27	7	5	Yes	
G.29.13.5	Reddish Brown	Volcanic	Flake	34	42	9	13	Yes	Usewear?
G.29.15.1	Pink	Chalcedony	Retouched Flake	33	23	7	5	No	
G.29.16.1	Pink	Flint	Retouched Flake	21	27	10	6	No	Steep-edge scraper
G.29.18.1	Pinkish Grey	Chalcedony	Retouched Flake	28	22	7	3	Yes	
G.29.19.1	Pinkish Grey	Chalcedony	Blade Core	18	15	19	5	Yes	
G.29.20.1	Brown	Quartz	Bipolar Flake	30	16.5	13	14	No	Chunky
G.29.20.2	Light Grey	Variegated Quartz	Flaked Piece	59	40	18	74	No	
G.29.21.3	Dark Grrenish Grey	Volcanic	Flake	24	16	6	2	No	
G.29.22.1	Pinkish White	Chalcedony	Blade	41	15	6.5	4	No	Usewear?
G.29.22.2	Pinkish White	Chalcedony	Retouched Flake	25	13.5	6	2	Yes	
G.29.22.3	Light Grey	Chalcedony	Flake	35	30	7	7	Yes	
G.29.25.1	Pinkish Grey	Chalcedony	Flaked Piece	28	21	8	4	Yes	
G.29.28.1	Pink	Chalcedony	Blade Core	36	18	12	6	Yes	
G.29.31.1	Very Pale Brown	Chalcedony	Flake	15	21.5	4	2	No	Usewear?
G.30.22.1	Pink	Agate	Retouched Flake	30.5	26	9	9	No	Truncated tip
G.40.1.2	Pinkish Grey	Chalcedony	Flake	27.5	19	5	2	Yes	
G.40.3.1	White	Flint	Flake	17	11	5	1	No	
G.40.4.1	Pinkish White	Chalcedony	Flake	25	22	7	4	No	Usewear?

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.40.4.2	Pinkish Grey	Agate	Flake	13	20	8	2	No	
G.40.5.1	Light Grey	Chalcedony	Flake	31.5	22	9	8	No	
G.40.5.2	Light Reddish Brown	Jasper	Retouched Flake	29.5	19	6	3	No	Point with Broken Tip
G.40.6.1	Light Grey	Flint	Flake	21	12	5	1	No	
G.41.1.1	White	Chalcedony	Core	35	31	30	52	Yes	
G.45.5.1	Brownish White	Flint	Flake	20	25	6	3	No	
G.45.6.1	Reddish Brown	Jasper	Flaked Piece	51	29	12	16	Yes	
G.46.3.2	Reddish Brown	Chalcedony	Blade Core	41	28	17	15	Yes	
G.46.4.1	Pink	Chalcedony	Flake	21	31	7.5	6	Yes	
G.46.13.1	Dark Reddish Grey	Chert	Flaked Pebble	77	74	33	200	Yes	
G.46.15.1	White	Chalcedony	Blade	33	16	9.5	4	No	
G.49.3.1	Light Brownish Grey	Chert	Flake	40	33	14	19	No	
G.49.3.2	Dark reddish Brown	Volcanic	Flaked Pebble	56	49	38	118	Yes	
G.50.3.1	Pink	Flint	Core	32	28	20	19	No	
G.50.4.1	Very Pale Brown	Flint	Core	21	17.5	12	3	No	
G.50.4.2	Light Grey	Flint	Core	28	23	17	9	Yes	
G.50.4.3	Pinkish White	Flint	Bipolar Flake	21	20.5	13	5	No	
G.50.4.4	Pinkish Grey	Chalcedony	Flake	14	24	10	2	Yes	
G.50.4.8	Pinkish Grey	Chalcedony	Bipolar Core	21	16	34	9	Yes	
G.50.6.1	Pink	Chalcedony	Retouched Flake	36	28	10	8	Yes	
G.50.8.1	Reddish Grey	Jasper	Flake	13	17	3	1	Yes	
G.50.8.2	Pink	Chalcedony	Core	50	43	12	24	No	
G.51.3.1	Yellow	Flint	Flake	22	31	8	4	Yes	
G.52.1.1	Yellow Red	Chert	Retouched Flake	24	18	6	2	No	Point
G.52.5.1	Light Grey	Flint	Core	30	28	14	12	Yes	
G.52.14.1	Light Grey	Flint	Flaked Piece	14	12	4	1	No	
G.53.1.1	Pinkish Grey	Flint	Flake	20	13	6	1	No	
G.53.1.2	Pinkish Grey	Flint	Flaked Piece	31	24	18	8	Yes	
G.53.2.2	Pinkish Grey	Flint	Flaked Piece	22	21	12	5	Yes	
G.53.3.1	Yellowish Red	Jasper	Retouched Flake	29	31	16	22	Yes	Steep-edged Scraper
G.53.4.1	Pink	Flint	Retouched Flake	24.5	15	6	2	No	Point
G.53.4.2	Pink	Chalcedony	Retouched Flake	24	23	6	2	No	Burin?
G.54.1.1	Yellow	Jasper	Flaked Piece	21.5	21	9.5	4	No	Chunk
G.54.1.2	Yellow	Jasper	Flaked Piece	28	27	16	9	No	Chunk
G.54.1.3	Brownish Yellow	Chert	Flake	27	42	9	11	Yes	
G.54.1.4	Red	Jasper	Flaked Piece	25	25	16	9	No	Chunk
G.54.1.5	Light Brown	Chert	Flake	53	33	12.5	25	Yes	Pebble Flake
G.54.1.6	Pink	Flint	Flake	22	23	4	3	No	
G.54.3.1	Pink	Chalcedony	Flake	22	16	4	2	Yes	
G.55.2.1	Pinkish Grey	Flint	Blade	31	14	4	2	No	
G.55.2.2	Light Reddish Brown	Chert	Flake	16	22	11	4	Yes	
G.55.8.1	Pink	Flint	Backed Blade	23	7.5	3.5	1	No	
G.55.9.1	Pink	Chalcedony	Bipolar Core	30	11.5	34	10	Yes	
G.56.0.1	Pink	Flint	Maros Point	21	14	3	1	No	
G.56.5.1	Light Reddish Brown	Quartzite	Flake	61	51	25	92	Yes	Pebble Flake
G.56.6.1	Light Grey	Chalcedony	Flake	45.5	27	7	7	Yes	Phytolith gloss
G.56.12.1	Pink	Quartzite	Flaked Pebble	46.5	33	19.5	31	Yes	
G.56.14.1	Light Grey	Flint	Retouched Flake	18	17	7	2	No	
G.56.14.2	White	Quartz	Flake	18	13	6	1	No	
G.57.6.1	Pink	Chert	Retouched Flake	17	16	6.5	2	No	
G.57.6.2	Pink	Chert	Flake	17	14	4	1	No	
G.57.8.1	Very Pale Brown	Chert	Flake	48	36	21.5	35	Yes	
G.57.8.2	Weak Red	Jasper	Flake	15.5	24	7	2	No	
G.59.1.5	Pink	Flint	Flake	19	23	10.5	6	No	Chunk
G.59.1.6	Very Pale Brown	Flint	Flaked Piece	16	12	7	2	No	Chunk
G.59.1.7	Very Pale Brown	Flint	Flake	15	13	3	1	No	Broken
G.59.1.8	Very Pale Brown	Flint	Backed Blade	27	12	6	2	Yes	
G.59.2.20	Brown	Chert	Flake	29	27	11	8	Yes	
G.59.2.21	Brown	Chert	Core	24.5	14.5	16	7	Yes	Some Bipolar Scars

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.59.2.22	Very Pale Brown	Flint	Flake	15	17	5	1	No	
G.59.2.23	Pinkish White	Flint	Flake	20.5	22	8.5	4	No	Truncated
G.59.2.25	Very Pale Brown	Flint	Flake	10	13	4	1	No	
G.59.2.26	Pinkish White	Flint	Flake	13	16	4.5	1	No	
G.59.2.27	Reddish Yellow	Chert	Retouched Flake	17	18	5	1	No	Thumbnail Scraper
G.59.2.28	Yellow	Chert	Flaked Piece	36	28	12	9	No	
G.59.2.29	Pink	Chalcedony	Flake	11	18	3	1	No	Snapped
G.59.2.30	Very Pale Brown	Flint	Flake	10	12	5	1	No	
G.59.2.31	Very Pale Brown	Flint	Flake	21	19	6	2	No	
G.59.2.32	Weak Red	Chert	Flaked Pebble	43	31	12.5	18	Yes	
G.59.2.33	Very Pale Brown	Flint	Retouched Flake	16	25	5	2	No	Burin?
G.59.2.34	Weak Red	Chert	Retouched Flake	14	26.5	7	3	Yes	Point
G.59.2.35	Reddish Brown	Chert	Flaked Piece	15	14	9	2	Yes	Chunk
G.59.2.36	Very Pale Brown	Flint	Chip	9	7	2	1	No	
G.59.2.38	Very Pale Brown	Flint	Flake	13	18	6	1	No	Broken
G.59.3.1	Very Pale Brown	Flint	Flake	13	15	2	1	No	
G.59.3.2	Very Pale Brown	Flint	Retouched Flake	11	16	3	1	No	
G.59.3.3	White	Flint	Backed Blade	18.5	11	4	1	No	Geometric Microlith
G.59.3.4	Pink	Chalcedony	Retouched Flake	18	16.5	4.5	2	No	Thumbnail Scraper
G.59.3.5	Very Pale Brown	Flint	Flaked Piece	17	13	3	1	No	
G.59.3.6	Brown	Chert	Flake	22	24	6	3	No	
G.59.3.7	Light Grey	Chalcedony	Flake	19	16	8	2	Yes	
G.59.3.8	Very Pale Brown	Flint	Flake	17	12	4	1	No	
G.59.3.9	Very Pale Brown	Chalcedony	Retouched Flake	16	13.5	6.5	2	Yes	Burin?
G.59.3.10	Pinkish Grey	Chalcedony	Flake	18.5	19	4	1	Yes	
G.59.3.11	Very Pale Brown	Flint	Flake	25	27	8	6	Yes	
G.59.3.13	Very Pale Brown	Flint	Flaked Piece	26	11	5	2	No	Retouched Point
G.59.3.14	Reddish Brown	Chert	Flake	28	30	6	6	No	
G.59.3.15	White	Flint	Flake	24.5	16	4	2	No	
G.59.3.16	Pinkish Grey	Chert	Flake	15	17	4	1	Yes	
G.59.3.17	Pink	Flint	Retouched Flake	18	14	3.5	1	No	
G.59.3.18	Pinkish grey	Chert	Flake	20	15.5	5	2	No	
G.59.3.19	Light Grey	Chert	Flaked Piece	19	11	4	1	No	
G.59.3.20	Pink	Flint	Flaked Pebble	40	23	13	12	Yes	
G.59.3.21	Very Pale Brown	Chert	Flake	40	31	15	16	No	
G.59.3.22	Very Pale Brown	Chert	Flake	50	35	12	18	Yes	
G.59.3.25	Reddish Brown	Chert	Flake	32	19	6	3	No	
G.59.3.26	Very Pale Brown	Chert	Bipolar Flake	17	11	6	1	Yes	
G.59.3.27	Pinkish Grey	Chalcedony	Bipolar Flake	12	12	4	1	No	
G.59.3.28	Very Pale Brown	Flint	Flake	10	11	1	1	No	
G.59.4.4	Very Pale Brown	Flint	Flaked Pebble	43	40	18	19	Yes	
G.59.4.5	Pink	Flint	Flake	15	15	2	1	No	
G.59.4.6	White	Flint	Chip	8.5	8	1.5	1	No	Broken from a Flake
G.59.4.9	Pinkish Grey	Chalcedony	Flake	10	11	2.5	1	No	
G.59.5.3	Grey	Chalcedony	Flake	22	12	7	2	Yes	Point
G.63.1.1	Pinkish Grey	Flint	Blade Core	39	13	12	5	Yes	
G.63.1.2	Pink	Flint	Flake	26.5	21.5	7	3	No	
G.63.1.3	Reddish Yellow	Chert	Flake	15	22	6	2	No	
G.63.1.4	Light Grey	Chalcedony	Flake	17	12	8	2	No	
G.63.1.5	Pink	Chert	Core	24	22	13	4	Yes	
G.63.1.6	Pink	Chert	Flake	17	16	4.5	1	No	
G.63.1.7	Pinkish Grey	Agate	Flaked Piece	33.5	25	15	6	Yes	
G.63.1.8	Strong Brown	Chert	Flaked Piece	23	14	10	2	No	
G.63.1.9	Reddish Yellow	Banded Chert	Bipolar Flake	20	27	7.5	3	Yes	
G.63.1.10	Pink	Chert	Flake	13	13	6	1	Yes	
G.63.1.11	Light Brown	Chert	Blade	26	13	5	1	No	
G.63.1.12	Pinkish White	Chert	Flake	17	27	4	2	Yes	
G.63.1.73	Light Reddish Brown	Flint	Core	41	33	19	20	Yes	
G.63.1.74	Pink	Chert	Flake	16	22	6	1	Yes	

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.63.1.75	Pink	Chalcedony	Flaked Piece	20	16	9	2	No	
G.63.1.76	Light Reddish Brown	Chert	Retouched Flake	21	14	8.5	2	No	
G.63.1.77	Pink	Chert	Blade Core	31	17.5	18	9	No	
G.63.1.78	Pink	Chert	Core	32.5	19	12	6	No	
G.63.1.79	Very Pale Brown	Chert	Flake	20	16	4.5	1	No	
G.63.1.80	Pink	Chert	Backed Blade	14	7	2.5	1	No	
G.63.1.81	Light Brown	Flint	Retouched Flake	15	19	5	1	No	Point
G.63.1.82	Very Pale Brown	Chert	Flake	31	17	13	5	Yes	
G.63.1.83	Pink	Chert	Flake	17	11	6	1	Yes	Snapped
G.63.1.84	Very Pale Brown	Chert	Core	26	20	12	6	No	
G.63.1.85	Very Pale Brown	Chert	Flake	18	20	5	2	No	Snapped
G.63.1.86	Very Pale Brown	Flint	Flaked Piece	19	18	10	2	No	
G.63.1.87	Brownish Yellow	Chert	Blade	31	13	5	2	No	Retouched
G.63.1.88	Very Pale Brown	Chert	Flaked Piece	12.5	10	6.5	1	No	
G.63.1.89	Weak Red	Jasper	Bipolar Flake	18	17	11	2	No	
G.63.1.90	Pink	Chert	Flake	23	22	8	4	No	Broken
G.63.1.91	Pink	Agate	Flake	15	14.5	4	1	No	
G.63.1.92	Light Grey	Chert	Backed Blade	21	11	5	1	No	
G.63.1.93	Light Reddish Brown	Chert	Bipolar Flake	16.5	10	4.5	1	No	
G.63.1.94	Pink	Chert	Flake	13	19	5	1	No	
G.63.1.95	Pink	Chert	Flake	10	8	2	1	No	
G.63.1.96	Dark Red	Jasper	Flake	18	25	5	3	No	
G.63.1.97	Pink	Chalcedony	Retouched Flake	20	15	5	1	No	Point
G.63.1.98	Very Pale Brown	Chert	Flake	11	13	5	1	No	
G.63.1.99	Yellowish Red	Volcanic	Flaked Pebble	36	26	17	16	Yes	
G.63.1.100	Pink	Flint	Flake	16	22	5.5	1	No	
G.63.1.101	Pink	Flint	Flake	14	17	7	1	Yes	
G.63.1.102	Weak Red	Jasper	Retouched Flake	28	27	7	4	No	
G.63.1.103	Weak Red	Chert	Flake	17	36	4.5	4	Yes	
G.63.1.104	Reddish Brown	Flint	Flake	21	31	6	2	Yes	
G.63.2.2	Light Olive Brown	Chert	Core	25	23	13	8	No	
G.63.2.3	Light Grey	Quartz	Bipolar Core	21	17	15	6	No	Chunk
G.63.2.4	Pink	Flint	Retouched Flake	17	17	4.5	1	No	
G.63.2.5	Pink	Chert	Core	19	14	23	5	No	
G.63.2.6	Pinkish Grey	Chalcedony	Flake	18	11	4.5	1	No	
G.63.2.7	Pinkish Grey	Chalcedony	Flake	10	16	2	1	No	
G.63.2.8	Light Grey	Flint	Flake	12	13	6.5	1	No	
G.63.3.1	Dark Reddish Brown	Jasper	Flake	12	11	8	1	Yes	
G.63.3.2	Pinkish Grey	Chert	Flake	19	20	6.5	2	No	
G.63.4.1	Black	Jasper	Retouched Flake	22.5	10	7.5	2	Yes	Steep-edged Scraper
G.63.4.2	Reddish Yellow	Chert	Bipolar Flake	16	31	7.5	4	Yes	
G.63.4.3	Light Reddish Brown	Flint	Flake	16	12	4	1	Yes	
G.63.4.4	Pink	Chalcedony	Retouched Flake	14	10	4	1	No	
G.63.8.1	Pinkish White	Flint	Blade Core	16	11	34	5	Yes	
G.63.8.2	Pinkish White	Flint	Flake	26	18	11	3	No	
G.63.8.3	Pink	Flint	Flake	15	27	7	3	No	
G.63.8.4	Pink	Flint	Flake	14	19	5	2	No	Snapped
G.63.8.5	Very Pale Brown	Chert	Flake	19	19	7	2	No	
G.63.8.6	Pink	Flint	Flake	13	10	2	1	No	
G.63.8.7	Very Pale Brown	Flint	Flake	9	18	4.5	1	No	
G.63.8.8	Pink	Flint	Flake	10	15	3	1	Yes	
G.63.8.9	Very Pale Brown	Flint	Flake	13	16	5	1	Yes	Snapped
G.63.8.10	Pink	Flint	Flake	9	14	4	1	Yes	Snapped
G.63.11.1	Pink	Chert	Flake	42	37	14.5	15	No	
G.63.11.2	Reddish Yellow	Chert	Flake	12	16	4	1	Yes	
G.63.11.3	Pink	Chalcedony	Flake	31.5	24	4	3	Yes	Usewear?
G.63.13.1	Pink	Flint	Blade Core	26.5	14	44	13	No	
G.63.13.2	Pink	Chert	Blade Core	26	14	44	13	Yes	
G.63.13.3	Very Pale Brown	Chert	Flake	10	16	4	1	No	

SPECIMEN	COLOUR	STONE TYPE	ARTEFACT TYPE	LENGTH	BREADTH	THICKNESS	WEIGHT	CORTEX?	COMMENTS
G.63.13.4	Reddish Yellow	Chert	Flake	12	19	3	1	Yes	
G.63.14.1	Pinkish White	Chert	Bipolar Flake	27	26	11	6	No	
G.63.14.2	White	Flint	Flake	8	14	4	1	No	
G.63.15.1	Very Pale Brown	Chert	Flake	35	20	7	5	Yes	
G.64.3.1	Dark Grey	Chert	Flake	16	26	5.5	2	Yes	
G.64.3.3	Colourless	Quartz Crys	Bipolar Core	17	11	11	2	No	
G.65.1.1	Reddish Grey	Chalcedony	Blade	50	12	8	6	No	Phytolith Gloss
G.65.1.2	Pinkish White	Flint	Flake	12	17	7	1	No	
G.65.1.3	Pinkish Grey	Chalcedony	Flake	13.5	23	6.5	1	Yes	
G.76.1.1	Very Dusky Red	Jasper	Blade	42	21	12	8	Yes	Usewear?
G.76.1.2	Very Dusky Red	Jasper	Flake	24	22	6	4	No	
G.76.1.3	Dark Red	Jasper	Core	40	40	20	34	Yes	
G.76.1.4	Dusky Red	Jasper	Retouched Flake	19	18	4.5	2	No	
G.76.1.5	Weak Red	Jasper	Flaked Piece	13	11.5	11	1	Yes	
G.76.1.6	Pale Brown	Chalcedony	Flake	19	27	5	4	Yes	
G.76.1.7	Reddish Yellow	Jasper	Flake	16	11	7	2	Yes	
G.90.1.1	White	Flint	Retouched Flake	28	18	4	1	No	Point
G.90.1.2	Light Grey	Flint	Flake	23	16	6	2	No	
G.90.1.3	Very Pale Brown	Flint	Blade	28	13.5	3.5	2	No	
G.90.1.4	White	Flint	Flake	15	22	5	1	No	
G.90.1.5	Very Pale Brown	Flint	Retouched Flake	15.5	14.5	5	1	No	
M.2.1.1	Very Pale Brown	Chalcedony	Flake	12	18	6	1	No	Snapped
M.2.1.2	Light Reddish Brown	Chalcedony	Flaked Piece	22	19	7	4	No	
M.2.6.1	Dark Reddish Grey	Jasper	Flake	21	16	7	2	No	
M.2.7.1	Dark Reddish Brown	Jasper	Flake	31	47	9	14	Yes	
M.2.9.1	Pinkish White	Flint	Flake	27	15	4	2	Yes	Usewear?
M.2.9.2	Reddish Brown	Jasper	Blade Core	46	19	16	16	Yes	
M.2.18.2	Pink	Flint	Flaked Piece	11	10	7	1	Yes	
M.2.24.1	Pinkish Grey	Chalcedony	Flake	29.5	24.5	8	5	Yes	
M.2.24.3	Pinkish White	Flint	Core	38	37	24	34	Yes	Pebble Core
M.2.24.4	White	Flint	Flake	40	25	10	10	No	
M.2.24.5	Very Pale Brown	Flint	Flake	19	23	10	5	Yes	Truncated
M.2.24.6	Pinkish White	Flint	Flake	36	23	6	4	No	
M.2.24.7	White	Flint	Retouched Flake	25	15	6	2	No	
M.2.24.8	White	Flint	Flake	21	22	7	4	No	Usewear?
M.2.24.9	Reddish Brown	Jasper	Flaked Piece	11	10.5	3	1	No	
M.2.24.10	Reddish Yellow	Flint	Flaked Piece	10.5	7	5	1	No	
U.13.3.1	Light Grey	Chalcedony	Core	50.5	39	21	40	Yes	Retouched Scraper
U.13.3.2	Red	Jasper	Flake	18	16	6.5	2	Yes	Broken Tip
U.13.3.3	Light Reddish Brown	Chalcedony	Retouched Flake	19	13	9	1	Yes	Point
U.13.12.1	Red	Jasper	Core	33	28	13	13	No	
U.21.5.1	Pinkish White	Chalcedony	Retouched Flake	19	12.5	7	2	No	Point; Broken Tip
U.22.1.1	Light Grey	Chalcedony	Flake	19.5	13	4	1	No	
U.22.1.2	Pink	Agate	Flake	12.5	8	4	1	No	
U.22.2.1	Pink	Chalcedony	Flake	22	19	5	3	No	
U.22.3.1	Light Grey	Agate	Retouched Flake	26.5	33	6.5	5	No	Truncated
U.22.3.2	Reddish Brown	Jasper	Flake	19	13	4	1	Yes	Snapped
U.22.9.1	Black	Agate	Bipolar Core	20	13	11.5	3	Yes	
U.22.9.2	Grey	Jasper	Flake	9	11.5	3	1	No	

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