International Council for the Exploration of the Sea

C.M.1981/G:3 Demersal Fish Committee

REPORT OF THE NORTH SEA ROUNDFISH WORKING GROUP SPECIAL MEETING ON DATA BASE PROBLEMS

Aberdeen, 11-17 February 1981

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1. Terms of Reference

It was recommended (C.Res.1980/2:6) that "appropriate members of the North Sea Roundfish Working Group should meet in Aberdeen from 11 to 17 February 1981, to complete the revision of their data bases started at the 1980 meeting of the Working Group. The results of this revision should be reported to the assessment meeting of this Working Group scheduled for 24 March to 2 April".

2. Participants

D	W Armstrong	United Kingdom (Scotland)
н	B Becker	Netherlands
Т	Jakobsen	Norway
В	W Jones (Chairman)	United Kingdom (England & Wales)
С	J Kuiter	Netherlands
\mathbf{F}	Lamp	Federal Republic of Germany
С	T Macer	United Kingdom (England & Wales)
Ρ	Sparre	Denmark
G	Wagner	Federal Republic of Germany.

3. Background

The data, on which all the analytical assessments are based, are the age compositions of the catches. Where appropriate, national age compositions are summed for each component of the fishery (human consumption, industrial and discards), these sub-totals, which may be raised to take account of catches by countries for which age compositions are unknown, are then summed to give age compositions as total numbers caught by all countries combined for each stock. These data bases for most stocks extend back to 1960. However, detailed examination of the historic data series has shown that they were not consistent over the whole time period. In particular, improvements in data collection in recent years have resulted in more extensive data becoming available for the industrial fisheries and for discards. Thus, whereas in recent years the age compositions included industrial by-catches and discards, these were not included for all countries in the earlier years, when such data were not available. In addition, it appears that there have been variations in the method of processing the age composition data from year to year.

A start was made last year to revise the catch age composition data for the main stocks. However because of the magnitude of the job and because of the need for consultation between members of the Working Group a special meeting was arranged to complete the job.

4. The Data Bases

Catches of cod, haddock and whiting are divided into three categories: human consumption landings, discards from the human consumption fisheries, and industrial (small mesh) fishery bycatches. The basic data are of numbers caught at each age in each category by each country. The availability of original data varies for the different species/category/country groupings. The earliest data considered by the Group were those for 1960 and, as would be expected, the quantity of data increases with time and the data sets for the more recent years are the most comprehensive.

For the Special Meeting computer facilities and programmes for data handling were kindly made available by Mr D W Armstrong and the Marine Laboratory. The processing of the data consisted of three stages:-

- (i) Original national annual age composition data were input into the computer together with the nominal weight of catch. Each age composition was accompanied by a set of weight-at-age data. The derivations of the original data are indicated in Tables 1-3. In some cases age compositions have been derived from national length compositions converted to age using another country's age/length keys. The computer program required all age compositions to be accompanied by weight-at-age data. These were generally derived from mean length-at-age data converted to weight, but where no original data were available suitable substitute data were input.
- (ii) A listing of the completed sets of original data was made and checked. The sums of products (SOPs) of numbers x average weight calculated during the processing of the data were compared with nominal weights of catches. Either the numbers at age (Scottish data only) or weight-at-age data were adjusted by the ratio SOPs to nominal weight.
- (iii) Within each category annual data were summed and raised to provide estimated total international age compositions for catches of all countries combined. The procedures adopted to allow for catches by countries for which no original age compositions were available are described below.

Raising Procedures

(a) North Sea human consumption landings

The same procedure was adopted for all three species. The available age compositions for sampled countries in each year were summed. The resultant age composition was prorated by the ratio of weight landed by 'other' countries to weight landed by sampled countries. This gave an age composition for 'other' countries which when added to that for all sampled countries gave the total international age composition for human consumption landings.

Alternative ways of making allowance for unsampled countries were discussed by the Group, but the Group was not convinced that any more elaborate procedure would have been more valid than the one described above.

(b) North Sea discards

Sampling of fish discarded can be undertaken only by scientific observers who go to sea and record quantities discarded and measure samples of the discarded fish. Only two countries, Netherlands and Scotland have data from such sampling programmes for years up to 1979, Netherlands from 1968 and Scotland from 1975. In the absence of any other data, and after inspection of the age compositions of the human consumption landings, the Group considered a number of options but concluded that the best approach would be to assume that countries with human consumption fisheries which could not provide discard data were discarding fish with age compositions similar to the reported age compositions and that the quantities discarded would be in the same proportion to human consumption landings as those for countries reporting discards. This procedure was adopted for all three species.

For cod there was no information on discarding during the period 1963-67. Age compositions were therefore estimated from those of consumption landings by assuming that, in each age group, the ratio of numbers discarded to those landed was the same as the mean ratio for years in which samples were available (Table 4). The total weight discarded in each year was estimated by multiplying the estimated numbers by mean weights, the latter being the average values for 1978 and 1979 (the only years for which both Scottish and Netherlands data are available).

(c) North Sea industrial fishery by-catch

Also included in this category for cod and whiting are by-catches taken in the crangonid shrimp fisheries. For cod it was assumed that countries other than the Federal Republic of Germany which have shrimp fisheries (Netherlands excluded) would have by-catches of cod similar to those of the Federal Republic of Germany. The age compositions reported by the Federal Republic of Germany were therefore raised by the factor:

> <u>Weight of shrimp landed by all countries except Netherlands</u> Weight of shrimp landed by Federal Republic of Germany

To give an estimate of the total numbers at each age landed in the international shrimp fishery Netherlands was excluded because estimates for by-catches in the shrimp fishery have been included in their discard data.

By-catch data for cod in the industrial fisheries were available for Norway for 1975-79 and for Denmark for 1974-79. Samples taken from Danish industrial landings contained only small numbers of cod and consequently the weights of the cod by-catches and the age compositions are not very reliably estimated. As the quantities of cod taken as by-catches are relatively small and because of the limited amount of data for this species the Group considered it inadvisable to attempt to reconstruct age compositions of cod by-catches in the industrial fisheries for the earlier years in the manner that is described below for haddock.

For haddock, age compositions of by-catches in the industrial fisheries were available for Denmark for 1972-79 and for Norway for 1974-79. To have a consistent data series it is necessary to include estimated age compositions of by-catches for all years. Accordingly estimates for the years 1960-71 were prepared as follows.

 For the period 1972 to 1979 the ratio of the number per tonne in the Danish industrial catch to the number per tonne in the total human consumption landings was computed for ages 1 to 7. A mean of the ratios was derived from this data set (Table 5).

- (2) Using these values the estimated number per tonne for ages 1 to 7 in the Danish industrial catch for the period 1960 to 1971 were derived from corresponding values of numbers per tonne in the total human consumption landings. The total estimated number of haddock landed as industrial by-catch was then obtained by multiplying by the appropriate weight landed.
- (3) Using data for the period 1972 to 1979 the ratio of the number per tonne in the Danish industrial landings at age 0 in year t to the corresponding value at age 1 in year t + 1 was evaluated. A mean value was then obtained (Table 6).
- (4) These values were then used to estimate the number at age 0 in the Danish industrial catch from the number at age 1 as estimated in paragraph (3) above.
- (5) The numbers at age in the Danish industrial landings were then adjusted by SOP to agree with the nominal weight of Danish landings. The mean weights at age used to evaluate SOPs are shown in Table 7.
- (6) For the years 1965-67 total landings of industrial by-catches were estimated because the national statistics for Denmark do not give separately the landings for human consumption and industrial purposes. For the years 1960-63 no data of total landings were available and a value of 10 000 tonnes was estimated for Danish industrial landings.

It should be added that the procedure described above is far from satisfactory, especially since very large SOP corrections were required to make the landed weight estimated from Danish age compositions agree with the nominal landed weight. However, the method does at least produce Danish age compositions which are more realistic than those used in assessments prior to 1980. In addition, the method also ensures that relative year class abundances are preserved in the estimated Danish age composition.

Having thus obtained estimates of Danish age compositions for 1960-71 these were then raised by the ratio:

Total weight of industrial by-catch all countries Weight of industrial by-catch of Demmark

For years when age compositions were reported by both Denmark and Norway these were first summed before raising to the total international landings.

Estimates of by-catches in industrial fisheries of the Federal Republic of Germany were available. For Norway (1960-71) and the Farce Islands (1969-78), by-catches had to be estimated using the landings of Norway pout as a basis. These figures were available from the report of the Working Group on Norway Pout and Sandeels in the North Sea 1978 and, for Farce for 1977-78, from the Bulletin Statistique. It was assumed that the by-catch of haddock amounted to the same percentage of Norway pout landings as in the Danish industrial fishery. However, for Norway, in the years for which Norwegian estimates exist, the estimates derived from this method were consistently higher and therefore the estimates for the earlier years were reduced accordingly. For whiting, age compositions of industrial by-catches were available for Denmark (1960-66 and 1970-79) and Norway (1975-79). In addition there were estimated age compositions for Danish by-catches for 1967-69. Either Danish or Danish plus Norwegian age compositions were raised to represent age compositions from the total international industrial fishery. Where necessary the weight landed as industrial catch was estimated as described for haddock. Age compositions of whiting by-catches in shrimp fisheries of the Federal Republic of Germany were available for 1960-67.

5. Documentation

Two sets of documents produced by the Working Group have been deposited with the ICES Statistician. For each species and each category these consist of:

- (i) Computer listings of the original age composition data and the corresponding nominal weight of the catch, together with the accompanying weight-at-age data.
- (ii) Computer listings of the above data after Sums of Products adjustment. The nominal weight of catch and the Sums of Products calculated from the data in (i) are also printed. In addition, the summations and raising to allow for unsampled countries is also printed. This listing is annotated with the quantities caught by each country for which age compositions were not available.

The weight-at-age data printed in the columns of summed or raised age compositions are weighted average values.

Examples of documents (i) and (ii) are given as Tables 8 and 9.

6. West of Scotland (Division VIa) Stocks

In the time available it was not possible to make a full revision of the data bases for the West of Scotland stocks. Furthermore, not all the data required for this were available at the meeting. It is hoped that some progress will be made with these data before the March meeting of the Working Group but it may not be possible to complete the work, and further revision may be necessary before the 1982 Working Group meeting.

TABLE 1. COD. NORTH SEA. KEY TO BASIC DATA



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TABLE 2. HADDOCK. NORTH SEA. KEY TO BASIC DATA





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Table 4. North Sea COD. Ratios of numbers discarded to numbers landed from human consumption fisheries in sampled years. Values with asterisks were not included in the mean.

Veen		Age group					
lear	I	II	III				
1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979	.533 1.610 1.177 .866 1.032 1.848 .264 1.136 .911 1.630 1.200 5.539*	.038 .133 .065 .110 .098 .045 .013 .020 .027 .026 .424* .293*	.006 .007 .004 .012 .043				
Mean	1.110	•057	.014				

<u>Table 5</u>	HADDOCK North Sea 1972-1979
	Estimated no./tonne in Danish industrial landings:
	No./tonne in total human consumption landings

Age	1972	1973	1974	1975	1976	1977	1978	1979	Mean 1972-1979
0									
1	13.0	314.1	37.4	17.2	104.3	72.1	102.8	490	88.7
2	1.8	1.0	2.16	1.49	3.23	3.96	2.0	.67	2.0
3	.2	0	.68	.36	.79	1,14	.23	.08	.5
4	,05	.03	.32	.04	r.	.24	.04	-	.1
5	.02	.74	-	-	,42	.25	-	-	.16
6	-	0	.34	-	-	.16	-	-	.06
7	-	0	.08	-	-	-	-	-	.01
8	-	-	-	-	-	~	-	~	-
9	-	-	-	-	-	~	-	-	-
10+	-	-	-	-	-	-	-	-	-

Table 6HADDOCK North Sea 1972~1979No./tonne at age 0 in year t: No./tonne at age 1 in year t + 1in Danish industrial landings

1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	Mean
.77	.62	.69	.39	.83	.20	3.8	1.0

<u>Table 7</u> HADDOCK North Sea. Mean weight at age in Danish industrial landings

Age	Mean weight
0	.01
1	.04
2	.18
3	.30
4	•40
5	.42
6	.44
7	.50

Human Consumption Landings COD North Sea 1977

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Human Consumption Landings Cod North Sea 1977

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Ase 0 1 2 3 4 5 6 7 8 9 10	Col nd ENG / Wts adj Number 9231 9231 8391 5392 1238 5392 1238 5392 1238 1238 1238 1238 14 152 232 87 18 10 5	6 ALL by SoF Weisht 0.516 0.834 1.916 3.961 6.502 8.249 9.887 10.860 7.852 12.537 14.255	Col no NET / I Wts adj Wts adj 30219 3435 1723 3435 1723 327 97 233 37 97 233 37 97 5 23 37 23 37 23 37 23 23 23 23 23 23 23 23 23 24 24 24 24 24 24 24 24 24 24 24 24 24	7 ALL by SoF Weisht 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 13.703 12.714	Col ri FSBDEN d Sum of 01 02 0 06 07 Number 51966 41632 19903 3713 1888 582 798 265 192 182 798 265	B ALL f col 3 04 05 Weisht 1 0.538 1 0.917 2.091 1 2.091 1 4.412 4 6.639 1 8.750 1 8.750 1 8.750 1 8.750 1 0.897 112.814	Col ni OTHERS / Raiser 08 Number 8301 6650 3179 593 302 93 128 42 31 31	<pre>> 9 ALL j col Weisht 0.538 0.917 2.091 2.091 4.412 6.639 8.750 8.750 8.750 10.897 112.018 12.830 13.814</pre>	Col ni ALL i Sum o 108 09 Number 60267 48281 23082 4307 2190 675 926 307 223 200	- 10 ALL f col Weisht 0.538 0.917 0.918 0.928 0.9288 0.9288 0.9288 0.9288 0.92888 0.92888 0.92888 0.928888 0.928888 0.92888888 0.928888888888 0.928888888888888888 0.92888888888888888888888888888888888888
Ase 0 1 2 3 4 5 5 6 7 8 9 10 10 11	Col nd ENG / Wts adj Number Number 231 8391 5392 1238 5392 1238 5392 1238 544 152 232 87 87 18 10 54 10 54	6 ALL by SoF Weisht 0.516 0.834 1.916 3.961 6.502 8.249 9.887 10.860 7.852 12.537 14.255	Col no NET / I Wts adj 30219 3435 1723 3435 1723 327 97 231 371 371 51 41 21	7 ALL by SoF Weisht 0,546 1,376 3,056 5,692 7,284 10,658 9,883 9,408 13,703 12,714 13,703	Col rink FSBDEN (Sum of 01 02 0 06 07 Number 51966 41632 19903 3713 1888 582 798 265 192 188 778 265 192	B 8 ALL f col 3 04 05 Weisht 1 0.538 1 0.538 1 0.917 2.091 4.412 4.412 4.439 8.750 1 9.980 10.897 12.018 12.830 13.814 14.251	Col ni OTHERS / Raiser 08 Number 8301 6650 3179 593 302 93 128 42 31 31 31	<pre>> 9 ALL i col Weisht 0.538 0.917 2.091 4.412 6.439 8.750 8.750 10.897 112.018 12.830 112.830 114.251</pre>	Col no ALL 1 Sum o 108 09 Number 60267 48281 23082 4307 2190 675 926 307 223 20 8 8 77	- 10 ALL f col
Ase 0 1 2 3 4 5 6 7 8 9 10 11 12 12	Col nd ENG / Wts adj Wts adj 9231 8391 5392 1238 544 152 87 152 87 152 1238 544 152 154 152 1238 544 152 152 153 154 152 153 154 152 153 154 152 153 154 152 153 154 154 154 154 154 155 154 154 155 154 155 155	6 ALL by SoF Weisht 0.516 0.834 1.916 3.961 6.502 8.249 9.887 10.860 7.852 12.537 14.255 14.402	Col nd NET / Wts adj Number 30219 3435 1723 327 97 23 327 97 23 327 5 4 23 321 97 23 321 97 23 321 321	<pre>> 7 >LL >> by SoF Weisht 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 13.703 12.714 13.703 12.714 13.703</pre>	Col ni FSBDEN 1 Sum o (01 02 0) 06 07 Number 51966 41632 19903 3713 1888 582 798 265 192 188 78 265 192 182 31	B 8 ALL f col 3 04 05 Weisht 1 0.538 1 0.5588 1 0.5588 1 0.5588 1 0.5588 1 0.5588	Col ni OTHERS / Raised Number 8301 6650 3179 593 302 93 128 42 31 31 55 55 55 55 55 55 55 55 55 55 55 55 55	- 9 - 9 - L - col - weisht - 0.538 - 0.917 - 2.091 - 4.412 - 4.439 - 4.439 - 8.750 - 9.80 - 10.897 - 12.018 - 12.830 - 13.814 - 14.173 	Col nd ALL 1 Sum o 108 09 Number 60267 48281 23082 4307 2190 675 926 307 223 20 8 37 34	- 10 ALL f col ;Weisht ; 0.538 ; 0.917 ; .991 ; .412 ; 4.639 ; 8.750 ; 8.750 ; 9.980 ; 10.897 ; 12.018 ; 12.830 ; 13.814 ; 14.173
Ase 0 1 2 3 4 5 6 7 8 9 10 11 12 11 12 14	Col nd ENG / Wts adj Number 9231 9231 9391 5392 1238 5392 1238 544 152 232 1238 152 1238 154 152 138 152 138 152 138 152 138 152 138 152 138 152 138 152 138 152 152 152 152 152 152 152 152 152 152	6 ALL Data by SoF Weisht 0.516 0.516 0.834 1.916 3.961 4.502 8.249 9.887 10.860 7.852 12.537 14.255 14.255 14.890	Col no NET / I I Wts adj Wumber 30219 3435 1723 327 97 23 327 97 23 327 97 23 327 97 23 327 1 23 1 23 1 23 1 23 1 21 2 1 2 1 2 1 2	7 LL by SoF 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 13.703 12.714 13.703 14.545	Col riv FSBDEN / Sum or 01 02 00 06 07 Number 19903 19903 1888 582 798 265 192 188 778 265 192 18 778 265 192 18 31	B ALL f col 3 04 05 Weisht 0.538 0.917 2.091 4.412 4.432 8.750 8.750 8.750 10.897 12.018 12.830 112.830 113.814 114.173	Col ni OTHERS (Raised 08 Number 8301 6450 3179 3593 302 93 128 42 31 31 128 128 128 128 55 31 593 302 593 302 593 302 593 302 593 302 593 302 593 302 593 302 593 302 593 593 593 593 593 593 593 593 593 593	9 ALL i col 0.538 0.917 2.091 4.412 6.639 8.750 9.980 10.897 12.018 12.830 112.830 113.814 14.251 14.173	Col nu IALL I Sum or 108 09 1 108 09 1 108 09 1 108 09 108 07 108 00 109 00 109 00 108 00 109 00 109 0000000000000000000000000	<pre>b 10 aLL f col lweisht l 0.538 0.917 l 0.917 l 0.91 l 0.412 l 6.639 l 8.750 l 8.750 l 9.980 l10.897 l12.018 l12.830 l13.814 l14.251 l14.173</pre>
Ase 0 1 2 3 4 5 6 7 8 9 10 11 12 13 13 13 14 15	Col nd ENG / Wts adj Number 9231 9231 9231 9391 1238 1238 1238 1238 1238 1238 1238 123	6 ALL by SoF Weisht 0.516 0.516 0.834 1.916 3.961 4.502 8.249 9.887 10.860 7.852 12.537 14.255 14.255 14.602 14.890 14.890	Col no NET / I I Wts adj Number 30219 3435 1723 3435 1723 327 97 23 327 97 23 327 97 23 327 97 23 1 23 1 23 1 23 1 22 1 23 1 23 1 23	7 LL by SoF Weisht 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 9.408 13.703 12.714 13.703 14.545	Col riv FSBDEN / Sum or 01 02 00 06 07 Number 19903 19903 1888 582 798 265 192 188 778 245 192 188 731 31	B ALL f col 3 04 05 Weisht 0.538 0.917 2.091 4.412 6.639 8.750 8.750 8.750 9.980 10.897 12.018 12.830 13.814 14.251 14.173	Col ni OTHERS (Raised 08 Number 8301 6450 3179 593 302 93 128 42 31 128 42 31 128 55 55	<pre>> 9 ALL j col 0.538 0.917 2.091 4.412 6.639 8.750 9.980 10.897 12.018 12.830 13.814 14.251 14.173</pre>	Col nu IALL I Sum or 108 09 1 Number 23082 48281 23082 48281 23082 4307 2190 675 926 307 223 20 8 37 36	D 10 ALL f col /Weisht / 0.538 / 0.917 / 091 /412 / 6.639 / 8.750 / 9.980 / 10.897 / 12.018 / 12.830 / 13.814 / 14.251 / 14.173 /
Ase 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15	Col nc ENG / Wts adj Number 9231 9231 9231 1238 5392 1238 1238 1238 1238 1238 1238 1238 1331 134 152 135 135 14 152 135 152 135 152 135 152 135 152 152 152 152 152 152 152 152 152 15	6 ALL by SoF Weisht 0.516 0.516 0.834 1.916 3.961 4.502 8.249 9.887 10.860 7.852 12.537 14.255 14.255 14.602 14.890 14.890	Col no NET / I I Wts adj Number 30219 3435 1723 3435 1723 327 97 23 327 97 23 327 97 23 327 1 23 1 23 1 27 1 23 1 27 1 23 1 27 1 23 1 27 1 23 1 27 1 23 1 27 1 23 1 27 1 23 1 27 1 27	7 LL by SoF Weisht 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 9.408 13.703 12.714 13.703 14.545	Col riv FSBDEN / Sum or 01 02 00 06 07 Number 51966 41632 19903 3713 1888 582 798 265 192 188 798 265 192 188 731 31	B ALL f col 3 04 05 Weisht 0.538 0.917 2.091 4.412 6.639 8.750 8.750 8.750 10.897 12.018 12.830 13.814 14.251 14.173	Col nu OTHERS (Raised 08 Number 8301 6450 3179 593 302 93 128 42 31 128 42 31 128 55 5 5	9 ALL i col Weisht 0.538 0.917 2.091 4.412 6.639 8.750 9.980 10.897 12.018 12.830 13.814 14.251 14.173	Col nu ALL 1 Sum or 08 09 Number 60267 48281 23082 4307 2190 675 926 307 223 20 8 37 36	D 10 ALL f col Weisht 0.538 0.917 0.917 0.412 0.6639 8.750 8.750 8.750 8.750 10.897 12.018 12.830 113.814 114.251 114.173
Ase 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15 14 15 15	Col nd ENG / Wts adj Number 9231 9231 9231 9391 1238 1238 1238 1238 1238 1238 1238 123	6 ALL by SoF Weisht 0.516 0.834 1.916 3.961 4.502 8.249 9.887 10.860 7.852 12.537 14.255 14.255 14.602 14.890 14.890 14.890	Col no NET / I I Wts adj Number 30219 3435 1723 3435 1723 327 97 23 327 97 23 327 97 23 327 1 23 1 27 1 23 1 27 1 2 1 2 2 1 2 2 2 5	7 ALL by SoF Weisht 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 9.408 13.703 12.714 13.703 14.545 203	Col riv FSBDEN Sum or 01 02 00 06 07 Number 51966 41632 19903 3713 1888 582 798 265 192 188 778 265 192 188 731 188 192 188 192	B ALL f col 3 04 05 Weisht 0.538 0.917 2.091 2.091 4.412 6.639 8.750 8.750 8.750 10.897 112.018 112.830 113.814 114.251 114.173	Col ni OTHERS / Raised 08 Number 8301 6450 3179 593 302 93 128 42 31 31 5 5 5	<pre>> 9 ALL j col 0.538 0.917 2.091 4.412 6.639 8.750 9.980 10.897 12.018 12.830 13.814 14.251 14.173 446</pre>	Col nu IALL I Sum or 108 09 1 Number 1 60267 1 48281 1 23082 1 4307 2190 675 926 307 223 20 8 37 36 1 37 36	10 10 ALL f col Weisht 0.538 0.917 0.917 412 6.639 8.750 8.750 10.897 12.018 12.830 113.814 14.251 14.173 1 1173
Ase 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15 14 15 15 14 15 15	Col nd ENG / Wts adj Wts adj 9231 9231 9231 9391 1238 1238 1238 1238 1238 1238 1238 123	6 ALL by SoF Weisht 0.516 0.834 1.916 3.961 6.502 8.249 9.887 10.860 7.852 12.537 14.255 14.602 14.890 14.890 14.890 14.890	Col no NET / I I Wts adj Number 30219 3435 1723 371 327 327 327 327 327 327 327 327 327 327	7 ALL by SoF Weisht 0.546 1.376 3.056 5.692 7.284 10.658 9.883 9.408 9.408 9.408 13.703 13.703 13.703 14.545 203 298	Col n: FSBDEN Sum or 01 02 00 06 07 Number 51966 41632 19903 3713 31888 582 798 265 192 188 778 265 192 188 731 156 156	B ALL f col 3 04 05 Weisht 0.538 0.917 2.091 2.091 2.091 4.412 6.639 8.750 8.750 8.750 10.897 112.830 112.830 113.814 114.173 13.14 14.173	Col ni OTHERS (Raised 08 Number 8301 6650 3179 593 302 93 128 42 31 31 5 5 5 5	<pre>> 9 ALL j col Weisht 0.538 0.917 2.091 4.412 6.639 8.750 9.980 10.897 12.018 12.830 13.814 14.251 14.173 246 246</pre>	Col nu IALL I Sum or 08 09 Number 60267 48281 23082 4307 2190 675 926 307 223 200 8 37 36 37 36	10 10 ALL f col Weisht 0.538 0.917 412 412 412 412 1412 1412 1412 14173 14174 14174 14173 14174 14174 14174 14

 Table 9
 Sample of print-out of Document Set (ii) containing input data after SOPs adjustment raised and summed

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