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Preliminary Report of Ageing Workshop on Cod held at St. John's, Canada,  
31 January-5 February 1977

Convener: R. Wells

Introduction

The Ageing Workshop held in Vigo, Spain in 1975 showed significant variation in age determinations among individual readers. It was concluded that further work on age determination of cod should be undertaken. Subsequently STACRES instructed that a further workshop be conducted at St. John's to develop a set of guidelines for the interpretation of ages of cod from otoliths as an aid to reduce subjective errors in ageing.

The samples were aged by experts from Canada, FRG, France GDR, Spain and USSR. Due to a rescheduling of the Workshop necessitated by delays in circulating the ageing material, the expert from GDR was unable to attend the Workshop (see Appendix 1).

Materials and Methods

The otoliths examined were as follows:

<u>Div.</u>	<u>Type</u>	<u>Date of capture</u>	<u>Range of lengths (cm)</u>	<u>Number of otoliths</u>
2J	Commercial	February 1975	34-91	122
3K	Commercial	April 1976	37-121	127
3L	Commercial	June 1976	31-139	120
2J	Research	December 1975	22-32	25
3K	Research	November 1975	17-31	25

The commercial samples were supplied by Canada and the research samples of young cod by FRG.

A set of photographs of each otolith was provided to each expert prior to the Workshop and the otolith samples were circulated so that each reader had the opportunity to record his interpretation on his own set of photographs. No fish length data were available to the readers prior to the Workshop.

At the Workshop, the various interpretations as recorded on the photographs and including those of GDR were examined. Time was available to examine a total of 250 specimens (see table below).

<u>Div.</u>	<u>Type</u>	<u>Number examined</u>	<u>No. of "Best Ages"</u>
2J	Commercial	50	45
3K	Commercial	50	42
3L	Commercial	100	87
2J	Research	25	25
3K	Research	25	25
<b>Total</b>		<b>250</b>	<b>224</b>

Each of these specimens was examined in turn, and in a number of instances a "best age" was assigned with full agreement of the group. The "best age" was not necessarily the modal age. After this examination, the samples were considered for each division separately. Photographs of specimens of the same year-class were examined to ascertain if there were present distinguishing characteristics such as split third annulus, narrow fifth annulus. On this basis certain other specimens where ages had been doubtful were assigned "best ages". In total, best ages were assigned to 224 of the 250 specimens examined as shown in the preceding table. A small number of otoliths were re-examined at the Workshop using binocular microscopes.

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## Results

### A. Commercial Samples

A detailed list of the interpretations of readers, together with the "best ages" for these specimens examined at the Workshop, is shown in Appendix 2.

#### Agreement between pairs of readers

Table 1 shows the percentage agreement between pairs of readers for the three commercial samples separately and combined. Agreement ranged 18% by readers 4 and 7 for Div. 2J to 66% by readers 6 and 7 in Div. 3L. Agreement between pairs of readers for all areas combined ranged from 30% by readers 3 and 8 and readers 4 and 8 to 60% by readers 2 and 7. Out of 84 possible combinations of reader pairs, 50% or better agreement was reached by 19 pairs of readers. The average agreement by all pairs of readers for all areas was 42%.

An indication of reader bias with respect to pairs of readers and to the group as a whole for each division separately and for all divisions combined is given in Table 2. The bias between readers, defined as the percentage over-aged minus the percentage under-aged, ranged as follows:

<u>Div.</u>	<u>Greatest bias</u>	<u>Readers</u>	<u>Least bias</u>	<u>Readers</u>
2J	78	4,5	6	3,6
3K	71	3,5	0	3,4
3L	64	3,8	1	5,8
2J,3K,3L	62	4,5	4	2,6; 2,7; 6,7

Table 3 shows the average bias and average percent agreement with respect to the group for each reader for each Division separately and for the total. Reader 4 had a strong positive bias in all Divisions while reader 3 had a strong positive bias in Div. 3K and 3L. Readers 5 and 8 showed strong negative bias in all Divisions. Reader 1 had a strong negative bias in Div. 3K. The other readers had little or moderate bias. Average agreements did not show marked variation.

Appendix 3 shows anomalies between pairs of readers.

Another indicator of bias is the mean anomaly between readers. (Appendix 3 shows the anomalies between readers for each Division separately and in total.) Mean anomalies between readers are shown in Table 4, and the averages of the mean anomalies for each reader compared to the group one shown in Table 5. Using this indicator of bias, conclusions very similar to those drawn from the previous indicator can be reached.

#### Agreement with "best ages"

Of the 200 commercial otoliths examined at the Workshop, a "best age" was assigned to 174. The percentage agreements of each reader are shown in Table 6. Agreements ranged from a low 22% (reader 4) in Div. 2J to a high of 87% (reader 6) in Div. 3L. In general, for each reader agreement with "best ages" was better than agreement with the group taken as reader pairs (compare Table 6 and 3).

The anomalies between each reader and the "best ages" are shown in Appendix 4. The mean anomaly and standard error provide indicators of bias and consistency respectively. In Table 7, standard errors were generally less than 0.11 and would indicate that all readers were interpreting ages with a high degree of consistency.

In Fig. 1, for each reader, the percentage agreement with the "best ages" is plotted against the range of mean anomaly  $\pm 2$  standard errors. In Div. 2J, readers 2, 6, 7 and 8 appear to form one group, while readers 1, 3 and 5 comprise a second group. Reader 4 apparently has over-read. In Div. 3K, readers 1, 5, 6, 7 and 8 are fairly similar, and readers 2, 3 and 4 are similar to each other. In Div. 3L, readers 6 and 7 are similar. Readers 2, 4, 5 and 8 form a second group and readers 1 and 3 a third. For all Divisions combined, readers may be separated into groups of 2 as follows: 6, 7; 5, 8; 1, 2; 3, 4.

#### Age compositions and average length-at-age

As age-length key for each reader and Division was derived from the age determination listed in Appendix 2. These keys were each applied to appropriate length frequencies taken from the Canadian commercial sampling. These keys comprise Appendix 5.

Table 8 shows the resultant age compositions and average length-at-age for each reader and Division.

Figures 2 to 4 show the least squares fit of length-at-age against age for each reader by Division.

### Results

#### B. Research Samples

All 50 of the young cod were assigned "best ages". Of the 25 fish from Div. 2J, 24 were 2-year-olds and one was 3 years; from Div. 3K, 22 fish were of age 2 and 3 were age 1. Table 10 shows the mean anomalies and standard errors of each reader with respect to "best ages". In Fig. 2, for each reader the percentage agreement with the "best ages" is plotted against the range of mean anomaly  $\pm 2$  standard errors. Readers 6 and 8 achieved 100% agreement with the best ages in Div. 2J, while in Div. 3K, reader 2 had no agreement with the best ages. In general, readers 2, 3 and 4 tended to over-read.

Some readers over-read because they did not take into account that the young fish had been captured in November and December. The true age in this case should be derived as follows:

<u>Edge</u>	<u>Number of hyaline rings</u>	<u>Age</u>
Narrow hyaline	N	N-1
Wide hyaline	N	N-1
Narrow opaque	N	N
Wide opaque	N	N

Most of the young fish had otoliths showed either narrow or wide hyaline edge.

### Discussion and Conclusions

Agreements between readers at this Workshop were somewhat higher than the low level at Vigo:

<u>Source</u>	<u>Average agreement between pairs (%)</u>		
	<u>2J</u>	<u>3K</u>	<u>3L</u>
Vigo, 1975	32	27	38
St. John's, 1977	41	37	49

This improvement may perhaps be partly attributed to the fact that age determinations from the St. John's Workshop were made by each reader at his own laboratory and using his own microscope.

Because the age determinations had been made prior to the Workshop, the participants were able to devote their time to examining in detail the causes of discrepancies. Of the 200 samples examined from the commercial fishery, "best ages" were assigned to 174. "Best ages" were assigned to all 50 of the young cod examined. It was encouraging that the group could come close to 90% agreement. It would seem probable that if a clear set of guidelines were produced and accepted, a substantial reduction in discrepancies between readers would result.

Materials available from this Workshop which would aid in preparing such a set of guidelines are:

- 1) photographs of otoliths showing the interpretations of "best age" of the 224 otoliths examined at the Workshop;
- 2) photographs of otoliths showing the interpretations by the various readers for these 224 otoliths; and
- 3) photographs of all other otoliths examined prior to the Workshop by the various readers. (Each reader has in his own possession the photographs showing his interpretations.)

Table 1. Percentage agreement between pairs of readers.

Reader Pair	2J	3K	3L	Total
1,2	48	37	45	44
1,3	54	27	30	36
1,4	30	25	45	33
1,5	36	48	48	44
1,6	38	37	47	40
1,7	43	31	48	41
1,8	43	38	48	43
2,3	63	42	41	48
2,4	29	41	42	37
2,5	41	44	58	48
2,6	43	41	54	46
2,7	63	51	65	60
2,8	57	48	54	53
3,4	42	29	43	38
3,5	39	25	32	32
3,6	42	29	40	38
3,7	43	31	47	40
3,8	45	19	27	30
4,5	19	31	46	32
4,6	34	34	53	40
4,7	18	37	50	35
4,8	19	30	42	30
5,6	34	36	60	43
5,7	46	45	55	48
5,8	42	46	58	49
6,7	42	48	66	52
6,8	44	44	58	49
7,8	62	51	56	56
Average	41	37	49	42
No. of pairs	28	28	28	84

Table 2. Bias between pairs of readers: (percentage over-aged minus percentage under-aged).

Div.	Reader	1	2	3	4	5	6	7	8	Ave. Bias	Ave. Agreement
2J	1	.	12	-8	-57	34	-14	12	17	-1	43
	2	-12	.	-22	-68	27	-13	8	15	-9	48
	3	8	22	.	-51	49	6	33	33	14	47
	4	58	68	51	.	78	49	74	74	65	27
	5	-34	-27	-49	-78	.	-39	-22	-23	-39	37
	6	14	13	-6	-49	39	.	22	28	9	40
	7	-12	-8	-33	-74	22	-22	.	8	-17	45
	8	-17	-15	-33	-74	23	-28	-8	.	-22	45

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Div.	Reader	1	2	3	4	5	6	7	8		
3L	1	.	0	-35	-8	33	23	3	27	6	45
	2	0	.	-36	-16	27	29	7	28	6	51
	3	35	36	.	26	56	53	45	64	45	31
	4	8	16	-26	.	39	35	23	42	20	46
	5	-33	-27	-56	-39	.	-7	-25	1	-27	51
	6	-23	-29	-53	-35	8	.	-20	8	-21	54
	7	-3	-7	-45	-23	25	20	.	29	-1	55
	8	-27	-28	-64	-42	-1	-8	-29	.	-28	49

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3K	Reader	1	2	3	4	5	6	7	8		
3K	1	.	-49	-65	-63	-6	-54	-42	-15	-42	35
	2	49	.	-36	-26	50	-2	-2	37	10	44
	3	65	36	.	0	71	24	43	67	44	29
	4	63	26	0	.	68	23	27	58	38	32
	5	6	-50	-71	-68	.	-53	-46	-10	-42	39
	6	54	2	-24	-23	53	.	8	40	16	39
	7	42	2	-43	-27	46	-8	.	33	6	42
	8	15	-37	-67	-58	10	-40	-40	.	-31	40

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Total	Reader	1	2	3	4	5	6	7	8		
Total	1	.	-12	-38	-43	20	-16	-9	10	-13	40
	2	12	.	-32	-37	35	4	4	27	2	48
	3	38	32	.	-7	59	28	40	56	35	37
	4	43	37	8	.	62	35	41	58	41	35
	5	-20	-35	-59	-62	.	-33	-31	-10	-36	42
	6	16	-4	-28	-35	33	.	4	25	2	44
	7	9	-4	-40	-41	31	-4	.	24	-4	47
	8	-10	-27	-56	-58	10	-25	-24	.	-27	44

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Table 3. Average bias and average % agreement of each reader with respect to the group.

	Av.Bias				Av. % Agreement			
	2J	3K	3L	Total	2J	3K	3L	Total
1	-1	-42	6	-13	43	35	45	40
2	-9	10	6	2	48	44	51	48
3	14	44	45	35	47	29	31	37
4	65	38	20	41	27	32	46	35
5	-39	-42	-27	-36	37	39	51	42
6	9	16	-21	2	40	39	54	44
7	-17	6	-1	-4	45	42	55	47
8	-22	-31	-28	-27	45	40	49	44
					42	38	48	42

Table 4. Mean anomalies between readers.

Div.	Reader	1	2	3	4	5	6	7	8	
2J	1	.	0.14	-0.18	-0.98	0.55	-0.15	0.19	0.22	-0.03
	2	-0.14	.	-0.30	-1.05	0.43	-0.26	0.09	0.10	-0.16
	3	0.18	0.30	.	-0.63	0.74	0.10	0.45	0.39	0.22
	4	0.98	1.05	0.63	.	1.56	0.84	1.18	1.24	1.07
	5	-0.55	-0.43	-0.74	-1.56	.	-0.71	-0.35	-0.33	-0.67
	6	0.15	0.26	-0.10	-0.84	0.71	.	0.35	0.38	0.13
	7	-0.19	-0.09	-0.45	-1.18	0.35	-0.35	.	0.33	-0.23
	8	-0.22	-0.10	-0.39	-1.24	0.33	-0.38	-0.33	.	-0.33
3K	1	.	-0.77	-1.32	-1.30	-0.20	-0.85	-0.75	-0.28	-0.78
	2	0.77	.	-0.57	-0.50	0.61	-0.11	-0.02	0.49	0.10
	3	1.32	0.57	.	0.0	1.20	0.41	0.58	1.16	0.75
	4	1.30	0.50	0.0	.	1.18	0.43	0.54	1.09	0.72
	5	0.20	-0.61	-1.20	-1.18	.	-0.76	-0.64	-0.09	-0.61
	6	0.85	0.11	-0.41	-0.43	0.76	.	0.11	0.67	0.24
	7	0.75	0.02	-0.58	-0.54	0.64	-0.11	.	0.55	0.10
	8	0.28	-0.49	-1.16	-1.09	0.09	-0.67	-0.55	.	-0.51
3L	1	.	-0.14	-0.68	-0.40	0.47	0.13	-0.15	0.45	-0.05
	2	0.14	.	-0.56	-0.28	0.56	0.24	0.06	0.58	0.11
	3	0.68	0.56	.	0.34	1.04	0.84	0.62	1.16	0.75
	4	0.40	0.28	-0.34	.	0.86	0.49	0.33	0.93	0.42
	5	-0.47	0.56	-1.04	-0.86	.	-0.28	-0.61	-0.02	-0.55
	6	-0.13	-0.24	-0.84	-0.49	0.28	.	-0.22	0.34	-0.19
	7	0.15	-0.06	-0.62	-0.33	0.61	0.22	.	0.59	0.08
	8	-0.45	-0.58	-1.16	-0.93	0.02	-0.34	-0.59	.	-0.58
Total	1	.	-0.26	-0.76	-0.90	0.27	-0.30	-0.24	0.12	-0.30
	2	0.26	.	-0.51	-0.62	0.53	-0.05	0.04	0.42	0.01
	3	0.76	0.51	.	-0.22	1.01	0.46	0.55	0.93	0.57
	4	0.90	0.62	0.22	.	1.20	0.59	0.68	1.09	0.76
	5	-0.27	-0.53	-1.01	-1.20	.	-0.59	-0.54	-0.14	-0.61
	6	0.30	0.05	-0.46	-0.59	0.59	.	0.09	0.47	0.06
	7	0.24	-0.04	-0.55	-0.68	0.54	-0.09	.	0.39	-0.03
	8	-0.12	-0.42	-0.93	-1.09	0.14	-0.47	-0.39	.	-0.47

Table 5. Average mean anomaly of each reader as compared to the group.

Reader	2J	3K	3L	Total
1	-0.03	-0.78	-0.05	-0.30
2	-0.16	0.10	0.11	0.01
3	0.22	0.75	0.75	0.57
4	1.07	0.72	0.42	0.76
5	-0.67	-0.61	-0.55	-0.61
6	0.13	0.24	0.08	-0.03
7	-0.23	0.10	-0.58	-0.47
8	-0.33	-0.51		

Table 6. Percentage agreement of each reader with "best ages".

Reader Type	1	2	3	4	5	6	7	8	Total
2J comm.	42	65	48	22	52	70	76	78	57
3K comm.	62	38	38	40	69	65	76	62	56
3L comm.	54	66	48	64	74	87	84	70	68
Total	53	59	46	48	67	78	80	70	63

Table 7. Mean anomalies and standard errors for each reader as compared with "best ages".

Reader	Total Read	Mean	Standard Error	% Agmnt.	Skew- ness	Kurtosis	Mean $\pm 2S_x$		Remarks
							Include 0	Include 0	
1	2J 45	-.2000	.1333	42	.8467	4.7522	yes		
	3K 42	-.2381	.1266	62	-.9085	4.8266	yes		
	3L 87	.4943	.1019	54	.5495	4.0844	no	+	bias
	Total 174	0.1379	.0735	53			yes		
2	2J 43	-.1395	.0975	65	-.2674	3.5313	yes		
	3K 39	.2564	.1631	38	-.5187	2.8523	yes		
	3L 83	.2410	.0655	66	.3299	3.6307	no	+	bias
	Total 165	.1455	.0578	59			no	+	bias
3	2J 33	.1818	.1338	48	.0763	2.3546	yes		
	3K 32	.6563	.1774	38	.5118	2.9303	no	+	bias
	3L 69	.7826	.1166	48	.8856	3.4076	no	+	bias
	Total 134	.6045	.0827	46			no	+	bias
4	2J 45	1.0667	.1435	22	.7388	3.9204	no	+	bias
	3K 42	.8571	.1301	40	.4225	2.1499	no	+	bias
	3L 87	.4138	.0889	64	.1750	5.9722	no	+	bias
	Total 174	.6897	.0690	48			no	+	bias
5	2J 44	-.3864	.1039	52	-.1330	2.7605	no	-	bias
	3K 42	-.4286	.1639	69	-2.2184	7.1974	no	-	bias
	3L 86	-.0233	.0618	74	-.4260	5.4605	yes		
	Total 172	-.2151	.0586	67			no	-	bias
6	2J 44	-.0682	.0997	70	.0446	5.0804	yes		
	3K 40	.3750	.1325	65	.8581	6.5441	no	+	bias
	3L 85	-.1176	.0424	87	-.8736	9.8863	no	-	boas
	Total 169	.0118	.0482	78			yes		
7	2J 45	-.1333	.0816	76	.3990	6.7779	yes		
	3K 42	-.0238	.1104	76	-.8145	9.3930	yes		
	3L 87	.1494	.0449	84	.7851	7.4206	no	+	bias
	Total 174	.0345	.0415	80			yes		
8	2J 45	-.0889	.0698	78	-.1416	4.1828	yes		
	3K 42	-.0476	.1273	62	-.3501	3.7889	yes		
	3L 87	-.1034	.0675	70	-.1257	4.9080	yes		
	Total 174	-.0862	.0488	70			yes		

Table 8. Age compositions and average lengths-at-age by readers in Div. 2J,  
Div. 3K, and Div. 3L.

Age	Div. 2J							
	Reader							
	1	2	3	4	5	6	7	8
3								
4	65	12	29	11	55	12	12	12
5	109	115	39	19	139	88	121	105
6	142	230	166	86	304	340	247	315
7	307	346	315	223	336	170	363	335
8	226	179	258	297	127	210	147	149
9	66	62	133	219	17	80	60	56
10	51	42	32	70	12	49	36	22
11	20	4	4	54	-	16	4	4
12	4	-	-	15	-	21	-	-
13	-	-	-	4	-	-	-	-
14	-	-	-	-	-	4	-	-
15	-	-	-	-	-	-	-	-
15+	-	-	-	-	-	-	-	-
NK	9	9	23	2	9	9	9	2
Total	999	999	999	999	999	999	999	999
4	44.4	39.8	41.9	40.0	45.5	39.8	39.8	39.8
5	49.4	48.8	48.6	42.7	50.6	48.0	47.9	48.2
6	53.7	51.9	50.0	50.1	55.5	52.8	53.5	53.9
7	55.8	56.5	55.6	52.5	58.4	55.4	56.7	57.0
8	59.4	59.4	57.3	55.9	58.7	59.6	59.6	61.3
9	61.6	64.9	63.1	60.1	62.5	62.1	63.1	62.1
10	61.5	67.6	62.6	60.1	68.9	61.4	68.6	65.7
11	69.8	79.0	79.0	63.4	-	63.9	79.0	79.0
12	79.0	-	-	66.2	-	70.8	-	-
13	-	-	-	79.0	-	-	-	-
14	-	-	-	-	-	79.0	-	-
15	-	-	-	-	-	-	-	-
15+	-	-	-	-	-	-	-	-
NK	78.3	78.3	73.5	86.5	78.3	78.3	78.3	86.5
Div. 3K								
	1	2	3	4	5	6	7	8
3	35	14	34	6	33	-	6	14
4	139	88	116	102	167	72	170	139
5	315	148	64	108	253	244	169	285
6	247	309	221	186	225	233	213	199
7	122	215	147	253	158	164	154	208
8	84	120	194	137	107	90	162	94
9	40	61	123	78	50	156	70	36
10	11	32	35	76	-	23	16	17
11	2	6	32	25	-	2	23	8
12	2	4	17	29	10	-	2	-
13	6	6	8	2	-	6	19	2
14	-	-	2	-	-	13	-	-
15	-	-	-	-	-	-	-	-
15+	-	-	-	-	-	-	-	-
NK	-	-	10	-	-	-	-	-
Total	1002	1002	1002	1002	1002	1002	1002	1002
3	43.7	46.0	46	40.0	46.1	-	40.0	46.0
4	51.3	46.0	46.9	47.5	48.1	45.7	47.1	46.4
5	55.1	51.5	55.6	50.3	55.4	52.7	52.8	55.9
6	62.5	57.6	55.6	57.6	60.7	59.2	60.0	59.5
7	67.2	63.4	61.1	62.7	69.6	60.7	63.3	67.4
8	67.2	70.3	63.3	67.4	71.4	65.4	68.9	72.7
9	75.9	75.7	68.4	65.9	81.1	73.4	72.8	75.0
10	75.6	79.0	74.7	64.5	-	79.5	80.2	85.5
11	79.0	97.0	75.1	72.1	-	106.0	81.6	97.0
12	106.0	109.0	85.5	83.9	100.0	-	106.0	-
13	112.0	94.0	97.0	112.0	-	94.0	87.4	112
14	94.0	-	112.0	-	-	84.2	-	-
15	-	-	-	-	-	-	-	-
15+	-	-	-	-	-	-	-	-
NK	-	-	94.6	-	-	-	-	-

Table 8. continued

Age	Div. 3L							
	Reader							
	1	2	3	4	5	6	7	8
3	26	49	65	55	60	75	75	61
4	117	202	117	156	229	251	188	204
5	279	185	86	195	220	208	168	263
6	144	165	152	129	102	75	158	141
7	102	62	135	106	161	99	78	98
8	178	129	169	126	87	127	130	80
9	40	38	113	52	61	12	51	34
10	21	11	9	27	8	35	21	13
11	14	14	14	47	-	-	26	23
12	24	16	10	25	20	27	15	42
13	6	36	39	-	-	13	13	-
14	4	-	8	2	4	20	6	2
15	7	-	6	29	-	8	22	2
15+	27	41	33	39	36	36	39	37
NK	13	55	45	13	13	16	13	-
Total	1001	1001	1001	1001	1001	1001	1001	1001
3	36.2	39.5	37.8	38.7	44.3	37.8	38.3	37.3
4	45.8	44.0	42.9	46.4	46.1	47.2	44.8	45.4
5	52.7	53.8	46.9	53.0	52.4	56.6	53.4	55.5
6	54.9	58.8	57.4	55.4	64.0	62.4	59.8	61.1
7	64.0	65.6	55.4	60.6	69.0	64.7	65.4	73.2
8	74.4	72.0	66.6	67.5	81.8	75.4	70.2	77.0
9	81.0	67.6	72.5	73.2	90.1	67.0	78.7	88.4
10	95.3	91.0	76.0	83.9	106.0	90.0	95.3	121.0
11	82.0	82.0	82.0	91.8	-	-	88.9	105.1
12	108.5	105.6	100.0	110.2	108.3	95.3	94.0	102.1
13	115.0	99.9	96.2	-	-	103.0	103.0	-
14	131.5	-	106.0	130.0	131.5	118.3	115.0	133.0
15	124.0	-	115.0	101.7	-	106.0	114.7	130.0
15+	115.2	120.0	116.5	119.5	118.3	117.9	119.5	118.8
NK	121.0	104.3	116.3	121.0	121.0	124.4	121.0	-

Table 9. Fitted arithmetic straight line parameters by Division and reader.

Div.	Reader	Slope	Intercept	R	T	DF	N
2J	1	3.3	32.5	0.99	202	913	
	2	4.0	28.0	0.99	197	943	
	3	3.9	27.7	0.98	137	938	
	4	3.7	26.5	0.99	199	852	
	5	3.2	35.4	0.94	87	976	
	6	3.6	30.7	0.98	161	898	
	7	3.8	29.9	0.98	144	948	
	8	3.8	30.2	0.97	121	969	
3K	1	5.8001	27.0351	0.9876	197.2028	979.3	981.3
	2	5.8783	22.5272	0.9953	315.8802	952.0	954.0
	3	3.9099	32.7690	0.9829	159.6508	897.2	899.2
	4	4.5210	29.7900	0.9630	105.2495	867.3	869.3
	5	6.1495	24.4576	0.9888	208.5786	990.0	992.0
	6	4.9864	27.5575	0.9830	165.6404	956.4	958.4
	7	5.2699	26.7580	0.9933	264.2565	940.1	942.1
	8	5.9426	24.8744	0.9841	172.8827	973.5	975.5
3L	1	7.1	16.2	0.98	167	883	
	2	6.1	21.5	0.97	120	826	
	3	5.7	19.9	0.98	127	835	
	4	5.3	25.0	0.99	211	817	
	5	8.3	13.3	0.99	178	918	
	6	6.6	21.1	0.97	125	844	
	7	6.5	19.6	1.00	310	844	
	8	8.3	12.9	0.99	271	880	

Table 10 . Percentage agreement of each reader with "best ages" of young cod  
(research samples).

Reader	Div	Total Read	Mean	Standard Error	% Agreement	Mean	$\pm 2S_x$	Include 0	Remarks
1	2J	25	-.16	.11	68	yes	62	+ bias	bias
	3K	25	.56	.14	56	no			
	Total	50	.20	.10	62	yes			
2	2J	24	.54	.10	46	no	22	+ bias	bias
	3K	25	1.48	.10	0	no			
	Total	49	1.02	.10	22	no			
3	2J	17	.88	.08	12	no	26	+ bias	bias
	3K	22	.68	.12	36	no			
	Total	39	.77	.08	26	no			
4	2J	25	.28	.09	72	no	52	+ bias	bias
	3K	25	.76	.12	32	no			
	Total	50	.52	.08	52	no			
5	2J	25	.16	.07	84	no	74	+ bias	bias
	3K	22	.36	.11	64	no			
	Total	47	.26	.06	74	no			
6	2J	25	0.0	0.0	100	yes	96	yes	bias
	3K	25	.08	.06	92	yes			
	Total	50	.04	.03	96	yes			
7	2J	25	-.08	.08	84	yes	84	- bias	bias
	3K	25	-.16	.07	84	no			
	Total	50	-.12	.05	84	no			
8	2J	25	0.0	0.0	100	yes	90	+ bias	bias
	3K	25	.20	.08	80	no			
	Total	50	.10	.04	90	no			

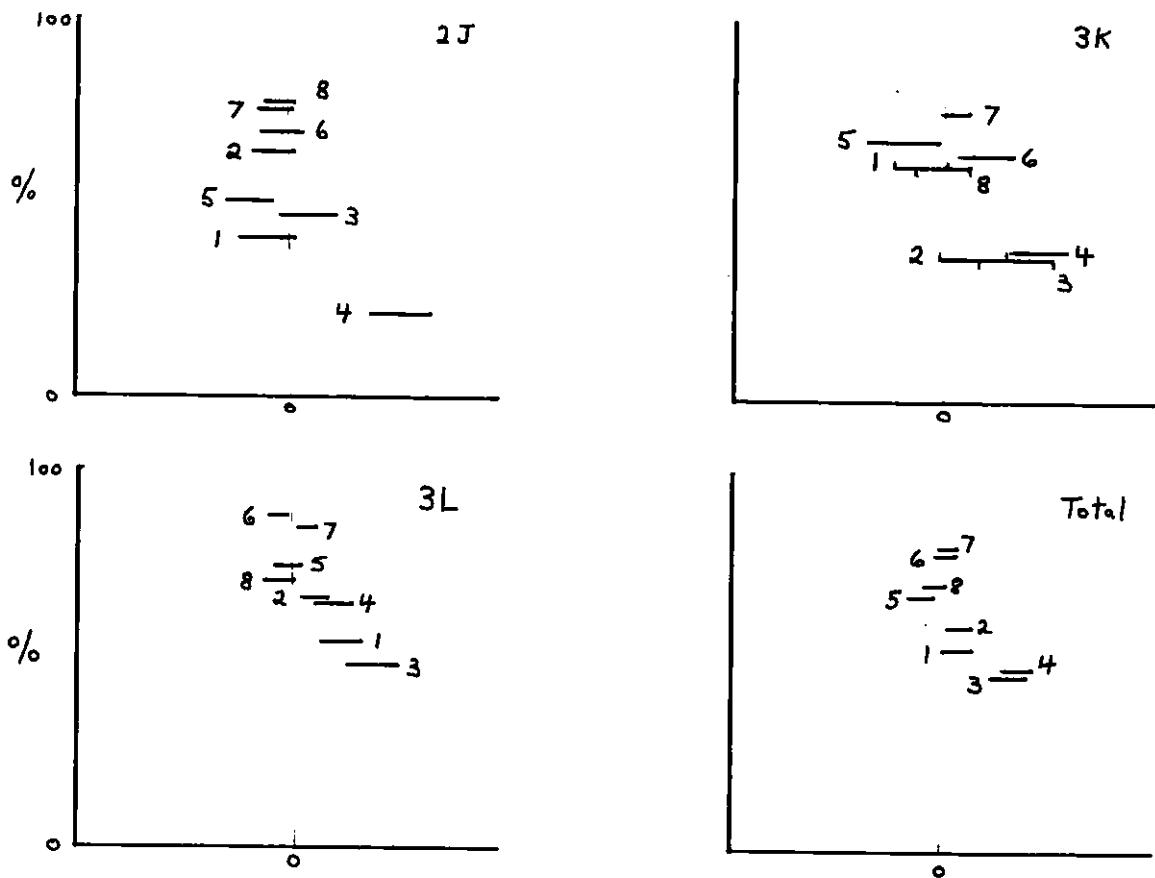


Fig. 1. Percentage agreement against anomalies from the "best ages". The horizontal lines show the range of anomalies  $0 \pm 2$  standard errors for each reader (commercial samples).

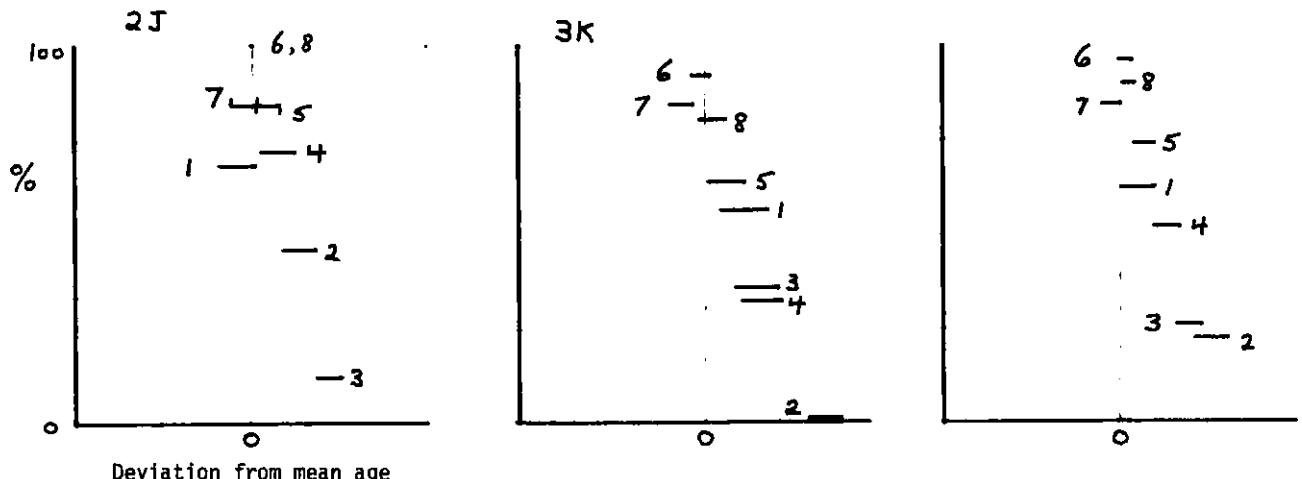


Fig. 2. Percentage agreements against anomalies from the "best ages". The horizontal lines show the range of anomalies  $0 \pm 2$  standard errors for each reader (research samples).

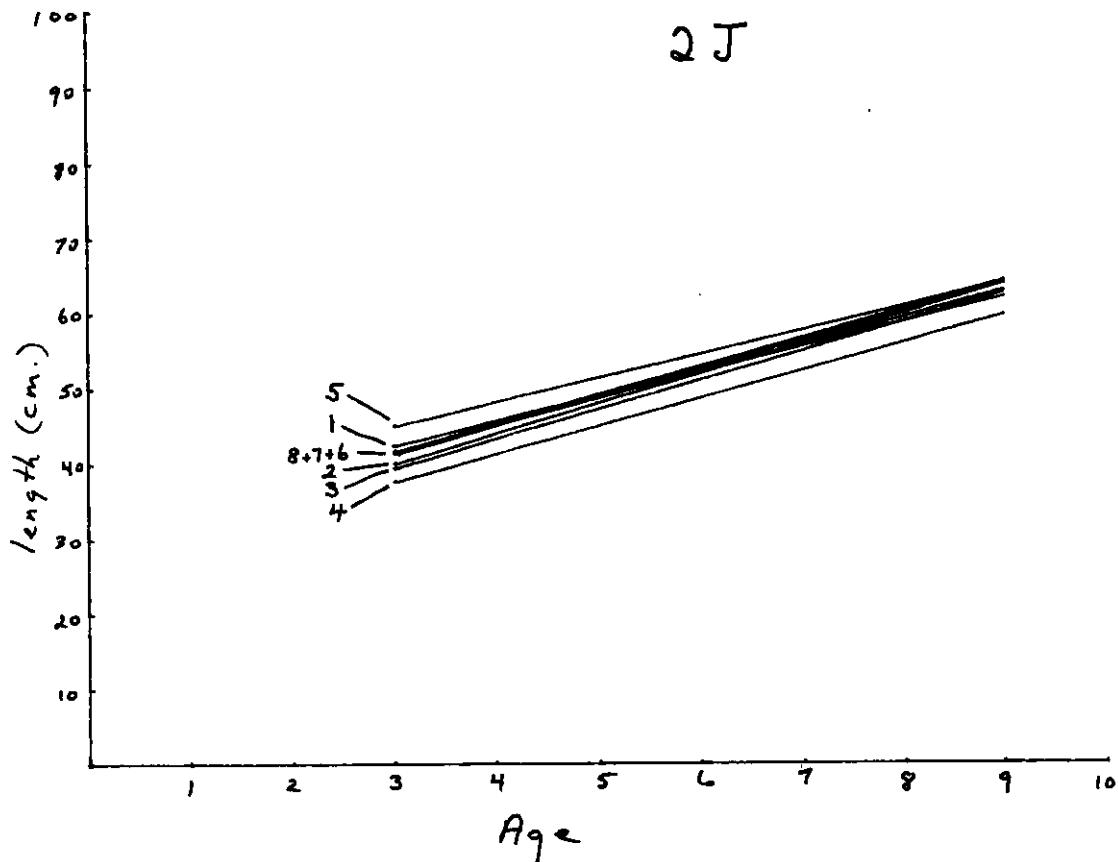


Fig. 3. Least squares fit of length-at-age against age for each reader in Div. 2J.

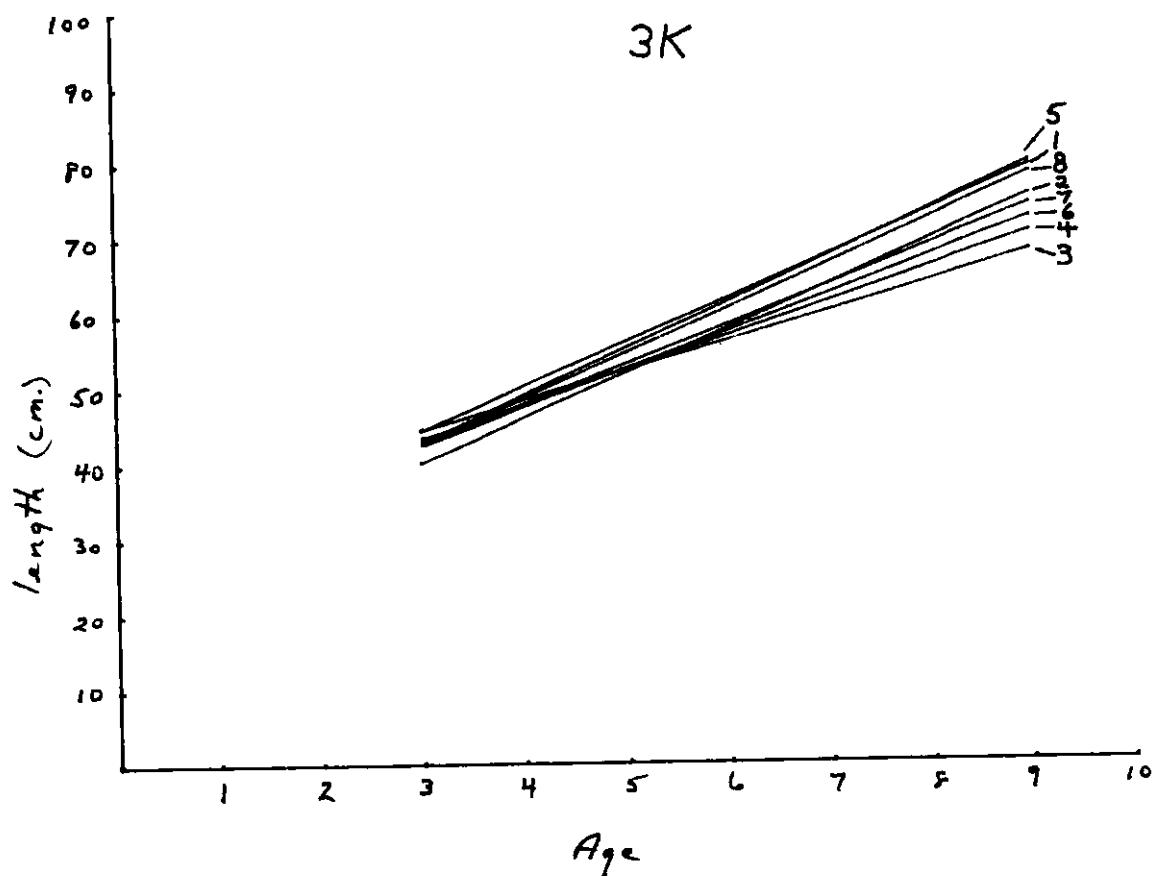


Fig. 4. Least squares fit of length-at-age against age for each reader in Div. 3K.

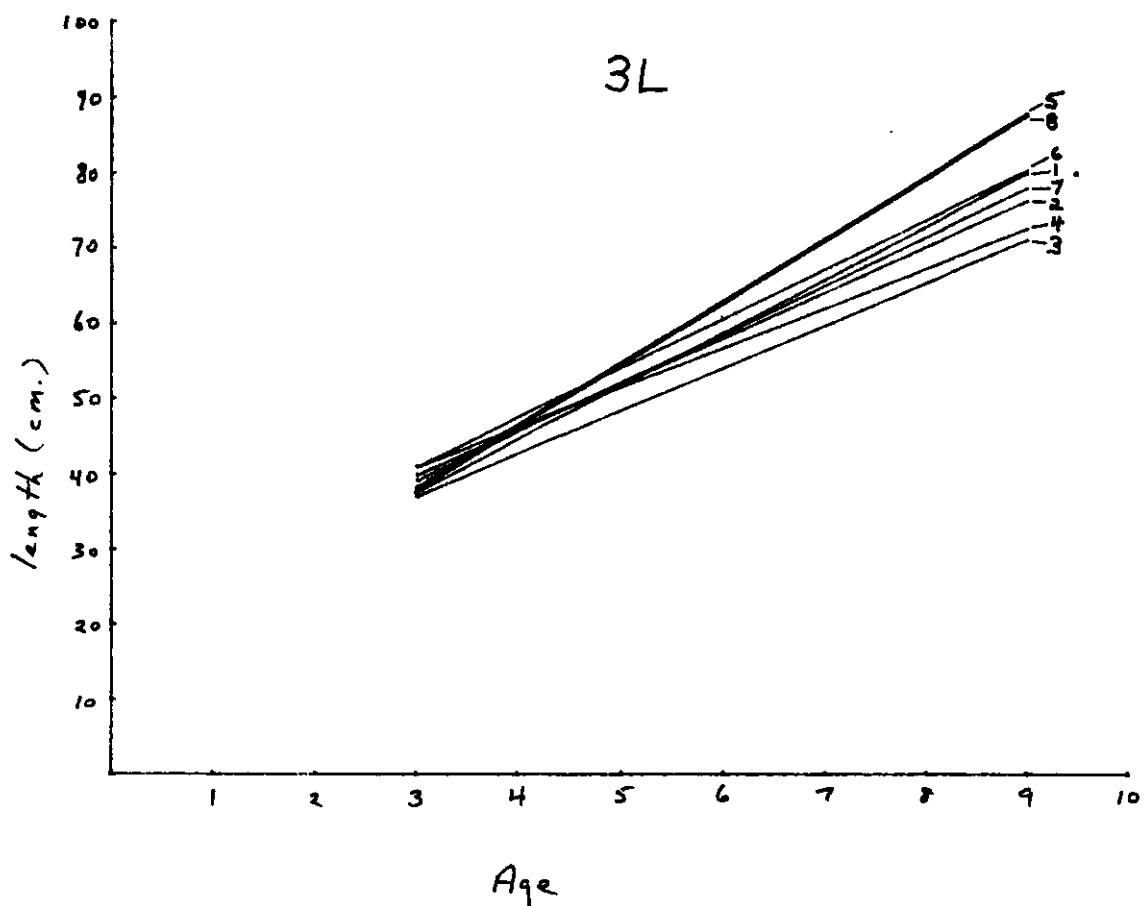


Fig. 5. Least squares fit of length-at-age against age for each reader in Div. 3L.

Appendix I

List of Participants in Ageing Workshop at St. John's, Canada, 1977.

Canada

Newfoundland Biological Station, St. John's.

R. Wells  
C. J. Woodford

Federal Republic of Germany

Institute für Seefischerei, 285 Bremerhaven 4,  
J. Messtorff

France

Institute Scientific et Technique des Peches Maritimes, St. Pierre et Miquelon.  
J. P. Minet            A. Forest            J.B. Perodou

German Democrdic Republic

Institute für Hochseefischerei, 251 Rostock Marienehe  
P. Ernst

Spain

Instituto de Investigaciones Pesqueras, Muelle de Bouzas  
Vigo.

J. R. Fuertes Gamundi (a)  
E. Labarta Fernandes

Union of Soviet Socialist Republics

Polar Research Institute, (PINRO), Knipovich 6, Murmansk,  
A. I Postolaky

Foreign Department, Ministry of Fisheries, 12 Roydestvensky Blvd., Moscow  
V. Solodovnik (b)

(a) Supplied interpretations of ages but did not attend workshop

(b) Acted as interpreter

AGEING WORKSHOP ST JOHNS NFLD 1977

Appendix 2. Detailed list of age determinations by each reader, including "best ages" where available.

ICNAF DIV	SPEC NO	LEN	* 1. AGE	EDG	REL	* * 2. AGE	EDG	REL	* * 3. AGE	EDG	REL	* * 4. AGE	EDG	REL	* * 5. AGE	EDG	REL	* * 6. AGE	EDG	REL	* * 7. AGE	EDG	REL	* * 8. AGE	EDG	REL	"best ages"
2J	J01	22	3	2	2	1	2	2	1	2	2	1	2	2	1	2	2	1	2	2	1	2	2	1	2	2	1
	J02	22	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	J03	22	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	J04	24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	J05	25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	J06	25	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	J07	25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	J08	25	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	J09	26	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	J10	26	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	J11	26	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	J12	27	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	J13	27	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	J14	27	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	J15	28	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	J16	28	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	J17	29	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	J18	30	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	J19	30	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	J20	30	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	J22	31	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	J24	31	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	001	32	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	002	33	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	004	34	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	005	43	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	006	45	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	007	46	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	008	46	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	011	47	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	013	48	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	014	49	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	015	49	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	016	48	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	017	48	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	018	49	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	020	49	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	021	50	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	023	50	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	024	52	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	025	52	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

AGEING WORKSHOP ST JOHNS NFLD 1977

DETAIL LIST FOR ALL READERS

AGEING WORKSHOP ST JOHNS NFLD 1977

DETAIL LIST FOR ALL READERS

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AGEING WORKSHOP ST JOHNS NFLO 1977

DETAILED LIST FOR ALL READERS

AGEING WORKSHOP ST JOHNS NFLD 1977

DETAIL LIST FOR ALL READERS



AGEING WORKSHOP ST JOHNS NFLD 1977

DETAIL LIST FOR ALL READERS										
ICNAF SPEC DIV NO	LEN	AGE	EDG	REL	*	*	*	*	*	*
002	004	008	010	012	015	016	018	020	021	023
	005	009	011	013	014	017	019	020	021	025
	006	009	010	012	014	016	018	020	021	026
	007	009	010	012	014	016	018	020	021	027
	008	009	010	012	014	016	018	020	021	028
	009	009	010	012	014	016	018	020	021	029
	010	009	010	012	014	016	018	020	021	030
	011	009	010	012	014	016	018	020	021	031
	012	009	010	012	014	016	018	020	021	032
	013	009	010	012	014	016	018	020	021	033
	014	009	010	012	014	016	018	020	021	034
	015	009	010	012	014	016	018	020	021	035
	016	009	010	012	014	016	018	020	021	036
	017	009	010	012	014	016	018	020	021	037
	018	009	010	012	014	016	018	020	021	038
	019	009	010	012	014	016	018	020	021	039
	020	009	010	012	014	016	018	020	021	040
	021	009	010	012	014	016	018	020	021	041
	022	009	010	012	014	016	018	020	021	042
	023	009	010	012	014	016	018	020	021	043
	024	009	010	012	014	016	018	020	021	044
	025	009	010	012	014	016	018	020	021	045
	026	009	010	012	014	016	018	020	021	046
	027	009	010	012	014	016	018	020	021	047
	028	009	010	012	014	016	018	020	021	048
	029	009	010	012	014	016	018	020	021	049
	030	009	010	012	014	016	018	020	021	050
	031	009	010	012	014	016	018	020	021	051
	032	009	010	012	014	016	018	020	021	052
	033	009	010	012	014	016	018	020	021	053
	034	009	010	012	014	016	018	020	021	054
	035	009	010	012	014	016	018	020	021	055
	036	009	010	012	014	016	018	020	021	056
	037	009	010	012	014	016	018	020	021	057
	038	009	010	012	014	016	018	020	021	058
	039	009	010	012	014	016	018	020	021	059
	040	009	010	012	014	016	018	020	021	060
	041	009	010	012	014	016	018	020	021	061
	042	009	010	012	014	016	018	020	021	062
	043	009	010	012	014	016	018	020	021	063
	044	009	010	012	014	016	018	020	021	064
	045	009	010	012	014	016	018	020	021	065
	046	009	010	012	014	016	018	020	021	066
	047	009	010	012	014	016	018	020	021	067
	048	009	010	012	014	016	018	020	021	068
	049	009	010	012	014	016	018	020	021	069
	050	009	010	012	014	016	018	020	021	070

AGENCY WORKSHOP ST JOHNS NFD 1977

DETAILS | 1ST EDITION READERS

SPEC NO	IF NO	LEN	AGE	EDG	REL	PREDICTION		ACTUAL		PREDICTION		ACTUAL	
						P	N	P	N	P	N		
053	054	52	22	22	55	061	061	061	061	061	061		
055	056	52	22	22	55	062	062	061	061	061	061		
057	058	52	22	22	55	063	063	061	061	061	061		
059	060	52	22	22	55	064	064	061	061	061	061		
061	062	52	22	22	55	065	065	061	061	061	061		
063	064	52	22	22	55	066	066	061	061	061	061		
065	066	52	22	22	55	067	067	061	061	061	061		
067	068	52	22	22	55	069	069	061	061	061	061		
069	070	52	22	22	55	071	071	061	061	061	061		
071	072	52	22	22	55	073	073	061	061	061	061		
073	074	52	22	22	55	075	075	061	061	061	061		
075	076	52	22	22	55	077	077	061	061	061	061		
077	078	52	22	22	55	079	079	061	061	061	061		
079	080	52	22	22	55	081	081	061	061	061	061		
081	082	52	22	22	55	083	083	061	061	061	061		
083	084	52	22	22	55	085	085	061	061	061	061		
085	086	52	22	22	55	087	087	061	061	061	061		
087	088	52	22	22	55	089	089	061	061	061	061		
089	090	52	22	22	55	091	091	061	061	061	061		
091	092	52	22	22	55	093	093	061	061	061	061		
093	094	52	22	22	55	095	095	061	061	061	061		
095	096	52	22	22	55	097	097	061	061	061	061		
097	098	52	22	22	55	099	099	061	061	061	061		
099	100	52	22	22	55	101	101	061	061	061	061		

AGEING WORKSHOP ST JOHNS NFLD 1977

DETAIL LIST FOR ALL READERS

Appendix 3 Anomalies between pairs of readers (estimated age by reader a - estimated age by reader b) (2J comm)

READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	
READER	1	TO	7	VS	8																	
1	1		1		1	1	3	19	52	32	11	1	1								121	
2	2		1		1	1	2	12	66	30	2	1	1								115	
3	3		1		1	1	1	6	38	27	6	2	1								84	
4	4		1		1	1	1	15	40	23	51	29	6	4	1						121	
5	5		1		1	1	2	13	53	35	18	3	1								119	
6	6		1		1	2	15	75	25	3											120	
7	7		1																		121	
READER	1	TO	6	VS	7																	
1	1					2	25	52	36	4	1	1									121	
2	2					2	15	72	23	2	1	1									115	
3	3					2	10	36	31	4	3	1									84	
4	4					1	2	10	5	21	59	23	9	1	2						120	
5	5					1	2	10	32	55	18	1									119	
6	6					1	2	1	21	50	36	8	3	1							120	
READER	1	TO	5	VS	6																	
1	1		1		1	3	3	39	45	21	6	1	1								120	
2	2		1		2	3	17	27	49	22	3										114	
3	3		1		2	1	7	35	17	17	10										84	
4	4		1		2	6	16	37	41	37	19	6	4								119	
5	5		2		1	6	16	37	40	13											118	
READER	1	TO	4	VS	5																	
1	1					1	17	43	39	14	3	1	1								119	
2	2					1	18	47	35	11	2	1									114	
3	3					1	5	32	27	15	3										82	
4	4					1	1	22	36	30	19	4	2	1							116	
READER	1	TO	3	VS	4																	
1	1					1	5	15	46	36	7										120	
2	2					1	2	4	30	44	33	1	1								115	
3	3					1	3	33	35	1	1										84	
READER	1	TO	2	VS	3																	
1	1					2	9	12	45	11	5										84	
2	2					1	4	19	51	16											81	
READER	1	TO	1	VS	2																	115
1						3	20	55	32	5												

OTOLITH AGE READING EXPERIMENT  
FREQ OF READINGS OF EACH READER WHEN COMPARED WITH ALL OTHER READERS (3K comm).

READER	1	2	3	4	5	6	7	8	9	10
READER 1 TO 7 VS 8	1	2	14	32	48	25	3	1	1	127
2	2	8	55	38	11	2	2	115	115	115
3	3	7	19	39	22	9	3	99	99	99
4	4	8	38	41	19	16	5	127	127	127
5	5	5	34	59	21	6	1	127	127	127
6	6	9	55	37	13	7	2	124	124	124
7	7	10	65	30	16	2	2	127	127	127
READER 1 TO 6 VS 7	1	1	2	5	17	44	39	16	1	126
2	2	2	1	1	26	59	24	3	115	115
3	3	12	31	41	12	2	2	99	99	99
4	4	3	20	47	29	21	4	127	127	127
5	5	15	46	57	26	1	3	127	127	127
6	6	1	2	15	23	60	29	6	2	124
READER 1 TO 5 VS 6	1	9	15	48	46	6	1	1	123	123
2	2	1	1	24	46	31	1	1	112	112
3	3	6	17	28	26	17	3	1	97	97
4	4	5	22	42	34	14	5	2	124	124
5	5	1	4	14	52	45	7	1	124	124
READER 1 TO 4 VS 5	1	1	1	4	14	51	25	3	1	127
2	2	2	3	51	25	35	12	1	115	115
3	3	2	2	25	26	35	10	1	99	99
4	4	1	1	39	46	26	10	2	127	127
READER 1 TO 3 VS 4	1	1	3	8	10	24	41	31	6	126
2	2	2	5	14	28	47	17	2	115	115
3	3	8	6	18	27	29	28	6	99	99
READER 1 TO 2 VS 3	1	1	6	14	14	33	26	4	98	98
2	2	12	12	15	26	39	10	1	92	92
READER 1 TO 1 VS 2	1	1	4	15	44	43	8	1	115	115

O TO LITH AGE READING EXPERIMENT  
FWEG OF READINGS OF EACH READER WHEN COMPARED WITH ALL OTHER READERS (3L comm)

READER -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

READER 1 TO 7 VS 8

1		2	4	9	58	29	8	9	2	1	1	1	121
2			10	59	26	8	4	1					110
3			4	25	32	19	9	2	1	1	1	1	92
4			5	9	50	23	6	2	2	1	1	1	120
5			16	69	19	25	4	4	2	1	1	1	120
6			19	67	17	7	3	4	2	1	1	1	116
7			9	67	26	7							120

READER 1 TO 6 VS 7

1	1	2	2	3	5	14	58	20	8	3	2	1	120
2		1		1	3	10	71	18	4				109
3			2	2	1	13	43	28	12	5			92
4			2	5	9	23	60	31	9	4			120
5			1	2	1	2	65	12					119
6			2	2	2	28	77	6	2				116

READER 1 TO 5 VS 6

1	1	2	2	2	1	7	55	30	7	6	1		116
2		1	1	1	2	4	58	36	2	1			107
3			1	1	1	2	36	24	20	4	2		89
4			1	1	1	5	61	32	14	1			116
5			2	1	1	2	18	68	18	1			114

READER 1 TO 4 VS 5

1		1	1	2	1	6	58	35	8	5	2	1	120
2			1	1	1	7	64	21	9	4	1	2	110
3			1	1	1	5	29	24	22	7	4	2	92
4			1	1	1	8	54	26	11	6	4	1	118

READER 1 TO 3 VS 4

1		3	1	1	5	19	53	23	3	2	1		119
2			1	1	2	9	27	46	20	13	3		109
3			1	1	5	10	40	22	13				92

READER 1 TO 2 VS 3

1		1	1	6	15	25	26	13	1	2	1		88
2			1	1	5	10	27	36	9				110

### **TOTOLITH AGE READING EXPERIMENT**

READER -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9

DIGITAL AGE READING EXPERIMENT  
FREQ OF READINGS OF EACH READER WHEN COMPARED WITH ALL OTHER READERS (2J baby).

READER -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

READER 1 TO 7 VS 8

1	6	17	2																	25
2		11	13																	24
3		12	15																	17
4		18	17																	25
5		21	4																	25
6		3	25																	25
7			1																	25

READER 1 TO 6 VS 7

1	1	4	17	2	13	3													25
2		12	9																24
3		12	13	2															17
4		16	19																25
5		1	17	7	3														25
6			1	21	3														25

READER 1 TO 5 VS 6

1	6	17	2																25
2		11	13																24
3		12	15																17
4		16	17																25
5		21	4																25

READER 1 TO 4 VS 5

1	9	15	19																25
2		12	15	12															24
3		1	20	4															17
4																			25

READER 1 TO 3 VS 4

1	2	8	14	1															25
2		1	16	7															24
3				11															17

READER 1 TO 2 VS 3

1	4	9	4																17
2		7	10																17
3																			24

READER 1 TO 1 VS 2

1	4	9	11																24
---	---	---	----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

ONOLITH AGE READING EXPERIMENT  
FREQ OF READINGS OF EACH READER WHEN COMPARED WITH ALL OTHER READERS (3K baby)

READER -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

READER 1 TO 7 VS 8

1																					
2	1																				
3	2	1																			
4	3	2	1																		
5	4	3	2	1																	
6	5	4	3	2	1																
7	6	5	4	3	2	1															

READER 1 TO 6 VS 7

1																					
2	1																				
3	2	1																			
4	3	2	1																		
5	4	3	2	1																	
6	5	4	3	2	1																

READER 1 TO 5 VS 6

1																					
2	1																				
3	2	1																			
4	3	2	1																		
5	4	3	2	1																	

READER 1 TO 4 VS 5

1																					
2	1																				
3	2	1																			
4	3	2	1																		

READER 1 TO 3 VS 4

1																					
2	1																				
3	2	1																			
4	3	2	1																		

READER 1 TO 2 VS 3

1																					
2	1																				

READER 1 TO 1 VS 2

1																					
2	1																				

**Appendix 4. Anomalies between each reader and "best ages".**

OTOLITH AGE READING EXPERIMENT 1977											AGREEMENT AGE (2J comm)													
FREQ OF READINGS OF EACH READER WHEN COMPARED WITH AGREEMENT AGE																								
READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10			
1								1	17	19	7	1										45		
2								1	9	28	5												33	
3								1	6	16	10	1											45	
4								1	6	16	10	24	6	3	1								44	
5								2	16	23	23												44	
6								1	7	31	4	1											45	
7								1	9	34	1												45	
8								7	35	3														44
	0	0	0	0	0	0	0	5	72	196	57	9	4	1	0	0	0	0	0	0	0		344	

OTOLITH AGE READING EXPERIMENT 1977											AGREEMENT AGE (3K comm)												
FREQ OF READINGS OF EACH READER WHEN COMPARED WITH AGREEMENT AGE																							
READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10		
1								1	2	8	26	5										42	
2								1	3	4	15	14	3									39	
3								1	3	12	12	3	2									32	
4								2	1	7	29	12	1									42	
5								1	1	4	26	11	2									40	
6								1	3	4	32	4	1									42	
7								1	5	26	7	1											42
8								0	0	0	0	2	3	10	31	183	70	17	5	0	0	0	
	0	0	0	0	0	0	0	5	72	196	57	9	4	1	0	0	0	0	0	0	0		321

OTOLITH AGE READING EXPERIMENT 1977

FREQ OF READINGS OF EACH READER WHEN COMPARED WITH AGREEMENT AGE (3L COMM)

READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	
1									2	3	47	24	7	4	3	4	5	6	7	8	9	10
2									5	55	21	2	1									87
3									1	1	33	19	13	2	1							83
4									1	1	56	19	9									69
5									1	2	9	64	11									87
6									1	1	74	1										86
7									1	1	73	12	1									85
8									2	15	61	8	1									87
	0	0	0	0	0	0	0	1	7	44	463	115	33	7	1	0	0	0	0	0	0	671

OTOLITH AGE READING EXPERIMENT 1977

FREQ OF READINGS OF EACH READER WHEN COMPARED WITH AGREEMENT AGE (total COMM)

READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	
1									1	5	28	92	36	7	5							174
2									4	18	98	40	5									165
3									1	10	61	41	17	4	1							134
4									2	1	52	83	58	24	5							174
5									5	32	116	16	1									172
6									1	3	16	131	16	1	2							169
7									1	14	139	17	3									174
8									5	27	122	18	2									174
	0	0	0	0	0	0	2	4	22	147	842	242	59	16	2	0	0	0	0	0	0	1336

OTOLITH AGE READING EXPERIMENT 1977

FREQ OF READINGS OF EACH READER WHEN COMPARED WITH AGREEMENT AGE (2J baby)

READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
1										6	17	2									25
2										6	11	13									24
3										6	12	15									17
4										6	18	7									25
5										6	21	4									25
6										6	3	25									25
7										6	21	1									25
8										6	25										25
	0	0	0	0	0	0	0	0	0	9	140	42	0	0	0	0	0	0	0	0	191

OTOLITH AGE READING EXPERIMENT 1977

FREQ OF READINGS OF EACH READER WHEN COMPARED WITH AGREEMENT AGE (3K baby)

READER	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
1											14	8	3								25
2											6	13	12								25
3											6	13	1								22
4											6	15	2								25
5											6	14	8								22
6											6	23	2								25
7											4	21									25
8											4	20	5								25
	0	0	0	0	0	0	0	0	0	4	108	64	18	0	0	0	0	0	0	0	194

APPENDIX 5.  
READER LENGTH FREQUENCY AGE-LENGTH KEY

- 35 -

READER NO.	1	AREA	3L	AGES						NUMBER PER MILLE	TOTAL
				5	6	7	8	9	10		
LEN	1	2	3	4	5	6	7	8	9	0.0	2.0
31*	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
34*	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0
37*	0.0	0.0	7.3	14.5	7.3	13.4	0.0	0.0	0.0	0.0	47.0
40*	0.0	0.0	6.7	20.1	6.7	21.0	0.0	0.0	0.0	0.0	71.0
43*	0.0	0.0	0.0	35.0	14.0	21.0	0.0	0.0	0.0	0.0	83.0
46*	0.0	0.0	0.0	13.8	6.2	9.0	0.0	0.0	0.0	0.0	45.0
49*	0.0	0.0	0.0	14.2	14.2	14.2	0.0	0.0	0.0	0.0	46.0
52*	0.0	0.0	0.0	7.6	6.0	8.0	0.0	0.0	0.0	0.0	48.0
55*	0.0	0.0	0.0	0.0	37.0	22.0	0.0	0.0	0.0	0.0	45.0
58*	0.0	0.0	0.0	1.7	1.0	3.4	0.0	0.0	0.0	0.0	20.0
61*	0.0	0.0	0.0	27.0	9.0	34.3	0.0	0.0	0.0	0.0	14.0
64*	0.0	0.0	0.0	0.0	2.9	4.6	0.0	0.0	0.0	0.0	13.0
67*	0.0	0.0	0.0	11.5	2.3	8.6	0.0	0.0	0.0	0.0	13.0
70*	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	11.0
73*	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.0	0.0	0.0	11.0
76*	0.0	0.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0	0.0	11.0
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
100*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
103*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
115*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
118*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
121*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
124*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
127*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
130*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
133*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
136*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
139*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
LEN	1	2	3	4	5	6	7	8	9	0.0	10.0

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	2	AREA	3L	AGES	NUMBER PER MILLE	9	10	11	12	13	14	15	15+	NK	TOTAL		
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	
31*	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	
34*	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	
37*	0.0	0.0	7.3	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	
40*	0.0	0.0	26.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
43*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
46*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
49*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
52*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
55*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
58*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
61*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
67*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
73*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
100*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
103*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
115*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
118*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
121*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
124*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
127*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
130*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
133*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
136*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
139*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	48.7	201.6	184.9	164.5	61.8	128.9	37.7	11.0	14.0	16.0	36.0	0.0	41.0	55.0	1001.0
	0.0	0.0	39.5	44.0	53.8	58.8	65.6	72.0	67.6	91.0	82.0	105.6	99.9	0.0	0.0	120.0	104.3

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	3	AREA	3L	AGES	NUMBER PER MILLE	9	8	7	6	5	4	3	2	1	LEN		
31*	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	31*		
34*	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34*		
37*	0.0	0.0	21.6	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37*		
40*	0.0	0.0	31.3	15.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40*		
43*	0.0	0.0	66.0	27.7	55.3	23.7	35.5	28.5	24.7	20.0	22.5	23.5	11.8	0.0	43*		
46*	0.0	0.0	27.0	1.1	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46*		
49*	0.0	0.0	52.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49*		
52*	0.0	0.0	55.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52*		
56*	0.0	0.0	61.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56*		
64*	0.0	0.0	67.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64*		
70*	0.0	0.0	70.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70*		
73*	0.0	0.0	73.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73*		
76*	0.0	0.0	79.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76*		
82*	0.0	0.0	85.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	82*		
86*	0.0	0.0	91.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86*		
94*	0.0	0.0	94.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	94*		
97*	0.0	0.0	97.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97*		
100*	0.0	0.0	103.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100*		
106*	0.0	0.0	109.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106*		
112*	0.0	0.0	112.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	112*		
115*	0.0	0.0	115.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115*		
118*	0.0	0.0	121.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118*		
124*	0.0	0.0	127.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	124*		
127*	0.0	0.0	130.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	127*		
130*	0.0	0.0	133.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	130*		
136*	0.0	0.0	139.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	136*		
139*	0.0	0.0	141.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	139*		
0.0	0.0	0.0	146.6	86.4	151.8	134.7	169.2	113.1	9.3	14.0	10.0	39.0	8.0	6.0	33.0	45.0	1001.0
0.0	0.0	0.0	147.0	42.9	46.9	57.4	66.6	72.5	76.0	82.0	100.0	96.2	106.0	115.0	116.5	116.3	

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	4	AREA	3L	NUMBER PER MILLE	AGE 6	AGE 5	AGE 4	AGE 3	AGE 2	AGE 1	LEN
1	31*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31*
	34*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34*
	37*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37*
	40*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40*
	43*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43*
	46*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46*
	49*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49*
	52*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52*
	55*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55*
	58*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58*
	61*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61*
	64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64*
	67*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67*
	70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70*
	73*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73*
	76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76*
	79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79*
	82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	82*
	85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85*
	88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88*
	91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91*
	94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	94*
	97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97*
	100*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100*
	103*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	103*
	106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106*
	109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109*
	112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	112*
	115*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115*
	118*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118*
	121*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	121*
	124*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	124*
	127*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	127*
	130*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	130*
	133*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133*
	136*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	136*
	139*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	139*
		0.0	0.0	0.0	55.3	155.9	195.2	128.7	105.5	126.1	52.0
		0.0	0.0	0.0	36.7	46.4	53.0	55.4	60.6	67.5	73.2
		0.0	0.0	0.0							83.9
		0.0	0.0	0.0							91.8
		0.0	0.0	0.0							110.2
		0.0	0.0	0.0							0.0
		0.0	0.0	0.0							130.0
		0.0	0.0	0.0							101.7
		0.0	0.0	0.0							119.5
		0.0	0.0	0.0							121.0

WEAVER LENGTH FREQUENCY AGGREGATE KEY

WEAVER NO.	S	AREA	JL	LEN	ALFS	NUMBER PER MILE	8	9	10	11	12	13	14	15	15+	nk	TOTAL
31.	0.0	0.0	2.0	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	10.0
34.	0.0	0.0	5.0	14.5	0.0	0.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.0
37.	0.0	0.0	14.5	20.1	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1
40.	0.0	0.0	4.5	26.9	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6
43.	0.0	0.0	4.5	28.4	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
46.	0.0	0.0	6.9	25.5	26.0	0.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
49.	0.0	0.0	52.	22.6	45.6	14.6	46.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.0
52.	0.0	0.0	55.	27.4	44.4	14.6	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0
55.	0.0	0.0	58.	20.0	36.0	20.0	37.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0
58.	0.0	0.0	61.	6.9	55.3	26.4	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
61.	0.0	0.0	64.	67.	59.4	18.9	9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
64.	0.0	0.0	67.	7.0	11.5	9.4	11.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
67.	0.0	0.0	73.	7.3	10.0	8.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
70.	0.0	0.0	76.	7.9	9.0	9.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
73.	0.0	0.0	79.	6.2	9.0	8.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
76.	0.0	0.0	82.	65.	9.4	9.4	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
79.	0.0	0.0	85.	68.	9.4	9.4	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4
82.	0.0	0.0	89.	61.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
85.	0.0	0.0	94.	97.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
89.	0.0	0.0	100.	103.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
94.	0.0	0.0	106.	109.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
97.	0.0	0.0	112.	115.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
100.	0.0	0.0	118.	121.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
103.	0.0	0.0	124.	127.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
106.	0.0	0.0	130.	133.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
109.	0.0	0.0	135.	139.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
112.	0.0	0.0	115.	118.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
118.	0.0	0.0	121.	124.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
121.	0.0	0.0	127.	130.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
124.	0.0	0.0	133.	139.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
130.	0.0	0.0	115.	118.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
133.	0.0	0.0	121.	124.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
139.	0.0	0.0	133.	139.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
115.	0.0	0.0	121.	124.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
118.	0.0	0.0	124.	130.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
121.	0.0	0.0	133.	139.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
124.	0.0	0.0	139.	143.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
130.	0.0	0.0	133.	139.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
133.	0.0	0.0	139.	143.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0
139.	0.0	0.0	143.	143.	9.0	9.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	6	AREA	3L	AGES	NUMBER PER MILLE	9	10	NK	TOTAL
LEN	1	2	3	4	5	6	7	15+	
31.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	
34.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	
37.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	
40.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	
43.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	
46.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	
49.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	
52.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	
55.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	
58.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	
61.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	
64.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	
67.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
70.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	
73.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
76.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	
82.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	
91.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	
94.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	
97.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	
103.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
106.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	
109.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
112.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
115.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
118.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
121.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
124.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
127.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
130.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
133.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
136.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
139.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	74.6	250.9	208.2	75.1	98.9	126.9	35.0
	0.0	0.0	37.6	47.2	56.6	62.4	75.4	67.0	90.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.3
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	103.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.3
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	117.9
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	124.4

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	7	AREA	3L	5	6	7	8	NUMBER PER MILLE	9	10	NK	TOTAL
LEN	1	2	3	4	5	6	7	8	9	10	0.0	2.0
31*	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
34*	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0
37*	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.0
40*	0.0	0.0	26.9	20.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.0
43*	0.0	0.0	0.0	6.9	5.3	7.7	0.0	0.0	0.0	0.0	0.0	83.0
46*	0.0	0.0	6.9	6.9	2	6.9	0.0	0.0	0.0	0.0	0.0	71.0
49*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.0
52*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.0
55*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0
61*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.0
67*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.0
70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0
73*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
100*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
103*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0
112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0
115*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
118*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
121*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
124*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
127*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
133*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
136*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
139*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	74.8	187.5	167.6	157.6	77.6	129.6	51.3	21.0	15.0	13.0	39.0
0.0	38.3	44.8	53.4	59.6	65.4	70.2	78.7	95.3	88.9	94.0	103.6	115.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	114.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	119.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	121.0

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	8	ARLA	3L	NUMBER PER MILLE						AGES 6 5 4 3 2 1	LEN		
				7	8	9	10	11	12	13	14	15	15+
31*	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
34*	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
37*	0.0	0.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.0
40*	0.0	0.0	20.1	26.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.0
43*	0.0	0.0	20.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.0
46*	0.0	0.0	62.2	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0
49*	0.0	0.0	21.3	28.4	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
52*	0.0	0.0	15.2	53.2	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0
55*	0.0	0.0	0.0	59.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
58*	0.0	0.0	8.6	25.7	17.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0
61*	0.0	0.0	0.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
64*	0.0	0.0	0.0	16.8	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.0
67*	0.0	0.0	0.0	11.5	23.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
70*	0.0	0.0	0.0	0.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0
73*	0.0	0.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	11.0
76*	0.0	0.0	0.0	0.0	0.0	22.5	1.1	0.0	0.0	0.0	0.0	0.0	15.0
79*	0.0	0.0	0.0	0.0	0.0	9.3	27.8	0.0	0.0	0.0	0.0	0.0	12.0
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	12.0
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
100*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
103*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
115*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
118*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
121*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
124*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
127*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
130*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
133*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
136*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
139*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0
0.0	0.0	0.0	61.1	204.2	262.6	141.4	98.4	80.3	34.0	13.0	42.0	0.0	37.0
0.0	0.0	0.0	37.3	45.4	55.5	61.1	73.2	77.0	88.4	121.0	105.1	102.1	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

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	1	AREA	2J	5	6	AGES	NUMBER PER MILLE	9	10	11	12	13	14	15	15+	NK	TOTAL	
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL
37.	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	1.0	1.0
40.	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	0.0	0.0	11.0	18.0
43.	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	45.0
46.	0.0	0.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.0	106.0
49.	0.0	0.0	28.2	57.1	24.5	16.3	24.5	56.7	16.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176.0	176.0
52.	0.0	0.0	0.0	35.5	67.0	17.8	98.0	53.5	8.9	17.8	0.0	0.0	0.0	0.0	0.0	0.0	196.0	196.0
55.	0.0	0.0	0.0	0.0	0.0	16.6	109.3	42.0	8.4	8.4	0.0	0.0	0.0	0.0	0.0	0.0	111.0	111.0
58.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0	65.0
61.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	39.0
64.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0
67.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	13.0
70.	0.0	0.0	0.0	0.0	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	7.0
73.	0.0	0.0	0.0	0.0	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	4.0
76.	0.0	0.0	0.0	0.0	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
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	65.2	108.6	141.9	307.2	225.9	65.8	51.2	20.2	4.0	0.0	0.0	0.0	0.0	0.0	999.0	999.0
0.0	0.0	0.0	44.4	49.4	53.7	55.8	59.4	61.6	61.5	69.6	79.0	0.0	0.0	0.0	0.0	0.0	0.0	78.3

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	2	AREA	2J	5	6	AGES	NUMBER PER MILLE	9	10	11	12	13	14	15	15+	NK	TOTAL		
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL	
37.	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	1.0	1.0	
40.	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	0.0	0.0	11.0	18.0	
43.	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	45.0	
46.	0.0	0.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.0	106.0	
49.	0.0	0.0	28.2	32.6	48.9	27.9	24.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176.0	176.0	
52.	0.0	0.0	0.0	46.3	83.4	46.3	46.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	196.0	196.0	
55.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
58.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
61.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
64.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
67.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
70.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
73.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
76.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
82.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	39.8	48.8	51.9	56.5	59.4	64.9	67.6	79.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.3	78.3

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	3	AREA	2J	AGES					NUMBER PER MILLE				11	12	13	14	15	15+	NK	TOTAL
				5	6	7	8	9	10	11	12	13								
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL		
37*	0.0	0.0	0.0	0.0	0.0	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	
40*	0.0	0.0	0.0	0.0	0.0	0.0	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	
43*	0.0	0.0	0.0	0.0	0.0	0.0	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	
46*	0.0	0.0	0.0	0.0	0.0	0.0	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	
49*	0.0	0.0	0.0	0.0	0.0	0.0	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	
52*	0.0	0.0	0.0	0.0	0.0	0.0	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	
55*	0.0	0.0	0.0	0.0	0.0	0.0	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	
58*	0.0	0.0	0.0	0.0	0.0	0.0	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	
61*	0.0	0.0	0.0	0.0	0.0	0.0	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	
64*	0.0	0.0	0.0	0.0	0.0	0.0	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	
67*	0.0	0.0	0.0	0.0	0.0	0.0	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	
70*	0.0	0.0	0.0	0.0	0.0	0.0	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	
73*	0.0	0.0	0.0	0.0	0.0	0.0	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	
76*	0.0	0.0	0.0	0.0	0.0	0.0	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	
85*	0.0	0.0	0.0	0.0	0.0	0.0	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	
86*	0.0	0.0	0.0	0.0	0.0	0.0	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	29.0	38.6	165.8	314.5	258.3	133.4	32.4	4.0	0.0	0.0	0.0	0.0	0.0	23.0	999.0	
	0.0	0.0	0.0	41.9	48.6	50.0	55.6	57.3	63.1	62.6	79.0	0.0	0.0	0.0	0.0	0.0	0.0	73.5		

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	4	AREA	2J	AGES					NUMBER PER MILLE				11	12	13	14	15	15+	NK	TOTAL
				5	6	7	8	9	10	11	12	13								
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL		
37*	0.0	0.0	0.0	0.0	0.0	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	
40*	0.0	0.0	0.0	0.0	0.0	0.0	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	
43*	0.0	0.0	0.0	0.0	0.0	0.0	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	
46*	0.0	0.0	0.0	0.0	0.0	0.0	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	
49*	0.0	0.0	0.0	0.0	0.0	0.0	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	
52*	0.0	0.0	0.0	0.0	0.0	0.0	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	
55*	0.0	0.0	0.0	0.0	0.0	0.0	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	
58*	0.0	0.0	0.0	0.0	0.0	0.0	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	
61*	0.0	0.0	0.0	0.0	0.0	0.0	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	
64*	0.0	0.0	0.0	0.0	0.0	0.0	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	
67*	0.0	0.0	0.0	0.0	0.0	0.0	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	
70*	0.0	0.0	0.0	0.0	0.0	0.0	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	
73*	0.0	0.0	0.0	0.0	0.0	0.0	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	
76*	0.0	0.0	0.0	0.0	0.0	0.0	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	
79*	0.0	0.0	0.0	0.0	0.0	0.0	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	
85*	0.0	0.0	0.0	0.0	0.0	0.0	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	
86*	0.0	0.0	0.0	0.0	0.0	0.0	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	11.0	19.0	86.0	222.7	296.6	218.8	69.9	53.6	15.4	4.0	0.0	0.0	0.0	0.0	0.0	2.0	999.0	
	0.0	0.0	40.0	42.7	50.1	52.5	55.9	60.1	63.4	66.2	79.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.5	

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	5	AREA	2J		AGES			NUMBER PER MILLE				15+	NK	TOTAL
			1	2	3	4	5	6	7	8	9			
LEN	1		0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
37*	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
40*	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0
43*	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0
46*	0.0	0.0	0.0	0.0	0.0	27.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
49*	0.0	0.0	0.0	0.0	0.0	24.5	48.9	8.2	0.0	0.0	0.0	0.0	0.0	45.0
52*	0.0	0.0	0.0	0.0	0.0	52.8	88.0	26.4	8.8	0.0	0.0	0.0	0.0	106.0
55*	0.0	0.0	0.0	0.0	0.0	8.9	53.5	106.9	26.7	0.0	0.0	0.0	0.0	176.0
58*	0.0	0.0	0.0	0.0	0.0	16.6	25.2	192.5	50.5	0.0	0.0	0.0	0.0	196.0
61*	0.0	0.0	0.0	0.0	0.0	51.2	0.0	25.6	8.5	0.0	0.0	0.0	0.0	111.0
64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.8	0.0	8.1	0.0	0.0	0.0	8.1
67*	0.0	0.0	0.0	0.0	0.0	0.0	15.6	7.8	15.6	0.0	0.0	0.0	0.0	65.0
70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0
73*	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0
76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	54.5	139.0	304.4	336.1	127.2	16.7	12.1	0.0	0.0	9.0
	0.0	0.0	0.0	45.5	50.6	55.5	58.4	58.7	62.5	68.9	0.0	0.0	0.0	999.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.3

## 2 READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	6	AREA	2J		AGES			NUMBER PER MILLE				15+	NK	TOTAL	
			1	2	3	4	5	6	7	8	9				
LEN	1		0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
37*	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	
40*	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	
43*	0.0	0.0	0.0	0.0	27.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	
46*	0.0	0.0	0.0	0.0	17.7	70.7	8.8	0.0	0.0	0.0	0.0	0.0	0.0	106.0	
49*	0.0	0.0	0.0	0.0	16.8	92.2	58.7	17.8	8.4	0.0	0.0	0.0	0.0	196.0	
52*	0.0	0.0	0.0	0.0	8.9	133.6	26.7	8.9	0.0	0.0	0.0	0.0	0.0	196.0	
55*	0.0	0.0	0.0	0.0	0.0	16.6	50.8	92.5	8.4	16.8	0.0	0.0	0.0	185.0	
58*	0.0	0.0	0.0	0.0	0.0	8.5	25.6	51.2	17.1	8.5	0.0	0.0	0.0	111.0	
61*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.7	36.1	0.0	0.0	0.0	65.0	
64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	7.2	0.0	0.0	0.0	39.0	
67*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	20.0	
70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
73*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	0.0	0.0	0.0	12.0	88.3	339.8	170.3	209.8	79.6	48.9	16.3	0.0	4.0	9.0	
	0.0	0.0	0.0	39.8	48.0	52.8	55.4	59.6	62.1	61.4	63.9	70.8	0.0	79.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.3

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	7	AREA	2J	AGES	NUMBER PER MILE	10	11	12	13	14	15	15+	NK	TOTAL					
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL	
37.	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	1.0	1.0	
40.	0.0	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	0.0	11.0	
43.	0.0	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	
46.	0.0	0.0	0.0	0.0	0.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	
49.	0.0	0.0	0.0	0.0	0.0	32.6	40.8	24.5	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.0	
52.	0.0	0.0	0.0	0.0	0.0	16.8	92.2	58.7	26.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176.0	
55.	0.0	0.0	0.0	0.0	0.0	8.9	80.2	80.2	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	196.0	
58.	0.0	0.0	0.0	0.0	0.0	0.0	16.6	117.7	42.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.0	
61.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	59.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	111.0	
64.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	28.9	14.4	0.0	0.0	0.0	0.0	0.0	0.0	65.0	
67.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	
70.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	
73.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0
76.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	8	AREA	2J	AGES	NUMBER PER MILE	10	11	12	13	14	15	15+	NK	TOTAL					
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL	
37.	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	1.0	
40.	0.0	0.0	0.0	0.0	0.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	
43.	0.0	0.0	0.0	0.0	0.0	36.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	
46.	0.0	0.0	0.0	0.0	0.0	24.5	48.9	32.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.0	
49.	0.0	0.0	0.0	0.0	0.0	8.4	92.2	50.3	16.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	176.0	
52.	0.0	0.0	0.0	0.0	0.0	17.8	89.1	62.4	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	196.0	
55.	0.0	0.0	0.0	0.0	0.0	0.0	50.5	109.3	25.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	185.0	
58.	0.0	0.0	0.0	0.0	0.0	0.0	25.6	51.2	17.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	115.0	
61.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	36.1	17.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	
64.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	15.6	15.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	
67.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	
70.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	
73.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
76.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	1	AREA	3K	AGES						NUMBER PER MILLE	TOTAL	
				2	3	4	5	6	7	8	9	10
LEN	1											
4.0*	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
4.3*	0.0	0.0	15.0	15.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
4.6*	0.0	0.0	13.6	27.2	27.2	0.0	0.0	0.0	0.0	0.0	0.0	66.0
4.9*	0.0	0.0	26.0	65.0	65.0	0.0	0.0	0.0	0.0	0.0	0.0	91.0
5.2*	0.0	0.0	0.0	29.6	69.0	39.0	0.0	0.0	0.0	0.0	0.0	138.0
5.5*	0.0	0.0	0.0	17.3	34.7	43.3	26.0	8.7	0.0	0.0	0.0	130.0
5.8*	0.0	0.0	0.0	11.1	4.4	3	16.6	0.0	0.0	0.0	0.0	72.0
6.1*	0.0	0.0	0.0	5.6	22.5	28.4	5.6	0.0	0.0	0.0	0.0	62.0
6.4*	0.0	0.0	0.0	0.0	25.5	31.9	12.8	6.4	0.0	0.0	0.0	83.0
6.7*	0.0	0.0	0.0	7.2	7.2	14.4	28.8	7.2	7.2	0.0	0.0	72.0
7.0*	0.0	0.0	0.0	0.0	1.9	8	39.5	19.8	0.0	0.0	0.0	79.0
7.3*	0.0	0.0	0.0	0.0	0.0	12.4	12.4	12.4	0.0	0.0	0.0	32.0
7.6*	0.0	0.0	0.0	0.0	0.0	10.2	10.2	10.2	0.0	0.0	0.0	51.0
7.9*	0.0	0.0	0.0	0.0	0.0	10.7	10.7	10.7	0.0	0.0	0.0	32.0
8.2*	0.0	0.0	0.0	0.0	0.0	0.0	19.5	9.5	0.0	0.0	0.0	19.0
8.5*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0
8.8*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.1*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.4*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.7*	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.3*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.6*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.9*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11.2*	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	34.6	139.0	315.2	247.0	121.5	84.0	40.0	10.7	2.0	6.0
	0.0	0.0	43.7	51.3	55.1	62.5	67.2	75.9	75.6	79.0	106.0	112.0

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	2	AREA	3K	AGES						NUMBER PER MILLE	10	9	8	7
				5	6	7	8	9	10					
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14
40*	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43*	0.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46*	0.0	0.0	13.6	40.8	26.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	13.6	87.8	147.6	309.0	214.8	120.2	61.0	32.0	6.0	4.0	6.0	0.0
0.0	0.0	46.0	46.0	51.5	57.6	63.4	70.3	75.7	79.0	97.0	109.0	94.0	0.0	0.0

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	3	AREA	3K	AGES						NUMBER PER MILLE				11	12	13	14	15	15+	NK	TOTAL
				1	2	3	4	5	6	7	8	9	10								
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL	6.0	30.0	
40.	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43.	0.0	0.0	0.0	15.0	0.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46.	0.0	0.0	34.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49.	0.0	0.0	0.0	60.7	15.2	15.2	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
52.	0.0	0.0	0.0	0.0	23.0	57.5	34.5	23.0	23.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55.	0.0	0.0	0.0	0.0	13.0	78.0	13.0	13.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58.	0.0	0.0	0.0	0.0	0.0	14.4	21.6	21.6	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61.	0.0	0.0	0.0	0.0	0.0	0.0	13.8	27.6	20.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5	52.8	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.6	20.6	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
70.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2	0.0	13.2	26.3	26.3	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
73.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
91.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
109.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	34.0	115.7	64.3	220.5	147.4	193.9	123.4	34.5	31.6	16.7	8.0	2.0	0.0	0.0	0.0	0.0	0.0	10.0	1002.0
2	0.0	0.0	46.0	46.9	55.6	55.6	61.1	63.3	68.4	74.7	75.1	85.5	97.0	112.0	0.0	0.0	0.0	0.0	0.0	94.6	0

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	6	AREA	3K	5	AGES	NUMBER PER MILLE	7	8	9	10	11	12	13	14	15	15+	NK	TOTAL
LEN	1	2	3	4	5													
4.0*	0.0	0.0	6.0	0.0	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	30.0
4.3*	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	68.0
4.6*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.0
4.9*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	138.0
5.2*	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	130.0
5.5*	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	172.0
5.8*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.0
6.1*	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	63.0
6.4*	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	72.0
6.7*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.0
7.0*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.0
7.3*	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	51.0
7.6*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.0
7.9*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0
8.2*	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	2.0
8.5*	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	6.0
8.8*	0.0	0.0	0.0	0.0	0.0	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
9.1*	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
9.4*	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	2.0
9.7*	0.0	0.0	0.0	0.0	0.0	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
10.0*	0.0	0.0	0.0	0.0	0.0	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
10.3*	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	2.0
10.6*	0.0	0.0	0.0	0.0	0.0	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
10.9*	0.0	0.0	0.0	0.0	0.0	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
11.2*	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	2.0
							32.6	167.2	252.6	225.3	157.7	106.9	49.7	0.0	0.0	0.0	0.0	1002.0
							0.0	46.1	48.1	55.4	60.7	69.6	71.4	81.1	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	

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	6	AREA	3K	AGES	NUMBER PER MILLE	10	11	12	13	14	15	15+	NK	TOTAL	
LEN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
40*	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
43*	0.0	0.0	0.0	15.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
46*	0.0	0.0	0.0	40.8	13.6	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.0
49*	0.0	0.0	0.0	0.0	60.7	15.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.0
52*	0.0	0.0	0.0	9.9	78.9	29.6	19.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	138.0
55*	0.0	0.0	0.0	0.0	26.0	34.7	52.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	130.0
58*	0.0	0.0	0.0	0.0	18.0	36.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.0
61*	0.0	0.0	0.0	0.0	15.6	28.2	16.9	11.3	0.0	0.0	0.0	0.0	0.0	0.0	62.0
64*	0.0	0.0	0.0	0.0	19.2	31.9	12.8	10.0	0.0	0.0	0.0	0.0	0.0	0.0	83.0
67*	0.0	0.0	0.0	0.0	17.2	7.2	14.4	28.8	14.4	0.0	0.0	0.0	0.0	0.0	72.0
70*	0.0	0.0	0.0	0.0	0.0	19.8	29.6	29.9	19.8	0.0	0.0	0.0	0.0	0.0	79.0
73*	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.4	6.4	0.0	0.0	0.0	0.0	0.0	32.0
76*	0.0	0.0	0.0	0.0	0.0	10.2	0.0	0.0	0.0	40.8	0.0	0.0	0.0	0.0	51.0
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0	0.0	0.0	0.0	32.0
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0	0.0	0.0	19.0
85*	0.0	0.0	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
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	71.7	244.1	232.7	163.8	90.2	155.9	23.1	2.0	0.0	0.0	0.0	12.7
	0.0	0.0	45.7	52.7	59.2	60.7	65.4	73.4	79.5	106.0	0.0	0.0	0.0	0.0	84.2
	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

## READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	7	AREA	3K	AGES			NUMBER PER MILE				NK	TOTAL
				5	4	3	7	8	9	10		
LFN	1	2	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
40*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49*	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
91*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97*	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
106*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
109*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
112*	0.0	0.0	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	169.7	168.9	212.7	153.6	161.6	69.6	15.9	23.3	2.0	0.0
0.0	0.0	40.0	47.1	52.8	60.0	63.3	68.9	72.8	80.2	81.6	106.0	87.4

READER LENGTH FREQUENCY AGE-LENGTH KEY

READER NO.	6	AREA	3K	AGES	NUMBER PER MILLE	11	10	9	8	7	6	5	4	3	2	1	LEN
40.	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.
43.	0.0	0.0	0.0	10.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.
46.	0.0	0.0	0.0	13.4	54.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.
49.	0.0	0.0	0.0	0.0	39.0	52.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.
52.	0.0	0.0	0.0	0.0	9.9	106.4	19.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.
55.	0.0	0.0	0.0	0.0	0.0	34.7	60.7	26.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.
58.	0.0	0.0	0.0	0.0	0.0	22.2	53.2	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.
61.	0.0	0.0	0.0	0.0	0.0	0.0	22.5	39.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61.
64.	0.0	0.0	0.0	0.0	0.0	19.2	31.9	31.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64.
67.	0.0	0.0	0.0	0.0	0.0	28.8	14.4	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67.
70.	0.0	0.0	0.0	0.0	0.0	19.8	19.9	29.6	19.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.
73.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	6.4	19.2	0.0	0.0	0.0	0.0	0.0	73.
76.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.4	30.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.
79.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.
82.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	82.
85.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.
88.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.
91.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.
94.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	94.
97.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	97.
106.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106.
109.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109.
112.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	112.
	0.0	0.0	13.6	139.3	285.0	198.8	208.3	94.4	36.1	16.7	8.0	0.0	2.0	0.0	0.0	0.0	0.0
	0.0	0.0	46.0	46.4	55.9	59.5	67.4	72.7	75.0	85.5	97.0	0.0	112.0	0.0	0.0	0.0	0.0