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IMCO

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Technical Committee

PASSENGER TERM IN NT-FORMULA

Submitted by Denmark

The Working Group was instructed by the Technical Committee to find the coefficients A and B in the following formula for net tonnage:

(1) $NT = AV_c + BP$

in which V_c is the space adapted for stowage of cargo (including vehicles) with the addition of the volume of hatchways, trunks etc. leading to such spaces.

$P = (N + \frac{N_1}{6} + \frac{N_2}{10})$, as defined in TM/CONF/C.2/WP.37

The net tonnage should, however, always exceed a certain lower limit, L, to be settled upon later:

$NT \geqq L$

The term A could be made constant or variable with V_c and was determined by using the non-passenger types of ships available.

The next step was to find the coefficient B in applying the formulae (1) and (2) to the passenger ships.

Equation (2), however, shows that $L \leqq NT$. For the majority of existing passenger ships, NT is of the order of 0.4 to 0.5GT, which limit was found by most delegations to be too high.

It is therefore proposed to change the formulae as follows:

(1) $NT = AV_c + BP$

(1a) or $NT = L + BP$, whichever is the greater.

This means that the lower limit is put on the first term in (1), e where $AV_c < L$, (1a) becomes applicable, instead of (1).

Under the two assumptions:

$L = 0.25GT$

and $L = 0.30GT$

B was calculated by means of:

$$B = \frac{NT - AV_c}{P} \quad \text{for } AV_c > L$$

or $$B = \frac{NT - L}{P} \quad \text{for } AV_c \leqq L$$

The results of these calculations are shown in the appended diagrams I and II. In both, lower limit lines are indicated.

The lines suggested for the two cases, can be expressed as:

for $L = 0.25GT$: $B = 1.25 \times \frac{GT + 10,000}{10,000}$, and

for $L = 0.30GT$: $B = 1.00 \times \frac{GT + 10,000}{10,000} = 1 + \frac{GT}{10,000}$

Calculations carried out for this exercise are shown in the attached table.

Note: In the calculations, P for all ships was taken as:

$$P = N_b + \frac{N_u}{10}$$

DIAGRAM I

$NT = AV_c + BP$

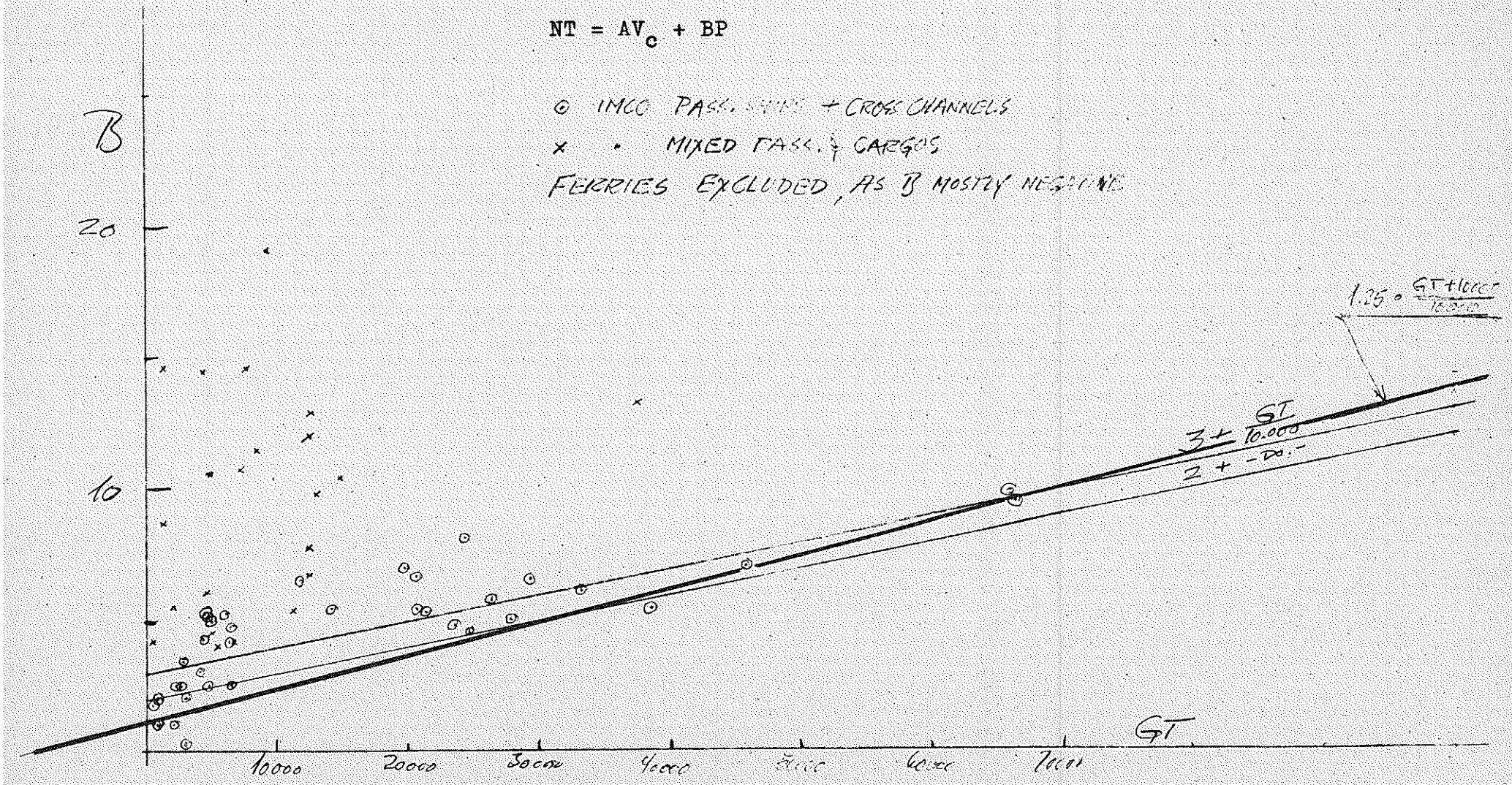
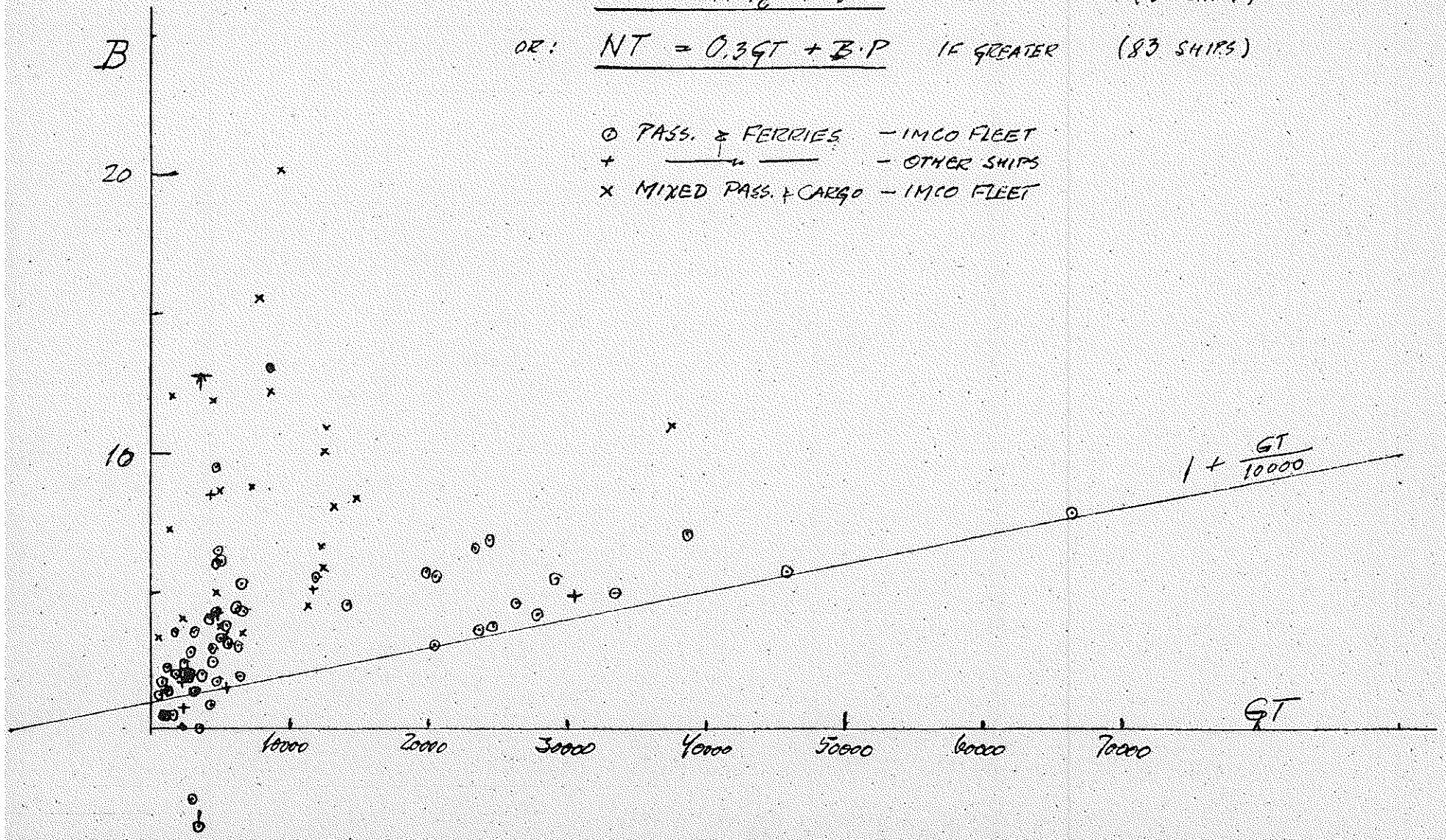


DIAGRAM II

$NT = A \cdot V_0 + B \cdot P$ (5 SHIPS)

OR: $NT = 0{,}3\,GT + B \cdot P$ IF GREATER (83 SHIPS)

⊙ PASS. & FERRIES — IMCO FLEET
\+ ——"—— — OTHER SHIPS
× MIXED PASS. + CARGO — IMCO FLEET



CALCULATION OF B IN THE FORMULA FOR NET TONNAGE

SHIP	GT	NT	$NT/_{GT}$	0.3GT	$V_c m^3$	a	aV_c	NT-L	P	B
PL -1	4775	2616	.548	1432	2692	.268	721	1188	277	4.3
2	2568	1318	.513	770	747	.257	192	548	262	2.1
PN-34	21316	11489	.538	6395	2352	.267	627	5194	778	6.66
35	5209	2600	.499	1563	0		0	1037	171	6.1
36	4835	2562	.530	1451	0		0	1111	171	6.5
37	6687	3488	.522	1856	425	.252	107	1632	378	4.3
38	6126	3522	.575	1838	425	.252	107	1684	378	4.45
PS-34	24731	12883	.521	7419	2292	.267	612	5464	1437	3.8
PK-43	24320	13900	.571	7296	3948	.271	1070	6604	955	6.9
44	38700	21880	.565	11610	2883	.269	775	10270	1442	7.1
45	20600	11625	.564	6180	8314	.278	2308	5445	960	5.65
PU -1	4871	2061	.423	1461	550	.256	141	600	337	1.8
2	3218	1322	.411	965	507	.254	129	357	256	1.4
PG -1	29429	15694	.533	8829	4037	.272	1098	6865	1248	5.5
2	20416	12167	.596	8125	7646	.277	2117	4042	1300	3.1
3	33340	17227	.516	10002	3440	.270	929	7225	1450	5.0
4	45911	24572	.535	13773	2570	.268	689	10799	1853	5.8
5	11879	6633	.559	3564	4232	.273	1154	3069	547	5.6
6	27906	15762	.564	8372	8842	.278	2460	7390	1754	4.2
PQ -1	957	519	.542	287	105	.241	25	232	133	1.75
2	2694	1379	.512	808	0		0	571	274	2.1
3	2912	1608	.552	873	261	.248	65	735	251	2.9
PY-27	26315	13536	.514	7895	7740	.277	2140	5641	1202	4.7
28	23751	11229	.472	7125	6310	.275	584	4104	1094	3.75
PT -1	66348	36063	.543	19904	7015	.276	1935	16159	2044	7.9
2	14224	7739	.544	4267	4935	.274	1350	3472	756	4.6
PU -1[x]	19860	10614	.534	5958	4010	.272	1090	4656	800	5.8
2[x]	1002	354	.353	301	127	.242	31	53	106	0.5

CALCULATION OF B IN THE FORMULA FOR NET TONNAGE (continued)

SHIP	GT	NT	NT/GT	0.3GT	$V_c m^3$	a	aV_c	NT-L	P	B
PG -7	30567	17772	.581	9170	2041	.266	543	8602	1750	4.9
8	4406	2311	.524	1322	4150	.272	1128	989	115	8.6
9	11879	6633	.557	3564	3941	.271	1068	3069	605	5.1
10	5735	3196	.557	1721	1502	.263	395	1475	996	1.5
11	2164	1155	.534	649	790	.258	204	506	276	1.8
12	1213	645	.531	364	607	.256	155	281	178	.6
PL -3	4776	2617	.548	1433	2690	.268	722	1184	277	4.3
4	2568	1319	.513	771	1006	.260	262	548	605	0.9
5	2703	1195	.442	811	4490	.264	1187	8	183	.05
ZA -1	4836	2355	.487	1452	9550	.280	.125	334	903	150	6.0
2	3077	1480	.481	923	5121	.274	.170	239	557	150	3.7
ZL -1	2703	1195	.442	811	0			0	384	183	2.1
2	1264	467	.370	379	0			0	88	62	1.4
ZN-41	2240	1096	.489	672	0			0	424	170	2.5
42	1904	933	.490	571	0			0	362	170	2.1
43	1064	352	.331	319	0			0	33	72	0.5
44	1627	744	.457	488	0			0	256	70	.7
ZS-37	3420	1335	.340	1176	500	.254	.359	46	159	107	1.5
ZF -1	5564	2914	.524	1669	3105	.270	.196	164	1245	394	3.2
ZK-50	4670	2825	.604	1401	0			0	1424	150	9.5
ZG -1	1306	687	.526	392	0			0	295	127	2.3
2	3713	1013	.273	1114	0			0	-	203	0
3	4297	2006	.466	1289	0			0	717	175	4.1
4	4504	2572	.570	1351	2143	.267	.342	196	1221	403	3.0
5	5299	2691	.508	1590	0			0	1101	329	3.35
ZQ -1	1624	528	.347	487	0			0	41	95	0.5
2	6148	2880	.468	1844	0			0	1036	196	5.3

CALCULATION OF B IN THE FORMULA FOR NET TONNAGE (CONTINUED)

SHIP	GT	NT	NT/GT	0.3GT	$V_c m^3$	a	a.V	NT-L	P	B
ZQ-3	8279	4298	.519	2484	0		0	1814	138	13.1
ZD-1	4406	1759	.399	1322	0		0	437	493	0.9
2	3529	1532	.434	1059	0		0	473	223	2.1
XS-35	6707	3276	.489	2012	1808	.266	480	1264	631	2.0
XN-39	4334	2100	.484	1300	2010	.266	535	800	310	2.6
40	5286	2791	.528	1586	2010	.266	535	1205	310	3.9
XE-1	3467	692	.200	1040	7140	.277.131	257	-348	180	-3.5
2	2943	797	.271	883	492	.253	124	-86	361	-2.4
XK-49	6230	2730	.438	1869	754	.257	194	861	277	3.1
XG-1	649	288	.443	195	0			93	70	1.3
corrected ? XE-1	5813	3038	.522	1744			a.v.	1294	100	12.9
MK-46	5100	2868	.559	1530	5628	.275.81	1253	1338	154	8.7
47	7230	3793	.525	2169	5933	.276.80	1311	1624	184	8.8
48	8550	4707	.551	2565	11725	.281 1	3298	1409	115	12.25
MG-1	6570	3624	.552	1971	2550	.268		1653	478	3.5
2	5173	2758	.532	1552	2850			1200	315	3.8
3	11440	6406	.559	3432	6530			2974	658	4.5
4	5509	2990	.543	1653	2230			1337	408	3.3
5	4406	2311	.525	1322	4050			989	83	11.9
6	4755	2495	.525	1427	2513			1068	214	5.0
7	13205	7240	.548	3962	9712	.289.61		3278	400	8.1
MQ-1	1441	814	.565	432	508			382	52	7.3
2	2245	1167	.520	674	1068			493	119	4.1
3	642	320	.498	193	368	.252.952		127	37	3.4
4	12628	7272	.611	3788	12480	.382. 89	3130	3484	594	5.9
MO-1	9283	5418	.565	2785	19000	.286.687	3680	1738	86	20.2
2	1529	793	.520	453	2985	.369.314		340	28	12.1
MS-36	37647	20928	.555	11294	18200			9634	874	11.0
MY-29	14799	7496	.506	4440	4960			3056	365	8.4

CALCULATION OF B IN THE FORMULA FOR NET TONNAGE (continued)

SHIP	GT	NT	NT/GT	Q36T	$V_c m^3$	a	a.V.	NT-L	P	B
30	7922	4327	.546	2377	10820	.281 1	3040	1287	82	15.7
31	8357	4916	.588	2507	14300	.283.778	3150	1766	52	33.9
1	12712	7263	.572	3814	15940	.283.586		3449	317	10.9
MF-2	12654	7194	.569	3796	9920			3398	336	10.1
MF-3	12460	7022	.564	3738	10560			3284	492	.7