STAFF OFFICERS' FIELD MANUAL

FOR

AMPHIBIOUS OPERATIONS

(ESPECIALLY AS IT PERTAINS TO THE PACIFIC OCEAN AREA.)

ORGANIZATION, TECHNICAL AND LOGISTICAL DATA

FLEET MARINE FORCE, PACIFIC

10 SEPTEMBER 1944

THIS MANUAL IS PUBLISHED FOR THE INFORMATION AND GUIDANCE OF ALL CONCERNED.

PRINTED BY 6 BASE DEPOT REPRODUCTION SECTION

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FOR

AMPHIBIOUS OPERATIONS

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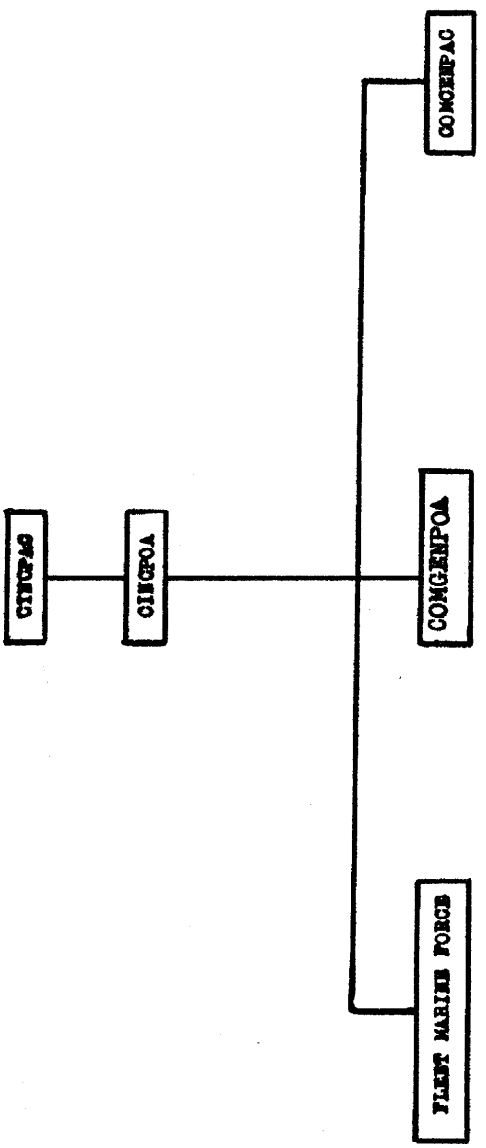

CENTRAL PACIFIC AREA

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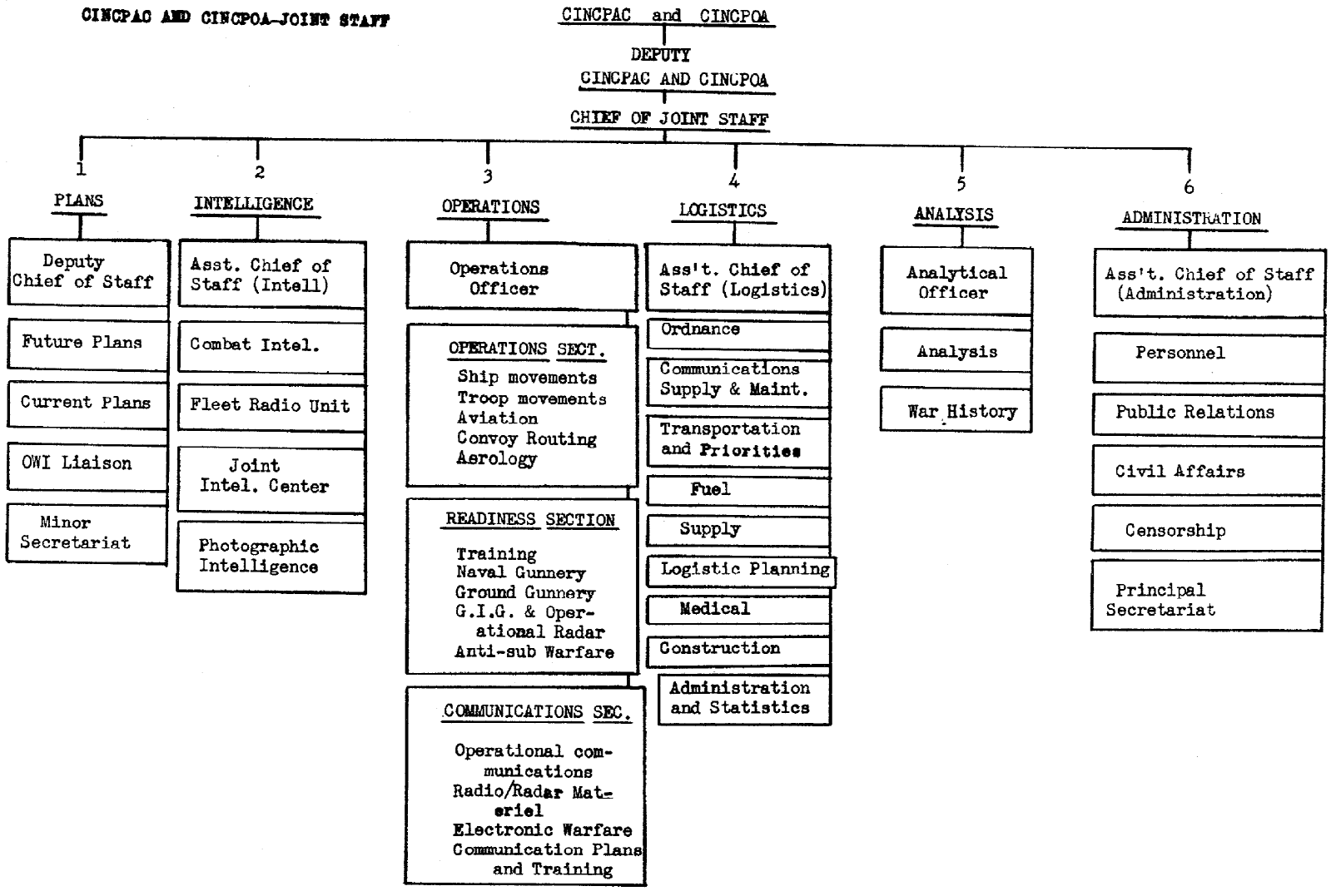
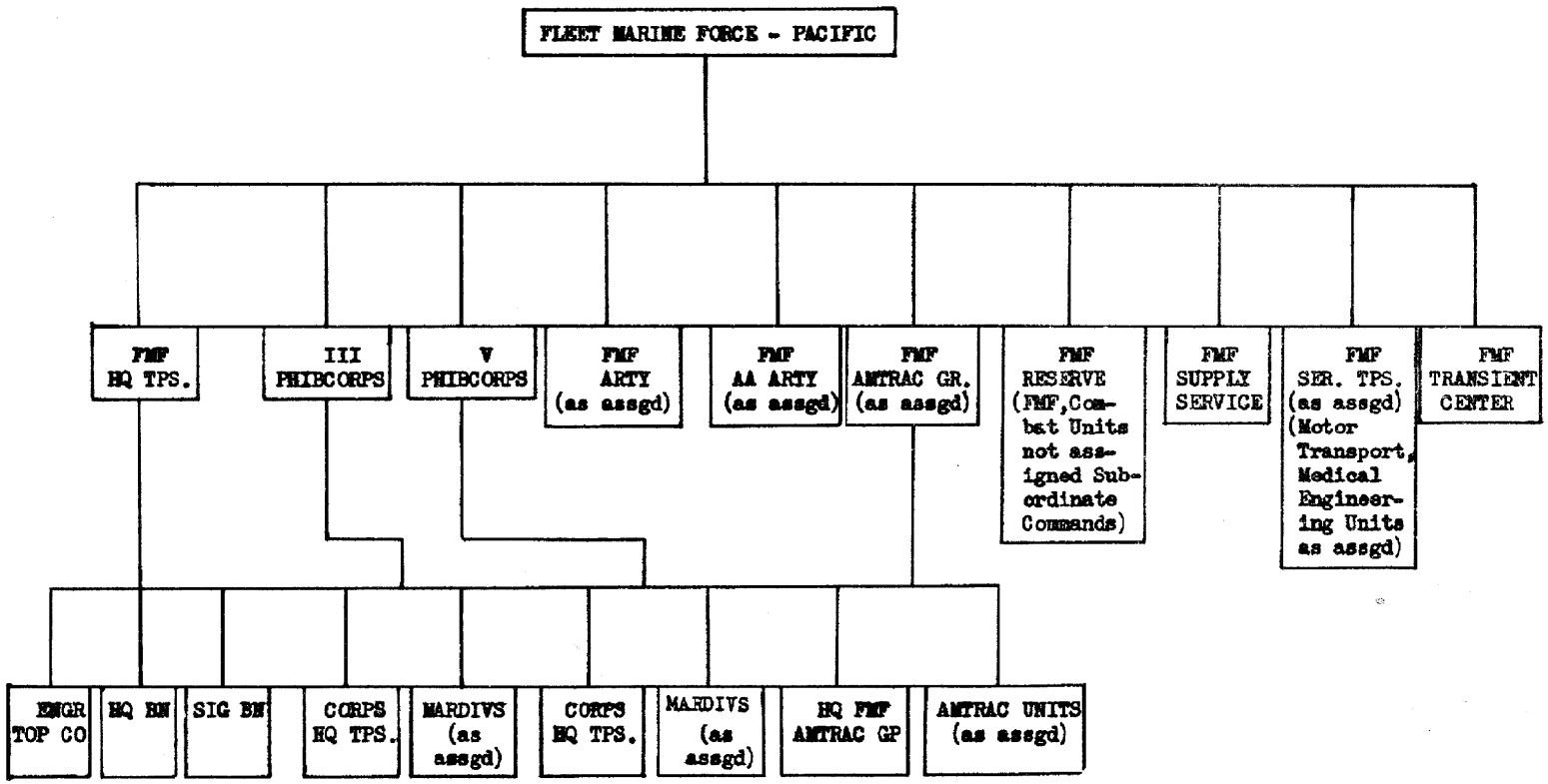
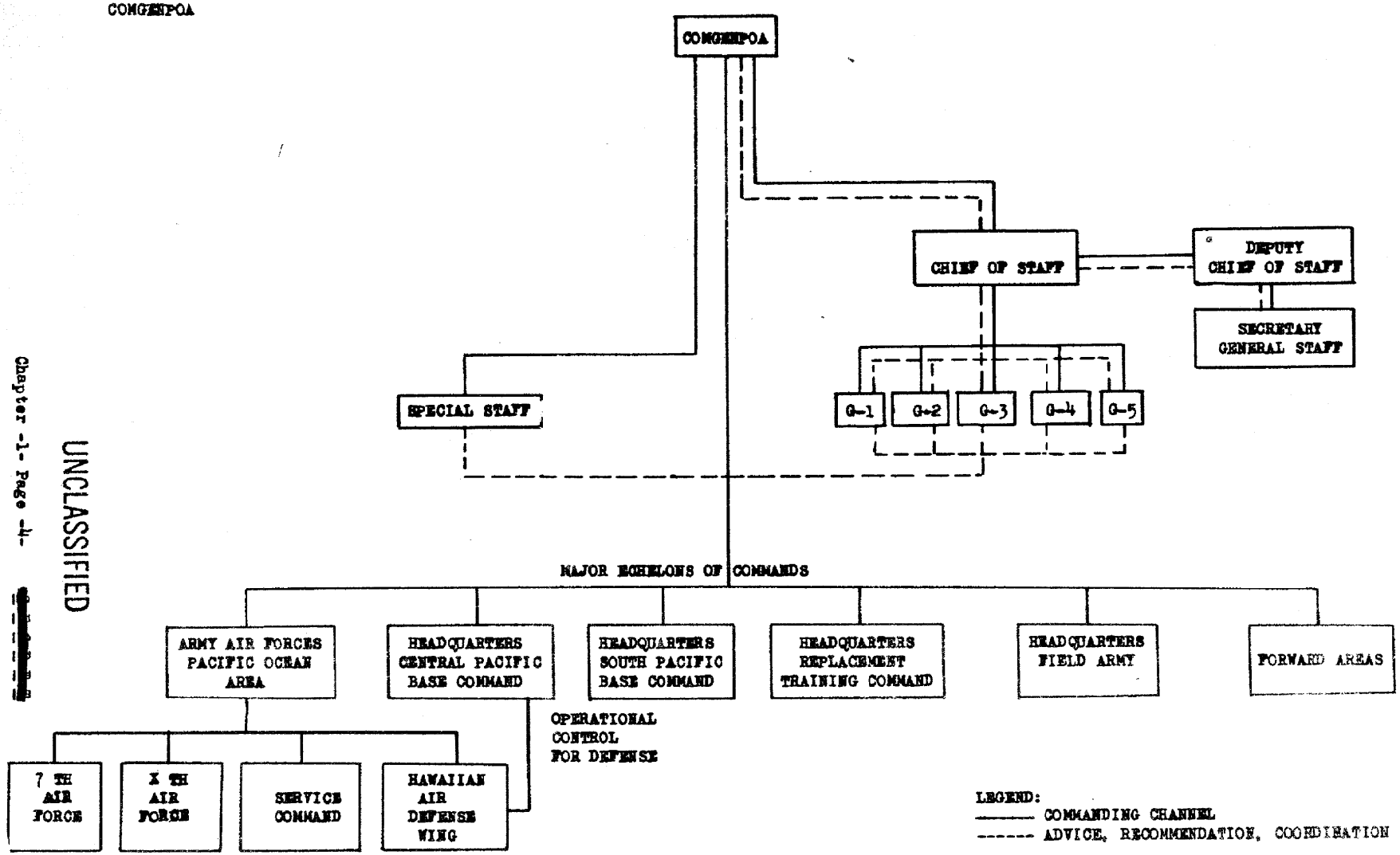


ORGANIZATION CHART
FLEET MARINE FORCE, PACIFIC





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AMPHIBIOUS CORPS- MARINE

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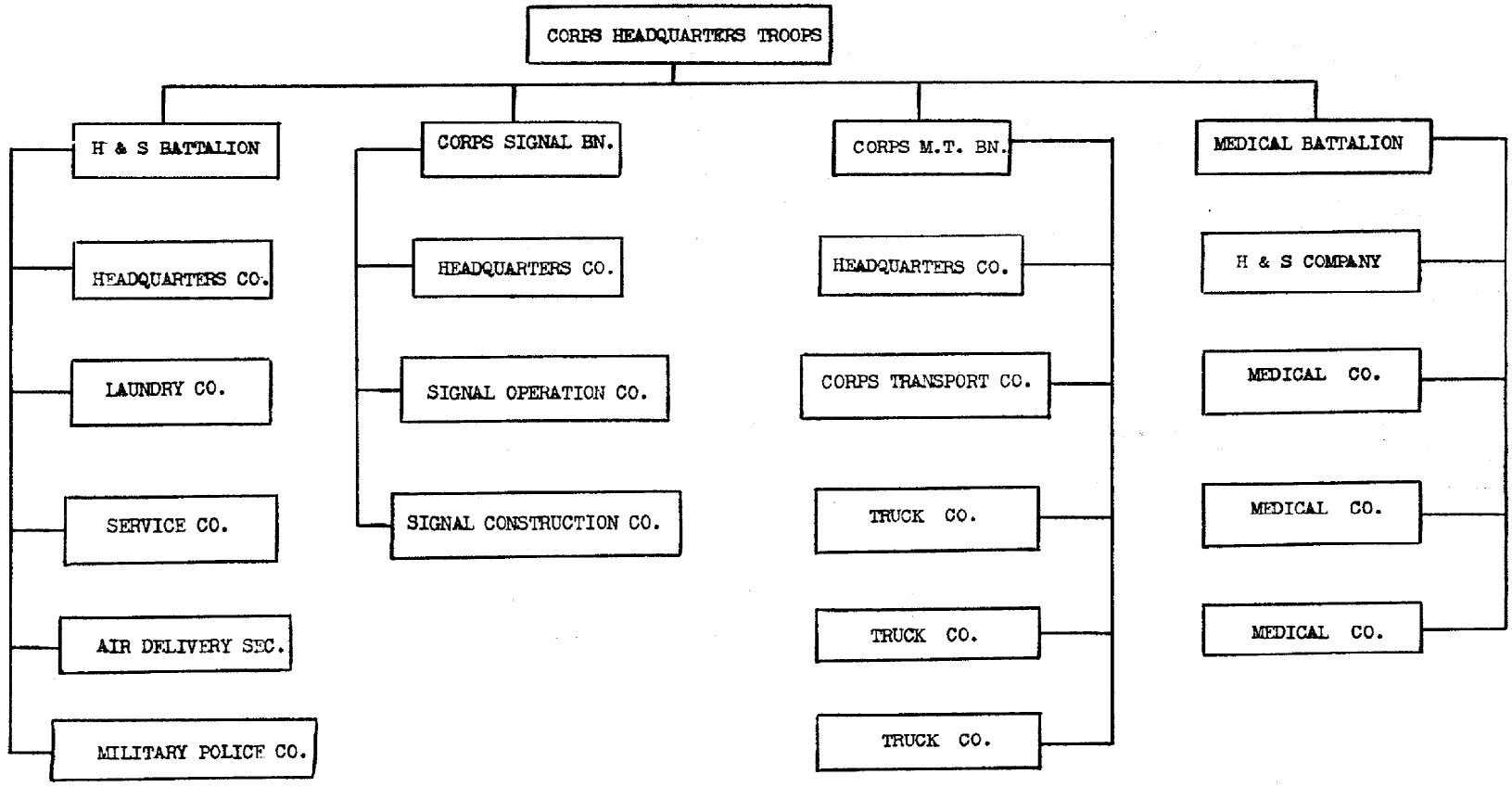
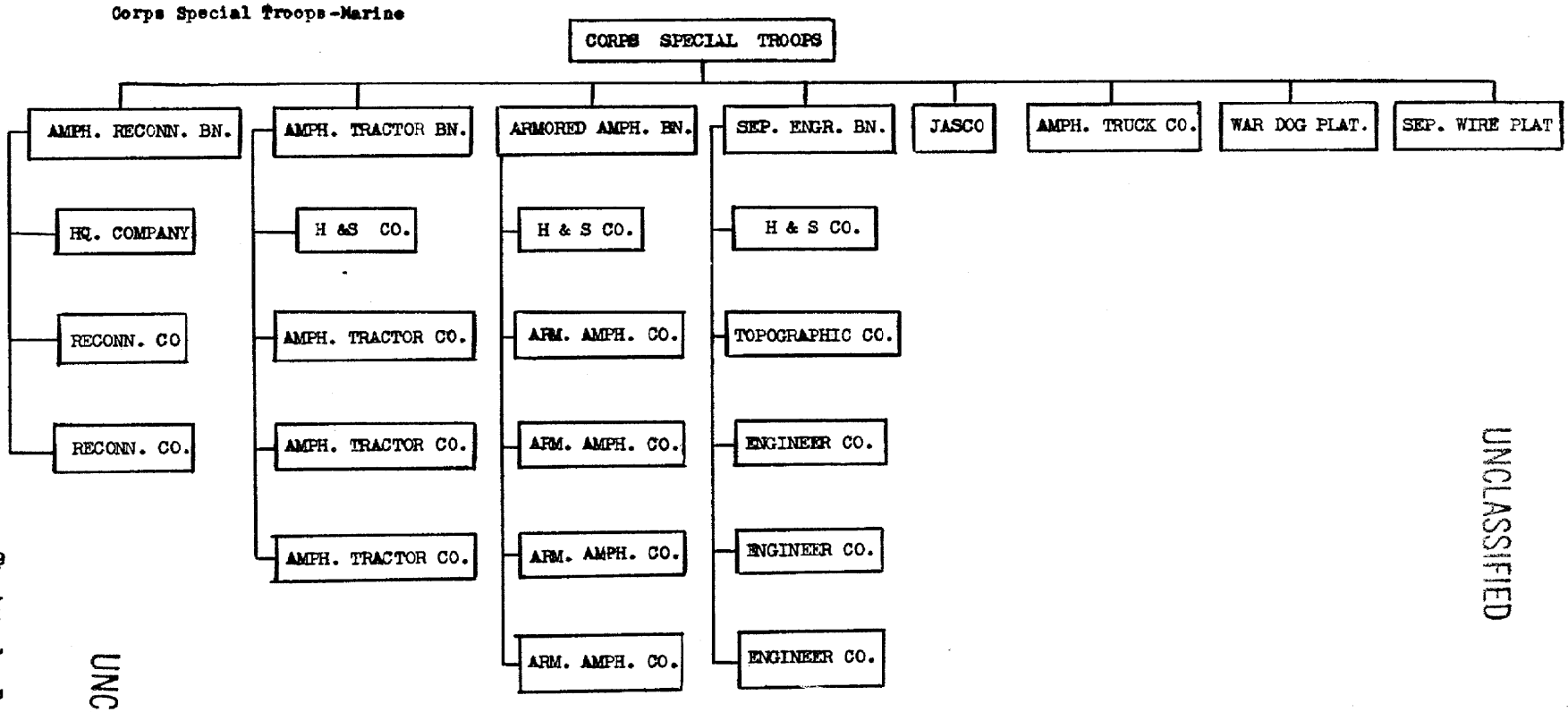
Corps Headquarters Troops-Marine



Corps Special Troops-Marine



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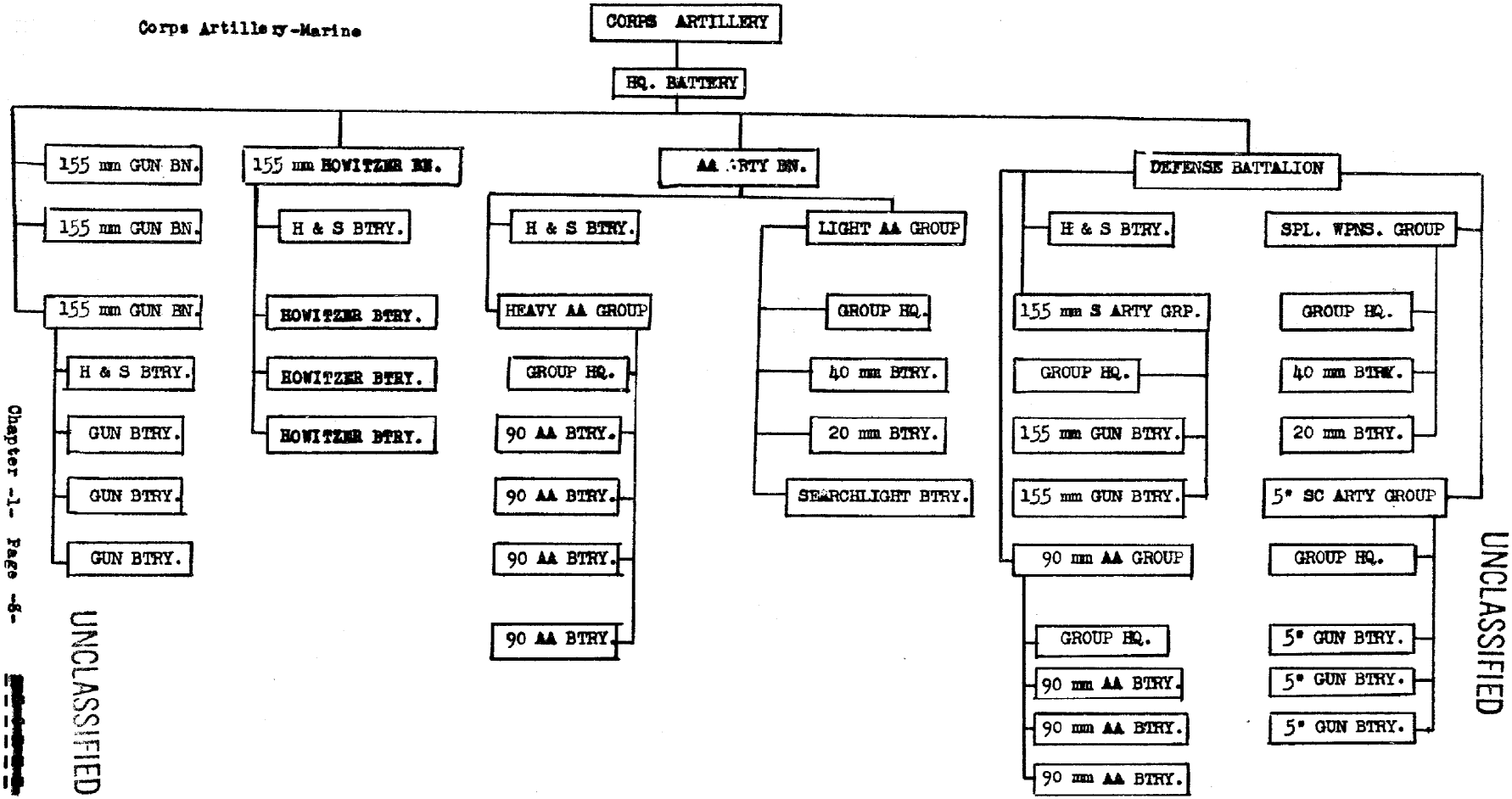
Corps Artillery-Marine



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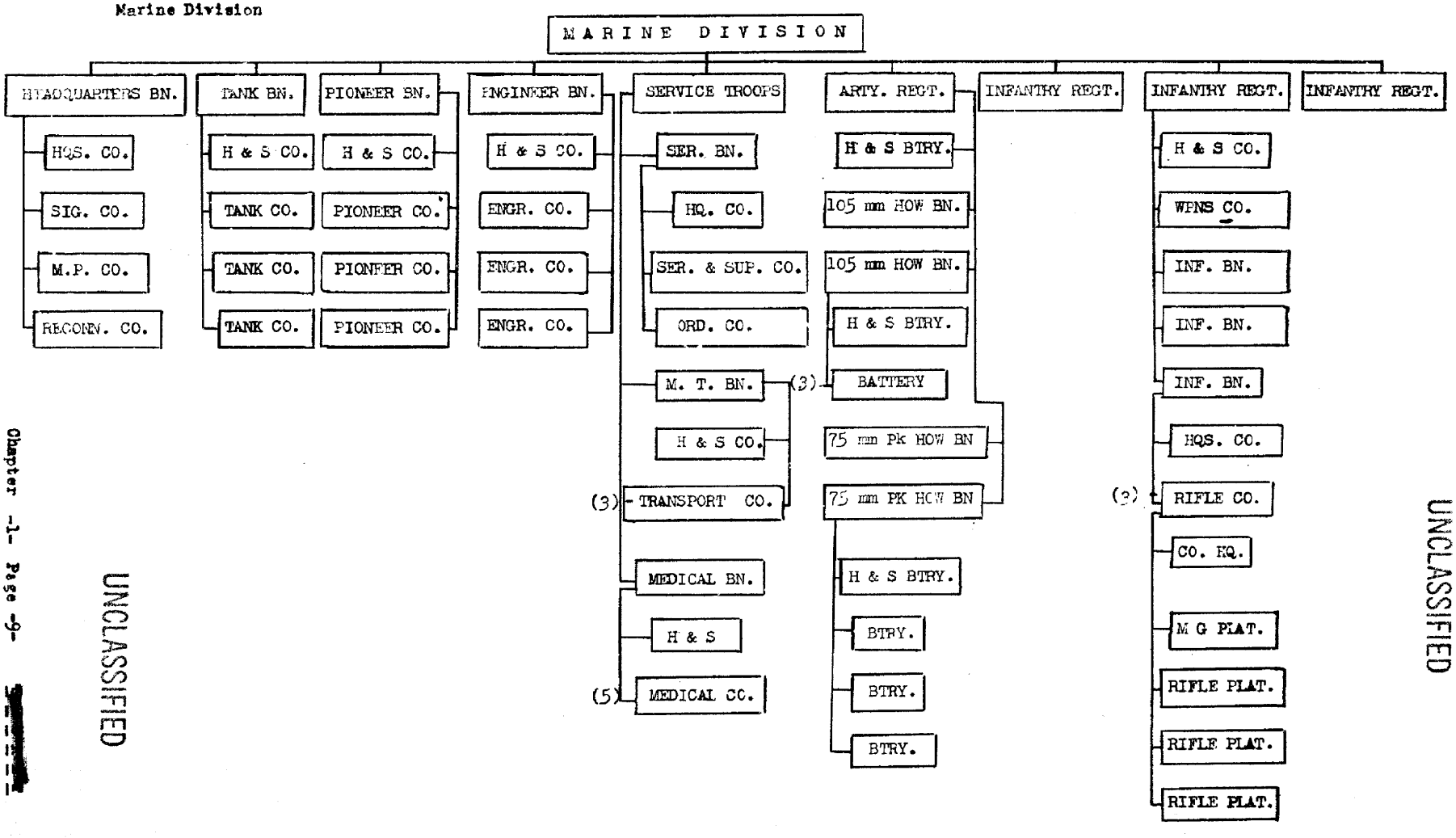
Marine Division



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FORWARD AND REAR ECHELON TBA EQUIPMENT OF A MARINE DIVISION
- As Distributed for Amphibious Operations -

	Auth. T/O F-100	Assault	Cu.ft.	Wgt.	Rear Ech-elon	Cu.ft.	Wgt.
Carbine, Cal .30 M1	10953	10953	Hand Carried				
Gun, Machine							
Cal .30 M1917A1	162	162	162	5103			
Cal .30 M1919A4	302	302	242	9422			
Cal .50 M2 HB	161	161	886	13524			
Gun, Sub-machine .45 Cal	49	49	29	515			
Gun:							
37mm AT	36	24	7848	21888			
75mm AT (SP)	12	12	17928	222000			
Howitzer:							
75mm Pack	24	16	2608	20304			
105mm	24						
Launcher, Rocket, AT M1A1	172	172	Hand Carried				
Mortar:							
60mm	117	117	585	1725			
81mm	36	36	36	1602			
Pistol, Cal .45	399	399	Hand Carried				
Rifle:							
Cal .30 M1	5436	5436	Hand Carried				
Cal .30 BAR	853	853	Hand Carried				
Shotgun, 12 guage	306	306	Hand Carried				
Tank, Army, medium w/armament, radio equipped	46	46	97750	2898000			
Tank, retriever	3	3	6375	189000			
ENGINEER EQUIPMENT:							
Bulldozer, tank mounting f/tanks	3	3	524	9500			
Bridge, pontoon, complete	1				1	4677	169956
Compressor, air, 105 cu ft capacity, 4-wheel	5	5	1778	23055			
Crushing plant, rock	1				1	864	16000
Crusher, rock, gasoline engine powered	3				3	1362	27540
Distillation plant, 2000 gal capacity	20	20	11160	134000			
Dock "Tubelox" 128 ft	1				1	266	13000
Earth, auger, self-powered and propelled	1	1	741	6300			
Eqpt. repro., mobile	1				1	6830	31715
Flame thrower, mech.	24	24	72	12680			
Flame thrower, portable	243	243	851	6804			
Generator, electric, 7-10 KVA, trailer	16	11	3784	33000	5	1720	15000
Generator, electric, 3-6.5 KVA, portable	4				4	50	1140
Grader, road, leaning wheel type, 4-wheel	3	3	4794	36900			
Grader, SP, w/scarifier	3				3	4492	58650

	Auth. T/O F-100	Assault	Cu.ft.	Wgt.	Rear Echelon	Cu.ft.	Wgt.
Hammer, gas, portable	11				11	143	4400
Mixer, concrete, 14 cu.ft. cap., 4-wheel	2				2	1576	13820
Pier, temp., 120 ft., 20 ton comp.	4				4	12800	408000
Plow, rd. or grading	1				1	63	340
Pump, centrif., 3", comp	2				2	55	1390
Pump, double diaph., 3"	2				2	193	2240
Repair unit, shoe and textile	10				10	20520	128100
Ripper, cable oper., 2-wheel	1	1	324	6010			
Roller, rubber-tired	1				1	102	4000
Roller, smooth, tandem, SP, 5-8 ton	1	1	572	11750			
Roller, tamping, sheepsfoot	1	1	520	6480			
Sawmill, portable, comp.	3	1	176	8688	2	530	17376
Scraper, 8 cu. yd.	6	6	13380	105000			
Shovel, gas., 3/8 cu.yd. cap.	3	3	2873	90000			
Shovel, diesel, 3/4 cu.yd.	1				1	1210	30000
Water pur. unit, portable	14	14	560	10360			
Well rig, SP, 4-wheel	1	1	1456	9000			
VEHICLES:							
Cart, artillery, T4E1	24	24	2568	7680			
Cart, hand							
MM1 (communication)	47	47	4653	5922			
M3 (.30 cal MG and ammo)	162	162	6642	14256			
M3 (81mm Mtr and ammo)	72	72	3600	6336			
M3 (utility)	103	103	5150	10815			
Ambulance:							
1/4 ton, 4x4	52	41	10139	95940	11	2720	25740
1/2 ton, 4x4	12	5	2982	24750	6	3548	29700
Car, 5 passenger	3				3	1803	9660
Station wagon, 4x4	3				3	1989	17250
Tractors:							
Hvy w/angledozer	9	5	5720	117900	4	4576	94320
Hvy w/power control unit	8	4	2744	107000	4	2744	107000
Hvy w/hydraulic oper. angle-dozer & 3 1/4 yd BD scraper	5	3	7296	95640	2	4864	63760
Hvy w/2-wheel crane, 20t. lt.	1	1	3801	34545			
Light	6	6	2430	70650			
Medium	2	1	433	11912	1	433	11912
Medium, rubber tired, general purpose, w/brush cutter	1				1	281	3500
Medium, w/angledozer	16	16	12448	194160			
Medium, w/bulldozer	9	9	7002	109215			
Medium, w/power control unit	13	13	6604	197769			
Medium, w/dozer shovel	10	7	5712	130284	3	2448	55836
Trailer:							
1/4 ton, 2-wheel	135	85	11985	46750	50	7050	27500
1/2 ton, 2-wheel, dump	19	8	1152	5088	11	1584	6996
1 ton, 2-wheel, cargo	155	120	34560	180000	4	1152	6000
1 ton, 2-wheel, greasing	24	8	3776	26400	16	7552	52800
1 ton, 2-wheel, stockroom	12	8	4768	38560	4	2384	19280

FORWARD AND REAR ECHELON TBA EQUIPMENT OF A MARINE DIVISION
(Continued)

	Auth. T/O F-100	Assault	Cu.ft.	Wgt.	Rear Ech-elon	Cu.ft.	Wgt.
Trailer: (Cont'd)							
1 ton, 2-wheel, water 300 gal.	74	61	20435	88450	13	4355	18850
1 ton, 2-wheel, cleaning unit	14	1	392	3205	13	5096	41665
2 ton, 4-wheel, cargo	2				2	884	7360
2 ton, 4-wheel, stockroom	11	4	3256	48000	7	5698	84000
3 ton, 2-wheel, ster. shower	10	5	4525	32500	5	4525	32500
3 ton, 4-wheel, water pur. unit	9	9	7074	70650			
5 ton, 4-wheel, mach. shop, comp.	7	3	3432	35805	4	4576	47740
Trailer, arc welder, 2-wheel	3	6	1368	18846			
15 ton machinery	18	2	1314	13000	16	10512	104000
Trucks:							
¼ ton, 4x4, all types	408	170	42160	416500	238	59024	583100
1 ton, 4x4, cargo	224	130	90090	780000	94	65142	564000
1 ton, 4x4, lt. repair	13				13	9009	78000
1 ton, 4x4, recon.	11	11	7623	66000			
2½ ton, 6x6, cargo	150	50	89350	800000	100	178700	1600000
2½ ton, 6x6, dump	53	22	28468	300652	31	40114	423646
2½ ton, 6x6, tank, gas, 750 gal	2	1	1292	12660	1	1292	12660
2½ ton, 6x6, wrecking	9	3	5382	42510	6	10764	85020
2½ ton, auto. repair	1	1	1359	13265			
2½ ton, instrument repair	1	1	1359	13265			
2½ ton, machine shop	3	1	1359	13265	2	2718	26530
2½ ton, short wheel base	48	16	20816	200320	32	41632	400640
2½ ton, pressure distributor, 1000 gal.	1	1	1656	12900			
2½ ton, welding	1	1	1359	13265			
Radio, w/trailer f/truck, radio	1				1	2620	15080
Baggage; Office, Mess, Camp, and Special Eqpt not listed in T/O:			292912	5461200		216754	3058272
TOTALS			896243	13872602		822159	8655168

SUMMARY:

	Assault	Rear Echelon
Ship tons	22406.1	20554.0
Short tons	6936.3	4327.6

DISTRIBUTION OF PERSONNEL, MARINE DIVISION								
RANK	Headquarters Battalion	Tank Battalion	Service Troops	Pioneer Battalion	Engineer Battalion	Artillery Regiment	Three (3) Infantry Reg.	TOTAL MARINE DIVISION
Major General	1							1
Brigadier General	1							1
Colonel	5		2			1	3	11
Lieutenant Colonel	8	1	1	1	1	6	12	30
Major	18	2	3	1	3	11	33	71
Captain	19	6	13	6	8	35	66	153
Lieutenant	37	22	25	24	19	83	273	484
TOTAL COMMISSIONED	89	31	44	32	31	137	387	751
COMMISSIONED W.O./ OR W.O.	12	4	14	6	10	22	24	92
Sergeant Major	2	1	2	1	1	5	12	24
First Sergeant	5	4	8	4	4	17	42	84
Master Gunnery Sergeant	1	2	5			1		9
Master Technical Sergeant	12		16	3	12	3	15	61
Quartermaster Sergeant	3	1	8	1	1	1	3	18
Paymaster Sergeant	2					1	3	6
Gunnery Sergeant	5	12	11	4		22	78	132
Technical Sergeant	16	5	21	6	20	10	60	138
Supply Sergeant	5	1	12	1	2	4	12	37
Drum Major	3							3
Steward, 1st Class	1							1
Cook, 1st Class	1							1
Platoon Sergeant	7	18	37	2		25	135	224
Staff Sergeant	48	6	56	14	34	37	60	255
Chief Cook	2		15	3	4	1	15	40
Cook, 2nd Class	1							1
Sergeant	118	103	176	34	99	203	741	1474
Field Music Sergeant	1					1	3	5
Field Cook	7	4	47	7	5	18	51	139
Cook, 3d Class	3							3
Corporal	157	174	289	108	211	463	1662	3064
Field Music Corporal	1			1	1	5	12	20
Assistant Cook	16	12	105	14	13	51	153	364
Stewards Assistant, 1st Class	3							3
Field Music 1st Class	2			4	4	28	72	110
Steward's Assistant, 2d Class	4							4
Private 1st Class/ Private	451	242	535	465	431	1519	5679	9322
Steward's Assistant, 3d Class	6							6
TOTAL ENLISTED	883	585	1343	672	842	2415	8808	15548
TOTAL MARINE CORPS	984	620	1401	710	883	2574	9219	16391
Officers, USN	7	1	66	3	1	8	33	119
Enlisted, USN	13	9	422	32	20	57	402	955
TOTAL, USN	20	10	488	35	21	65	435	1074
TOTAL DIVISION	1004	630	1889	745	904	2639	9654	17465

Marine Division F - 100
Approved - 5 May 1944

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TRANSPORTATION MARINE DIVISION	NO.
Cart, Artillery, T4E1	24
Cart, hand, MC-1942	
Communication	47
Utility	103
30 Cal. Machine Gun and Ammunition	162
81 mm Mortar and Ammunition	72
Ambulance:	
¼ ton, 4 x 4	52
½ ton, 4 x 4	12
Bulldozer, tank mounting, for M4A1, M4A2, M4A3 Tanks	3
Car, 5 Passenger	3
Station Wagon, 4 x 4	3
Tractor:	
Light	6
Medium	2
Medium/with angledozer	16
Medium, withdozer shovel	10
Medium, rubber tire, general purpose, w/b.c.	1
Medium, w/power control unit, w/TV-9 Tracrane	13
Heavy, w/angledozer	9
Heavy, w/power control unit	8
Heavy, w/hyd op angledozer & 3½ T b.d. scraper	5
Heavy, w/2 whl. crane, 15-20 T	1
Trailer:	
¼ ton, 2 wheel, cargo	135
½ ton, 2 wheel, dump	19
1 ton, 2 wheel, cargo	155
1 ton, 2 wheel, greasing	24
1 ton, 2 wheel, high pressure cleaning unit	14
1 ton, 2 wheel, stockroom	12
1 ton, 2 wheel, water, 300 gallon	74
2 ton, 2 wheel, welder combination	3
2 ton, 4 wheel, cargo	2
2 ton, 4 wheel, stockroom	11
3 ton, 2 wheel, sterilizer shower	10
3 ton, 4 wheel, water purification unit	9
5 ton, 4 wheel, machine shop #1 complete	7
15-18 ton, machinery	18
Truck:	
¼ ton, 4 x 4	323
¼ ton, 4 x 4, radio equipped (TCS)	66
¼ ton, 4 x 4, radio equipped (SCR-193)	2
¼ ton, 4 x 4, radio equipped (SCR-510)	17
1 ton, 4 x 4, Cargo	224
1 ton, 4 x 4, light repair	13
1 ton, 4 x 4, reconnaissance	11
2½ ton, 6 x 6, automotive repair, w/load A.	3
2½ ton, 6 x 6, cargo	150
2½ ton, 6 x 6, dump	53
2½ ton, 6 x 6, Instrument Repair, w/load A.	1
2½ ton, 6 x 6, Machine shop, w/load A.	3
2½ ton, 6 x 6, short Wheel base	48
2½ ton, 6 x 6, tank, gasoline, 750 gal.	2
2½ ton, 6 x 6, tank, pressure distrib. 1000 gal.	1
2½ ton, 6 x 6, welding, w/load	1
2½ ton, 6 x 6, wrecking	9
Vehicle, tank recovery M32B2, radio equipped(SCR-528)	3

Marine Division W - 100
Approved 5 May, 1944

WEAPONS, MARINE DIVISION	
Carbines, 30 caliber, M1	10,953
Flame thrower, mechanized E4-5	24
Flame thrower, portable M2-2	243
Gun, Machine:	
.30 Cal. Browning M1917A1	162
.30 Cal. Browning M1919A4	302
.50 Cal. Browning, M2 , h.b.flex.	161
Gun, submachine, .45 Cal. Thompson	49
Gun, 37 mm, M3 (anti-tank)	36
Gun, 75 mm, Motor carriage, M3	12
Howitizer, 75 mm, Pack	24
Howitizer, 105 mm	24
Launcher, rocket, AT, 2.36-inch, M1A1	172
Mortar, 60 mm	117
Mortar, 81 mm	36
Pistol, .45 Caliber	399
Rifle, .30 Cal, Browning automatic	853
Rifle, .30 cal, M1	5436
Shotgun, 12-Gauge	306
Tank, Army Medium, w/armament:	46
radio equipped (SCR-508)	(19)
radio equipped (SCR-528)	(27)

Marine Division F-100
Approved 5 May, 1944

DISTRIBUTION OF PERSONNEL - INF. DIVISON - ARMY

UNIT	Division Headquarters	SPECIAL TROOPS						(3) Inf. Regts. (each)	Divisional Artillery	Cavalry Reconnaissance Troop, Mechanized	Engineer Battalion	Medical Battalion	TOTAL DIVISION	Attached Medical	Attached Chaplain	Attached Band	AGGREGATE	Enlisted Cadre
		Headquarters	Headquarters Co.	Military Police Pl.	Ordnance Light Maintenance Co.	Quartermaster Co.	Signal Company											
Major General	1												1				1	
Brigadier General	1								1				2				2	
Colonel	1							1	1				5				5	
Lieutenant Colonel	11	1			1	1	1	4	5		1	1	34				34	
Major	8			1	1	1		6	10		2	2	43	5			48	
Captain	11	1	2		2	3	1	28	40	1	7	5	157		4		161	
Captain or first Lieut.												17	17	32			49	
First Lieutenant	4		1	1	3	3	5	58	52	2	11	6	262		9		271	
Second Lieutenant	1		1	1	2	2		42	21	3	6	3	166				166	
TOTAL COMMISSIONED	38	2	4	3	9	10	7	139	130	6	27	34	687	37	13		737	
Warrant Officer	8				1		4	5	9		3	2	42			2	44	
Master Sergeant	10				1	1	3	5	10		3	1	44				44	33
First Sergeant			1		1	1	1	19	21	1	4	4	91				91	91
Technical Sergeant	6	1	1		4	2	8	2	18	1	6	4	57	5		2	64	45
Staff Sergeant	4	1	5	1	8	7	10	120	101	6	25	21	549	14		2	565	502
Sergeant	8	1	2	8	6	11	7	226	89	9	41	23	883	5			888	191
Corporal	2		4	6	2	18	2	252	233	11	32	13	1079	14			1093	98
Technician, grade 3	10				6		14		5			9	44	33			77	16
Technician, grade 4	34		7	1	23	7	26	78	138	15	40	31	556	43	14		613	298
Technician, grade 5	26		2	18	44	39	58	141	255	36	108	58	1067	93		16	1176	226
Private, first class	3	1	29	24	15	40	33	938	482	29	150	113	3733	106		22	3861	
Private, including		1	39	30	27	57	53	1193	669	41	208	147	4851	144			4995	
Basic			(10)	(6)	(13)	(17)	(20)	(270)	(191)	(13)	(58)	(39)	(1176)	(40)			(1216)	
TOTAL ENLISTED	103	7	106	70	137	183	215	2974	2021	149	617	424	12954	457		56	13467	1505
AGGREGATE	149	9	110	73	147	193	226	3118	2160	155	647	460	13683	494	13	58	14248	1500

1	UNIT	2 Headquarters & Service Company (T/O F-9)	3 Weapons Company (T/O F-7)	4 Three (3) Infantry Bns. (T/O F-5)	5 TOTAL REGIMENT
2	Colonel	1			1
3	Lieutenant Colonel	1		3	4
4	Major	4	1	6	11
5	Captain	5	2	15	22
6	Lieutenant	9	4	78	91
7	TOTAL COMMISSIONED	20	7	102	129
8	Commissioned Warrant or Warrant Officer	4	1	3	8
9	TOTAL WARRANT	4	1	3	8
10	Sergeant Major	1		3	4
11	First Sergeant	1	1	12	14
12	Master Technical Sergeant	2		3	5
13	Quartermaster Sergeant	1			1
14	Paymaster Sergeant	1			1
15	Gunnery Sergeant	2		24	26
16	Technical Sergeant	4	1	15	20
17	Supply Sergeant	1		3	4
18	Platoon Sergeant	1	5	39	45
19	Staff Sergeant	13	1	6	20
20	Chief Cook	1	1	3	5
21	Sergeant	22	18	207	247
22	Field Music Sergeant	1			1
23	Field Cook	1	1	15	17
24	Corporal	40	37	477	554
25	Assistant Cook	3	3	45	51
26	Field Music Corporal	1		3	4
27	Field Music 1st Class	1	2	21	24
28	Private 1st Class/Private	121	125	1647	1893
29	TOTAL ENLISTED	218	195	2523	2936
30	TOTAL MARINE CORPS	242	203	2628	3073
31	Commissioned, Medical Corps	2		6	8
32	Commissioned, Dental Corps	1			1
33	Commissioned, Chaplain Corps	2			2
34	TOTAL COMMISSIONED, U.S. NAVY	5		6	11
35	Chief Pharmacist's Mate	1		3	4
36	Pharmacist's Mate, 1st Class	7		36	43
37	Pharmacist's Mate, 2d Class	4		36	40
38	Pharmacist's Mate, 3d Class	2		45	47
39	TOTAL ENLISTED, U.S. NAVY	14		120	134
40	TOTAL NAVAL PERSONNEL	19		126	145
41	AGGREGATE	261	203	2754	3218

1		2	3	4	5
42	UNIT	Headquarters & Service Company (T/O F-9)	Weapons Company (T/O F-7)	Three (3) Infantry Bns. (T/O F-5	TOTAL REGIMENT
43	Carbine, .30-caliber, M1	142	170	1482	1794
44	Flame thrower, portable, M2-2			81	81
45	Gun, machine:				
46	-.30-caliber, Browning, M1917A1			54	54
47	-.30-caliber, Browning, M1919A4		11	54	65
48	-.50-caliber, Browning, M2, heavy-barrel, flexible		10		10
49	Gun, 37mm, M3 (Antitank)		12		12
50	Gun, 75mm, motor carriage M3, w/armament, radio-equipped (GF/RU)		4		4
51	Launcher, rocket, AT, M1		16	27	43
52	Mortar, 60mm			39	39
53	Mortar, 81mm			12	12
54	Rifle, .30-caliber, M1	117	33	1029	1179
55	Rifle, .30-caliber, Browning, automatic			243	243
56	Shotgun, 12-gauge	100			100
57	Cart, hand, MC-1942:				
58	-Communication	2	1	6	9
59	-Utility	5		24	29
60	-81mm Mortar and Ammunition			24	24
61	-.30-caliber Machine Gun and Ammunition			54	54
62	Ambulance, 1/4-ton, 4 x 4	5			5
63	Trailer:				
64	-1/4-ton, 2-wheel, cargo			15	15
65	-1-ton, 2-wheel, greasing		1		1
66	Truck:				
67	-1/4-ton, 4 x 4	7	5	24	36
68	-1/4-ton, 4 x 4, radio-equipped (TCS)	2	3	3	8
69	-1-ton, 4 x 4, cargo	2	21		23
70	-1-ton, 4 x 4, light repair	1	1		2

NOTE: This table superseded Table of Organization E-10, approved 15 April, 1943.

Approved:

G. C. THOMAS,
By direction.

DISTRIBUTION: "A", "B", "QMZ(3)", "QMHN(3)"

1		2	3	4	5	6	7	8	9	10	11	12
1	UNIT	Headquarters (T/O & E 7-12)	Headquarters company (T/O & E 7-12)	Service company (T/O & E 7-13)	Cannon company (T/O & E 7-14)	Anti-tank company (T/O & E 7-19)	3 battallion (each) (T/O & E 7-15)	Total regiment	Attached medical (for details see P. 4)	Attached ched lain	Aggregate	Enlisted cadre
2	Colonel	1						1			1	
3	Lieutenant colonel	1					1	4			4	
4	Major	2		1			1	6	[b]1		7	
5	Captain	1	2	5	1	1	6	28			28	
6	Captain or 1st lieutenant								[b]8	3	11	
7	First lieutenant	3	2	5	2	2	15	59			59	
8	Second lieutenant				2	4	12	42			42	
9	Total commissioned	8	4	11	5	7	35	140	9	3	152	
10	Warrant officer		1	4				5			5	
11	Master sergeant		1	4				5			5	5
12	First sergeant		1	1	1	1	5	19			19	19
13	Technical sergeant		1	1	3	4	18	63	1		64	63
14	Staff sergeant		6	6	3	11	72	242	3		245	69
15	Sergeant		2	3	8	6	62	205	1		206	12
16	Corporal		3	4	10	10	21	90	3		93	19
17	Technician, grade 3								9		9	
18	Technician, grade 4		13	16	5	4	15	83	12		95	55
19	Technician, grade 5		22	33	7	11	25	148	24		172	54
20	Private, first grade		19	12	55	80	446	1,504	31		1,535	
21	Private		27	20	21	31	172	615	42		657	
22	Basic		(9)	(9)	(10)	(14)	(76)	(270)	(11)		(281)	
23	Total enlisted		95	100	113	158	836	2,974	126		3,100	296
24	Aggregate	8	100	115	118	165	871	3,119	135	3	3,257	296

Infantry Regiment

INFANTRY REGIMENT
(Continued)

ARMY
T/O & E 7-11

	1	2	3	4	5	6	7	8	9	10	11	12
25	0 Carbine, cal. .30	4	20	30	77	48	219	836			836	
26	0 Gun, machine,cal..30 heavy, flexible						8	24			24	
27	0 Gun, machine, cal..30 light, flexible						6	18			18	
28	0 Gun, machine,HB,cal..50, flexible		2	9	3	3	6	35			35	
29	0 Gun, 57-mm, towed					9	3	18			18	
30	0 Howitzer, 105-mm				6			6			6	
31	0 Launcher, rocket, AT, 2.36-in.		4	8	4	9	29	112			112	
32	0 Mortar, 60-mm						9	27			27	
33	0 Mortar, 81-mm						6	18			18	
34	0 Pistol, automatic, cal..45	4		1		45	81	293			293	
35	0 Rifle, automatic, cal..30						27	81			81	
36	0 Rifle, cal..30, M1		80	84	41	72	535	1,682			1,682	
37	0 Rifle, cal..30, M1903A4						9	27			27	
38	0 Trailer, 1/4-ton		4				22	70	7	3	80	
39	0 Trailer, 1-ton		1	19	3	2	1	28			28	
40	0 Truck, 1/4-ton		19	6	6	6	34	139	7	c3	149	
41	0 Truck, 3/4-ton, wpns,carrier		1	2	1	2	2	12			12	
42	0 Truck, 1 1/2ton, cargo				7	12	4	31			31	
43	0 Truck, 2 1/2ton, cargo		1	29	3			33	1		34	

Remarks

♦ Insert number of regiment.

a Infantry only. See page 4 for medical cadre.

b To be furnished only as required and available within the continentallimits of the United States. Will be furnished prior to departure for oversea duty.

c Driven by chaplain's assistants.

AMPHIBIAN TRUCK COMPANY
AMPHIBIOUS CORPS

Marine Corps
Table of Organization
E-705

Designation ----- Marine Amphibian Truck Company

1	UNIT	2	3	4	5	6	7
		Company Hq		Platoon			
		Headquarters Section	Maintenance Section	Platoon Headquarters	Section (2 Squads)	TOTAL PLATOON (Hq & 2 Sect)	TOTAL COMPANY (Hq 7 3 Platoons)
2	Captain	1c					1
3	Lieutenant	1c	1c	1c		1	5
4	TOTAL COMMISSIONED	2	1	1		1	6
5	First Sergeant (885)	1c					1
6	Technical Sergeant		1c				1
7	Motor (QM)(813)		(1)				
8	Platoon Sergeant			1c	1c	3	9
9	Platoon (651)			(1)			
10	Section Leader (652)				(1)		
11	Staff Sergeant (C) (824)		1c				1
12	Chief Cook (C) (060)		1c				1
13	Sergeant		12		1	2	18
14	Assistant section leader (652)				(1)c		
15	Clerk, parts (QM) (348)		(1)				
16	Mechanic, auto (QM) (014)		(6)				
17	Property and supply decontamination (870)		(1)				
18	Repairman, auto body (QM) (040)		(3)				
19	Welder (EP) (257)		(1)				
20	Field-Cook (C) (060)		1				1
21	Corporal	4	13		10	20	77
22	Clerk (405)	(1)					
23	Clerk, parts (QM) (348)		(1)				
24	Dispatcher (QM) (410)		(1)				
25	Driver, amphibian truck (245)	(2)c			(8)c		
26	Driver, truck (QM) (345)	(1)c					
27	Mechanic, auto (QM) (014)		(7)				
28	Repairman, auto body (QM) (040)		(3)				
29	Squad leader (653)				(2)c		
30	Welder (EP) (256)		(1)				
31	Assistant Cook (C) (060)		1				1
32	Field Music 1st Class (803)	1c					1
33	Private 1st Class/Private		12	1	9	19	69
34	Driver, amphibian truck (245)				(8)		
35	Driver, truck (345)		(2)c				
36	Other duty (621)		(10)	(1)	(1)		
37	TOTAL ENLISTED	6	42	2	21	44	180
38	TOTAL MARINE CORPS	8	43	3	21	45	186
40	Carbine, .30-caliber, M1	7	6	2	12	26	91
41	Gun, machine, .50-cal; Browning, M2 heavy-barrel, flexible (v)		2				2
42	Rifle, .30-caliber, M1	1	37	1	9	19	95
43	Trailer:						
44	-1-ton, 2-wheel, greasing		1				1
45	-1-ton, 2-wheel, high pressure cleaning unit		1				1
46	-1-ton, 2-wheel, stockroom		1				1
47	-1-ton, 2-wheel, water, 300-gallon		1				1
48	Truck:						
49	-1/4-ton, 4 x 4	1	1				2
50	-1-ton, 4 x 4, cargo		1				1
51	-2½-ton, amphibian	2	25b		8	16	75
52	-2½-ton, 6 x 6, cargo		1				1
53	-2½-ton, 6 x 6, tank, gasoline, 750-gal.		1				1
54	-2½-ton, 6 x 6, wrecking		1				1

b-Carried in reserve (C)-Commissary Branch (QM)- Quartermaster Pers.
c-Armed w/carbine (EP)-Engineer Personnel (v)-Vehicular weapon.
Serial number in parentheses refers to specialist qualification as shown in AR 615-26.

TRANSPORTATION CORPS AMPHIBIAN TRUCK COMPANY

ARMY
T/O & E 55-37

1		2	3	4	5	6	7	8	9	10
1	Unit	Specification Ser. No.	Technician Grade	Company Headquarters	Maintenance Platoon	2 amphibian truck platoons (each) Platoon Hqs.	3 Sections (each) 2 squads	Total Platoon	Total Company	Enlisted Cadre
2	Captain, including			1					1	
3	Amphibian truck	0668		(1)					(1)	
4	First lieutenant, including				1	1		1	3	
5	Amphibian truck	0668				(1)		(1)	(2)	
6	Maintenance	0668			(1)				(1)	
7	Second lieutenant, including			1		1		1	3	
8	Amphibian truck	0668		(a1)		(1)		(1)	(3)	
9	TOTAL COMMISSIONED			2	1	2		2	7	
10	First sergeant	585		1					1	1
11	Technical sergeant, including				1				1	1
12	Motor	813			(1)				(1)	(1)
13	Staff sergeant including			3		1	1	4	11	5
14	Amphibian transportation	927					(1)	(3)	(6)	(3)
15	Dispatcher	927		(1)					(1)	
16	Mess	824		(1)					(1)	(1)
17	Platoon	927				(1)		(1)	(2)	
18	Supply	821		(1)					(1)	(1)
19	Sergeant						1	3	6	
20	Amphibian transportation	927					(1)	(3)	(6)	
21	Corporal, including			1			2	6	13	7
22	Amphibian transportation	927					(b2)	(6)	(12)	(6)
23	Company clerk	405		(c1)					(1)	(1)
24	Technician, grade 3								3	
25	Technician, grade 4								12	2
26	Technician, grade 5 including			11	22	3	17	54	65	4
27	Private, first class								26	
28	Private								35	
29	Amphibian truck driver	934	5	(2)			(8)	(24)	(50)	
30	Amphibian truck driver	934		(1)			(8)	(24)	(49)	
31	Amphibian truck mechanic	797	3		(3)				(3)	
32	Amphibian truck mechanic	797	4		(3)				(3)	(1)
33	Amphibian truck mechanic	797	5		(d7)				(7)	(1)
34	Armorer	511	5		(e1)				(1)	
35	Clerk, parts	348	4		(1)				(1)	
36	Cook	060	4	(2)					(2)	(1)
37	Cook	060	5	(2)					(2)	(1)
38	Cook's helper	590		(2)					(2)	
39	Crane operator	063	4			(f2)		(2)	(4)	
40	Repairman, auto, body	201	4		(1)				(1)	
41	Repairman, auto, body	201	5		(2)				(2)	(1)
42	Visual signalman	765	5	(g1)					(1)	
43	Visual signalman	765		(1)					(1)	
44	Welder, combination	256	4		(1)				(1)	
45	Welder, combination	256	5		(2)				(2)	(1)
46	Basic	521			(1)	(1)	(1)	(4)	(9)	
47	TOTAL ENLISTED			16	23	4	21	67	173	20
48	AGGREGATE			18	24	6	21	69	180	20

TRANSPORTATION CORPS AMPHIBIAN TRUCK COMPANY

ARMY
T/O & E 55-37

1		2	3	4	5	6	7	8	9	10
1	Unit	Specification Ser. No.	Technician Grade	Company Headquarters	Maintenance Platoon	2 amphibian truck platoons (each): Platoon Headquarters	2 amphibian truck platoons (each): 3 Sections (each) 2 Squads	2 amphibian truck platoons (each): Total Platoon	Total Company	Enlisted Cadre
49	E Crane truck, mounted gasoline engine driven 3/8 cu. yd.					1		1	2	
50	O Carbine cal..30			15	19	5	15	53	140	
51	O Gun, machine, Browning HB, cal..50, flexible			13					13	
52	O Launcher, grenade			2	2			5	20	
53	O Mount, machine gun cal..50, AA			1					1	
54	O Rifle, cal..30			3	5	1	5	16	40	
55	O Truck, 1/4-ton			1	1				2	
56	O Truck, 3/4-ton, weapons carrier				1				1	
57	O Truck, 21/2-ton, amphibian			2			8	24	50	
58	O Truck, 2 1/2-ton, cargo				1				1	

Remarks

Function: To transfer cargo from shipside to shore dumps where pier facilities are not available.

Capacity: Capable of operating on a 24-hour basis unloading appoximately 1,000 to 1,500 tons of mixed cargo. This figure is based on serviceability of vehicles.

Assignment: This organization is normally assigned for supply functions in the theater of operations where amphibian vehicles are required.

a Beach traffic control
b In emergency operations will drive amphibian vehicles.
c Drives truck, 1/4-ton.
d 1 drives truck, 2 1/2-ton cargo; 1 drives truck, 1/4-ton.
e Drives truck, 3/4-ton weapons truck.
f Drives truck mounted crane.
g Also qualified as radio repairman (648).

All enlisted men, except mess personnel will receive additional training in operations of amphibian vehicles.

For specification serial numbers shown in column 2, for enlisted men see AR 615-26, for officers see TM 12-406 and 12-407.

AMPHIBIAN TRACTOR BATTALION
AMPHIBIOUS CORPS

UNCLASSIFIED

Marine Corps
Table of Organization
F-1015

Designation: _____ Amphibian Tractor Battalion

1		2	3	4
1	UNIT	Headquarters & Service Company (T/O F-1014)	Three (3) Amphibian Tractor Cos. (T/O F-1011)	TOTAL BATTALION
2	Lieutenant Colonel	1		1
3	Major	1		1
4	Captain	3	3	6
5	Lieutenant	2	15	17
6	TOTAL COMMISSIONED	7	18	25
7	Commissioned Warrant or Warrant Officer	1		1
8	TOTAL WARRANT	1		1
9	Sergeant Major	1		1
10	First Sergeant	1	3	4
11	Master Gunnery Sergeant	2		2
12	Master Technical Sergeant	1		1
13	Quartermaster Sergeant	1		1
14	Gunnery Sergeant	1	6	7
15	Technical Sergeant		6	6
16	Platoon Sergeant	4	12	16
17	Staff Sergeant	4	3	7
18	Sergeant	14	45	59
19	Field Cook	1	3	4
20	Corporal	27	93	120
21	Assistant Cook	2	6	8
22	Private 1st Class/Private	31	231	262
23	TOTAL ENLISTED	90	408	498
24	TOTAL MARINE CORPS	98	426	524
25	Commissioned, Medical Corps	1		1
26	Commissioned, Dental Corps	1		1
27	TOTAL COMMISSIONED, U. S. NAVY	2		2
28	Chief Pharmacist's Mate	1		1
29	Pharmacist's Mate, 1st Class	2		2
30	Pharmacist's Mate, 2d Class	3		3
31	Pharmacist's Mate, 3d Class	3		3
32	TOTAL ENLISTED, U. S. NAVY	9		9
33	TOTAL NAVAL PERSONNEL	11		11
34	AGGREGATE	109	426	535
35	Carbine, .30-caliber, M1	58	339	397
36	Launcher, rocket, 2.36-inch		9	9
37	Rifle, .30-caliber, M1	51	87	138
38	Pumping set, centrifugal, self-priming, gasoline driven, 55-gallon per minute	1	3	4
39	Tractor:			
40	-amphibian, w/armament, radio-equipped (3TOS)	4	6	10
41	-amphibian, w/armament, radio-equipped (2TOS)		3	3
42	-amphibian, w/armament, radio-equipped (1TOS)	3	84	87
43	-medium		3	3
44	-heavy, w/2-wheel crane (15-20 ton)	1		1

UNCLASSIFIED

Marine Corps
Table of Organization
F-1015

Designation: _____ Amphibian Tractor Battalion (Cont'd)

45	1 UNIT	2 Headquarters & Service Company (T/O F-1014)	3 Three (3) Amphibian Tractor Cos (T/O F-1011)	4 TOTAL BATTALION
46	Trailer:			
47	-1/4-ton, 2-wheel, cargo	2	3	5
48	-1-ton, 2-wheel, cargo	3		3
49	-1-ton, 2-wheel, greasing	1	3	4
50	-1-ton, 2-wheel, high pressure cleaning unit	1	3	4
51	-1-ton, 2-wheel, stockroom		3	3
52	-1-ton, 2-wheel, water, 300-gallon	1	3	4
53	-2-ton, 2-wheel, welder combination	1		1
54	-2-ton, 4-wheel, stockroom	1		1
55	Truck:			
56	-1/4-ton, 4 x 4	2	3	5
57	-1/4-ton, 4 x 4, radio-equipped (TCS)	2	3	5
58	-1/4-ton, 4 x 4, cargo		3	3
59	-2½-ton, 6 x 6, cargo	3		3
60	-2½-ton, 6 x 6, machine shop, M16A1, w/load "A"	1		1
61	-2½-ton, 6 x 6, wrecking	1		1

NOTE: This table supersedes Table of Organization E-50, approved 15 April, 1943.

Approved:
s/G. C. Thomas,
G. C. THOMAS,
By direction.

DISTRIBUTION: "A", "B" and "QNA(3)".

UNCLASSIFIED

AMPHIBIAN TRACTOR BATTALION Army

1	2	3	4	5	6	7
1. UNIT	Headquarters and H & S Company	2 Companies (each)	TOTAL	Attached Medical	Aggregate	Enlisted Cadre
2. Lieutenant Colonel	1		1		1	
3. Major	2		2		2	
4. Captain	4	1	6		6	
5. Captain or first lieutenant				1	1	
6. First lieutenant	2	4	10		10	
7. TOTAL COMMISSIONED	9	5	19	1	20	
8. Warrant Officer	2		2		2	
9. Master sergeant	2		2		2	2
10. First Sergeant	1	1	3		3	3
11. Technical Sergeant	6	1	8		8	8
12. Staff sergeant	5	6	17	1	18	12
13. Sergeant	2	9	20		20	8
14. Corporal	1	37	75	1	76	9
15. Technician, grade 3				1	1	
16. Technician, grade 4	21	9	39	1	40	16
17. Technician, grade 5	35	108	257	3	260	9
18. Private, 1st Class	7	5	13	2	15	
19. Private, including	15	21	55	2	57	
20. Basic	(9)	(17)	(43)	(1)	(44)	
21. TOTAL ENLISTED	95	197	489	11	500	67
22. AGGREGATE	106	202	510	12	522	67
23. 0 Carbine, cal. 30	73	145	363		363	
24. 0 Gun, machine, .30 light	34	102	238		238	
25. 0 Gun, machine, HB .50	34	102	238		238	
26. 0 Gun, submachine, cal .45	30	54	138		138	
27. 0 Landing vehicle tracked (unarmored) w/armament	17	51	119		119	
28. 0 Launcher, rocket, 2.36 in.	4	3	10		10	
29. 0 Pistol, automatic, .45	3	3	9		9	
30. 0 Trailer, 1-ton	3	2	7		7	
31. 0 Truck, ¼ ton	4	1	6	3	9	
32. 0 Truck, 3/4 T, W.P. Carrier				1	1	
33. 0 Truck, 2½ ton, cargo	8	2	12		12	
34. 0 Truck, heavy, wrecker	1		1		1	

ARMORED AMPHIBIAN BATTALION
AMPHIBIOUS CORPS

UNCLASSIFIED

Marine Corps
Table of Organization
G-1020

Designation: _____ Armored Amphibian Battalion

1		2	3	4
1	UNIT	Headquarters & Service Company (T/O G-1019)	Four (4) Armored Amphibian Companies (T/O G-1016)	TOTAL BATTALION
2	Lieutenant Colonel	1		1
3	Major	1		1
4	Captain	3	4	7
5	Lieutenant	5	20	25
6	TOTAL COMMISSIONED	10	24	34
7	Commissioned Warrant or Warrant Officer	3		3
8	TOTAL WARRANT	3		3
9	Sergeant Major	1		1
10	First Sergeant	1	4	5
11	Master Gunnery Sergeant	2		2
12	Master Technical Sergeant	1		1
13	Quartermaster Sergeant	1		1
14	Gunnery Sergeant	1	12	13
15	Technical Sergeant	1	8	9
16	Platoon Sergeant	2	16	18
17	Staff Sergeant	3	4	7
18	Chief Cook		4	4
19	Sergeant	20	108	128
20	Field Cook	1	4	5
21	Corporal	33	208	241
22	Assistant Cook	2	12	14
23	Private 1st Class/Private	55	316	371
24	TOTAL ENLISTED	124	696	820
25	TOTAL MARINE CORPS	137	720	857
26	Commissioned, Medical Corps	1		1
27	Commissioned, Dental Corps	1		1
28	TOTAL COMMISSIONED, U.S. NAVY	2		2
29	Chief Pharmacist's Mate	1		1
30	Pharmacist's Mate, 1st Class	2		2
31	Pharmacist's Mate, 2d Class	2		2
32	Pharmacist's Mate, 3d Class	3		3
33	Hospital Apprentice, 1st Class	2		2
34	TOTAL ENLISTED, U.S. NAVY	10		10
35	TOTAL NAVAL PERSONNEL	12		12
36	AGGREGATE	149	720	869
37	Carbine, .30-caliber, M1	87	360	447
38	Gun, submachine, .45-caliber, Thompson	3	72	75
39	Pistol, .45-caliber	9	216	225
40	Rifle, .30-caliber, M1	53	144	197
41	Armored amphibian, w/armament:	3	72	75
42	-radio equipped (1TCS)	(1)	(68)	
43	-radio equipped (2TCS)		(4)	
44	-radio equipped (3TCS)	(2)		

UNCLASSIFIED

Marine Corps
Table of Organization
G-1020

Designation: ____ Armored Amphibian Battalion (continued)

	1	2	3	4
45		Headquarters & Service Company (T/O G-1019)	Four (4) Armored Amphibian Companies (T/O G-1016)	TOTAL BATTALION
46	Pumping set, centrifugal, self-priming, gasoline driven,			
	55-gallon per minute	1	4	5
47	Tractor, amphibian, w/armament, radio equipped (LTCS)	4	8	12
48	Trailer:			
49	-1-ton, 2-wheel, greasing	1	4	5
50	-1-ton, 2-wheel, high pressure cleaning unit	1	4	5
51	-1-ton, 2-wheel, stockroom		4	4
52	-1-ton, 2-wheel, water, 300-gallon		4	4
53	-2-ton, 4-wheel, stockroom	1		1
54	Truck:			
55	-1/4-ton, 4 x 4		12	12
56	-1/4-ton, 4 x 4, radio equipped (TCS)	2	4	6
57	-1-ton, 4 x 4, cargo	2		2
58	-1-ton, 4 x 4, reconnaissance	2		2
59	-2½-ton, 6 x 6, cargo	8	12	20
60	-2½-ton, 6 x 6, machine shop, M16A1, w/load "A"	1		1
61	-2½-ton, 6 x 6, tank, gasoline, 750-gallon	1		1
62	-2½-ton, 6 x 6, wrecking	1		1

NOTE: This table supersedes Table of Organization F-1020, approved 31 December 1943.

Approved:

s/G. C. Thomas,
G. C. THOMAS,
By direction.

DISTRIBUTION: "A", "B" and "QND(3)".

UNCLASSIFIED

AMPHIBIAN TANK BATTALION

Designation: † _____ Amphibian Tank Battalion

ARMY
T/O & E 17-115

1		2	3	4	5	6	7	8
1	Unit	Hq & Hq Service Co (T/O&E 17-116)	4 CO's (each) (T/O&E 17-117)	TOTAL	Attached Medical	Aggregate	Enlisted Cadre a	Remarks
2	Lieutenant Colonel	1		1		1		† Insert number of
3	Major	2		2		2		battalion.
4	Captain	4	1	3		8		a.Other than med-
5	Captain or first lieutenant				(d1)3b	3		ical. For med-
6	First lieutenant	1	2	9		9		ical see p.3.
7	Second lieutenant	2	2	10		10		b.To be furnished
								only as required
8	TOTAL COMMISSIONED	10	6	30	3	33		and available
								within the con-
9	Warrant Officer	4		4		4		tinental limits
10	Master sergeant	2		2		2	2	of the United
11	First sergeant	1	1	5		5	5	States. Will be
12	Technical sergeant	6	1	10		10	10	furnished prior
13	Staff sergeant	5	5	25	1	26	24	to departure for
14	Sergeant	5	20	85		85	81	oversea duty.
15	Corporal	1	2	9	1	10	5	
16	Technician, grade 3				2	2	2	
17	Technician, grade 4	20	16	84	2	86	50	
18	Technician, grade 5	21	15	81	6	87	11	
19	Private, first class	14	41	178	3	181		
20	Private, including	22	55	242	4	246		
21	Basic	(9)	(14)	(65)	(2)	(67)		
22	TOTAL ENLISTED	97	156	721	19	740	188	
23	AGGREGATE	111	161	755	22	777	188	
24	0 Carbine, cal..30	73	37	221		221		
25	0 Gun, machine, HB, cal..50, flexible	4	2	12		12		
26	0 Gun, submachine, cal..45	35	121	519		519		
27	Launcher, rocket, 2.36-inch	4	3	16		16		
28	0 Pistol, automatic, cal..45	3	3	15		15		
29	0 Trailer, 1-ton	4	1	8		8		
30	0 Truck, 1/4-ton	2	2	10	4	14		
31	0 Truck, 3/4-ton, command	2		2		2		
32	0 Truck, 3/4-ton, weapons carrier				1	1		
33	0 Truck, 2½-ton, cargo	8	2	16		16		
34	0 Truck, heavy wrecker	1		1		1		
35	0 Vehicle, LVT, cargo, (armored w/o armament)	4	2	12		12		
36	0 Vehicle, LVT, combat, (armored) (w/armament)	3	18	75		75		

T/O & E 17-115

SERVICE TROOPS
MARINE DIVISION

E-70

1		2	3	4	5	6
1	UNIT	Service Battalion (T/O E-65)	Motor Transport Battalion (T/O E-60)	Medical Battalion (T/O E-55)	Amphibian Tractor Battalion (T/O E-5C)	TOTAL SERVICE TROOPS
2	Colonel	2				2
3	Lieutenant Colonel		1		1	2
4	Major	2	1		1	4
5	Captain	6	7		5	18
6	Lieutenant	9	13	1	14	37
7	TOTAL COMMISSIONED	19	22	1	21	63
8	Marine Gunner	5	5		1	11
9	Quartermaster Clerk (QMD)	3	1			4
10	TOTAL WARRANT OFFICER	8	6		1	15
11	Sergeant Major	1	1		1	3
12	First Sergeant	3	4		4	11
13	Master Gunnery Sergeant	4				4
14	Master Technical Sergeant	3	4		1	8
15	Quartermaster Sergeant	8	1		1	10
16	Gunnery Sergeant	18			4	22
17	Technical Sergeant	15	5		3	23
18	Supply Sergeant	8	4			12
19	Platoon Sergeant	32		5	9	46
20	Staff Sergeant	33	25		4	62
21	Sergeant	68	69	6	50	193
22	Mess Sergeant	1	3		3	7
23	Chief Cook	15	5	5	4	29
24	Corporal	113	130	22	190	455
25	Field Cook	15	1	5	1	22
26	Assistant Cook	43	5	10	5	63
27	Private (including 1st Class)	234	232	72	174	712
28	TOTAL ENLISTED	614	489	125	454	1682
29	TOTAL MARINE CORPS	641	517	126	476	1760
30	Commissioned, Medical Corps	1	1	27	1	30
31	Commissioned, Hospital Corps			6		6
32	Commissioned, Dental Corps			5		5
33	Commissioned, Chaplain Corps	1				1
34	TOTAL COMMISSIONED, U.S. NAVY	2	1	38	1	42
35	Chief Pharmacist's Mate	2	1	16	1	20
36	Pharmacist's Mate, 1st Class	1	1	41	1	44
37	Pharmacists Mate, 2d Class	9	1	46	1	57
38	Pharmacist's Mate, 3d Class	2	3	52	2	59
39	Hospital Apprentice, 1st Class	2	3	103	2	110
40	Hospital Apprentice, 2d Class	2		104	2	108
41	TOTAL ENLISTED, U.S. NAVY	18	9	362	9	398
42	TOTAL NAVAL PERSONNEL	20	10	400	10	440
43	AGGREGATE	661	527	526	486	2200
44	Carbine, .30-caliber, M1	183	301	526	187	1197
45	Gun, machine, .30-caliber, Browing, M1919A4		28		300	328
46	Gun, machine, .50-caliber, Browning, M2, heavy-barrel, flexible		28		100	128
47	Launcher, rocket, AT, M1				9	9
48	Pistol, .45-caliber	100				100
49	Rifle, .30-caliber, M1	477	226		299	1002

SERVICE TROOPS
MARINE DIVISION

E-70

50	UNIT	2 Service Battalion (T/O E-65)	3 Motor Transport Battalion (T/O E-55)	4 Medical Battalion (T/O E-55)	5 Amphibian Tractor Battalion (T/O E-50)	6 TOTAL SERVICE TROOPS
51	Generator, electric, 7 to 10 KVA, trailer mounted		6	5		11
52	Steam cleaningunit, high pressure, portable trailer-mounted, complete	1	4		4	9
53	Ambulance:					
54	-1/4-ton, 4 x 4			30		30
55	-1/2-ton, 4 x 4			10		10
56	Motorcycle, w/side car		5		2	7
57	Station wagon, 4 x 4		1			1
58	Tractor:					
59	-amphibian				87	87
60	-amphibian, radio-equipped (GF/RU)				13	13
61	-heavy, w/2-wheel crane (20-ton)				1	1
62	light		6			6
63	medium		2		3	5
64	Trailer:					
65	-1/4-ton, 2-wheel		11			11
66	-1-ton, 2-wheel, cargo		30	5	3	38
67	-1-ton, 2-wheel, greasing		4		4	8
68	-1-ton, 2-wheel, stockroom		4		3	7
69	-1-ton, 2-wheel, stockroom (Ordnance)	4				4
70	-1-ton, 2-wheel, water, 300-gallon		37	5		42
71	-2-ton, 4-wheel, stockroom		4		1	5
72	-2-ton, 4-wheel, stockroom (Ordnance)	2				2
73	-3-ton, 2-wheel, steriliser-shower	4		5		9
74	-4-ton, 4-wheel, clothing, shoe and textile repair	8				8
75	-5-ton, 4-wheel, machine shop, complete		4		1	5
76	-5-ton, 4-wheel, machine shop, ordnance	1				1
77	Truck:					
78	-1/4-ton, 4 x 4		47	2	3	52
79	-1/4-ton, 4 x 4, radio-equipped (TCS)	2			2	4
80	-1-ton, 4 x 4, cargo		4	11	3	18
81	-1-ton, 4 x 4, light repair	4	4			8
82	-2½-ton, 6 x 6, cargo	2	101		3	106
83	-2½-ton, 6 x 6, wrecking	1	5		1	7

SERVICE AND SUPPLY COMPANY
SERVICE BATTALION

1		2	3	4	5	6	7	8	9	10	11	12	13
1	UNIT	Company Hq		Service and Supply Platoon									
		Administrative Section	Operations Sections	Platoon Headquarters	Service and Supply Section	Bakery Section	Chemical Service Section	Commissary Section	Graves Registration Section	Post Exchange Section	Salvage Section	TOTAL PLATOON	TOTAL COMPANY (Cols 2 & 3 plus col 12)
2	Captain	1c	2c										3
3	Commanding Officer	(1)											
4	Commissary Officer		(1)										
5	Post Exchange Officer		(1)										
6	Lieutenant	1c	3c	1c								1	8
7	Adjutant	(1)											
8	Assistant PX Officer		(1)										
9	Chemical Officer		(1)										
10	Platoon Commander			(1)									
11	Salvage Officer		(1)										
12	TOTAL COMMISIONED	2	5	1								1	11
13	Marine Gunner (General)		1c										1
14	Graves Registration Off		(1)										
15	Quartermaster Clerk (QMD)		1c										1
16	Ass't Commissary Officer		(1)										
17	TOTAL WARRANT OFFICER		2										2
18	First Sergeant (585)	1c											1
19	Master Technical Sergeant		3c										3
20	Baker (017)		(1)										
21	Bookkeeper, PX (350)		(1)										
22	Steward, PX (819)		(1)										
23	Quartermaster Sergeant (821)		1c	1c								1	5
24	Gunnery Sergeant (585)	1c											1
25	Technical Sergeant		2c			1c				2c		3	14
26	Bookkeeper, PX (350)									(1)			
27	Salvage Foreman (QM) (193)		(1)										
28	Section chief (Baker) (017)					(1)							
29	Steward, PX (819)									(1)			
30	Storeroom keeper, PX (769)		(1)										
31	Supply Sergeant (821)		2c					1c				1	6
32	Graves registration		(1)										
33	Platoon Sergeant (651)				1c							1	4
34	Staff Sergeant	1c	2c		1c	1c	1c	1c		1c	1c	6	27
35	Baker (017)					(1)							
36	Chief clerk, PX (324)									(1)			
37	Clerical (QM) (821)				(1)			(1)					
38	Draftsman, topographic, grave registration (EP)(076)		(1)										
39	Mess (O) (824)	(1)											
40	PX Steward, Ass't (819)		(1)										
41	Section chief (EP) (870)						(1)						
42	Section chief (QM) (193)										(1)		
43	Sergeant	1	4		2		1	1	1	2	2	9	41
44	Camouflage (EP) (800)		(1)										
45	Chemical (EP) (870)						(1)						
46	Clerical (QM) (821)		(1)		(2)			(1)					
47	Clerk, PX (324)		(2)							(2)			
48	Foreman, sterilization (QM) (591)										(1)		
49	Salvage (QM) (194)										(1)		
50	Section chief (539)								(1)				
51	Supply and property (821)	(1)											

SERVICE AND SUPPLY COMPANY
SERVICE BATTALION

E-62
(Continued)

1		2	3	4	5	6	7	8	9	10	11	12	13
52	UNIT	Company Hq		Service and Supply Platoon									
		Administrative Section	Operations Section	Platoon Headquarters	Service and Supply Section	Bakery Section	Chemical Service Section	Commissary Section	Graves Registration Section	Post Exchange Section	Salvage Section	TOTAL PLATOON	TOTAL COMPANY (Hq & 4 Platoons)
53	Chief Cook	1				3						3	13
54	Baker (017)					(3)							
55	Cook (C) (060)	(1)											
56	Corporal	1	3	1	5	1	1	1	3	1	2	15	64
57	Clerical (QM) (055)		(1)	(1)	(2)			(1)					
58	Clerk, company (405)	(1)											
59	Clerk, PX (324)		(1)							(1)			
60	Clerk, record, graves registration (QM)(055)		(1)						(1)				
61	Decontamination (EP)(809)						(1)						
62	Draftsman, topographical (EP) (076)								(2)				
63	Mechanic, gen. (QM) (121)					(1)							
64	Mechanic, typewriter (QM) (239)				(1)								
65	Operator, sterilizer (QM) (706)										(1)		
66	Salvage (QM) (194)										(1)		
67	Supply (653)				(2)								
68	Field Cook	2				3						3	14
69	Baker (017)					(3)							
70	Cook (C) (060)	(2)											
71	Assistant Cook			1		9						10	40
72	Baker (017)					(9)							
73	Cook (C) (060)			(1)									
74	Private (incl. 1st Class)	6	2	5	16	3	2	2	10	1	9	48	200
75	Barber (022)	(1)											
76	Capenter (050)				(2)								
77	Clerk (055)				(2)			(2)					
78	Clerk, PX (324)		(1)							(1)			
79	Clerk, record (055)								(2)				
80	Cobbler (204) (d)	(1)											
81	Decontamination (809)						(2)						
82	Draftsman, topographical graves registration (076)		(1)										
83	Fireman (084)										(1)		
84	Fireman, oven (376)					(1)							
85	Operator, sterilizer (706)										(1)		
86	Salvageman (194)										(6)		
87	Supply (521)				(12)								
88	Other duty (521)	(4)		(5)		(2)			(8)		(1)		
89	TOTAL ENLISTED	14	19	8	25	21	5	6	14	7	14	100	433
90	TOTAL MARINE CORPS	16	26	9	25	21	5	6	14	7	14	101	446
91	Chief Pharmacist's Mate (Graves Registration)		1										1
92	Pharmacist's Mate, 2d Class								2			2	8
93	TOTAL ENLISTED, U.S. NAVY		1						2			2	9
94	AGGREGATE	16	27	9	25	21	5	6	16	7	14	103	455
95	Carbine, .30-calibre, M1	5	18	2	2	2	1	2	2	3	1	15	83a
96	Pistol, .45-caliber (b)		100										100
97	Rifle, .30-caliber, M1	11	9	7	23	19	4	4	14	4	13	88	372

SERVICE AND SUPPLY COMPANY
SERVICE BATTALION

M-62
(Continued)

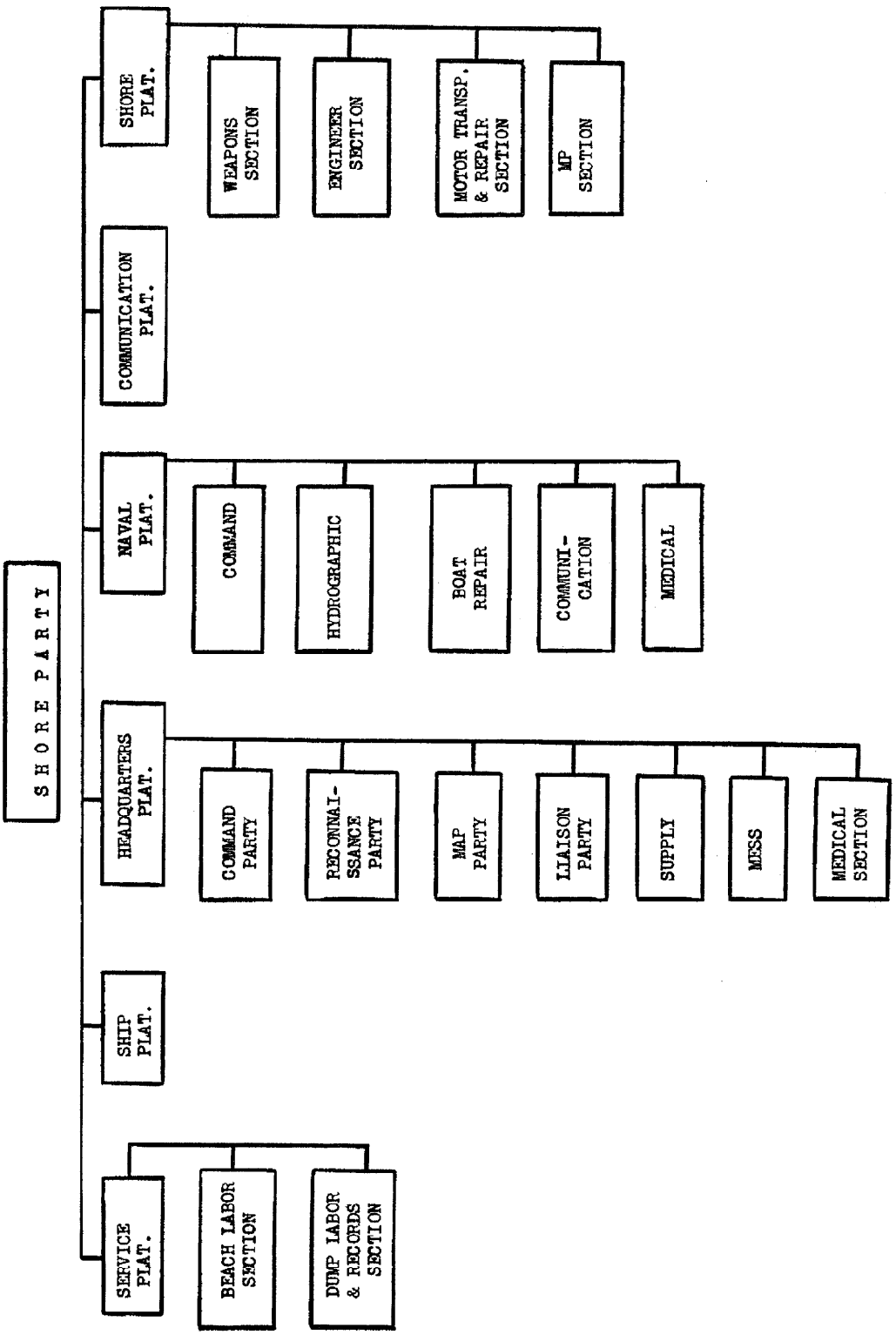
1		2	3	4	5	6	7	8	9	10	11	12	13
		Company Hq		Service and Supply Platoon									
98	UNIT	Administrative Section	Operations Section	Platoon Headquarters	Service and Supply Section	Bakery Section	Chemical Service Station	Commissary Section	Graves Registration Section	Post Exchange Section	Salvage Section	TOTAL PLATOON	TOTAL COMPANY (Hq & 4 Platoons)
99	Trailer:												
100	-3-ton, 2-wheel, sterilizer - shower										1	1	4
101	-4-ton, 4-wheel, clothing, shoe and textile repair										2	2	6

a-includes 9 reserve for medical personnel when required in accordance w/Rules of Land Warfare.
(b)-Carried in reserve.
c-Armed w/carbine.
(C)-Commissary branch.
(d)-Cobblers from various units may be grouped to operate shoe and textile repair unit as required.
(EP)-Engineer personnel.
(QM)-Quartermaster personnel.

NOTE: Serial number in parenthesis refers to specialist qualifications as shown in AR 615-26.

1		2	3	4	5
1	UNIT	Headquarters Battalion (T/O E-95)	Special Weapons Battalion (T/O E-85)	Tank Battalion (T/O E-80)	TOTAL SPECIAL TROOPS
2	Major General	1			1
3	Brigadier General	1			1
4	Colonel	6			6
5	Lieutenant Colonel	7	1	1	9
6	Major	16	3	1	20
7	Captain	17	9	6	32
8	Lieutenant	23	19	21	63
9	TOTAL COMMISSIONED	71	32	29	132
10	Marine Gunner	4	6	6	16
11	Quartermaster Clerk (A&ID)	3			3
12	Quartermaster Clerk (QMD)	3		1	4
13	Pay Clerk	3			3
14	TOTAL WARRANT OFFICER	13	6	7	26
15	Sergeant Major	2	1	1	4
16	First Sergeant	4	5	5	14
17	Master Gunnery Sergeant	1	2	1	4
18	Master Technical Sergeant	10	1	1	12
19	Quartermaster Sergeant	3		1	4
20	Paymaster Sergeant	2			2
21	Gunnery Sergeant	1	6	8	15
22	Technical Sergeant	15	2	7	24
23	Supply Sergeant	5	1		6
24	Drum Major	3			3
25	Steward, 1st Class	1			1
26	Cook, 1st Class	1			1
27	Platoon Sergeant	3	15	13	31
28	Staff Sergeant	41	10	11	62
29	Cook, 2d Class	1			1
30	Sergeant	96	70	122	288
31	Chief Cook	3	5	5	13
32	Field Music Sergeant	1			1
33	Cook, 3d Class	3			3
34	Corporal	135	128	237	500
35	Field Cook	4	2	4	10
36	Field Music Corporal	1			1
37	Steward's Assistant, 1st Class	2			2
38	Assistant Cook	7	7	6	20
39	Field Music 1st Class	2			2
40	Steward's Assistant, 2d Class	3			3
41	Private (including 1st Class)	392	449	238	1079
42	Steward's Assistant, 3d Class	5			5
43	TOTAL ENLISTED	747	704	660	2111
44	TOTAL MARINE CORPS	831	742	696	2269
45	Commissioned, Medical Corps	4	2	1	7
46	Commissioned, Hospital Corps	1			1
47	Commissioned, Dental Corps	1			1
48	Commissioned, Chaplain Corps	3			3
49	Commissioned, H-V(S), USNR	2			2
50	TOTAL COMMISSIONED, U.S. NAVY	11	2	1	14

1		2	3	4	5
51	UNIT	Headquarters Battalion (T/O E-95)	Special Weapons Battalion (T/O E-85)	Tank Battalion (T/O E-80)	TOTAL SPECIAL TROOPS
52	Chief Pharmacist's Mate	2	1	1	4
53	Pharmacist's Mate 1st Class	3	1	1	5
54	Pharmacist's Mate 2d Class	4	5	3	12
55	Pharmacist's Mate 3d Class	5	2	2	9
56	Hospital Apprentice, 1st Class	5	3	2	10
57	Hospital Apprentice, 2d Class	2	2	2	6
58	TOTAL ENLISTED U.S. NAVY	21	14	11	46
59	TOTAL NAVAL PERSONNEL	32	16	12	60
60	AGGREGATE	865	758	708	2329
61	Carbine, .30-caliber, M1	860	583	270	1713
62	Gun, Machine, .30-caliber, Browning, M1919A4		43	24	67
63	Gun, Machine, .50-caliber, Browning, M2 heavy-barrel, flexible		37	2	39
64	Gun, submachine, .45-caliber			66	66
65	Gun, 37mm, antitank		18		18
66	Gun, antiaircraft		16		16
67	Gun, 75mm or 3", antitank, self-propelled, radio-equipped (GF/RU)		6		6
68	Launcher, rocket, AT, M1		24		24
69	Pistol, .45-caliber			198	198
70	Rifle, .30-caliber, M1		175	174	349
71	Shotgun, 12-gauge	6			6
72	Tank, Army light, w/armament, radio-equipped (GF/RU)			54	54
73	Tank, Army light, recovery			3	3
74	Steam cleaning unit, high pressure, portable, trailer mounted, complete		1	4	5
75	Cart, hand, M3 (Medical)	3			3
76	Car, 5-passenger	3			3
77	Station wagon, 4 x 4	2			2
78	Trailer:				
79	-1-ton, 2-wheel, cargo	5	8	22	33
80	-1-ton, 2-wheel, greasing		2	4	6
81	-1-ton, 2-wheel, stockroom		2	3	5
82	-1-ton, 2-wheel, water, 300-gallon		3	3	6
83	-1-ton, 2-wheel (PE-95)	1			1
84	-2-ton, 4-wheel, stockroom		1	1	2
85	-5-ton, 4-wheel, machine shop complete		1	4	5
85a	-5-ton, 4-wheel, intercept station	1			1
86	Truck:				
87	-1/4-ton, 4 x 4	21	25	26	72
88	-1/4-ton, 4 x 4 radio equipped (TCS)	5	15	23	43
89	-1/4-ton, 4 x 4 radio equipped (SCR-193)	2			2
90	-1-ton, 4 x 4, cargo	5	43	3	51
91	-1-ton, 4 x 4, light repair		3		3
92	-1-ton, 4 x 4, reconnaissance			5	5
93	-1-ton, 4 x 4, reconnaissance, radio-equipped(GF/RU)	2	6		8
94	-1½-ton, 4 x 4, radio-equipped (SCR-299)	1			1
95	-2½-ton, 6 x 6, cargo	9	23	32	64
96	-2½-ton, 6 x 6 tank, gasoline 750-gallon			1	1
97	-2½-ton, 6 x 6, wrecking			4	4
97a	-2½-ton, 6 x 6, special body, control.	1			1


SHORE PARTY
SHORE PLAT.
WEAPONS SECTION
ENGINEER SECTION
MOTOR TRANSP. & REPAIR SECTION
MP SECTION
COMMUNICATION PLAT.
NAVAL PLAT.
COMMAND
HYDROGRAPHIC
BOAT REPAIR
COMMUNI-CATION
MEDICAL
HEADQUARTERS PLAT.
COMMAND PARTY
RECONNAI-SSANCE PARTY
MAP PARTY
LIAISON PARTY
SUPPLY
MESS
MEDICAL SECTION
SHIP PLAT.
SERVICE PLAT.
BEACH LABOR SECTION
DUMP LABOR & RECORDS SECTION

STANDING OPERATING PROCEDURE FOR SHORE PARTIES

SECTION I

GENERAL

1. Definition and Purpose:

a. A Shore Party is a special task organization charged with the responsibility for the unloading of material and supplies at the beach and their movement to beach dumps.

2. Composition:

a. The Shore Party consists of components of both the Landing Force and the Naval Force. The organization of the Landing Force component is dependent upon the tactical and logistical requirements of the anticipated operation (See Section II). The Naval component is a definitely organized unit known as the Beach Party.

3. Allocation of Shore Parties:

a. The number of Shore Parties required will of necessity vary with the size of the Landing Force, and the character and number of beaches to be utilized. Normally, a Shore Party is provided for each Landing Team.

4. Command:

a. The Commanding Officer of the Shore Party is known as the Shore Party Commander. This officer is normally designated by the Landing Force Commander, and is preferably an Engineer Officer of field grade.

b. The Landing Force Commander will also designate Combat Team and Division Shore Party Commanders as may be required to coordinate the work of the Landing Team Shore Parties under their respective control.

c. In the case of two (2) or more Landing Teams landing on and utilizing the same beach, the first Shore Party Commander ashore will remain in command until the arrival of the Shore Party Commander of the next higher troop unit.

5. Control and Responsibility:

a. The Senior Troop Commander ashore in each subordinate zone of action will coordinate and be responsible for the functioning of the supply system within that zone. As the operation progresses, Senior Troop Commanders landing within subordinated zones will consolidate and operate supply installations established in such zones by lower units.

b. The authority and responsibility of unit Troop Commanders with respect to Shore Party operations will terminate when the next higher echelon is ashore and functioning.

c. Personnel from unit-4 sections will represent their respective commanders in all matters of supply and evacuation in connection with the Shore Party operation.

d. Landing Team Commanders are responsible for the preparation of boat assignment tables that will insure the landing of Shore Party personnel and equipment in those waves permitting the timely accomplishment of Shore Party missions.

e. When established ashore, the Shore Party Commander assumes complete control over the landing beach and such other necessary adjacent areas as are designated and delimited by the Senior Troop Commander.

f. The responsibility of the Shore Party Commander for the movements and segregation of supplies terminates when the supplies are placed in beach dumps.

(1) The protection and issue of these supplies continues to be the responsibility of the Shore Party Commander until such time as the normal supply agencies are ashore and functioning.

g. Beach dumps are those areas adjacent to the beach utilized by the Shore Party for the temporary storage of supplies.

(1) While the primary mission of the Shore Party is to insure the rapid movement of supplies and material across the beach in accordance with the Landing Team supply plan, Shore Party Commanders must insure judiciously located beach dump areas in order to provide maximum dispersion.

SECTION II

TASKS OF THE SHORE PARTY

1. Tasks:

a. The Shore Party is responsible for the performance of the following general tasks:

(1) Mark hazards to the navigation in the vicinity of the beach and determine the most suitable landing points.

(2) Effect emergency boat repairs.

(3) Evacuate casualties to ships in accordance with Naval Attack Force and Landing Force Medical Plans.

(4) Control boat traffic in the vicinity of the beach.

(5) Direct landing, retraction, and salvage of boats.

(6) Mark landing beach limits.

(7) Establish and mark unloading points on landing beaches.

(8) Unload the material of the Landing Forces from small craft.

(9) Evacuate prisoners of war to ships in accordance with Landing Force instructions.

(10) Construct landing facilities when required.

(11) Maintain liaison with the Senior Troop Commander within the zone served by that particular Shore Party, and in the case of the Senior Shore Party Commander, with the Senior Commander of the Landing Force ashore.

(12) Maintain order and direct traffic on and in the vicinity of the beach.

(13) Provide bivouac, parking and storage areas on and in the vicinity of the beach for the various elements using the beach.

(14) Insure the rapid movement of equipment and supplies landed on the beach in accordance with the requirements of the units which the Shore Party is serving.

(15) Maintain a record showing organizations, material and supplies by appropriate categories which have been landed on the beach.

(16) Construct and maintain beach exit routes.

(17) Provide for decontamination of gassed areas on the beach.

(18) Maintain a situation map for the information of landing units.

(19) Operate an emergency motor maintenance service to assist vehicles damaged in landing.

(20) Provide local security for the beach area.

(21) Perform such other functions as are assigned.

(22) Establish communications with adjacent Shore Parties.

(23) Maintain communications with naval vessels and forces ashore as set forth in FTP 211 Cent Com 1, and FM 31-5 plus supplement.

(24) Remove underwater and beach obstructions.

2. Division of Tasks:

a. The execution of tasks is as follows:

(1) Sub-paragraphs (1) to (5) of paragraph 1. above, are functions of the Naval Component of the Shore Party.

(2) Sub-paragraphs (6) to (21) of paragraph 1. above are functions of the Military Component of the Shore Party.

(3) Sub-paragraphs (22) to (24) of paragraph 1. above, will be the joint responsibility of both components.

SECTION III

THE NAVAL COMPONENT OF THE SHORE PARTY

1. General:

a. The Naval Platoon of the Shore Party is known as the Beach Party. It is provided by the Navy for the performance of certain naval tasks (Section IV) which are essential to the successful operation of the Shore Party.

2. Command:

a. The naval officer in command of the Beach Party is known as the Beachmaster. He acts as assistant to the Shore Party Commander, and as advisor on naval matters.

b. The Shore Party Commander is not authorized to order the Beachmaster to perform other than naval functions except in the case of grave emergencies.

3. Organization of the Beach Party:

a. The Beach Party consists of three (3) naval officers and forty-three (43) naval enlisted.

(1) Personnel are assigned to five (5) sections, namely:

(a) The Command Section.
(b) The Hydrographic Section.
(c) The Boat Repair Section.
(d) The Communication Section.
(e) The Medical Section.

4. Duties of the Beach Party Sections.

a. The Command Section supervises the operations of the Beach Party.

b. The Hydrographic Section:

(1) Keeps the beach clear of boats.
(2) Makes the hydrographic reconnaissance.
(3) Assists in removing underwater obstructions.
(4) Acts as stretcher bearers.
(5) Furnishes relief boat crews.

c. The Boat Repair Section:

(1) Repairs broken down and damaged boats and boat motors on the beach.

(2) Assists the Hydrographic Section in the evacuation of casualties from the Beach to the Boats.

(3) Assists the Hydrographic Section in retracting boats.

(4) Strip abandoned boats of guns and equipment.

d. The Communication Section:

(1) Maintains the necessary communication channels for the Beachmaster.

(2) Repairs and maintains equipment.

(3) Assists the troop communication center as required.

(4) Provides the Beachmaster with local security.

e. The Medical Section:

(1) Establishes the beach evacuation station.

(2) Operates beach emergency stations on all beaches to care for all beach casualties.

(3) Provides transportation of all casualties from the beach evacuation station to the boats.

(4) Maintains liaison with the Senior Medical Officer of the unit responsible for supply and evacuation.

(5) Keeps the Senior Medical Officer of the unit responsible for the supply and evacuation, informed of the rate that casualties can be evacuated to ships, in order to maintain the flow of casualties at the maximum rate while at the same time preventing congestion at beach evacuation stations.

5. Training of the Beach Party:

a. The training of the Beach Party is a responsibility and function of the Naval Force.

SECTION IV

ORGANIZATION OF THE MILITARY COMPONENT OF THE SHORE PARTY

1. General:

a. Shore parties must be organized operating units in the same sense as are the tactical units of the Landing Force. They must be composed to fit the specific tactical and logistical situation and must be trained as a coordinated unit, prior to active operations.

2. The Basic Shore Party:

a. Irrespective of the tactical and logistical requirements, basic Shore Party elements must be available to amphibious units at all times. Such basic Shore Party elements must have the special equipment and technical training required for the performance of the normal Shore Party missions.

b. The basic Shore Party elements are:

For Marine Units:

(1) One (1) Pioneer Platoon.
(2) One (1) JASCO Detachment.

For Army Units:

(3) One (1) Engineer Company (Combat).
(4) One (1) JASCO Detachment.

c. In addition to these basic elements, both Marine and Army units will provide for each Shore Party, medical personnel trained in the performance of their special Shore Party duties.

3. Reinforcing Elements:

a. In the study of the contemplated operation, command decisions with reference to the attachment of combat and service troops to the basic Shore Party must be made. The basic Shore Party is not intended as a complete unit. The elements of the military component of the Shore Party must be such as to permit the effective discharge of their duties.

4. Attached Tactical Troops:

a. Depending upon the study of the enemy possibilities within the contemplated area, such troop units as anti-aircraft, anti-tank infantry, etc, may be required. When such units are intended primarily for the defense of the beach, they must be attached to the Shore Party in order that proper coordination may be obtained.

5. Attached Service Troops:

a. The logistical study of the contemplated area will reveal the proper service troops required to reinforce the Shore Party. Such troops may normally include additional troops for:

(1) Labor.
(2) Military police units.
(3) Quartermaster units.
(4) Ordnance units.
(5) Amphibian tractor units.
(6) Motor transport units.

6. The Reinforced Shore Party:

a. The decision with reference to the composition of the reinforcing elements of the Shore Party must be made at an early stage and these elements immediately attached in order that coordinated training under the Shore Party Commander may be commenced.

7. Relief of Attached Units:

a. Attached units will be relieved by the Commanding Officer who attached such units, when they are no longer required for Shore Party operations, or when their services are required elsewhere to insure the success of the operation.

8. Distinctive Marking (Clothes) for Shore Party Personnel:

a. Shore Party personnel will have their clothes distinctively marked so that they can be readily identified on the beach.

(1) Markings will consists of a one (1) inch square on the front and back of the steel helmet, a horizontal stripe one (1) inch by three (3) inches on the outer side of each trouser leg below knee.

(2) Shore Party personnel assigned shore detail will have red (paint) markings on clothes.

(3) Shore Party personnel assigned to ship platoons will have white (paint) markings.

SECTION V

TRAINING OF THE SHORE PARTY

1. General:

a. The training of the military elements of the Shore Party is a function of the Landing Force. The combined training of both (the military and naval) components of the Shore Party shall be conducted by arrangements between the military and naval echelons concerned.

2. Training Objectives:

a. The training of all components of the Shore Party will be directed toward the attainment of proficiency in operating as a coordinated team under the Shore Party Commander in support of an amphibious operation.

3. Training of the Basic Shore Party:

a. Training of the basic Shore Party shall include:

(1) A thorough knowledge of all Shore Party functions.

(2) The skilled use of all weapons and equipment.

(3) Vigorous physical training.

b. Engineer elements shall in addition, train for the normal combat engineer missions in order that their services may be effectively utilized after the completion of the Shore Party operation.

4. Training of Reinforcing Elements:

a. Reinforcing elements shall be trained in their normal functions under the supervision of their own commanders. When attached to Shore Parties, these elements will be made available to the Shore Party Commander for training in the specific missions assigned.

SECTION VI

SHORE PARTY STAFF PLANNING FOR A SPECIFIC OPERATION

1. General:

a. While control and flexibility are stressed in all Shore Party operations, tentative plans based on all available information should be made as early as practicable.

2. Map Reconnaissance:

a. A study of all available maps and aerial photographs should be made. Based on this information tentative plans for the organization of the beach and of the possible beach dump areas should be prepared.

3. Tactical Plan of Operation:

a. Shore Party Commanders must be acquainted with the tactical plan as a whole and of the detailed plan of the unit to which they are attached.

(1) A copy of the operation order of the unit to which the Shore Party is attached must be available at the Shore Party Command Post at all times.

4. Combat Supply:

a. Shore Party Commanders will be familiar with the plan for supply of the unit to which attached.

5. Authorized Markings:

a. Shore Party personnel will be familiar with the authorized markings for:

(1) Supplies.
(2) Organizational property.
(3) Equipment as established within the unit.

6. Allocation of Shore Party Duties:

a. After a study of all available information, Shore Party Commanders will allocate specific duties to units or members of their commands. This allocation will be subject to change after the actual reconnaissance of the beach.

SECTION VII

SHIP TO SHORE MOVEMENT OF THE SHORE PARTY

1. General:

a. Elements of the Shore Party must be landed in proper sequence and given sufficient priority to insure not only the success, but also the proper control of all Shore Party functions. In common with other troop units, tactical considerations govern the landing of Shore Party personnel. In no case, will Shore Party personnel be assigned boat spaces merely to fill up the boat.

b. The Reconnaissance Section:

(1) The Reconnaissance Section of the military component should normally go ashore with the leading wave of the reserve infantry company. The Beachmaster, and personnel of the Hydrographic Section shall go ashore in the same wave, but not in the same boat, as the Reconnaissance Section.

c. The Communication Section:

(1) The Communication Sections of both the military and naval components must go ashore in the wave next succeeding that of the Reconnaissance Section.

d. The Remaining Elements:

(1) The remaining elements of the Shore Party should go ashore in accordance with the tactical and logistical requirements.

e. All elements of the Shore Party must be ashore and organized prior to the landing of any supplies.

(1) The various sections of the Beach Party, especially the Boat Repair Section, should be given high priority in the boat assignment table.

2. Bulldozers and Tractors:

a. High landing priority will be afforded all Shore Party bulldozers.

(1) Should pallet loading be utilized, Landing Team Commanders shall insure the landing of sufficient tractors to operate at the beach prior to the landing of pallets.

SECTION VIII

OPERATION OF THE SHORE PARTY

1. General:

a. Each Shore Party operation will involve different problems to such an extent as to prohibit fixed details or units. Knowing the duties required, the immediate conditions, and the limitations imposed by the availability of manpower and equipment, the Shore Party Commander must formulate a flexible plan that may be altered as conditions change.

2. Shore Party Subdivisions.

a. The allocation of duties and personnel, as given in this section, is intended as a guide only. These sections or platoons are:

(1) Headquarters.
(2) Shore Platoon.
(3) Service Platoon.
(4) Ship Platoon.
(5) Communication Section.
(6) Naval Platoon (Beach Party).

b. Each of the above sections or platoons may be further sub-divided in order to perform the required missions. (See Plate II).

3. Duties of the Sections or Platoons:

a. The Headquarters Section:

(1) Controls all Shore Party activities.

(2) Selects sites for beach dumps, unloading points, beach roadways and exits.

(3) Maintains contact with the senior troop commander in the zone served.

(4) Maintains a situation map for the zone that the Shore Party serves.

(5) Operates the public address system.

(6) Operates the Shore Party Medical Section.

b. The Shore Platoon:

(1) Directs traffic and prevents congestion on the beach.

(2) Keeps lateral movement of traffic on the beach at a minimum.

(3) Controls stragglers within the beach areas.

(4) Supervises the evacuation of prisoners of war.

(5) Effects emergency repairs to vehicles damaged in landing.

(6) Executes engineer tasks including beach demolitions, beach roadways, mine field removal, emergency repair of landing facilities, and decontamination.

(7) Provides for local defense.

c. The Service Platoon:

(1) Unloads supplies and equipment from boats moving material direct to selected beach dumps.

(2) Maintains a record of classes of material landed.

(3) Carries out other labor duties as are assigned.

d. The Ship Platoon:

(1) Furnishes the labor details for the unloading of the ships.

e. The Communication Section:

(1) Installs, operates, and maintains the following communication agencies:

(a) Message Center.
(b) Radio.
(c) Wire.
(d) Visual.

(2) The Message Center operates continuously; it provides local messenger service only.

(3) Operates radio in the following nets:

(a) Ship to Shore Administrative Net.
(b) Shore Party Lateral Net.
(c) Shore Party Net.
(d) Battalion Shore Party Net.

(4) Connects switch board with the senior unit operating on the beach served by Shore Party.

(5) Establishes wire communication with adjacent Shore Parties.

(6) Establishes visual channel (lamp and/or Flag) to parallel the Ship to Shore net described in 3e(3) (a), above.

(7) Is prepared to operate panel station.

f. The duties of the Naval Platoon have been outlined in Section III.

SECTION IX

BEACH MARKERS AND BEACH ORGANIZATION

1. General:

a. Beach markers and landing point markers will be in accordance with Plate I, attached.

2. Priority for Placing Markers:

a. Beach flank markers will be placed prior to the placing of any landing point markers. When applicable, the beach center point marker may be used.

3. Landing Point Markers:

a. A minimum of one (1) landing point marker for each type of supply will be required for each beach.

(1) In the selection of these landing point markers, for various types of supplies, due consideration must be given to the tactical plan, and to the type of supply.

(2) Those supplies such as gasoline and ammunition readily destroyed by enemy action, should be so situated as to be afforded the maximum possible protection.

b. Unloading points should possess the following characteristics:

(1) Suitable landing point.
(2) Suitable egress from beach.
(3) Convenient location with respect to dump areas.

SECTION X

BEACH DUMPS

1. General:

a. The Shore Party will establish dumps in the beach area for:

(1) Ammunition.
(2) Rations.
(3) Water.
(4) Vehicles.
(5) Gasoline.
(6) Medical.
(7) Miscellaneous supplies.

b. The medical point normally may be used for casualty evacuation. However, in order to expedite the removal of casualties from shore to ship, they may be evacuated at any point so designated by the Shore Party Commander and approved by the Beachmaster.

2. Location of Dumps:

a. Prior to landing, dump locations will be tentatively selected from a study of maps and aerial photographs. These locations will be confirmed by personal reconnaissance immediately upon landing.

b. Ordinarily, on each beach there will be established one (1) dump for each type of supply. Due consideration must nevertheless be given to the tactical requirements, to the control of Shore Party personnel, and to the effects of enemy air action, before making final decision as to the number of dumps for the various types, and classess of supplies.

3. Dump Characteristics:

a. Dump areas should possess the following characteristics:

(1) Sufficient area to permit a wide dispersal of supplies.

(2) Convenient location with respect to unloading points.

(3) Accessibility both from seaward and from the road net established for the movement forward.

(4) Concealment from air and ground observation by use of natural cover is desirable but not at the sacrifice of dispersion.

4. Stacking:

a. Dumps will be laid out in such a manner as to permit free circulation of traffic.

(1) Within each dump, supplies will be segregated in accordance with:

(a) Type.
(b) Caliber.

b. Stacks will be of such size as to reduce loss incurred by enemy action.

5. Change of Dump Areas:

a. Shore Party Commenders will constantly be alerted to the possible necessity for change of location of dump areas, either by reason of changes in the tactical situation, or because of the fact that the quantity of supplies brought ashore exceeds the capacity of the dump area.

SECTION XI

LANDING SHIPS

1. General:

a. The use of landing ships in amphibious operations necessitates a variation from the normal Shore Party procedure as outlined for ship to shore landing boats.

2. Beaching of Ship:

a. The beaching of the ship will be as directed by the Navy.

(1) The location for beaching is based on the hydrographic survey.

(2) Naval officers must take cognizance of the Landing Force Tactical Plan and must beach the ship in such an area as to support this plan.

3. Unloading Operations:

a. Under average conditions a bulldozer or heavy tractor with winch should be so loaded as to be the first vehicle out. This piece of equipment must remain near the vicinity of the ship to assist other pieces of equipment that may become stalled.

b. Once started, unloading will proceed to completion at the selected point of landing.

(1) Shore Party Commanders will plan initial dump areas for the various types of supplies in accordance with the method of loading:

(a) Pallet or normal container.
(b) The amount of equipment available to handle such supplies.

c. Priority shall be given to the unloading of the ship rather than to the forward movement of supplies. This does not however, imply that dispersion of supplies in the beach area shall be overlooked.

SECTION XII

PALLETS

1. General:

a. Shore Party commanders shall acquaint themselves with the type of pallet to be used by their units and the extent to which pallet loading will be employed for the operation.

(1) The Senior Shore Party Commander shall advise the Senior Landing Force Commander as to the type and number of vehicles, either wheeled or tracked, required to expeditiously remove pallets from landing boats.

2. Inland Movement of Pallets.

a. While it is essential that every effort be made to expedite the removal of pallets from boats to shore, Shore Party Commanders should not neglect to move pallets to inland dump areas as promptly as possible.

SECTION XIII

BEACH DEFENSE

1. Responsibility:

a. The Shore Party Commander is responsible for his local security.

(1) The Commanding Officer of Troops for the zone is responsible for the defense of the beach.

(2) When tactical units are attached to the Shore Party, the Shore Party Commander shall be responsible for the proper tactical employment of such units.

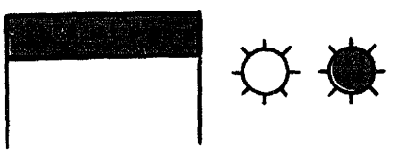
2. Air Warning:

a. Shore Party Commanders shall establish an air warning system for the beach area. He shall prepare plans for the protection of Shore Party personnel against both surprised and warned air attacks.

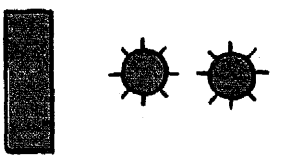
3. Ground Defensive Plans:

a. The Shore Party Commander will prepare plans for the defense of the beach should that emergency arise.

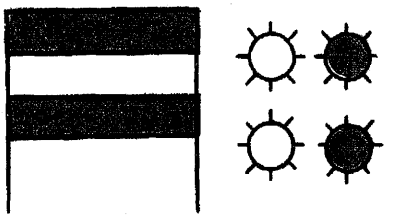
BEACH FLANK MARKERS



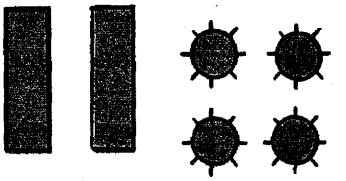
LEFT FLANK MARKER
BEACH RED



RIGHT FLANK MARKER
BEACH RED

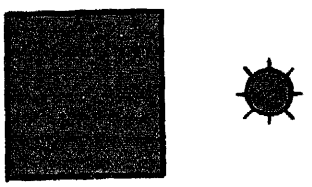


LEFT FLANK MARKER
BEACH RED TWO

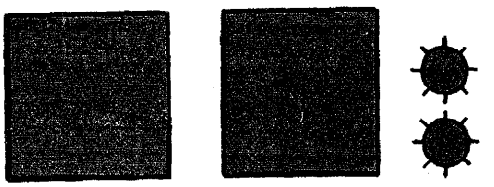


RIGHT FLANK MARKER
BEACH RED TWO

BEACH CENTER MARKERS



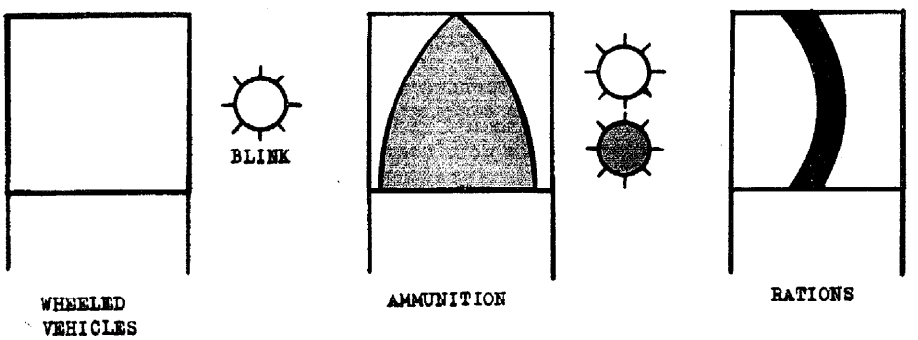
CENTER BEACH RED

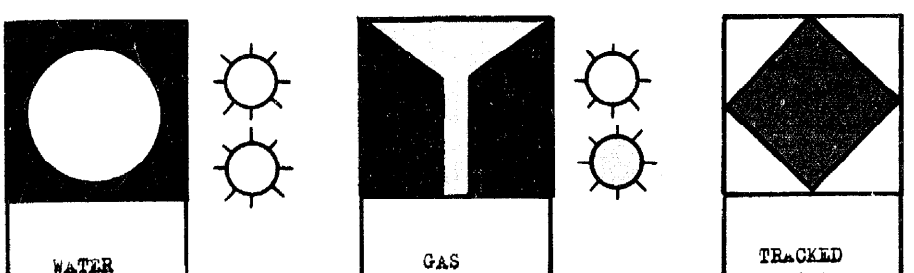


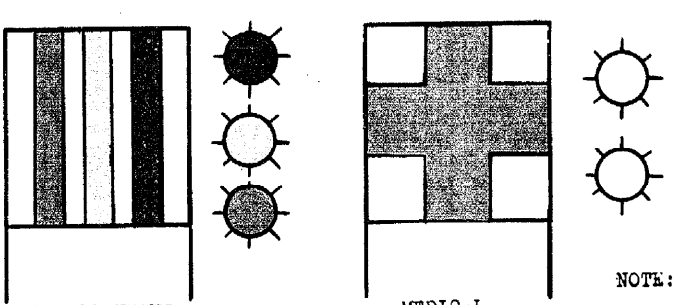
CENTER BEACH RED TWO

NOTE: Beach flank markers to be 12' long and 2½' wide.
Beach center markers to be 6' square.

LANDING POINT MARKERS







NOTE: All landing point markers (day) sha be 6' square.

2. Initially the Commander Expeditionary Force commands all task organizations at all objectives through interrelated attack force or group commanders. He commands support aircraft, and air defense as it becomes available at each objective through command channels designated by him.

3. The Commanding General Expeditionary Troops will be embarked in the flag ship of the Commander Joint Expeditionary Force or stationed ashore when the situation requires, and will command all landing and garrison forces that are ashore. Since the employment of troops, including the reseve troops engaged in the seizure of objectives, is subject to the capabilities of the surface units to land and support them, directives issued by the Commanding General Expeditionary Troops as to the major landings or as to the major changes in tactical plans during the amphibious stages require the approval of the Commander Joint Expeditionary Force before they are issued.

4. At each objective, the related Commander Attack Force will command the landing force through the related Commander Landing Force from ship-to-shore operations. For shore-to-shore operations, the landing force will be under the direct command of the Commander Landing Force, and naval craft and supporting forces will be under the command of the Commander Attack Force concerned. As soon as the Commander Landing Force determines that the status of the landing operations permits, he will assume command on shore and report that fact to the related Commander Attack Force.

5. Landing Forces, after their respective commanders have assumed command on shore, will be under the over-all command of the Commanding General Expeditionary Troops. Garrison force commanders (island commanders) are initially under the command of the Commander Landing Force. Garrison force (island) commanders will exercise direct command over units of the garrison forces except those temporarily attached to the landing forces. The Commanding General Expeditionary Troops will retain command of all forces established on each objective until the officer commanding the operation has determined the situation is such that the capture and occupation phase at that objective may be considered completed. The Officer Commanding the Operation will then direct that command of all forces at that objective pass to the Garrison Force or Island Commander.

6. At each objective, initially the related Commander Attack Force commands support aircraft through the Commander Support Aircraft embarked in his flagship from the time that the aircraft arrive on station until their departure for recovery by the parent carrier. Prior to their reporting on station and after departure for recovery, these aircraft will operate under command of their respective carrier group or unit commander. When the Landing Force Aircraft Commander has been established on shore, he will, under the Commander Landing Force, command troop support aircraft.

7. Responsibility for air defense will pass from the Commander Support Aircraft to the Air Defense Commander ashore when so directed by the Commander Attack Force. The Officer designated as the Air Defense Commander, or an Officer designated to act for him, will report for operational control to the Commander Support Aircraft. He will proceed ashore at the earliest practicable time and act under the Commander Support Aircraft, as directed, in matters pertaining to air defense. He will act in such capacity until such time as full responsibilty for the air defense of the base passes to him. If the Commander Attack Force is to be temporarily absent from the objective area, he will delegate the responsibility for air defense to such other commander, afloat or ashore, as he may deem appropriate. In this event, the Air Defense Commander will report to the commander so designated.

8. The Officer Commanding the Operation will determine and announce when the capture and occupation phase is completed, whereupon the Commander Forward Area will assume responsibility to him for the defense and and development of positions captured. The organization and administration of the captured positions and of the defense forces assigned will then conform to the directives issued by the Commander in Chief, Pacific Ocean Areas, to the Commander Forward Area and to the Garrison or Island Commanders concerned.

9. When the situation permits, the Commander in Chief, Pacific Ocean Areas will relieve the Officer Commanding the Operations of the responsibility for all positions captured. Thereafter, Commander Forward Area will be responsibility direct to the Commander in Chief, Pacific Ocean Areas, the newly captured positions will be incorporated into the Forward Area, and their garrisons into the task force commanded by the Commander Forward Area.

U. S. NAVY
ADVANCE BASE UNITS

UNCLASSIFIED

GLOSSARY OF TERMS
FOR AMPHIBIOUS OPERATIONS

LION - A self-sustaining, standard, ready, Advance Base Unit including the Components of a major all-purpose Base. It contains technical shops, fully equipped, and personnel of sufficient number and training, to perform voyage repairs and repair minor battle damage for a major portion of the fleet. It includes repair facilities equivalent to a fleet repair ship, plus all special equipment usually provided by a submarine tender and a destroyer tender. Aviation facilities will be furnished with each Lion Unit if desired and requested. Normally the aviation facilities will consist of four Acorns and engine overhaul Component and such other Components necessary to perform its mission. The Construction Battalions necessary to construct a Lion with aviation facilities will be supplied when requested. Normally, five Construction Battalions would be required. The Construction Battalions construct and maintain its roads, housing for personnel, technical buildings, water, lighting and communication systems and other utilities and public works necessary to set up and operate the base. The complement (excluding any aviation facilities but including 3 ½ CB's) is 370 officers and 7,198 men. Its weight packed for shipment is 64,427 long tons. Its cube packed for shipment is 127,505 measured tons.

CUB - An assembly of equipment and trained personnel, which can be used as a whole or in part to establish and advanced fuel and supply base, capable of furnishing support without repairs for a small task group of light forces. It also contains harbor defense, harbor control and operation facilities and trained personnel. Aviation facilities will be furnished with each Cub Unit, if desired and requested. Normally the aviation facilities will consist of two Acorns and such other Components necessary to perform its mission. The Construction Battalions necessary to construct a Cub Unit with aviation facilities will be supplied when requested. Normally two Construction Battalions would be required. Its complement (excluding aviation facilities but including two Construction Battalions) is 195 officers and 3,727 men. Its weight packed for shipment is 28,819 long tons. Its cube packed for shipment is 58,664 measured tons.

ACORN - An airfield assembly designed to accomplish the rapid construction and operation of a landplane and seaplane advance base, or in conjunction with amphibious operations, the quick repair and operation of a captured enemy airfield. Each airfield assembly will consist of two 6,000 foot runway strips of pierced plank landing mat, together with the necessary airfield or seadrome construction equipment. Each will be so equipped that when furnished with a Casu and a Patsu, it can service, rearm and perform minor repairs and routine upkeep for the planes of one Carrier Group or its equivalent and one patrol Plane Squadron. An Acorn without the Casu or Patsu will include sufficient personnel to maintain the aviation facilities in operating condition, to provide for service casual planes, to operate the air warning system, field lighting, transportation and medical facilities and to maintain the berthing and messing facilities to be used by the Casu and or Patsu and aircraft crews. Its complement (including Construction Battalion but not the personnel supplied by the Fleet) is 68 officers and 1,590 men. Its weight packed for shipment is 15,270 long tons. Its cube packed for shipment is 25,907 measured tons.

CASU - A trained shore based carrier Air Group Service Personnel Unit whose function is to support the flight operations of a shore-based Carrier Air Group including the operation of all facilities, servicing, rearming, minor repairs, and routing upkeep and all necessary administrative duties. A Casu has no equipment but depends on the equipment and facilities of an Acorn.

PATSU - A detachment of the Fleet Air Wing Headquarters Squadron which performs the functions of that Squadron for a detached part of the Wing.

FLEET AIR WING HEADQUARTERS SQUADRON - All enlisted personnel of a patrol wing who are not part of the combat flight crews. It includes all officers not members of the wing staff or the combat flight crews. It may include certain officers of the wing staff who are performing additional duties in the headquarters squadron. It contains personnel and equipment adequate in support the flight operations of the aircraft attached to the operational command of the wing including the operation of the facilities provided, line maintenance, servicing, rearming, minor repair and routine upkeep and to perform all necessary administrative duties.

MINOR REPAIR AND ROUTINE UPKEEP - All repairs not requiring extensive shop equipment. They include engine changes; inspection, adjustment and replacement of structural parts; inspection adjustment and replacement of engine parts (including engine accessories) outside the crank case assembly; replacement of defective instruments; in fact, all adjustment, repairs or replacements that can be accomplished in the field including cleaning and painting.

MAJOR REPAIRS - Any repairs requiring extensive shops or specialized shop equipment. The equipment and specialized personnel to accomplish major repairs are similar to that required for major overhaul.

MAJOR OVERHAUL (Airplane overhaul) - The disassembly, inspection, and repair of, and incorporation of mandatory changes in, and aircraft structure. It includes the replacement of engines, accessories, instruments, radio and ordnance equipment with similar new or overhauled items to the end that the overhauled airplane be restored to a condition closely approximating its original performance and strength.

OVERHAUL - The complete disassembly, inspection, and replacement or repair of parts (together with the incorporation of prescribed changes) of an airplane subassembly or equipment item in order to restore that component to approximately its original state, is termed overhaul. This term applies to engines, propellers, instruments, radio and ordnance equipment and structural parts and to all other airplane and engine accessories.

SERVICING - The replenishment of the supply of fuel, oil, oxygen, food, and other consumable items in order to prepare an airplane for flight. It includes line maintenance and excludes rearming.

ARMING AND REARMING - An operation that replenishes an airplane with prescribed stores of ammunition, bombs, and other armament items including replacement of defective ordnance equipment, in order to make the plane ready for combat service.

REPLACEMENTS - The replacement of any part of a plane including engine and structural units.

COMPARISON OF PERSONNEL - MARINE AND INFANTRY DIVISIONS

UNIT	MARINE DIVISION	INFANTRY DIVISION
Spec. Trps.	Hq Bn (T/O F-95): Hq Co (T/O F-94) MP Co (T/O F-90) Sig Co (T/O F-91) Recon Co (T/O F-89) Tank Bn (T/O F-80) H&S Co (T/O F-79) 3 Tank Cos (T/O F-76) Service Troops (T/O F-70): Service Bn (T/O F-65): Hq Co (T/O F-64) Serv & Sup Co (T/O F-62) Ord Co (T/O F-61--M't'ce except MT MT Bn (T/O F-60): H&S Co (T/O F-59)--MT M't'ce 3 Trans Cos (T/O F-56)--MT M't'ce Med Bn(T/O F-55): listed under Medical below	Hq & Hq Co (T/O & E 7-2) MP Pltn (T/O & E 19-7) Sig Co (T/O & E 11-7) (Tank units drawn from Corps) (Most service units drawn from Corps) (Serv Co in Inf Regt) Ord Co (T/O & E 9-8--all M't'ce (MT decentralized in Inf Regts; may be pooled by Div) QM (Truck) Co (T/O & E 10-17) (Listed under Medical below)
Recon-nais-sance	(Recon Co (T/O F-89) incl. in Hq Bn	Cavalry Troop (T/O & E 2-27)
Infan-try	3 Regiments (T/O F-10): H&S Co (T/O F-9) Wpns Co (T/O F-7)--37&57mm Guns (Serv & Sup Co in Serv Trps) 3 Infantry Bns: (T/O F-5): Hq Co (T/O F-4) 3 Rifle Cos (T/O F-1)	3 Regiments (T/O & E 7-11): Hq & Hq Co (T/O & E 7-12) Cannon Co (T/O & E 7-14)--105mm How's AT Co (T/O & E 7-19)--57mm Guns Serv Co (T/O & E 7-13) 3 Rifle Bns (T/O & E 7-15): Hq Co (T/O & E 7-16) 3 Rifle Cos (T/O & E 7-17) Hvy Wpns Co (T/O & E 7-18)--81mm mtrs
Artil-lery	Artillery Regiment (T/O F-30) H&S Btry (T/O F-29) 2 105mm How Bns (T/O F-25) 2 75mm How Pk Bns (T/O F-20)	Division Artillery (T/O & E 6-10): Hq & Hq Btry (T/O & E 6-10-1) 3 105mm How Bns (T/O & E 6-25) 1 155mm How Bn (T/O & E 6-35)
Engin-neer	Engineer Bn(T/O F-35) H&S Co (T/O F-34) 3 Engr Cos (T/O F-31) Pioneer (Shore Party) Bn: (T/O F-40)	Engineer (Combat) Bn (T/O & E 5-15): Hq Co (T/O & E 5-16) 3 Combat Engr Cos (T/O & E 5-17) (A Combat Engr Co may be so used) (Port Cos may be drawn from Corps)
Medic-al	Med Bn (T/O F-55) (incl. in Serv Trps): H&S Co (T/O F-54) 5 Med Cos (T/O F-51) both collecting and clearing sections	Medical Bn (T/O & E 8-15): Hq & Hq Det (T/O & E 8-16) 3 Collecting Cos (T/O & E 8-17) 1 Clearing Co (T/O & E 8-18)

TABLE OF COMPARISON OF SUPPLIES (CLASSIFICATION) ARMY AND MARINE CORPS UNITS			
GROUP	MARINE CORPS	CLASS	ARMY
1.	All individual equipment needed in a field operation and combat issued to officers and men normally carried on the person i.e., clothing, packs, arms, gas masks.	II	Individual and organizational equipment authorized by Table of Equipment.
2.	Trunk lockers, sea bags, hand baggage	II	
3.	Field desks, stationery, typewriters, etc.	II	
4.	Organizational equipment; crew served weapons, tanks, hand drawn carts, radios, medical chests. (Less ordnance and motor maintenance Parts)	II	
5.	Supplementary equipment; cleaning and preserving materials, weapon spare parts. (Less ordnance and motor maintenance parts)	II	
6.	Mess equipment; field ranges, water cases, mess chests.	II	
7.	Camp equipment; tentage, field camp equipment	II	
8.	Transportation, motor vehicles, spare parts for vehicles.	II	
9.	Special equipment; construction material, chemical warfare material, camouflage material (Issued only on specific authority)	IV	Miscellaneous supplies, expendable and New T/E, CWS, Medical, Engineer, (include fortification material Ordnance), Quartermaster, and Signal Supplies.
10.	Ammunition, empty magazines, for automatic rifle and sub-machine guns or similar ordnance equipment	V	Ammunition
11.	Automatic Supplies Subsistence, water, Gasoline, keresone, (consumed at a uniform rate)	I III	Rations, water Gasoline, greases, oils, fuels.
12.	Replacements: articles of initial issue under groups 1, 2, 4, 5, 6, 7, 9. (No replacement is required for groups 3 and 8 as the initial issue is sufficient for 90 days.)	II&IV	
13.	Post Exchange Supplies Tobbacco Toilet articles	I & II	

COMPARISON OF MAJOR ITEMS OF EQUIPMENT - MARINE AND INFANTRY DIVISIONS

ITEM	MARINE DIV.	INFANTRY DIV.
Airplane, liaison		10
Boat, assault		14
Gun:		
37mm, AT	36	
57mm, AT		57
75mm, AT	12	
Howitzer:		
75mm, Pack	24	
105mm	24	54
155mm		12
Engineer Equipment; other Special Equipment:		
Bulldozer, tank mounting, for M4A1, M4A2, and M4A3 tanks	3	
Bridge, pneumatic, ponton	1	
Compressor, air, 105 cu ft cap, 4 wh.	5	4
Crusher, rock	3	
Crushing plant, rock, 20-30 tons per hr.	1	
Distillation plant, 1500-2000 gal/day cap.	20	
Dock, "Tubelox", 128 ft.	1	
Earth auger, SP, 4 wh.	1	
Eqpt., repro., mobile	1	
Generator, elec., 3-6.5 KVA, port.	4	
Generator, elec., 7-10 KVA, trler mtd.	16	
Grader, road, SP, w/scarifier	3	
Grader, road, leaning wh. type, 4 wh.	3	
Hammer, gas., port.	11	
Mixer, concrete, 14 cu. ft. cap.	2	
Pier, temp., 120 ft., 20-ton	4	
Plow, road	1	
Pump, centrifugal	2	
Pump, double diaphragm	2	
Repair unit, shoe & textile, trler mtd.	10	
Rig, well, SP, 4 wh.	1	
Ripper, cable oper., 2 wh.	1	
Roller, rubber tired	1	
Roller, tandem, 5-8 ton, SP	1	
Roller, tamping, sheepsfoot	1	
Sawmill, portable, comp.	1	
Scraper, 8 cu. yd.	6	
Shovel, gas., 3/8 cu. yd.	3	
Shovel, mtz., 3/4 cu. yd.	1	
Water purif. unit, port.	14	
Water supply eqpt, engr.		4
Welding eqpt, set no. 1, elec., trler mtd.		1
Ambulance:		
¼ ton	52	
½ ton	12	
3/4 ton		30
Car, armored, light, M-8		13
Car, 5 passenger	3	
Carrier, personnel, half-track, M3A1		5
Station wagon	3	
Carts:		
Artillery	24	
Hand	384	

COMPARISON OF MAJOR ITEMS OF EQUIPMENT - MARINE AND INFANTRY DIVISIONS

ITEM	MARINE DIV.	INFANTRY DIV.
Tanks:		
Army medium, w/armament	46	
Vehicle, tank recovery	3	
Tractors:		
Gas engine driven, 35 DBHP		3
Light	6	
Medium	42	
Heavy	36	
Trailers:		
¼ ton, 2 wh.	135	278
½ ton, 2 wh., dump	19	
1 ton, 2 wh., cargo	155	235
1 ton, 2 wh., greasing	24	
1 ton, 2 wh., high pressure cl. unit	14	
1 ton, 2 wh., stockroom	12	
1 ton, 2 wh., water, 300 gal.	74	5 (250 gal)
2 ton, 2 wh., welder combination	3	
2 ton, 4 wh., cargo	2	
2 ton, 4 wh., stockroom	11	
2½ ton, utility, pole type		10
3 ton, 2 wh., sterilizer-shower	10	
3 ton, 4 wh., water purif. unit	9	
5 ton, 4 wh., machine shop #1, comp.	7	
8 ton, low bed		3
15-18 ton, machinery	18	
K-52		1
Ammunition, M10		60
Trucks:		
¼ ton, 4x4	408	637
3/4 ton, command		56
3/4 ton, WC		159
1 ton, 4x4, cargo	224	
1 ton, 4x4, recon.	11	
1 ton, 4x4, lt. repair	13	
1½ ton, cargo		107
2½ ton, cargo	150	272
2½ ton, auto. repair	3	
2½ ton, dump	53	27
2½ ton, instrument repair	1	
2½ ton, machine shop	3	
2½ ton, short wheel base	48	
2½ ton, tank, gas., 750-gal.	2	
2½ ton, welding	1	
2½ ton, wrecking	9	
2½ ton, SA repair		3
2½ ton, SWB		84
4 ton, cargo		18
4 ton, wrecker		4
Heavy wrecker		1
Tank, pressure distributor, 1000 gal.	1	

REPRESENTATIVE ORGANIZATION OF A BATTALION LANDING TEAM (MARINE) FOR AMPHIBIOUS OPERATIONS

UNIT	T/O	MARINE			NAVY		
		OFF	W/O	EM	OFF	CPO	EM
Infantry Battalion	F-5	33	0	805	2	0	32
Artillery Battery	E-16	6	1	141	0	0	0
Engineer Company	F-31	5	1	193	0	0	0
Tank Plat. (Medium)	E-1006	1		27			0
Special Wpns. Plat. 37mm AT	F-7	1		33			
Amphibian Tractor Bn.	E-50	21	1	445	1	0	9
Armored Amphib. Tractor Platoon	E-1016	1		35			
Medical Platoon							13*
Ordnance Det.							
S & S Detachment							
M. P. Detachment							
JASCO Detachment							
* Collecting Station							

REPRESENTATIVE ORGANIZATION OF A REGIMENTAL COMBAT TEAM (MARINE) FOR AMPHIBIOUS OPERATIONS

UNIT	T/O	MARINE			NAVY		
		OFF	W/O	EM	OFF	CPO	EM
**Inf. Regt. (plus Band Sec)	F-10	126	5	2825	11	0	110
Artillery Bn.	F-20	31	4	555	1	0	12
*** Composite Engr. Bn.	***	13	2	390	3	2	254
Tank Company, Medium	E-1006	5	1	144			
Tank Platoon, Light	E-76	1		28			
Special AT Weapons Btry.	E-81	5	1	110			
40 mm AA Platoon	E-82	1		68			
Amphibian Tractor Bn.	E-50	21	1	455	1	0	9
Armored Amphibian Tractor Co.	E-1016	5	1	174			
Medical Co.	F-51	0	0	25	7	0	70
Motor Transport Company	F-56	4	1	110			
Ordnance Platoon	F-61		1	30			
S & S Platoon	F-62	1		111			
M.P.Platoon	F-90	1		25			
JASCO Detachment							
Scout Platoon	F-77	1		25			
** Band Section	E-94		1*	29			
*** Eng. Co.)Comp.	E-31	5	1	193			
*** CB Co.)Engr.	E-43 "A"				3	2	254
*** Pioneer Co.) Bn.	F-36	8	1	197			
* 1 W/O in Division.							

Personnel, Cube and Weight, Standard Amphibious Forces.

UNIT	Strength		Cube	Weight (long tons)	Ship Tons
	Com.	Enl.			
BLT	65	1350	50,742	625.5	1,256.5
RCT	256	5366	340,970	4,176	8,542
Div. (Reinf)	800	19200	1,700,000	20,500	42,000
*DUKW Co. (M)	6	180	257,146	917	6,428
*Amtrac Bn.	23	463	503,320	2,813	12,583
*Amtrac Bn. (Arm'd)	36	811	723,626	4,674	18,091
Def. Bn. (M)			463,801	3,483	11,595

* Includes 90 da. MarCorps T/BA Supplies.

FORWARD AND REAR ECHELON T/BA EQUIPMENT OF A MARINE AA BATTALION (less 155mm grp)
-To be used as a guide for planning combat loading-

Item	Auth.	Assault	Cu.ft.	Weight	Rear Echelon	Cu.ft.	Weight
Carbine, Cal .30, M1	870	870	348	4611			
Gun, Machine:							
Cal .30, M1917A1	20	20	20	630			
Cal .50, M2, HB, flex.	12	12	66	1008			
Cal .50, M2, WC, flex.	12	12	62	1452			
Guns:							
20mm	12	24	72	3384			
40mm	12	12	13440	66588			
90mm	12	12	29772	207600			
Rifle, Cal .30, M1	239	239*	161	3848			
Mark XX Radar	12	12	60264	401880			
SCR 584 Radar	3	3	25689	245595			
SCR 270-D	2	2	18400	167320			
Searchlight	12	12	10944	109680			
Engineer Equipment:							
Compressor, Air, 105 cu.ft.,							
4 wheel	1	1	615	7005			
Crusher, rock, gas pow. 4-wh.	1				1	1170	9180
Generator, elec., 3KVA, Port.	1	1	19	285			
Generator, elec., 7-10KVA,							
trailer mounted	3	1	377	2520	2	754	5040
Hammer, gasoline, portable	2				2	40	800
Mixer, concrete,14 cu.ft.4-wh.	1				1	1485	6790
Water pur. unit, portable	5	5	300	3700			
Vehicles:							
Ambulance, ¼ ton. 4x4	2	2	742	4680			
Ambulance, ¾ ton, 4x4	1	1	887	5140			
Cart, hand, MM1 (Commun.)	16	16	1584	2016			
Tractors:							
Heavy	6	6	5802	161940			
Heavy, w/angledozer	3	1	1823	26990	2	2946	53980
Heavy, w/hyd.oper.angledozer							
&3⅜ cu.yd. back dump scraper	1				1	2432	34165
Heavy, w/2 wh. crane, 20-ton	1				1	3801	34545
Prime mover, Army, k-32	2				2	3686	25000
Trailers:							
¼ ton, 2 wheel	17	16	3392	8800	1	212	550
1 ton, 2 wheel, cargo	14	14	7098	22750			
1 ton, 2 wheel, greasing	2	1	614	320	1	614	3200
1 ton, 2 wheel, high pressure							
cleaning unit	1	1	588	3025			
1 ton, 2 wheel water, 300-gal.	8	8	4280	32048			
2 ton, 4 wh. searchlight	12	12	20400	109680			
2 ton, 4 wheel, stockroom	1	1	1221	12280			
2 ton, 4 wh. stockroom (ord)	1	1	1221	12280			
3 ton, cargo	3	3	2310	20310			
3 ton, 2 wh., ster. shower	1	1	905	6500			
3 ton, 4 wh., instrument	3	3	2112	10800			
3 ton, 4 wh., water pur. unit	1	1	1179	1850			
8 ton, 4 wh., Army K-78-A	3				3	4668	60000
Antenna, 4 wh. K-64-C	2	2	4296	33480			
Antenna, 2 wh. K-22	2	2	7984	28550			
4 wheel, SKD 2226	2	2	4536	27220			
4 wheel, SKD 2226-1	2	2	4536	35100			
Welder, electric	0	1	228	3141			
Trucks:							
¼ ton, 4x4	17	16	6000	35840	1	375	2240
¼ ton, 4x4, radio (TOS)	1	1	375	2475			
1 ton, 4x4, cargo	14	3	3510	18360	11	12870	67320
1½ ton, 4x4, Army K-54	2				2	3844	17950
2½ ton, 6x6, cargo w/w	6	6	12276	81996			
2½ ton, 6x6, dump w/w	4				4	7764	54664

Forward and R.Ech. T/BA Equipment of a Mer. AA Bn. (less 155mm grp)
To be used as a guide for planning combat loading.

Item	Auth.	Assault	Cu.ft.	Weight	Echelon	Cu.ft.	Weight
Trailers: (Cont'd)							
2½ ton, 6x6, mech.shop M16A1	1				1	1355	13265
2½ ton, 6x6, searchlight	24	12	26064	163992	12	26064	163992
2½ ton, 6x6, wrecking	1	1	2541	14170			
5/6 ton, 4x4, van, Army K31-A	2				2	7194	52392
5/6 ton, 4x4, van, Army, K-12	2				2	3072	33200
Totals	2710	1374	289053	2115719	52	84346	638273

SUMMARY:

	Assault	Rear Echelon
Ship tons	7,226.3	2,108.6
Short tons	1,057.8	319.1

* Estimate - weight and cube.

TRANSPORTATION CORPS PORT COMPANY *

Designation: ..... Port Company

	1	2	3	4	5	6	7	8	9	10
				Company headquarters		3 operating platoons (each)				
1	Unit	Specification serial No.	Technician grade	Headquarters	Service section	Platoon headquarters	3 sections (each)	Total platoon	Total company	Enlisted cadre
2	Captain, stevedore officer	0804		1					1	
3	First lieutenant, stevedore officer.	0804		1		1		1	2	
4	Second lieutenant, stevedore officer.	0804							2	
5	Total commissioned			2		1		1	5	
6	First sergeant			1					1	1
7	Staff sergeant, including			2	1	1		1	6	4
8	Foreman, mechanic	086			(1)				(1)	(1)
9	Mess	824		(1)					(1)	(1)
10	Stevedore foreman	468				(1)		(1)	(3)	(1)
11	Supply	821		(1)					(1)	(1)
12	Sergeant, including						1	3	9	3
13	Hatch foreman	469					(1)	(3)	(9)	(3)
14	Corporal, including			1			1	3	10	1
15	Clerk Company	405		(1)					(1)	(1)
16	Hatch foreman	469					(1)	(3)	(9)	
17	Technician, grade 4								23	3
18	Technician, grade 5 includ-			9	19		19	57	47	5
19	Private, first class ing								55	
20	Private								74	
21	Blacksmith	024	5		(1)				(1)	
22	Cargo checker	470	5				(1)	(3)	(9)	
23	Cargo checker	470					(1)	(3)	(9)	
24	Carpenter	202	5		(1)				(1)	
25	Carpenter	202			(1)				(1)	
26	Clerk typist	405		(1)					(1)	
27	Cook	060	4	(2)					(2)	(1)
28	Cook	060	5	(2)					(2)	(1)
29	Cook's helper	521		(3)					(3)	
30	Cooper	270	4		(2)				(2)	
31	Crane operator	063	4		(1)				(1)	
32	Crane operator	063	5		(2)				(2)	(1)
33	Hatch tender	475	5				(1)	(3)	(9)	
34	Longshoreman	271	5				(2)	(6)	(18)	(1)
35	Longshoreman	271					(10)	(30)	(90)	
36	Mechanic, general	121			(1)				(1)	
37	Mechanic, tractor	319	5		(2)				(2)	(1)
38	Mixer	189	5		(2)				(2)	(1)
39	Tractor operator	244			(3)				(3)	
40	Welder	256	5		(1)				(1)	
41	Winch operator	473	4				(2)	(6)	(18)	(2)

TRANSPORTATION CORPS PORT COMPANY *
(continued)

1	2	3	4	5	6	7	8	9	10
Unit	Specification serial No.	Technician grade	Company headquarters		3 operating platoons (each)			Total company	Enlisted cadre
			Headquarters	Service section	Platoon headquarters	3 sections (each)	Total platoon		
42 Basic	521		(1)	(2)		(2)	(6)	(21)	
43 Total enlisted			13	20	1	21	64	225	17
44 Aggregate			15	20	2	21	65	230	17
45 O Carbine, cal. .30, M1			15	20	2	21	65	230	
46 O Gun, machine, Browning, heavy barrel, cal. .50, M2 flexible			1					1	
47 O Trailer, 1-ton cargo								1	
48 O Truck, 2½-ton, cargo								1	

* This unit provides labor trained in loading and unloading vessels at ports.

Unloading capacity: 1,100 measurement tons per 8 hour day per company.

Designation: Headquarters and Headquarters Detachment, ... Port Battalion

	1	2	3	4	5	6	7	8	9
1	Unit	Specification serial No.	Technician grade	Headquarters	Headquarters detachment	Total	Attached chaplain	Aggregate	Enlisted cadre
2	Lieutenant colonel			1		1		1	
3	Stevedore officer	0804		(1)		(1)		(1)	
4	Major			1		1		1	
5	Stevedore officer	0804		(1)		(1)		(1)	
6	Captain			1		1		1	
7	Adjutant	2110			(1)	(1)		(1)	
8	Captain or first lieutenant						1	1	
9	Chaplain	5310					(1)	(1)	
10	Total commissioned			3		3	1	4	
11	Warrant officer				2	2		2	
12	Personnel	2200			(1)	(1)		(1)	
13	Supply	4000			(1)	(1)		(1)	
14	Master sergeant, including				1	1		1	1
15	Administrative	502			(1)	(1)		(1)	(1)
16	Technical sergeant, including				3	3		3	1
17	Personnel	816			(1)	(1)		(1)	
18	Stevedore foreman	058			(1)	(1)		(1)	
19	Supply	421			(1)	(1)		(1)	(1)
20	Technician, grade 4							2	
21	Technician, grade 5							4	
22	including				12	12	1		
23	Private first class							3	
24	Private							4	
25	Chaplain's assistant	534	5				(1)	(1)	
26	Clerk, general	055			(1)	(1)		(1)	
27	Clerk, typist	405	5		(1)	(1)		(1)	
28	Clerk, typist	405			(2)	(2)		(2)	
29	Crane operator	063	4		(1)	(1)		(1)	
30	Laborer	695			(1)	(1)		(1)	
31	Driver, tractor	244	5		(2)	(2)		(2)	
32	Mechanic, tractor	319	4		(1)	(1)		(1)	
33	Truck driver, light	345			(2)	(2)		(2)	
34	Basic	521			(1)	(1)		(1)	
35	Total enlisted				16	16	1	17	2
36	Aggregate			3	18	21	2	23	2

TRANSPORTATION CORPS HQ AND HQ DET, PORT BATTALION *

Designation: Headquarters and Headquarters Detachment, ... Port Battalion

(continued)

1	2	3	4	5	6	7	8	9
36 0 Carbine, cal. .30 M1			1	18	19	1	20	
37 0 Gun, machine, Browning, HB, cal. .50, M2, flexible				1	1		1	
38 0 Pistol, automatic, cal. .45, M1911A1			2		2		2	
39 0 Trailer, ¼-ton						1	1	
40 0 Truck, ¼-ton				1	1	1	2	
41 0 Truck, ¾-ton, weapons carrier				1	1		1	
42 0 Truck, 1½-ton, cargo				1	1		1	

* This headquarters is capable of controlling six port companies. Battalions will be organized in accordance with the local situation.

FORWARD AND REAR ECHELON EQUIPMENT OF AN ARMY INFANTRY DIVISION

As distributed for Amphibious Operations

ITEM	FORWARD ECHELON Weight (tons)	FORWARD ECHELON Cube (ft)	REAR ECHELON Weight (tons)	REAR ECHELON Cube (ft)
Baggage	659.2	55,683	659.2	55,683
Office Equipment	18.0	9,626	36.0	19,252
Organizational Equipment (less vehicles)	520.2	37,813		
Mess Equipment	124.5	9,626		
Special Equipment	2047.0	202,788	4094.0	405,576
Vehicles (including carts, engineer equipment and towed guns)	7136.9	670,267	2345.5	542,880
TOTALS	10505.8	985,803	7134.7	1,023,391

VEHICLE BREAKDOWN	Auth. T/O&E	FORWARD ECHELON FORAGER		REAR ECHELON FORAGER	
	7	27th Div.	77th Div.	27th Div.	77th Div.
Airplane, Liaison	10	4	6	6	4
Ambulance, 3/4 ton	30			30	30
Car, armored, M 8	13	9		4	13
Car, 5 passenger, sedan, medium	1			1	1
Crane, T 9		4	7		
Crane, T 20		1			
Crane, M 3			5		
Crane, M 5			6		
Cart, hand		99			
Compressor, MTR		1	2		
Compressor, 2½ ton	4	8			4
Distillation Unit		8	6		
Gun, 37 mm, AT (57 mm auth.)	57	73	30		
Gun, 40 mm, AA			32		
Howitzer, 75 mm			9		
Howitzer, 105 mm	54	45	12	9	33
Howitzer, 155 mm	12	13	12		
Half-track, M 3	5	1	13		
Half-track, M 4			1		
Half-track, M 5 A 1		6			
Half-track, Roustabout, D 7		2			
Motorcycle		4			
Mount, SP, M 7			4		
Mount, SP, M 8		9	24		
Mount, SP, M 10			3		
Tank, light		20	18		
Tank, medium		27	52		
Tank, medium, w/bulldozer			1		
Tractor, amphibian	3	12			
Tractor, D 7		8			
Tractor, D 7 w/dozer		38			
Tractor, D 4 w/dozer		2			
Tractor, D 6 w/dozer		3	11		
Tractor, D 8 w/dozer			1		
Tractor, R 4		15	15		

FORWARD AND REAR ECHELON EQUIPMENT OF AN ARMY INFANTRY DIVISION

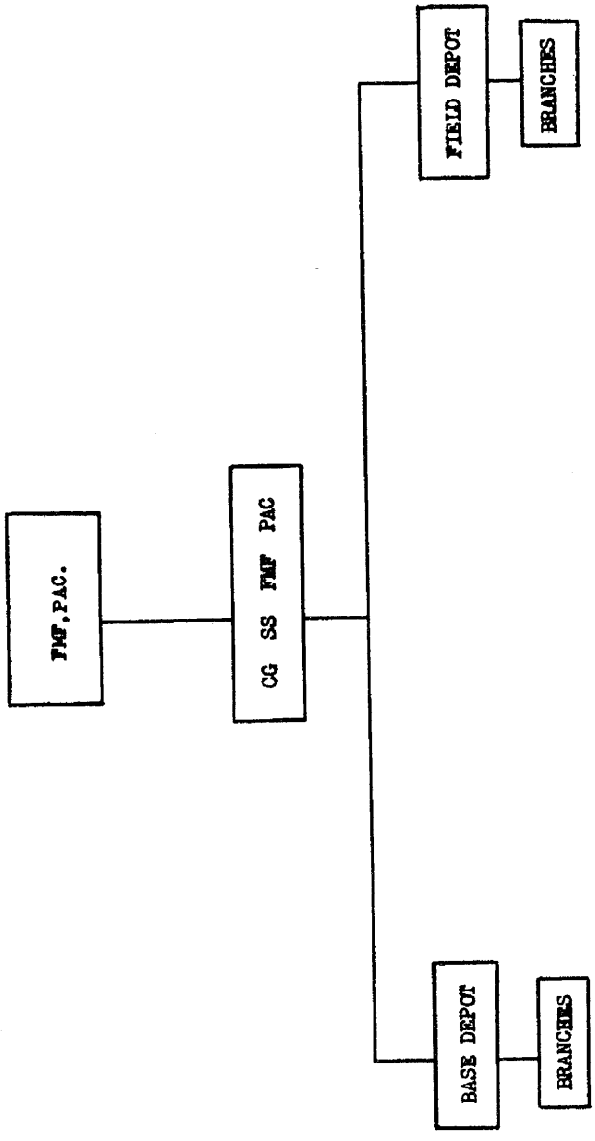
(Continued)

Vehicle Breakdown (Con't.)	Auth. T/O&E 7	Forward Echelon FORAGER		Rear Echelon FORAGER	
		27th Div	77th Div	27th Div	77th Div
Tractors (Con't.)	(3)				
Tractor, R 4, w/dozer		20	15		
Tractor, M 5		30	14		
Tractor, HD-14			14		
Trailer, ¼ ton	278	169	89	109	189
Trailer, 1 ton	235	23	33	212	202
Trailer, 1 ton, welder	1	2	2		
Trailer, 8 ton, low-bed	3			3	3
Trailer, lubrication			1		
Trailer, utility	10		1	10	9
Trailer, generator			2		
Trailer, water	5	11	53		
Trailer, Athey		2	6		
Trailer, water purification	4	2		2	4
Trailer, M10	60	12	12	48	48
Trailer, K52	1	1			1
Truck, ¼ ton, (includ. Ambulance)	637	489	498	148	139
Truck, ¼ ton, Amphibian		2			
Truck, ½ ton		1	1		
Truck, 3/4 ton		38	56		
Truck, 3/4 ton, C & R	56	4	18	52	38
Truck, 3/4 ton, W C	159	39	13	120	146
Truck, 3/4 ton, W C, w/winch		3			
Truck, 1 ton			1		
Truck, 1½ ton	107	9	27	98	80
Truck, 1½ ton, W C		1			
Truck, 2½ ton, amphibian (DUKW)		50	61		
Truck, 2½ ton, cargo	272	52	226	220	46
Truck, 2½ ton, dump	27	44	14		13
Truck, 2½ ton, wrecker			4		
Truck, 2½ ton, compressor			1		
Truck, 4 ton, cargo	18			18	18
Truck, repair shop	3		1	3	2
Winch, single drum		5			
Winch, sled mounted			1		
Wrecker, 4 ton	4	1	6	3	
Wrecker, 10 ton	1	3	6		
TOTAL VEHICLES EMBARKED:		1431 (1332 w/o carts)	1442		

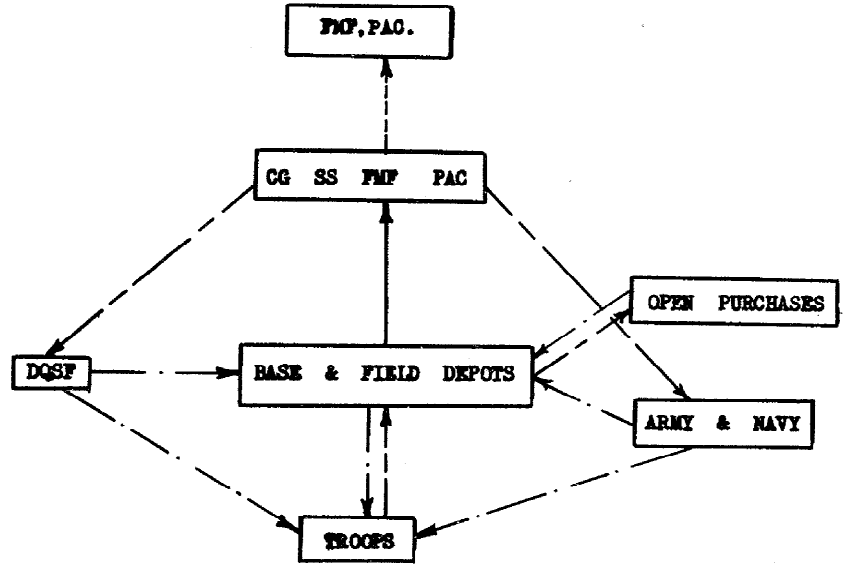
CHAPTER II

S U P P L Y

CHAIN OF COMMAND



GENERAL SUPPLIES



LEGEND:

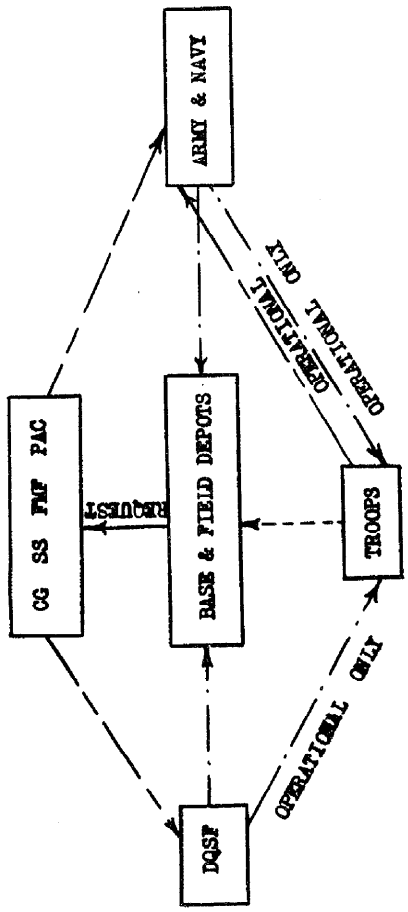
FLOW OF SUPPLIES ——·——·——·——·——→

SUBMISSION OF REQUISITIONS ——— — — — — →

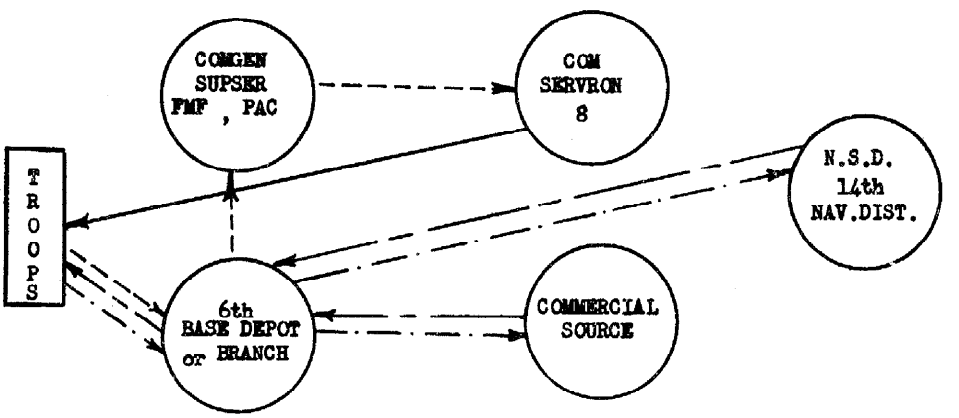
APPROVAL OF REQUISITIONS - NON TBA AND EXCESS ALLOWANCES ——→

DISAPPROVAL OF REQUISITIONS (ONLY) — — — — →

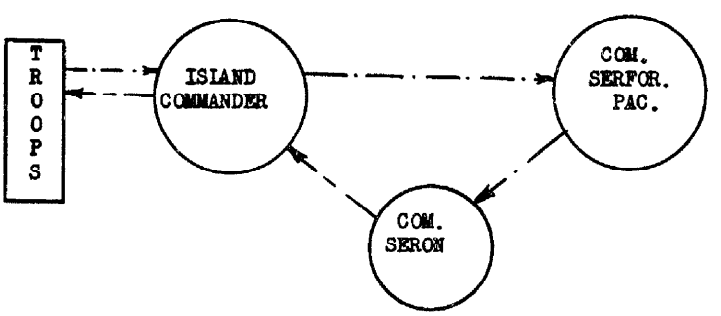
AMMUNITION


ARMY & NAVY
CG SS FMF PAC
BASE & FIELD DEPOTS
TROOPS
DQSF
REQUEST
OPERATIONAL ONLY
OPERATIONAL ONLY
LEGEND:
FLOW OF SUPPLIES
SUBMISSION OF ALL REQUISITIONS
APPROVAL OF REQUISITIONS - NON TBA AND EXCESS ALLOWANCES
DISAPPROVAL OF REQUISITIONS

HAWAIIAN AREA



ADVANCED BASES, CENTRAL PACIFIC AREA

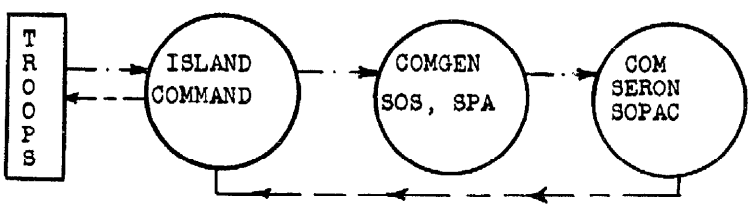


LEGEND:

—·—·— Requisition for garrison needs.
——— Flow of supply, garrison use.
- - - - - - Requisition for operation needs.
——— Flow of supply, operation use.

CLASS III SUPPLIES (con'd.)

SOUTH PACIFIC AREA



LEGEND:

——·——·——·— Requisition for garrison needs.
——— — ——— — ——— Flow of supply, garrison use.
— — — — — — — — — — — Requisition for operation needs.
——————————— Flow of supply, operation use.

CHAPTER III

AMPHIBIOUS LANDING CRAFT

SYMBOLS OF U.S. NAVY SHIPS

AB	Crane Ship
AD	Destroyer tender
AE	Ammunition ship
AF	Provision store ship
AG	Miscellaneous auxiliary
AGC	Combined operations communications headquarters ship
AGP	Motor torpedo boat tender
AGS	Surveying ship
AH	Hospital ship
AK	Cargo vessel
AKA	Cargo vessel, attack
AKF	Refrigerated cargo vessel
AKS	General stores issue ship
AM	Large minesweeper
AMb	Base minesweeper
AMc	Coastal minesweeper
AN	Net layer
AO	Oiler
AOG	Gasoline tanker
AP	Transport
APA	Transport, attack
APc	Coastal transport
APD	Troop transport (high speed)
APH	Transport for wounded
APM	Mechanized artillery transport
APR	Rescue transport
APS	Auxiliary cargo submarine
APV	Aircraft transport
AR	Repair ship
ARB	Repair ship, battle damage
ARD	Floating drydock
ARG	Internal combustion engine tender
ARH	Heavy hull repair ship
ARL	Repair ship, landing craft
ARS	Salvage vessel
AS	Submarine tender
ASR	Submarine rescue vessel
AT	Oceangoing tug
ATR	Rescue tug
AV	Seaplane tender (large)
AVC	Catapult lighter
AVD	Seaplane tender (converted DD)
AVP	Seaplane tender (small)
AX	Auxilliary tender, large
AY	Auxilliary tender, small
BB	Battleship
CA	Heavy cruiser
CB	Large cruiser
CL	Light cruiser
CM	Mine layer
CMc	Coastal mine layer
CV	Aircraft carrier
CVE	Aircraft carrier escort
CVB	Large aircraft carrier
CVL	Small aircraft carrier
DD	Destroyer
DE	Destroyer escort
DM	Light minelayer (high speed)
DMS	Minesweeper (high speed)
DUKW	2½-ton, 6 x 6 Amphibian Truck
IX	Unclassified
JEEP	¼-ton, 4 x 4 Amphibian Truck
LCC	Landing craft, control
LCI(L)	Landing craft, infantry (large)
LCM(2)	45' landing craft, mechanized, Mk 11
LCM(3)	50' landing craft, mechanized, Mk III
LCM(6)	Landing craft, mechanized
LCP(L)	36' landing craft, personnel (large)
LCP(R)	36' landing craft, personnel (with ramp)
LCP(N)	Landing craft, personnel (nested)
LCR(L)	Landing craft, rubber (large)
LCR(S)	Landing craft, rubber (small)
LCS(L)	Landing craft, support (large)
LCS(S)	Landing craft, support (small)
LCT(5)	Landing craft, tank Mk V
LCT(6)	Landing craft, tank Mk VI
LCV	Landing craft, vehicle
LCVP	Landing craft, vehicle and personnel
LSD	Landing ship, dock
LST	Landing ship, tank
LSV	Landing ship , vehicles
LVT(1)	Landing vehicle, tracked (unarmored) cargo obsolete
LVT(A1)	Landing vehicle, tracked (armored) tank
LVT(2)	Landing vehicle, tracked (new design-unarmored) cargo
LVT(A2)	Landvehicle, tracked (new design-armored) cargo
LVT(A3)	Land vehicle, tracked (new design-armored)
LVT(A4)	Land vehicle, tracked (new design-armored)
LVT(3)&(4)	Land vehicle, tracked cargo
PC	173' submarine chaser
PCE	180' patrol craft escort vessel
PCE(R)	180' patrol craft escort, rescue
PCS	136' submarine chaser
PE	Eagle boat
PF	Frigate
PG	Gunboat
PR	River gun boat
PT	Motor torpedo boat
PTC	Meterboat submarine chaser
PY	Yacht
PYc	Coastal yacht
SC	110' submarine chaser
SM	Mine laying submarine
SS	Submarine
YA	Ash lighter
YAG	District auxiliary, miscellaneous
YC	Open lighter
YCF	Car float
YCK	Open cargo lighter
YCV	Aircraft transportation lighter
YD	Floating derrick
YDG	Degaussing vessel
YDT	Diving tender
YF	Covered lighter; range tender; provision store lighter
YFB	Ferryboat and launch
YFD	Floating drydock
YFT	Torpedo transportation lighter
YD	Garbage lighter
YH	Ambulance boat
YHB	Houseboat
YHT	Heating scow
YM	Dredge

SYMBOLS (cont'd.)

YMS	Motor mine sweeper
YMT	Motor tug
YN	Net tender
YNg	Gate vessel
YNT	Net tender (tug class)
YO	Fuel oil barge
YOG	Gasoline barage
YOS	Oil storage barge
YP	District patrol vessel
YPD	Floating pile driver
YPK	Pontoon stowage barge
YR	Floating workshop
YRC	Submarine rescue chamber
YRD(H)	Floating workshop, drydock (hull)
YRD(M)	Floating workshop, drydock (machinery)
YS	Stevedore barge
YSD	Seaplane wrecking derrick
YSP	Salvage pontoon
YSR	Sludge removal barge
Yt	Harbor tug
YTT	Torpedo testing barge
YW	Water barge

ABAFT - In the direction of the stern.

AFT - Near the stern.

AMIDSHIPS ('MIDSHIPS) - In the center of the vessel, either with reference to her length or to her breadth.

ATHWARTSHIPS (THWARTSHIPS) - At right angles to the fore-and-aft line of the vessel.

BARGE - A ship's boat designated for the use of flag officers.

BELAY - To make fast to a pin or cleat. (Stop, cancel, such as to belay an order.)

BETWEEN DECKS ('TWEEN DECKS) - The space between any two decks of a ship.

BILGE - The curved part of a ship's hull where the sides and the flat bottom meet. Also the largest circumference of a cask.

BITTS - Vertical wooden or metal projections on the deck used for securing lines or gear.

BOAT BOOM - The boom swung out from a ship's side when at anchor and to which boats in the water secure.

BOAT HOOK - A wooden staff with a metal hook at one end used for fending off or holding on.

BOATSWAIN (BOS'N) - An officer aboard ship who has charge of the rigging and who calls the crew to duty.

BOOBY-HATCH - A raised small hatch.

BREECH - The bottom of a block. The after end of a gun. The outside angle of a knee-timber.

BRIDGE - The raised platform extending athwartship in the forward part of the ship and from which it is steered and navigated. Amidships and after bridges are sometimes so fitted.

BRIG - The ship's prison. A square rigged vessel with two masts An hermaphrodite brig is rigged on the foremast like a brig and on the mainmast like a schooner.

BROACH TO - To slew round when running before the wind.

BULKHEAD - Transverse or longitudinal partitions separating portions of the ship.

BUNK - Bed on board ship.

CALL - The boatswain's pipe.

CARGO HATCH - A hatch over a cargo hold.

CARRY AWAY - To break or tear loose.

CLEAT - A fitting of wood or metal with horns, used for securing lines.

COLORS - The national ensign.

COMPANIONWAY - The steps leading below from the upper deck.

DAVIT - A curved metal spar fitting into a socket on deck and projecting over the side for hanging a boat.

DEAD AHEAD - Directly ahead.

Nautical terms and phrases (Cont'd)

DEAD RECKONING - A navigator's reckoning with courses steered and distances run independent of sights or bearings.

DECK - The floor of all parts of the vessel which rest upon the beams.

DIP - (Colors) The temporary lowering of the ensign part way down in the pricess of saluting or returning a salute of another vessel.

DOGS - Used to secure water-tight doors and hatches.

DOG WATCH - One of the two-hour watches from 4 to 8 p.m.; from 4 to 6 p.m. is the first dog watch, and from 6 to 8 p.m., the second dog watch.

DOUBLE BOTTOMS - Water-tight subdivisions of a man-of-war next to the keel and between the outer bottom and inner bottom.

DRAFT - The depth of water to vessel's keel. The depth to which a vessel sinks in the water.

DUNNAGE - Loose material placed in holds for the cargo to rest on, or jammed between the cargo to wedge it.

EASE OFF - To slack up.

ENSIGN - The flag carried by a vessel as the insignia of her nationality.

FALL - That part of tackle which the power is applied in hoisting.

FANTAIL - The part of the stern of a vessel extending abaft the sternpost.

FATHOM - Six feet.

FENDER - Canvas, wood or rope used over the side to protect a vessel from chafing when alongside another vessel or a dock.

FIDLEY - The iron framework around the ladder of a deck-hatch leading below decks.

FORE - Term used to distinguish the forward part of a vessel, or parts forward of amidships.

FORECASTLE (FOCSLE) - The upper deck forward of the foremast.

FOUL - Jammed; not clear.

GALLEY - The ship's kitchen.

GANGWAY - An opening in the bulwarks to give entrance to the ship.

GEAR - The general name for ropes, blocks and tackles of spars or sails.

GIG - A ship's boat designated for the use of the commanding officer.

GUNWALE (GUNNEL) - The upper rail of a boat or vessel.

GYRO COMPASS - A compass consisting of a rapidly spinning rotor so swung as to maintain its axis in the geographical meridan and pointing to the true North.

HAND-ROPE - A line secured waist high above a boat-boom or gang-plank; used for steadying oneself. (Also termed grab rope.)

Nautical terms and phrases (Cont'd)

HARD OVER - An order to put the wheel or tiller as far over to the side designated as possible.

HAWSER - A large rope for towing or heavy work.

HEAD - The ship's lavatory; or toilet.

HEAVING LINE - A small line secured to a hawser and thrown to an approaching vessel or to a dock, for a messenger.

HEAVE TO - To put a vessel in the position of lying-to.

HELM - The tiller. The machinery by which a vessel is steered.

HOIST AWAY - An order to haul up.

HOLD - The space below decks utilized for the stowage of ballast, cargo or stores.

HULL - The body of a vessel.

INBOARD - Toward the fore-and-aft line of the ship.

INSHORE - Toward shore.

JACK - The flag similiar to the union of the national flag.

JACOB'S LADDER - A ladder of rope with wooden steps used over the side and aloft.

KEEL - The timber or bar forming the backbone of the vessel and running from the stem to the sternpost at the bottom of the ship.

KNOCK OFF - To stop; especially to stop work.

KNOT - A division on the log-line, answering to a mile of distance. A nautical mile is 6,080 feet; a land mile 5,280 feet.

LADDER - A metal, wooden or rope stairway.

LANYARD - A rope made fast to an article for securing it, o.g., knife lanyard, bucket lanyard, etc.; or for setting up rigging.

LEE - The side opposite to that from which the wind blows.

LEEWARD (LOOARD) - The direction away from the wind.

LEEWAY - The drift of a vessel to leeward caused by the wind or tide.

LIE TO - To stop the progress of a vessel at sea, either by counter-bracing the yards, or by reducing sail so that she will make little or no headway, but will merely come to and fall off by counteraction of the sails and helm.

LIFE LINE - A line secured around the side of the ship above the deck to prevent persons from falling overboard.

LIGHTER - A craft used in loading and unloading vessels.

LIST - The inclination of a vessel not caused by wind or sea.

MAGAZINE - The space provided for the stowage of explosives.

MAIN DECK - The highest deck extending from stem to stern.

MAKE COLORS - Hoisting the ensign at 8 a.m.

MAKE SUNSET - Lowering the colors at sunset.

MESS - Any number of men who eat or lodge together.

MILE - A nautical mile of 1-60 of a degree of latitude, generally 6,080 feet.

MUSTER - To assemble the crew.

OFFICER OF THE DECK - Officer temporarily in charge of the deck of a vessel.

ON THE BEAM - Same as abeam or abreast.

OUTBOARD - Towards the sides of the vessel.

PAINTER - A rope attached to the bows of a small boat, used for making her fast.

PAY OUT - To slack out on a line made fast on board.

PIPE DOWN - An order to keep quiet; an order dismissing the crew from an evolution.

PIPE TO - (quarters) Boatswains's pipe call to an evolution.

POOPDECK - A partial deck at the stern over the main deck.

PORT - The left side of a vessel looking forward, an opening in a ship's side-such as air-port, or cargo-port.

PROW - The prt of the bow above the water.

QUARTER - That portion of the vessel's sides near the stern.

QUARTERDECK - A name applied to the part of the upper deck reserved for the use of officers.

QUARTERMASTER - A petty officer of the bridge force.

RIBS - The framework of a vessel.

RIGGING - General term for all ropes of a vessel.

SCREW - The propeller.

SCUPPERS - Holes cut in the waterways to drain water from the decks.

SECOND DECK - A complete deck next below the main deck,

SECURE - To make fast; safe.

SET THE WATCH - Strictly speaking, to divide a ship's company into watches; the order at 8 p.m. on a man-of-war to station the first watch.

SHORE - To prop up. A prop or stanchion, placed under a beam.

SHOVE OFF - To leave; an order to the bowman to shove the bow clear preparatory to leaving a dock or a vessel's side.

SICK BAY - Ship's hospital.

SLING - To set in ropes, so as to put on a tackle to hoist or lower it.

STANCHIONS - Upright posts of wood or iron, palced so as to support the beams of a vessel. Upright pieces placed at intervals along the sides of a vessel, to support the bul-

warks, and rail, and reaching down to the bends by the side of the pieces to which they are bolted. Any fixed upright support.

STAND BY - A preparatory order.

STARBOARD - The right side of the vessel, looking forward.

STERN - The after part of a vessel.

STERN-FAST - (stern line) a rope led over the stern of a boat and used in securing her by the stern.

STOVE - Broke in.

STOW - To put in place.

SUPERSTRUCTURE-DECK - A partial deck above the main, upper, forecastle or poop deck, and not extending out to the side of the ship.

TAKE A TURN - To pass a turn around a belaying pin or cleat and hold on.

TARPAULIN - A piece of heavy canvas, used for covering hatches, boats, etc.

THWARTSHIPS - At right angles to the fore-and-aft line.

TOPSIDES - Above decks.

TROUGH - The hollow between two waves.

TURN - Passing a rope around a pin or kevel, to keep it fast.

TURN TO - An order to commence ship's work.

UNDERWAY - Having way or progress.

UNION - The upper inner corner of an ensign.

UNION JACK - (see jack) Small flag, containing only the union without the fly, usually hoisted at the bow-sprit-cap.

VENTILATOR - A wooden or metal pipe used to supply or exhaust air.

WAKE - A vessel's track; behind.

WARDROOM - Commissioned officers' quarters.

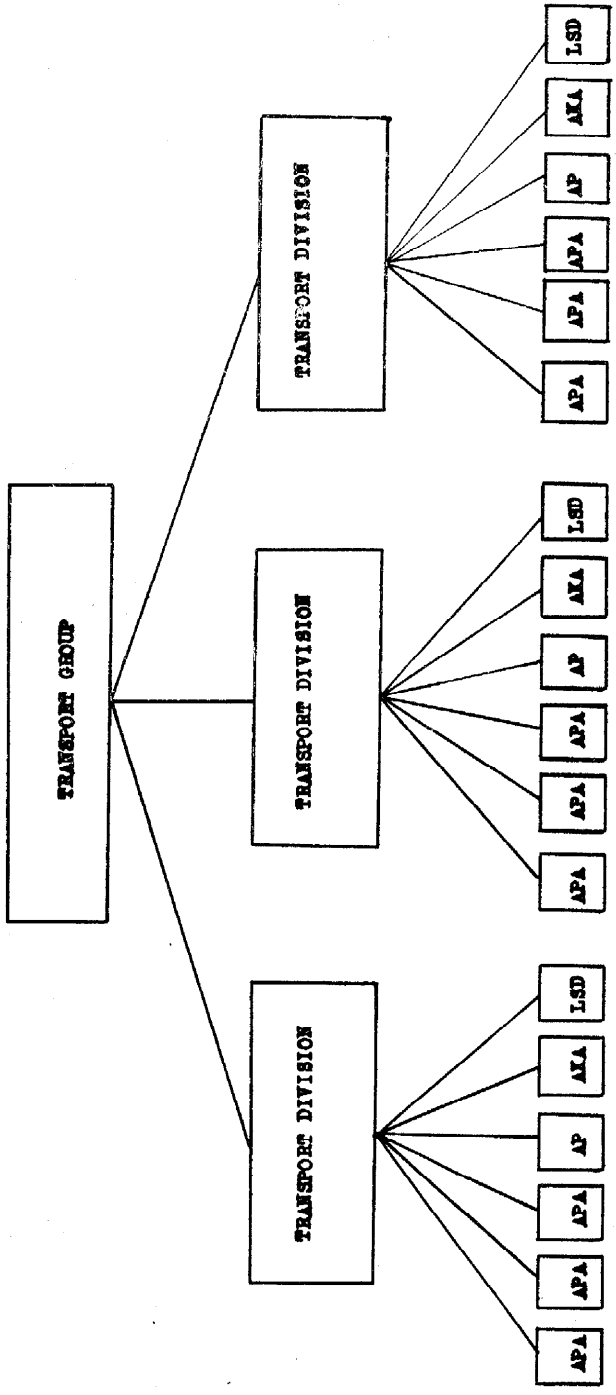
WATCH - A division of time on board ship. There are seven watches in a day, from 12 M. round through the 24 hours. They consist of 5 regular 4-hour watches and the 2 "dog-watches" (see Dog Watch). A certain portion of the ship's company, appointed to stand these watches are known as "the watch." A buoy is said to watch when it floats on the surface.

WEATHER - To windward.

WINCH - A purchase formed by a horizontal spindle or shaft with a wheel or crank at the end.

WINDWARD - Toward the wind.

WING - That part of the hold or between-decks which is next to the side.



Organization of a Transport Group

Landing Craft Characteristics

NAME	SYMBOL	CREW	LENGTH	BEAM	WEIGHT (LBS.)	TROOP CAP.	CARGO CAP.(TONS)	SPEED	RANGE (MI)
Landing craft, personnel, large.	LCP(L)	3	36' 8"	10'10"	12,500	36	4	10 m.p.h.	200
Landing craft, personnel, ramp	LCP(R)	3	36'8"	10'10"	12,500	36	4	10 m.p.h.	200
Landing craft, infantry, large	LCI(L)	28	158'4"	23'3"	500,000	205	32	12 knots	8000
Landing craft, rubber, large.	LCR(L)		16'0"	8'0"	395	10		3.5-4.5 k.	
Landing craft, vehicle	LCV	3	36'3"	10'10"	14,000	36	5	9 knots	68
Landing craft, vehicle-personnel	LCVP	3	36'0"	10'5½"	18,000	36	4	9 knots	102
Landing craft, mechanized.	LCM	4	50'0"	14'1"	52,000	60	30	11 knots	140
Landing Craft, Tank.	LCT	13	117' 6"	32'0"	268,000		150	8 knots	700
Landing Craft, Support, small.	LCS(S)(2)	6	36'6"	10'9"	23,000	4		10 knots	135
Landing Craft, Support, large	LCS(L)(3)	73	158'5"	23'3"	554,000		34	11.5 knots	70
Motor Gunboat	PGM		110'0"	18'0"	216,000			19 knots	690
Landing Craft, Control, 1	LCC(1)	14	56'0"	13'7"	60,000			13.5 knots	240
Landing Vehicle, Tracked, Mark 1	LVT (1)	3	21'6"	9'8"	16,900	20	2½	15 m.p.h. 4 knots	75 (land) 50 (water)
Landing Vehicle, tracked, Mark 2.	LVT (2)	3	26'1"	10'8"	25,200	24	3½	25 m.p.h. 5.4	150 (land) 75 (water)

Characteristics (cont'd.)

NAME	SYMBOL	CREW	LENGTH	BEAM	WEIGHT (LBS.)	TROOP CAP.	CARGO CAP. (TONS)	SPEED	RANGE (MILES)
Landing vehicle, tracked. Mark 3	LVT(3)	3	24'1½"	10'10"	28,000	24	4	5.2 k 25 mph	75 (water) 150 (land)
Landing vehicle, tracked. Mark 4	LVT (4)	3	26' 1"	10'8"	23,350	24	3½	5.4 k 25 mph	75 (water) 150 (land)
Landing vehicle, tracked, (armored) (Mark 1)	LVT(A)(1)	6	26'1"	10'8"	32,800		.5	25 mph 5.4 k	150 (land) 75 (water)
2½ ton, 6 x 6, Amphibian Truck.	DUKW	1	31'0"	8'0"	13,000	25	2½	5.5 k 50 mph	400 (35 mph)
¼ ton, 4 x 4, Amphibian Truck.	JEEP	1	15'7"	5'4"	3,700	4	.4	4.7 k 50 mph	300 (land)
Landing ship, Medium	LSM	52	203'6"	34'0"	1,026,000	54	150	13.3 k	3500 (12 k)
Landing Ship, Tank	LST	9 Off. 220 Enl.	328'0"	50'0"	2,980,000	163	2100	10.8 k	6000 (9 k)
Landing ship, Dock.	LSD	17 Off. 257 Men.	457'9"	72'0"	8,064,000	22 Off. 218 Enl.	1500	15 k.	8000
Amphibious Force, Flagship	AGC		459'3"	63"		130 Off. 869 Enl.		15.5 k.	
High Speed Transports (destroyers)	APD	212	306'0"	37'0"		162		23 k	2000 (23)
Coastal Transport, Small	APc	20	103'0"	21'3"	476,000	2 Off. 60 Enl.	17	9.5	3,095

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MATERIEL CAPACITY OF VARIOUS LANDING CRAFT

TYPE OF CRAFT	CAPACITY
LCV	One 1-ton truck, or 36 troops, or 10,000 lbs. cargo, or 1 Bren Carrier. (tight)
LCVP	36 troops or 6,000 lb. vehicle or 8,100 lbs. cargo, provided center of gravity is kept low.
LCM(2)	One 13½-ton tank or 30,000 lbs. cargo or 100 men.
LCM(3)	One 30-ton tank or 60,000 lbs. of cargo, of 60 troops.
LCT(5)	Five 30-ton, or four 40-ton, or three 50-ton tanks; or 9 trucks, or 150 tons cargo.
LCT(6)	Four medium or three 50-ton tanks, or 150 tons cargo.
LVT(2)	6,500 lbs. (normal) or 24 fully equipped men.
LVT(4)	6,500 lbs. cargo. (maximum)
LVT(A)(1)	Maximum of 1,000 lbs.
DUKW	25 troops and equipment or 12 loaded litters, or 5,000 lbs. of cargo.
LSM	5 medium or 3 heavy tanks, or 6 LVT's or 9 DUKW's.
LST	2,100 tons cargo (ocean going) 500 tons cargo (landing)
LSD	3 LCT (5)(6) each with 5 medium tanks or 2 LCT (3)(4) each with 12 medium tanks or 14 LCM(3) each with 1 medium tank or 1,500 long tons of cargo, or 41 LVT's or 47 DUKW's.
ARL	2 LCV(P), 10 Balsa Floats.
APD (DE conversion)	4 LCVP at davits 162 troops 6-¼ ton trucks 2-1 ton trucks 4 carts T4E1 4-75 mm. Pack Howitzers 4,500 cu.ft. ammunition 1,000 cu.ft. gasoline 3,500 cu.ft. gen.stores
APD (Destroyer)	Four LCP(L) or LCP(R) and one Marine rifle co.

APD

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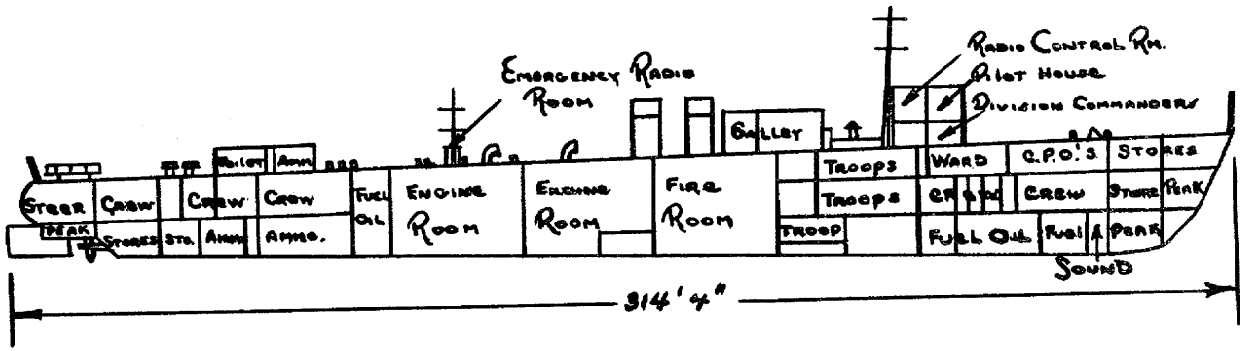


Dimensions: 314'4" X 31'8"

Speed: 23 Knots

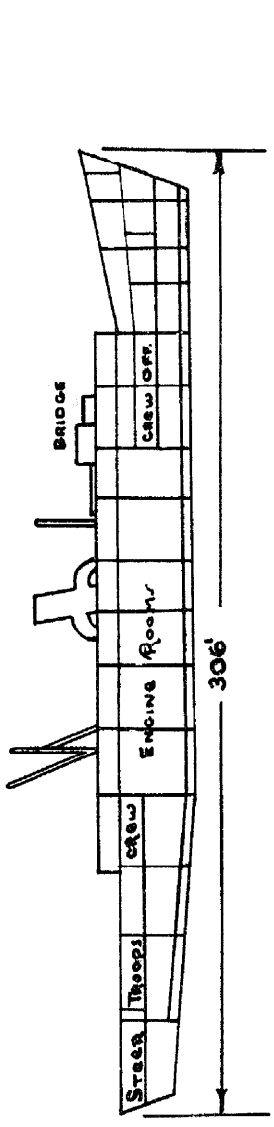
Capacity :- 4 LCP(L)'s or 4 LCP(R)'s and 1 Marine Rifle Company

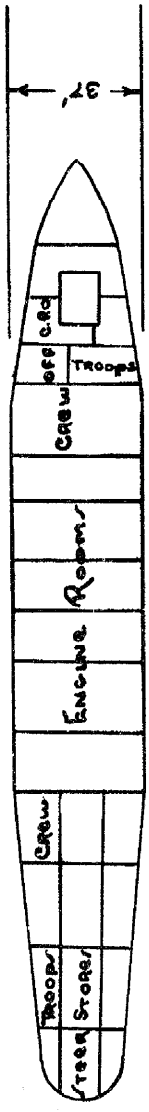
Crew : 112

Displacement : 1060-1090 Tons

Diagrams

APD





Speed - 23 Knots
Displacement - 2045 Tons (Full Load)
Endurance - 2000 Mi. at 23 K.
- 5000 Mi. at 15 K.

Plans are being Developed for the Conversion of DE Hulls to Serve as APD's.

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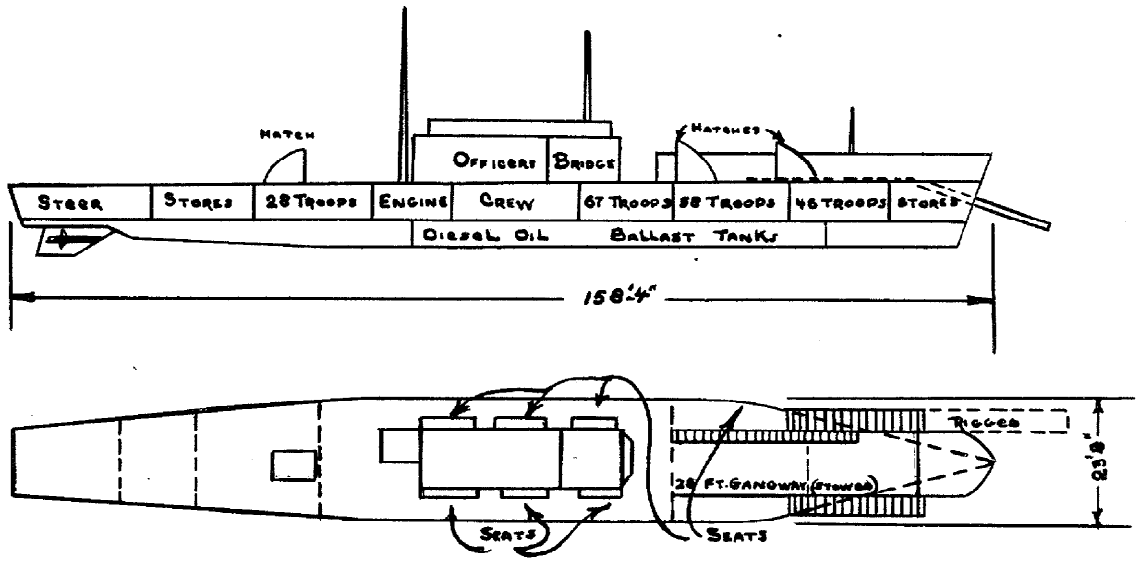
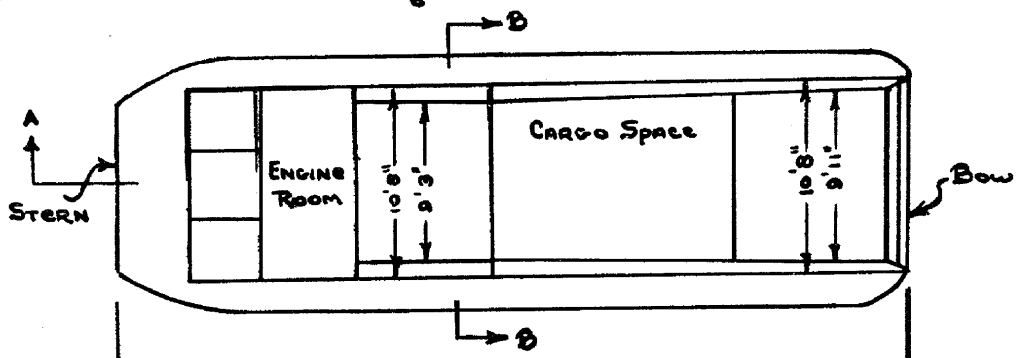
LCI(L)

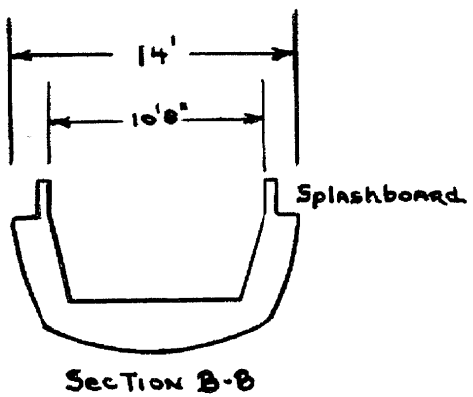


Speed -16 Knots (Max.)
Displacement (L) - 216 Tons
Troop Cap. - 6 Off. - 182 Enl.
Cargo Cap. - 75 Tons.

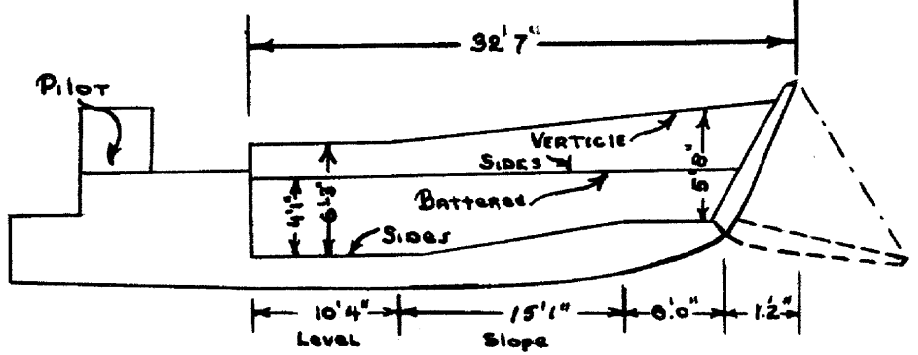
LCM

Scale - $\frac{1}{8}$" = 1'0"





Section B-B



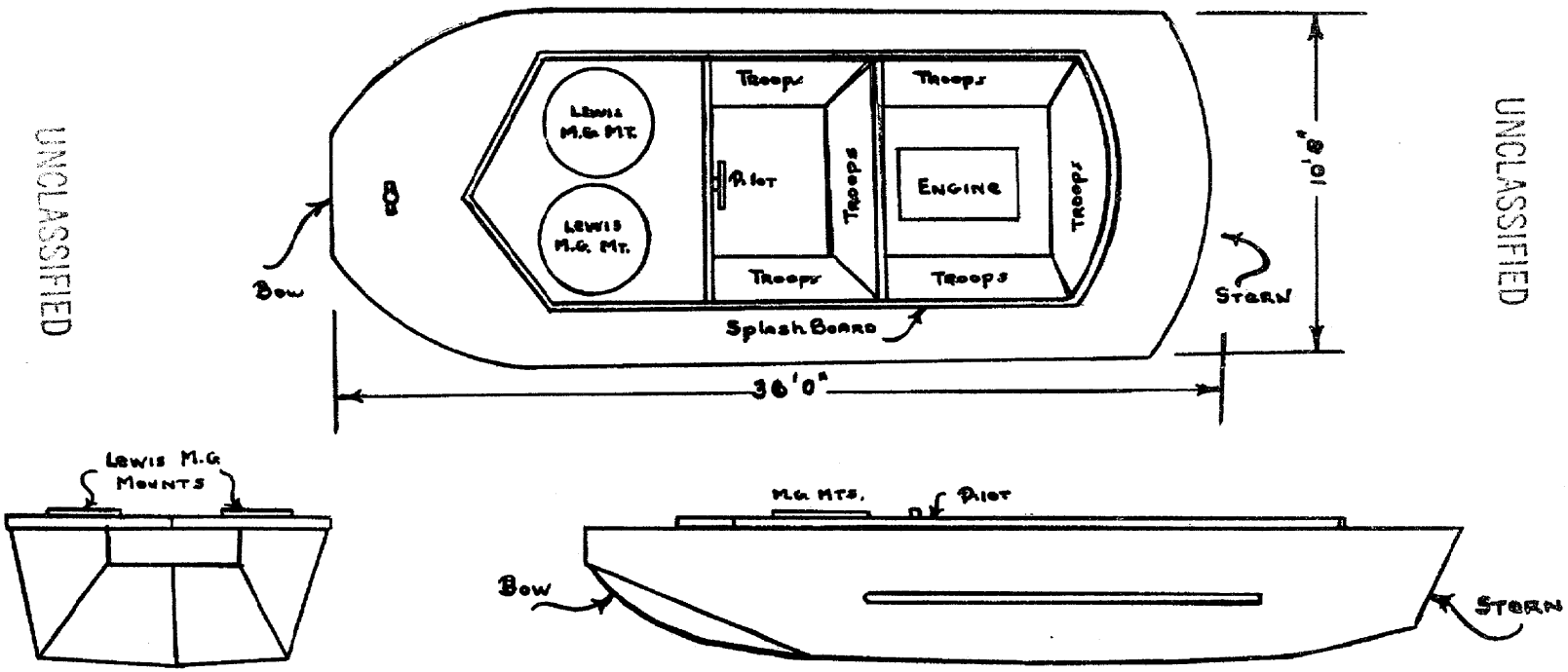
Section A-A

Capacity in Sq. Ft. - 301 Sq. Ft.
Capacity in Cu. Ft. - 1725 Cu. Ft.
Dead Weight Cap. - 30 Tons

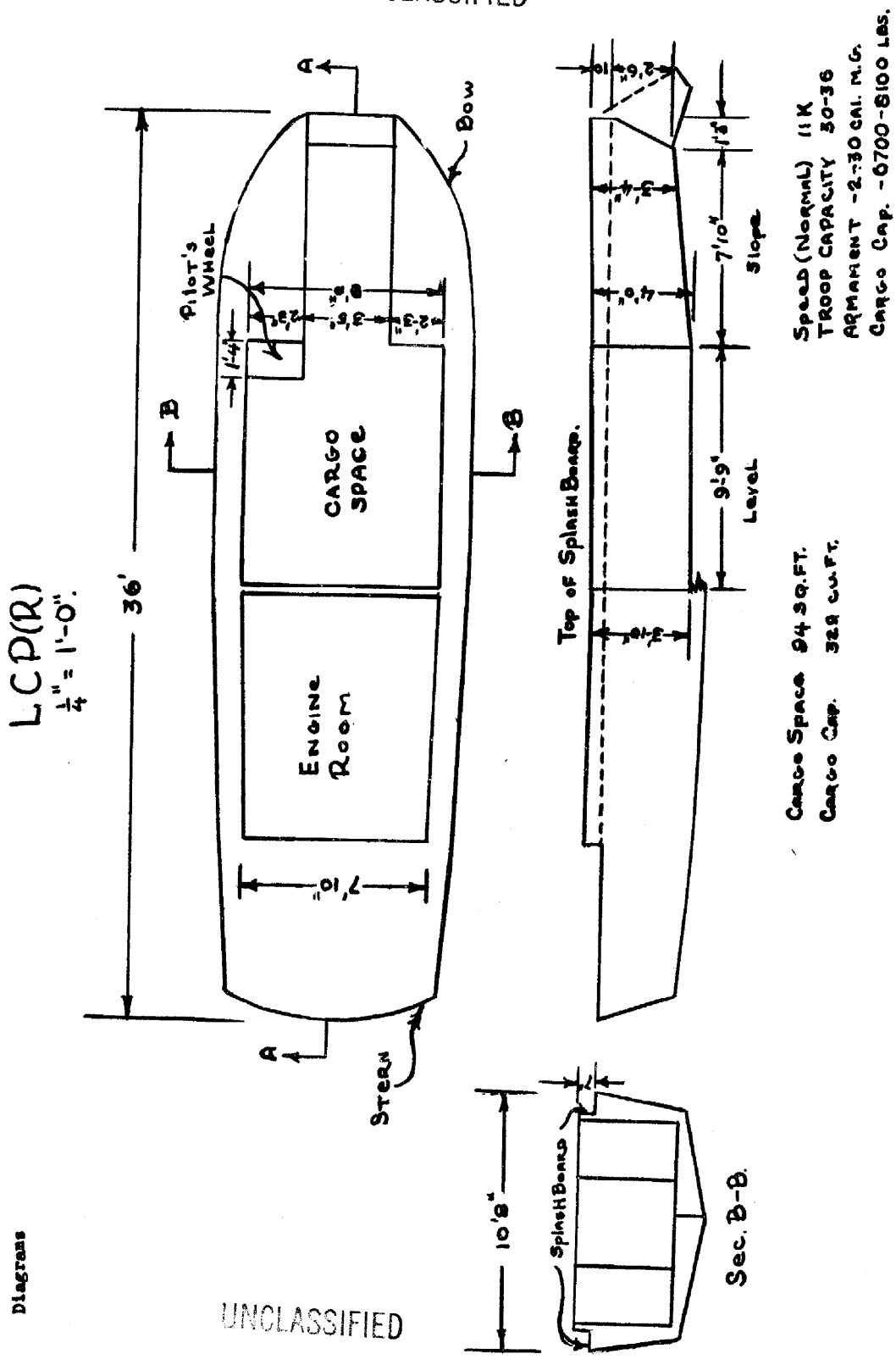
Speed - 10 M.P.H.
Troop Cap - 120
Arm. - 2-.50 cal. M.G.

LCP(L)

SCALE $\frac{1}{8}$" - 1'0"



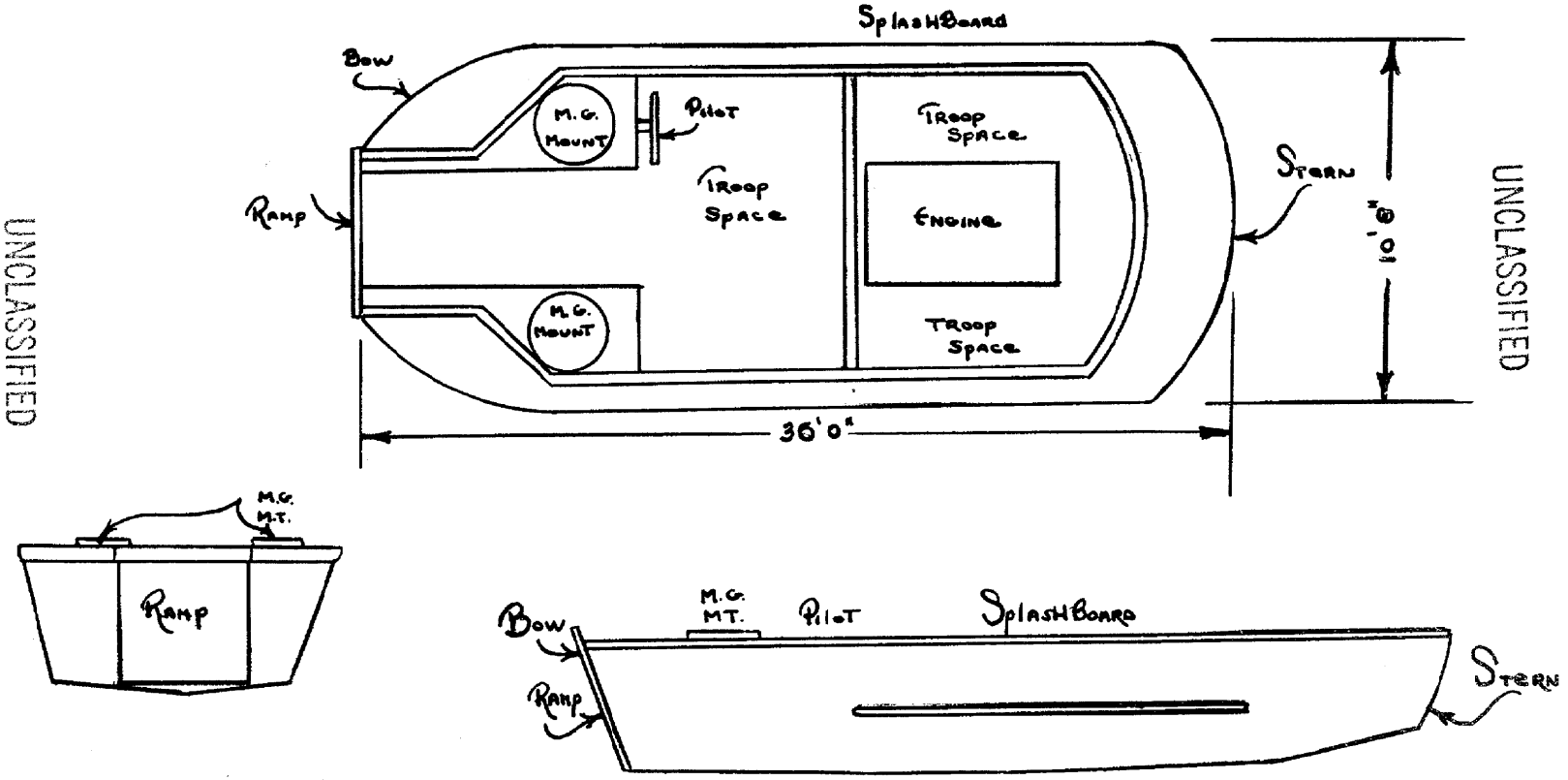
WEIGHT - 12,500 LBS.
Speed - 12 KNOTS
Cargo Cap. - 6700-8100 LBS.
Troop Cap. - 30-36
ARMAMENT - 2-.30. CAL. M.G.


LCP(R)
1/4" = 1'-0"
36'
A
Bow
Pilot's Wheel
B
CARGO SPACE
ENGINE ROOM
STERN
Top of Splash Board
Level
Slope
7'10"
9'9"
Speed (Normal) 11 K
Troop Capacity 30-36
Armament -2-.30 cal. M.G.
Cargo Cap. -6700-8100 Lbs.
Cargo Space 84 sq.ft.
Cargo Cap. 328 cu.ft.
10'8"
Splash Board
Sec. B-B.

Diagrams

LCP(R)

SCALE 1/6" - 1.0"



WEIGHT - 12,500
TROOP CAP. - 30-36
CARGO CAP. - 6700-8100 LBS.
SPEED - 10 M.P.H.
ARMAMENT - 2-.30 M.G.

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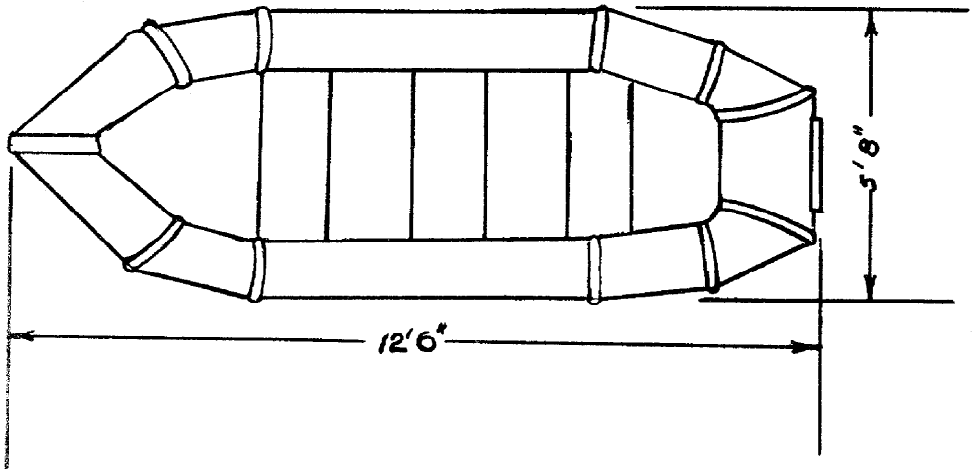
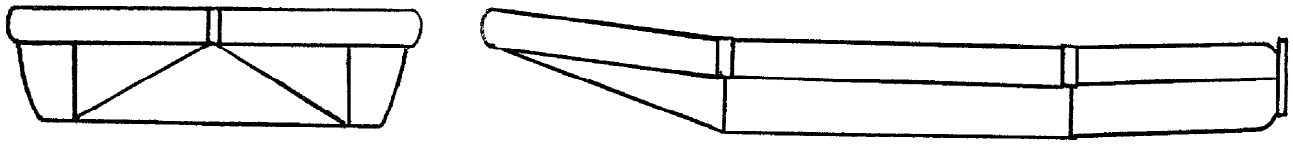
LCR(S)

SCALE - 1/2" = 1'0"

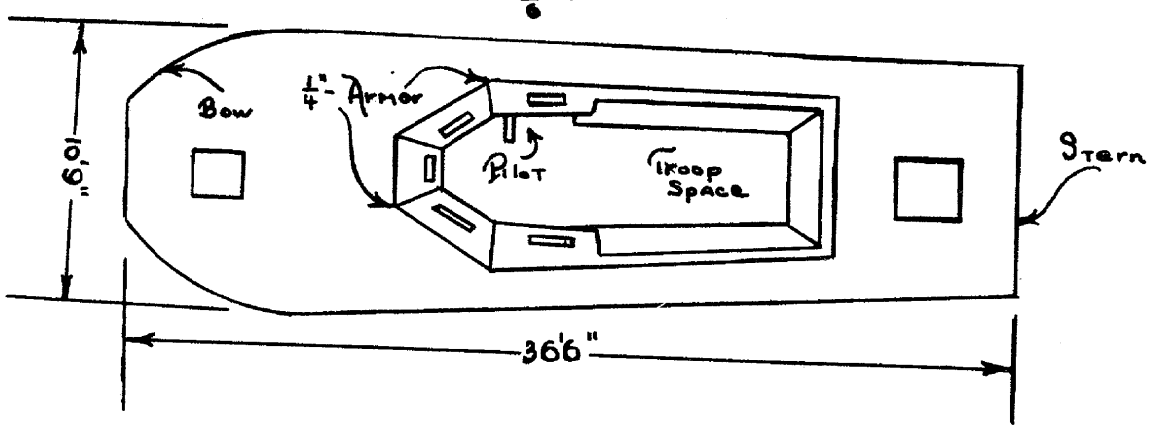


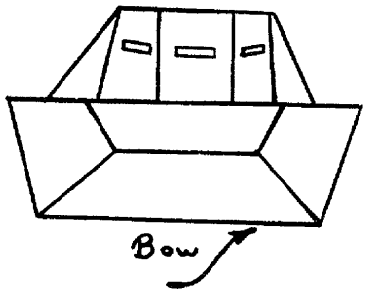


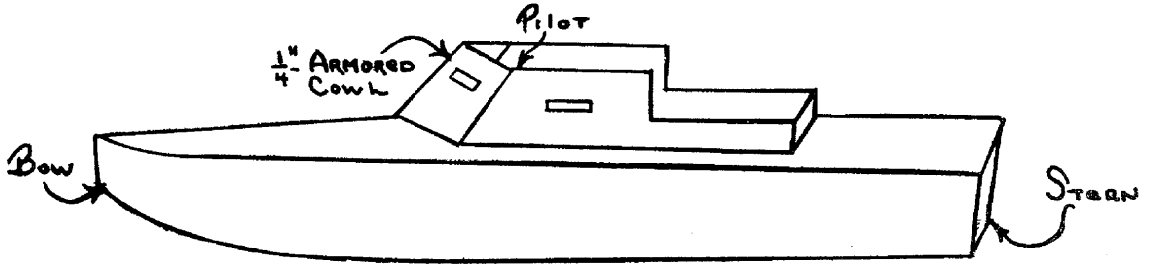
WEIGHT - 210 LBs. w/o MOTOR
TROOP CAPACITY - 7
SPEED (w/MOTOR) 4-5 K.
ARMAMENT - NONE

Diagrams

LCS(S)
SCALE - $\frac{1}{6}$"-1'-0"



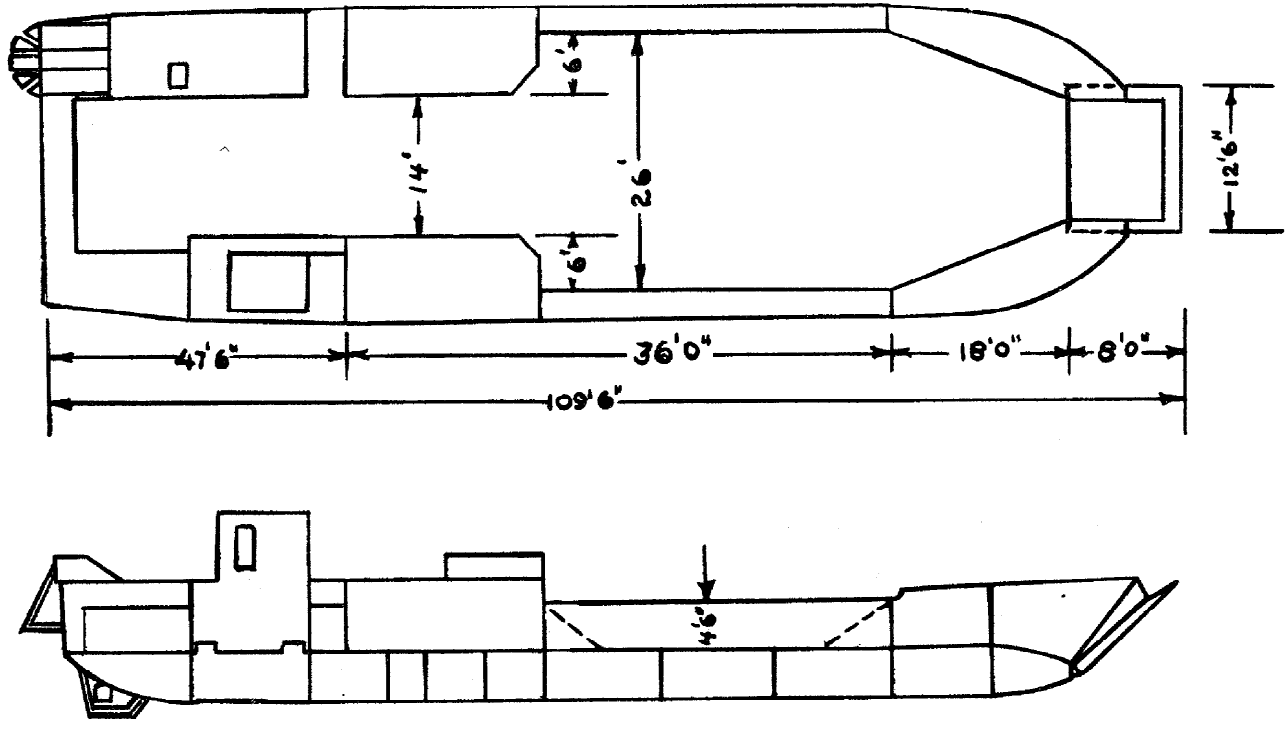




Speed - 16 K.
Troop Cap -3-4
WGT. - 20,000 LBS.
ARMAMENT:-
2-.50 CAL. M.G.
3-.30 CAL. M.G.

LCT(6)

SCALE 1/16"=1'-0"



CAPACITY IN SQ.FT.- 2051

CAPACITY IN CU. FT. 9230

DEADWEIGHT CAR. CAP. 150 TONS.

SPEED - 9K

ARMAMENT — 2-20 MM.

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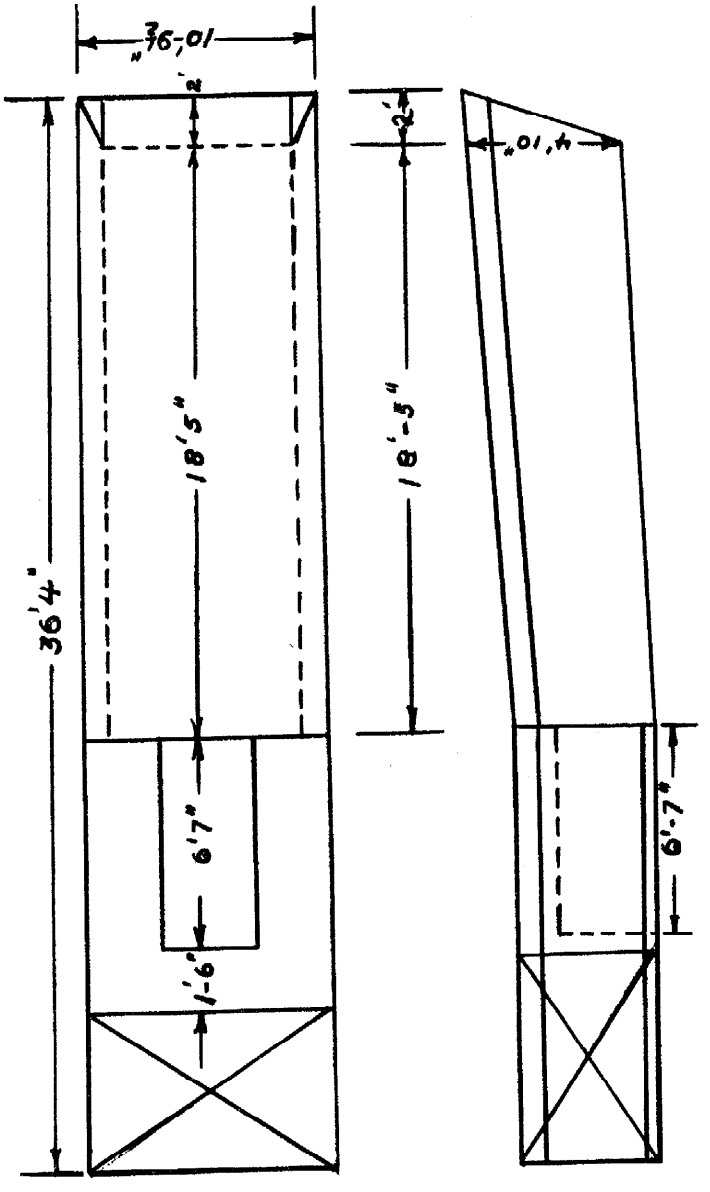


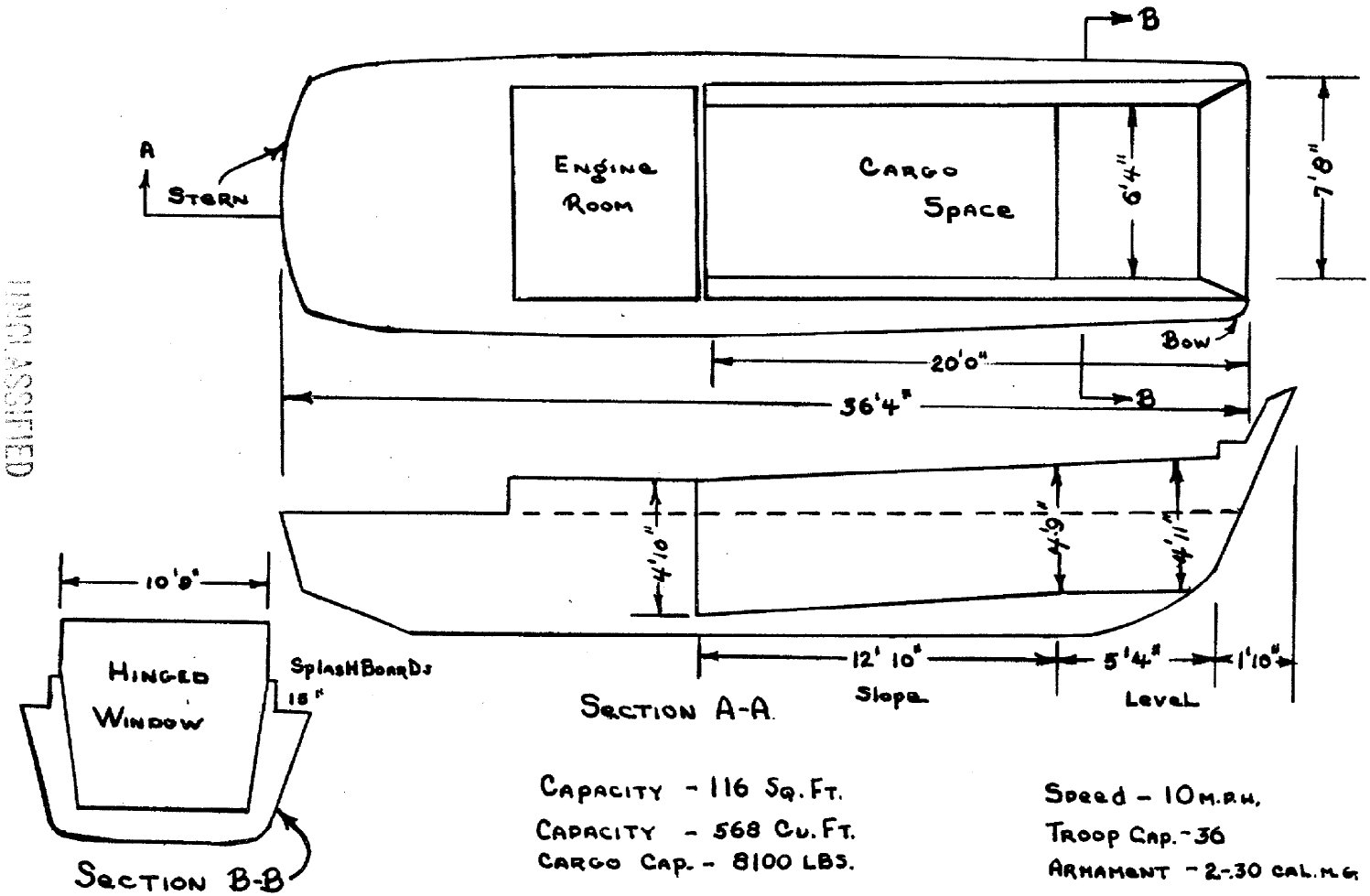
Capacity - 112 sq. ft.
Capacity - 450 cu. ft.
Cargo Car. - 10000 lbs.

Speed - 10 M.P.H.
Troop Cap. - 36
Armament - 2-30 cal M.G.

Diagrams

LCV(P)

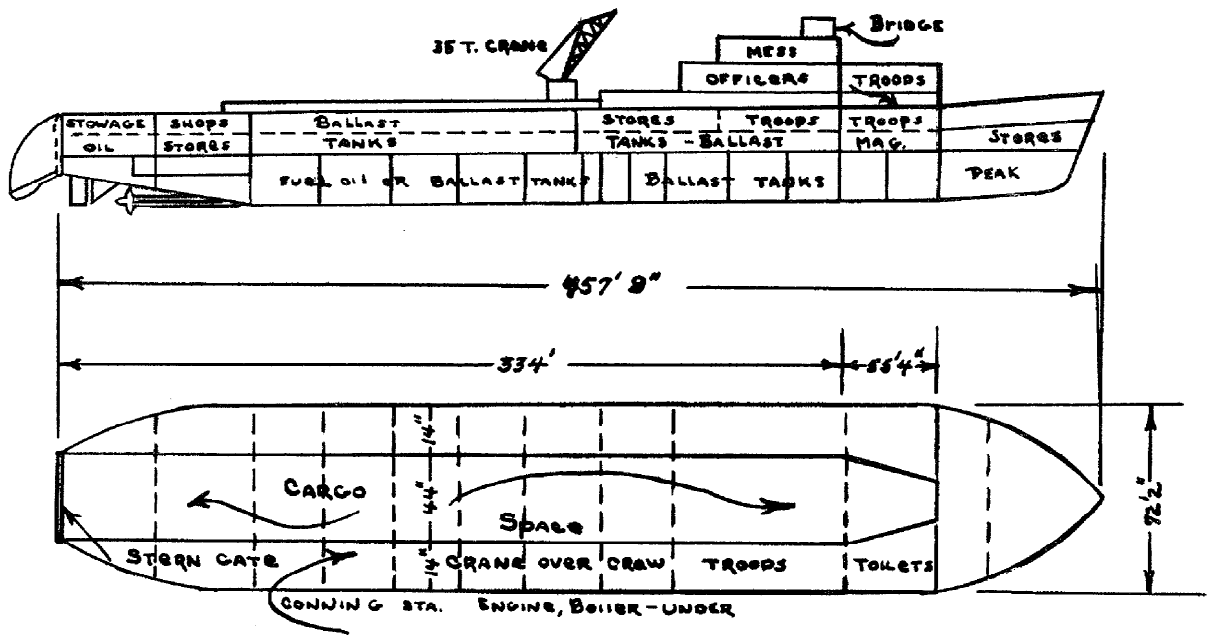
Scale - 1/4"-1'-0"



Capacity - 116 Sq. Ft.
Capacity - 568 Cu. Ft.
Cargo Cap. - 8100 lbs.

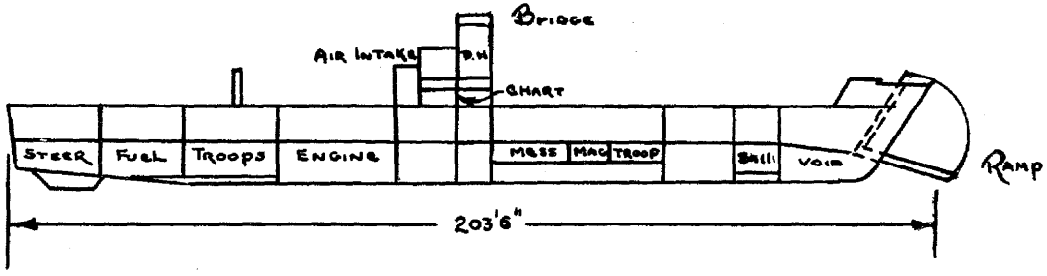
Speed - 10 M.P.H.
Troop Cap. - 36
Armament - 2-.30 cal. M.G.

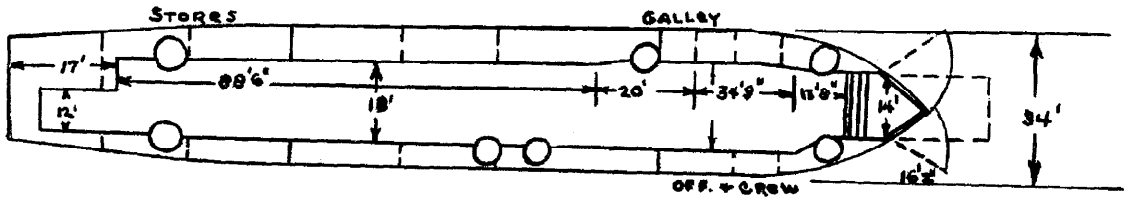
LSD



Speed - 17 Knots
Endurance - 8,000 at 15 K.
Weight - 5,850 Light
Capacity - 14,563 Sq. Ft.
Troop Cap. - 250
Cargo Cap. - 18 LCM's - 3 LCT's

LSM





Speed - 13.3 Knots
Displacement (L) - 513 Tons
Troop Cap. 20 Off. - 52 Men
Cargo Cap. - 5 Med or
3 Heavy Tanks

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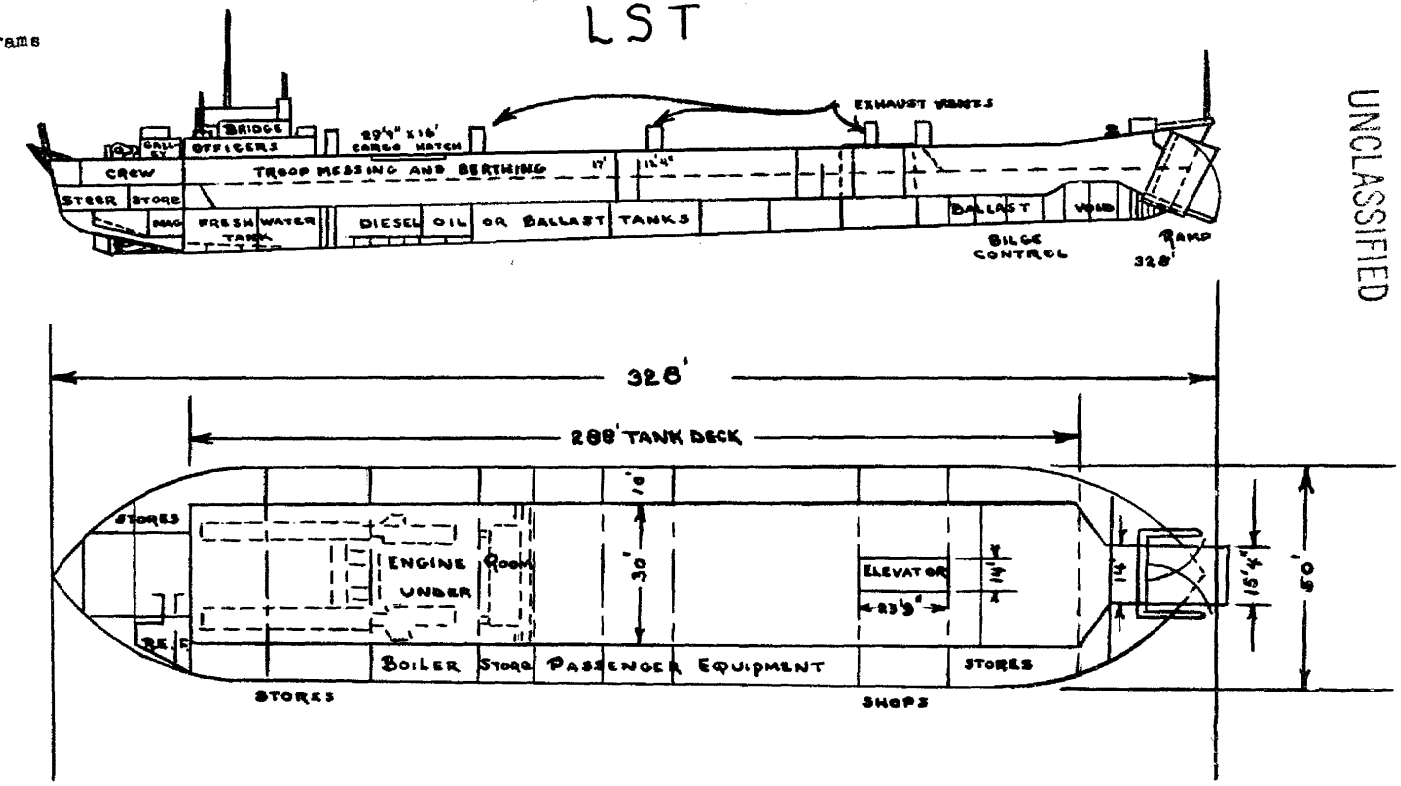
Diagrams

LST



DIMENSIONS -328'X50
SPEED -10.8 KNOTS
ENDURANCE - 6,000 AT 9K
ARMAMENT:
1-3"/50 CAL. D.P.
1-40 M.M.
6-20 M.M.
TROOP CAPACITY - 186
CARGO CAPACITY - 500 TONS

CAPACITY - 92,958 CU.FT.
CAPACITY - 7437 SQ.FT.

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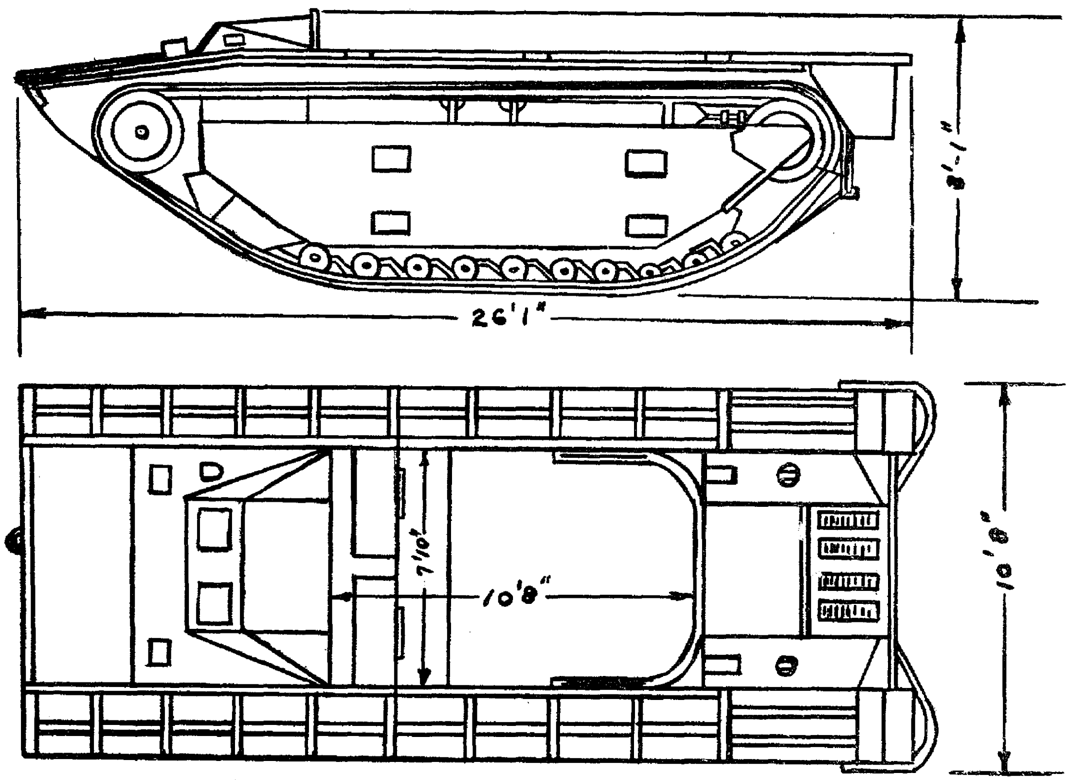
LVT(A)(1)

Diagrams

Speed - 4-5-18 M.P.H. (max.)
Cargo Capacity - 1000 Lbs
Weight - 32,800 Lbs.
Crew - 6

Diagrams

LVT(2)



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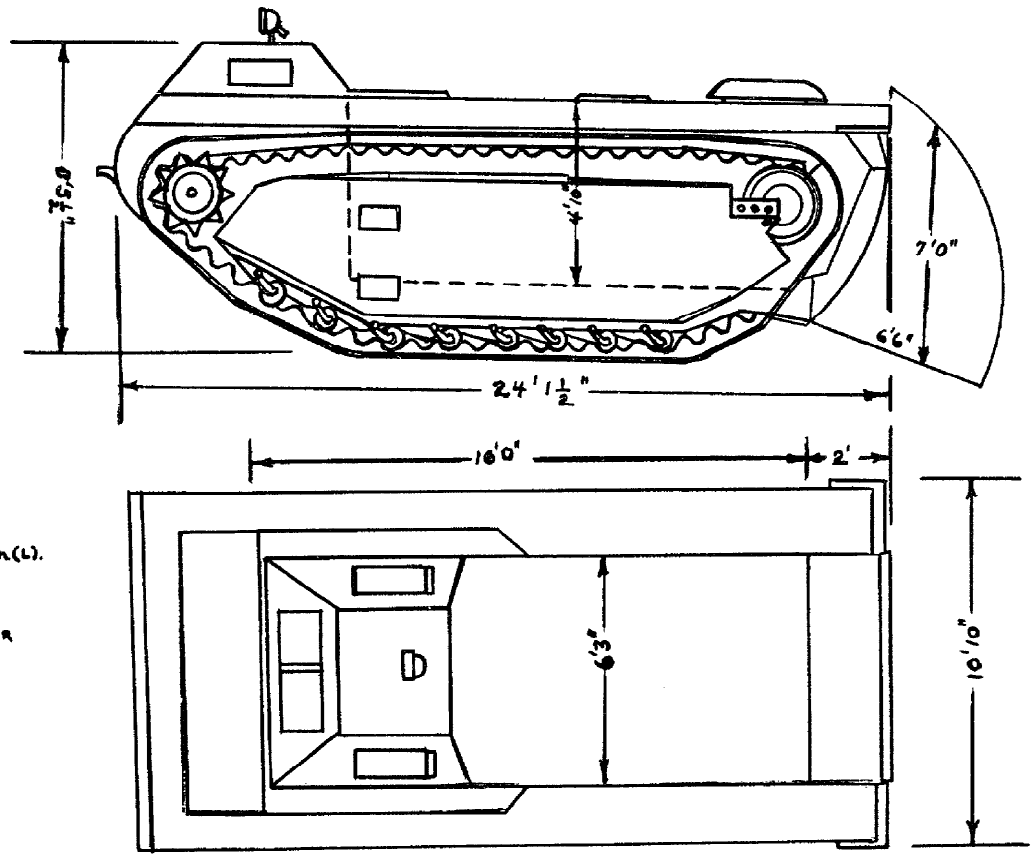
Speed -25 MPH (L) -5.4 K. (W)
Cargo Capacity -6,500 LBS.
Troop Cap. -24 Fully Eq. Men
Weight -25,200 LBS.
Sq. Ft. Cap. - 75

[redacted]

LVT(3)



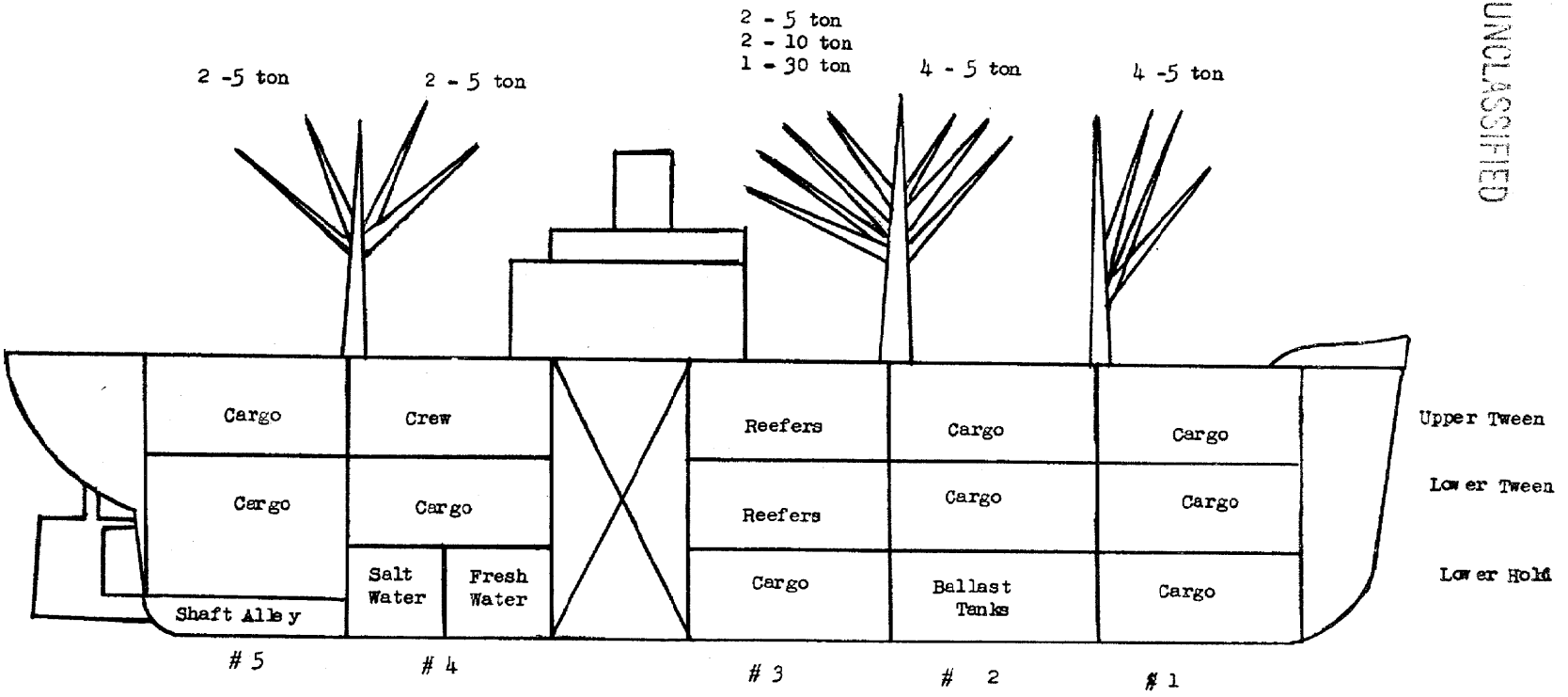
Speed - 5.2 K(W), 25 m.p.h.(L).
Sq. Ft. Cap. 101
Cu. Ft. Cap. 413
Cargo Cap. 5000 Lbs or
24 Com. Equip. Men
Weight - 28,000 Lbs.

UNCLASSIFIED

Diagrams

Troop Officers	26
Troops	215
Cruising Range	29,000 miles
Cargo Cap.	26,135 Sq. Ft.
Cargo Cap.	51,000 Cul Ft.

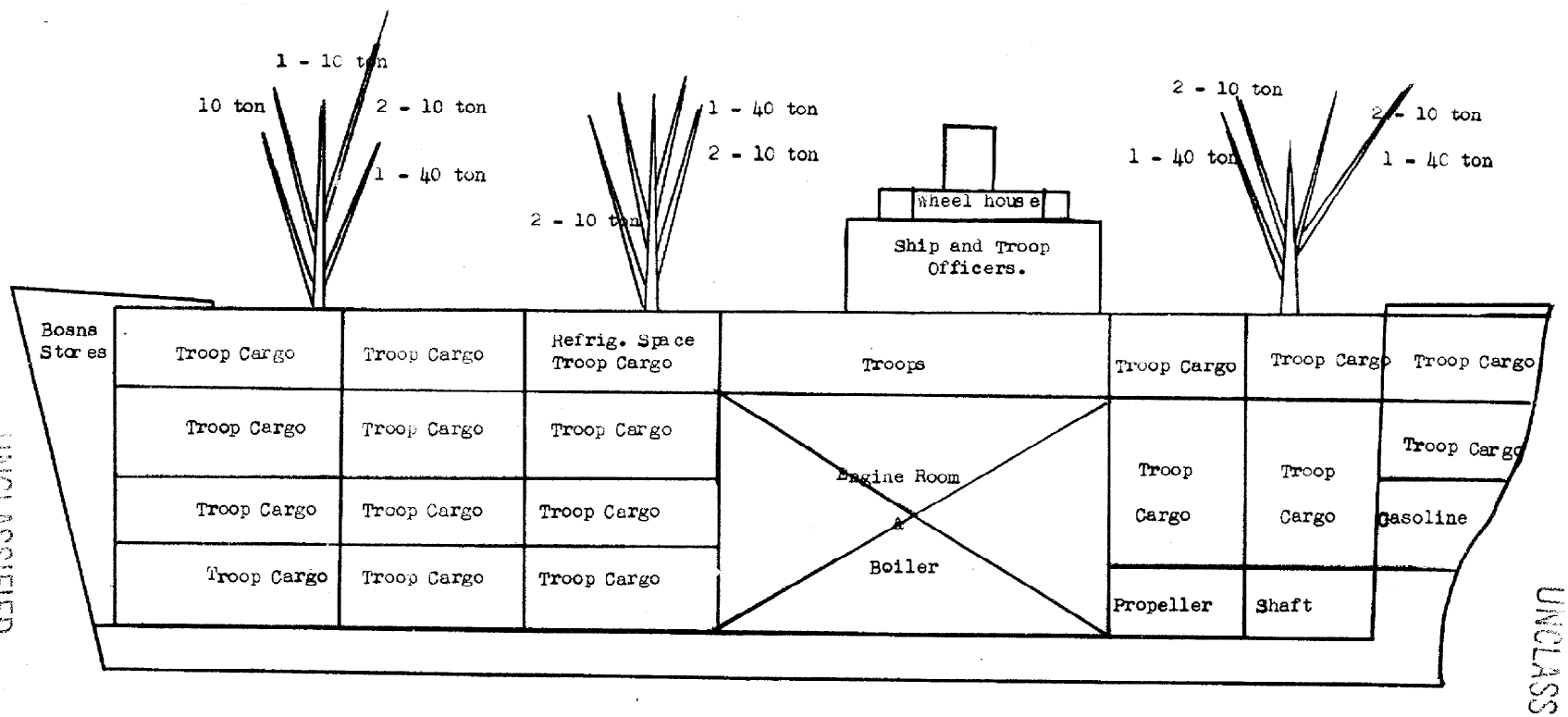
▲K



Length overall 459'
Speed 15½ knots

Diagrams

A K A



Length Overall	459' 2½ "
Displacement	13,900 tons.
Speed	17 knots
Steaming Radius	10360
Officers (troop)	9
Enlisted (troop)	120

Diagrams

A P

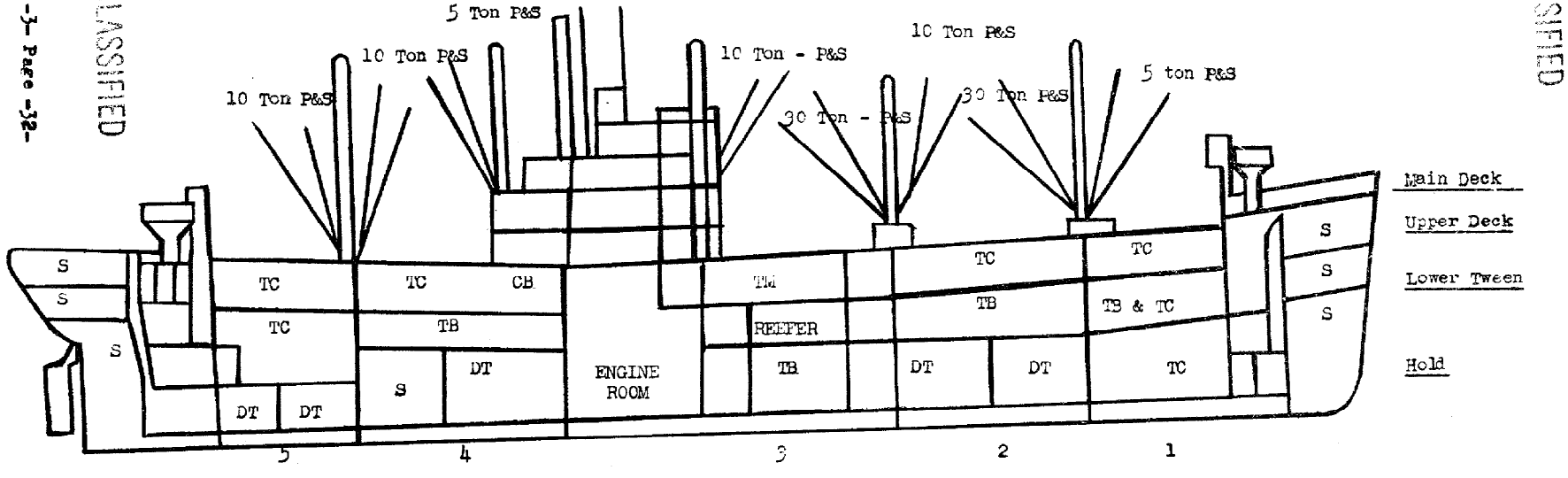
CB - Crew Berthing
DT - Deep Tank
L - Ladder
S - Ship's Space

TB - Troop Berthing
TC - Troop Cargo
TO - Troop Officer's Quarters
TM - Troop Mess

SPEED - 17 knots
Length - 459'6"
Beam - 63'0"
Steaming Radius - 17000 miles
Displacement - 13860 Tons

Troop Cap. 75 Officers 1544 Enlisted Men.

Cargo Cap. 12044 Sq. Ft. 121520 Cu. Ft.



Diagrams

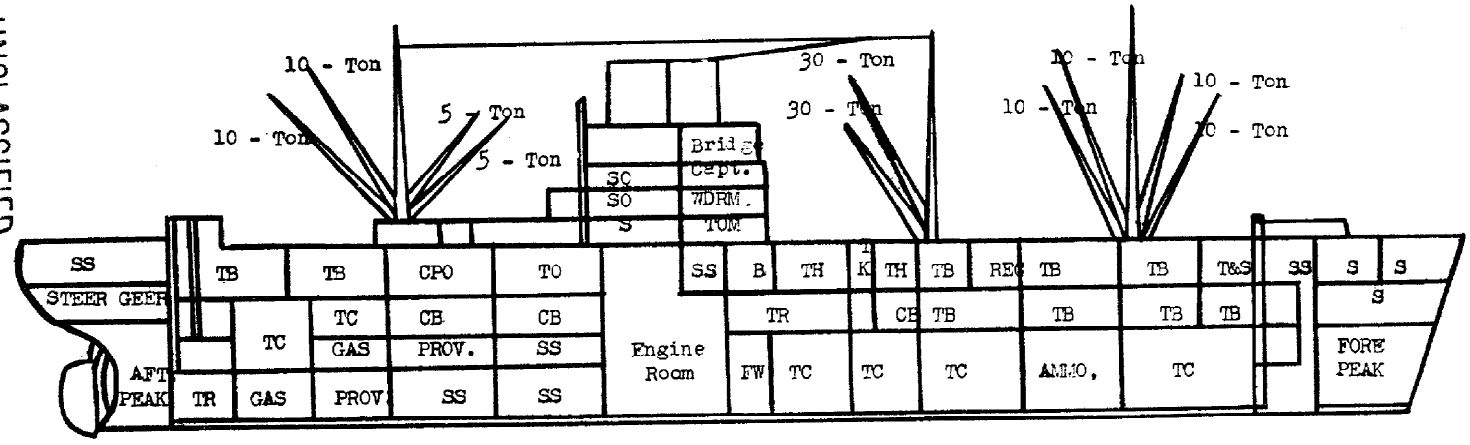
APA

CB * CREW BERTHING
FW * FRESH WATER
G * GALLEY
PR * ROOM
S * SHIP'S SPACE
SS * SHIP STORES
TB * TROOP BERTHING
TC * TROOP CARGO

T&S * TOILET
TOM * TROOP OFFICER'S MESS
TH * TRUNK
TM * TROOP MESS
TO * TROOP OFFICERS
TR * TUNNEL RECESS
R * REFFER

CHARACTERISTICS.

Speed	17.5 knots
Length	459'2½"
Beam	63'
Cargo	4,700
Cruising Radius	12.600 (17.5)
Troop Cap.	Off. 131
	Enl. 2060
Cargo Cap.	12,263 Sq. Ft.
	155,737 Cu. Ft.



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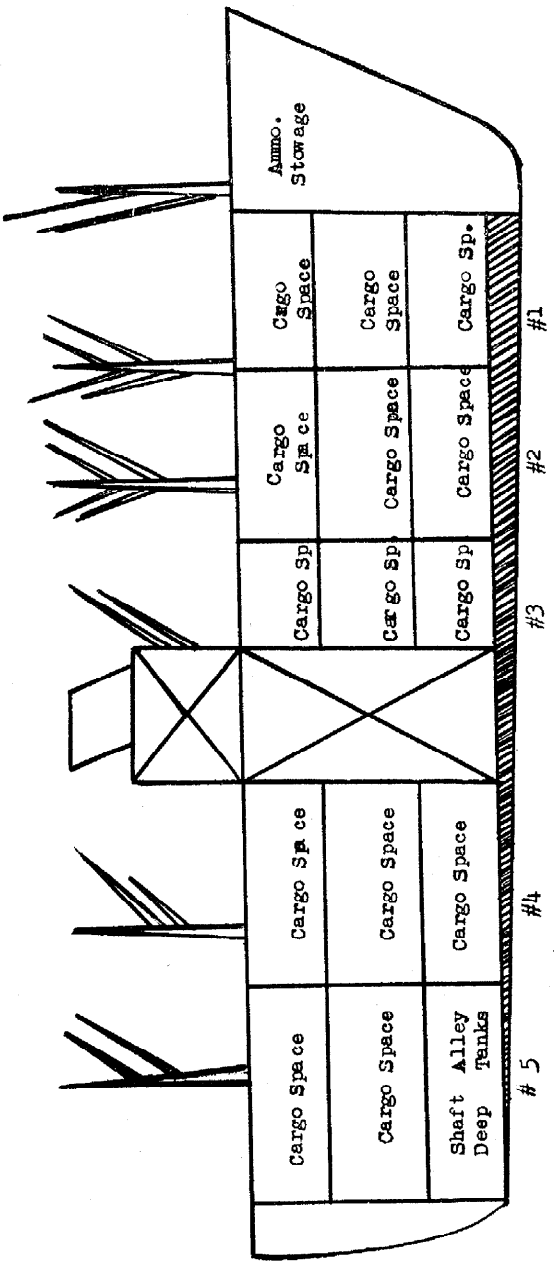

C1 - A

Diagrams

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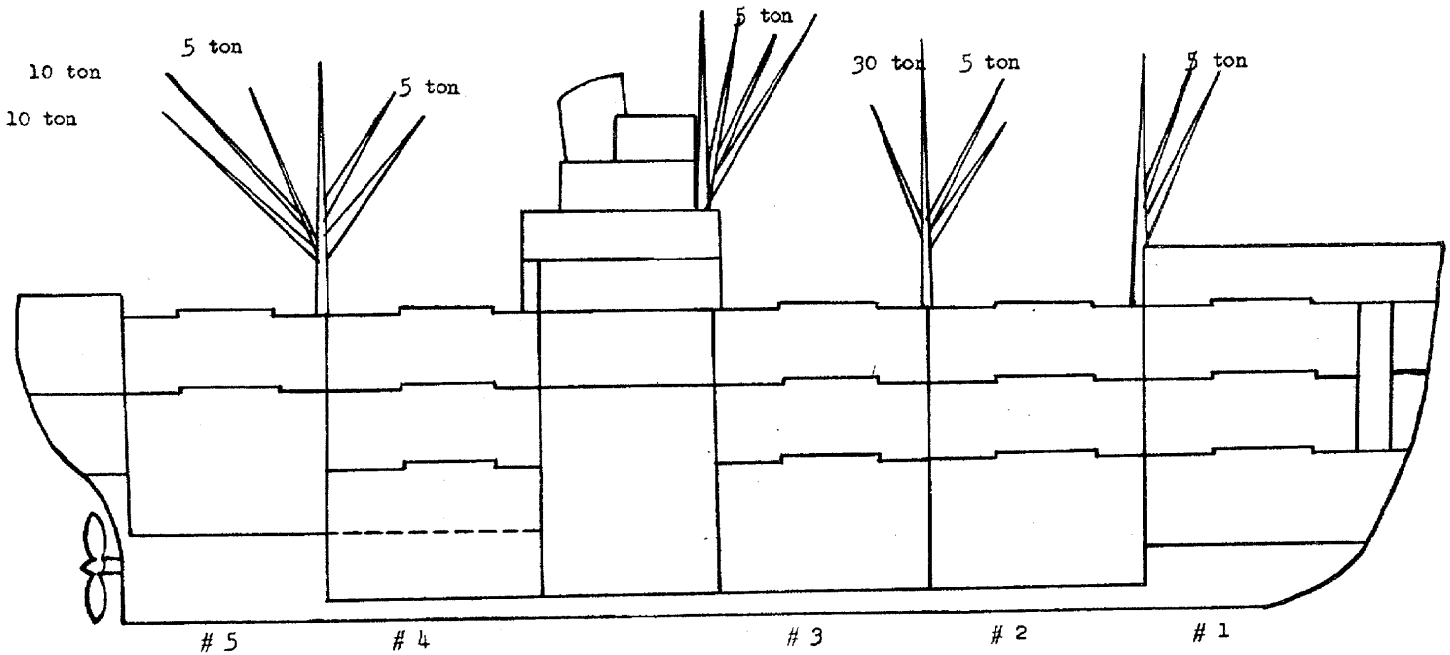
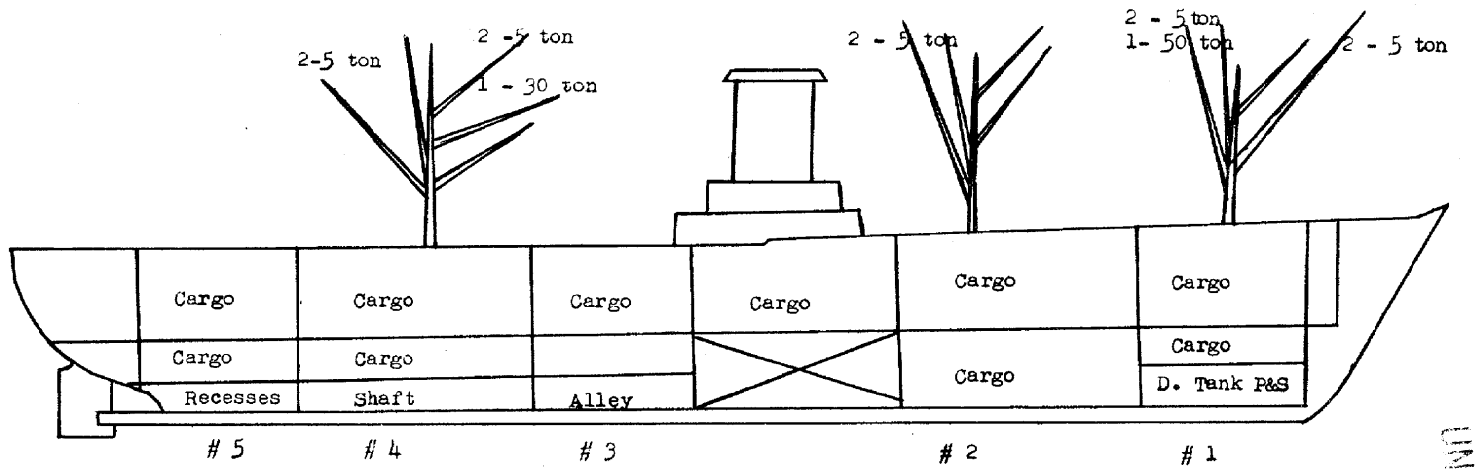


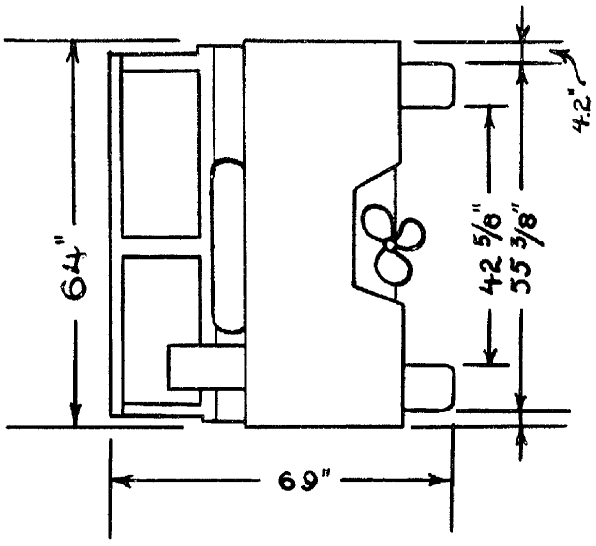
Length Overall	480 Feet	Cubic Cargo Capacity	26960 Cu. Ft.
Cruising Radius	17000 Miles at 14 knots	Square Cargo Capacity	3840 Sq. Ft.
Fresh Water	2,000 gallons Per Day		
Officers (troop)	25		
Troops	150		

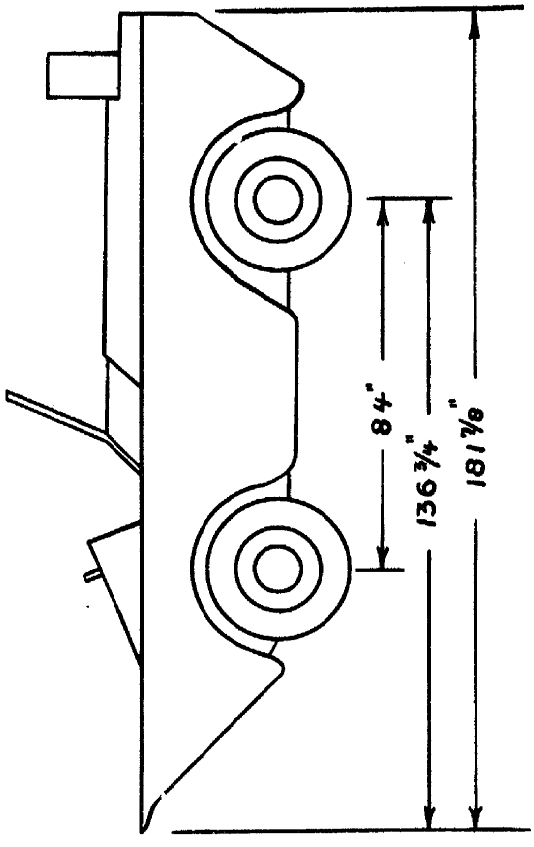
Diagrams

E C-2



Length Overall	441' 6"
Speed	12½ knots
Cruising range	18,000
Crew	43

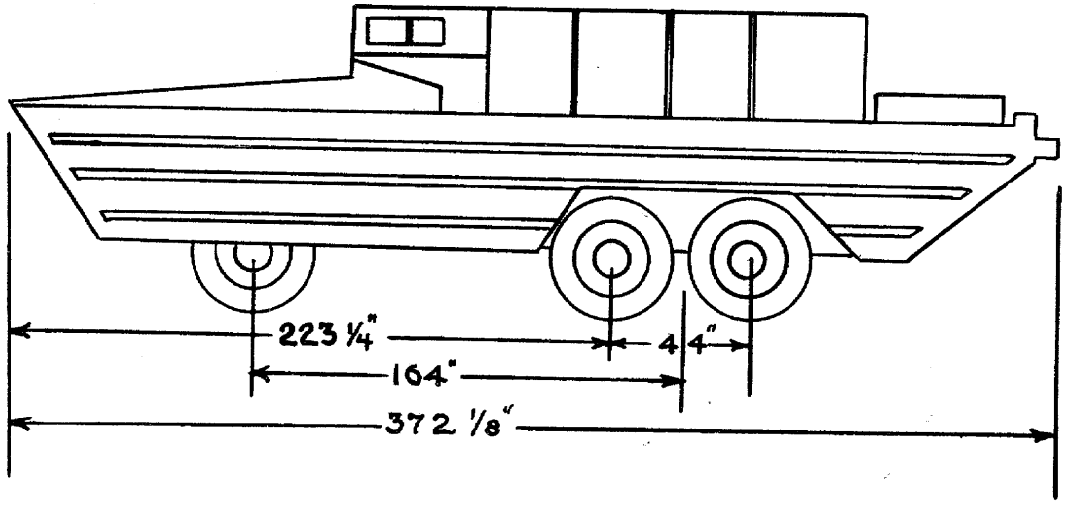


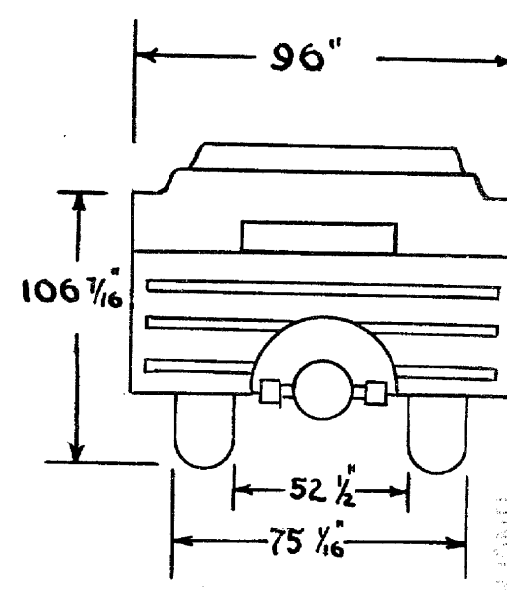


WEIGHT: 3,660 LBS.
PAYLOAD: 800 LBS.
OVERALL CUBE: 372 CU.FT

Truck, Amphibian, 2½ Ton, 6x6.
"DUKW."

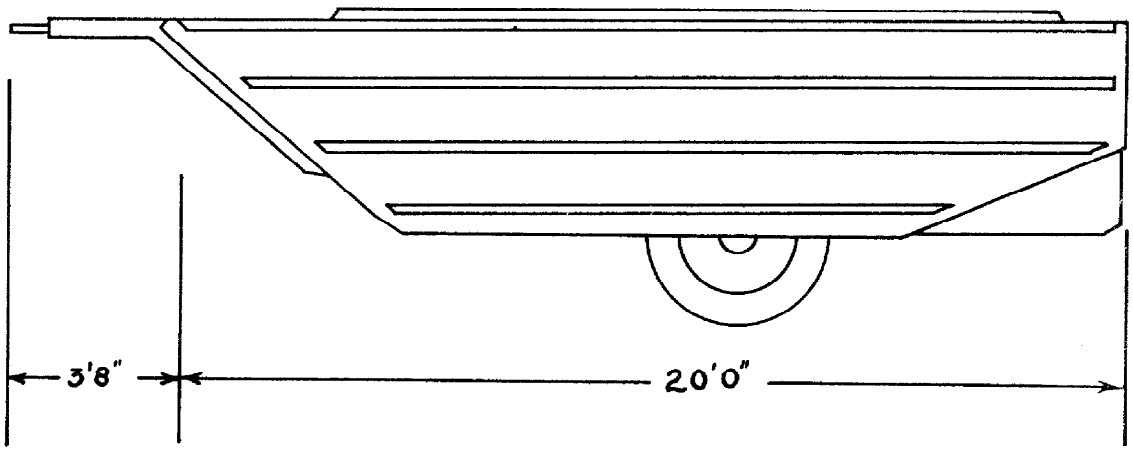
TM 9-802
TM 9-1802A
TM 9-1802B
PARTS LIST: SNL G-501

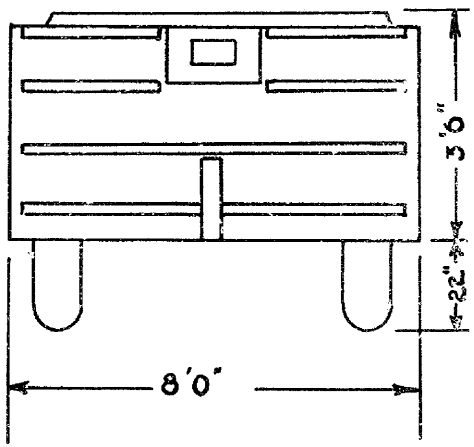




WEIGHT: 14,500 LBS.
PAYLOAD: 5,000 LBS.
SHIPPING DIMENSIONS: 248 SQ.FT.

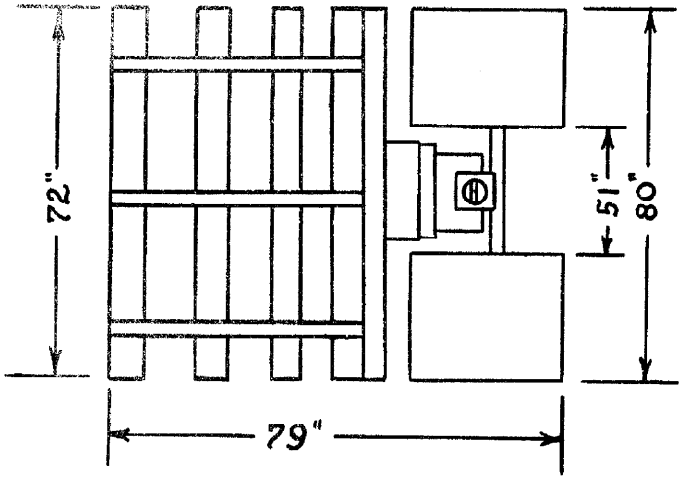
TRAILER, AMPHIBIOUS, CARGO
3-TON

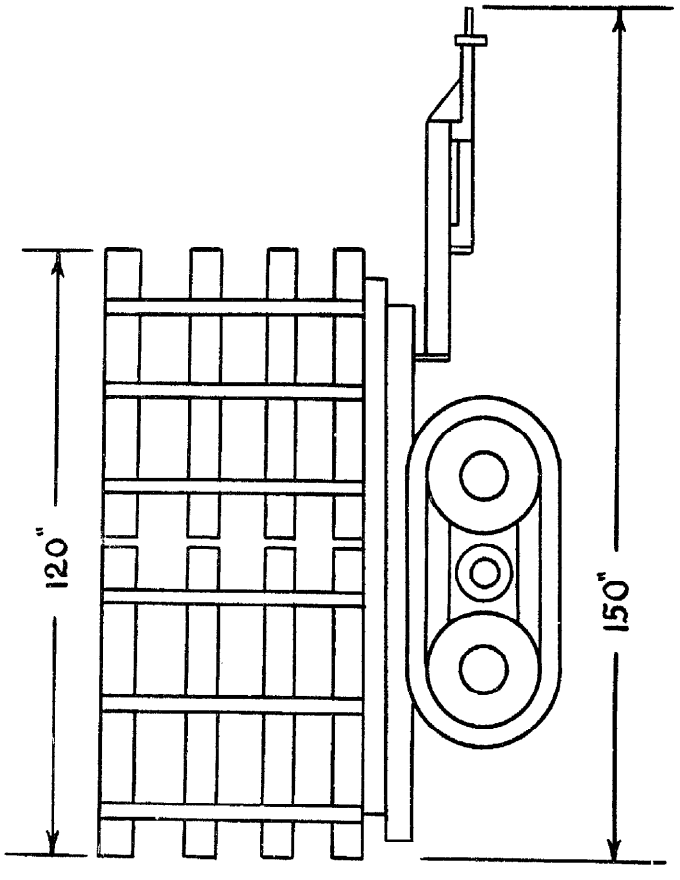




CARGO HOLD:
CAPACITY: 3 TON
CUBIC CAP: 210 CU.FT.

TRAILER, ATHEY

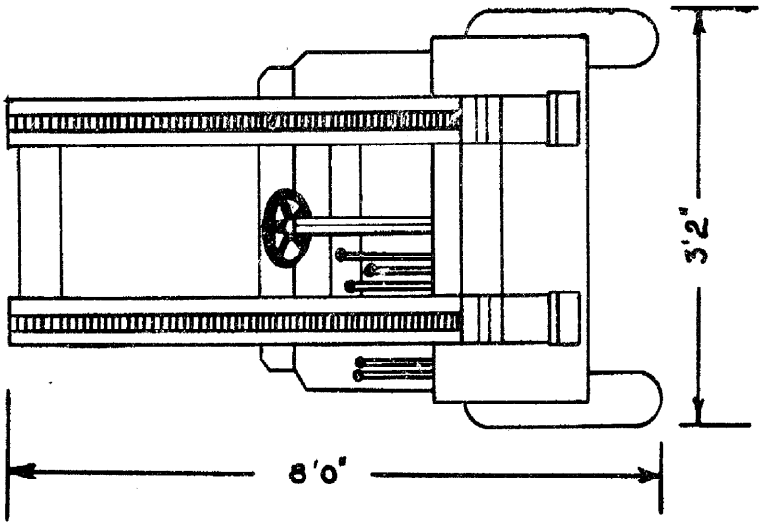


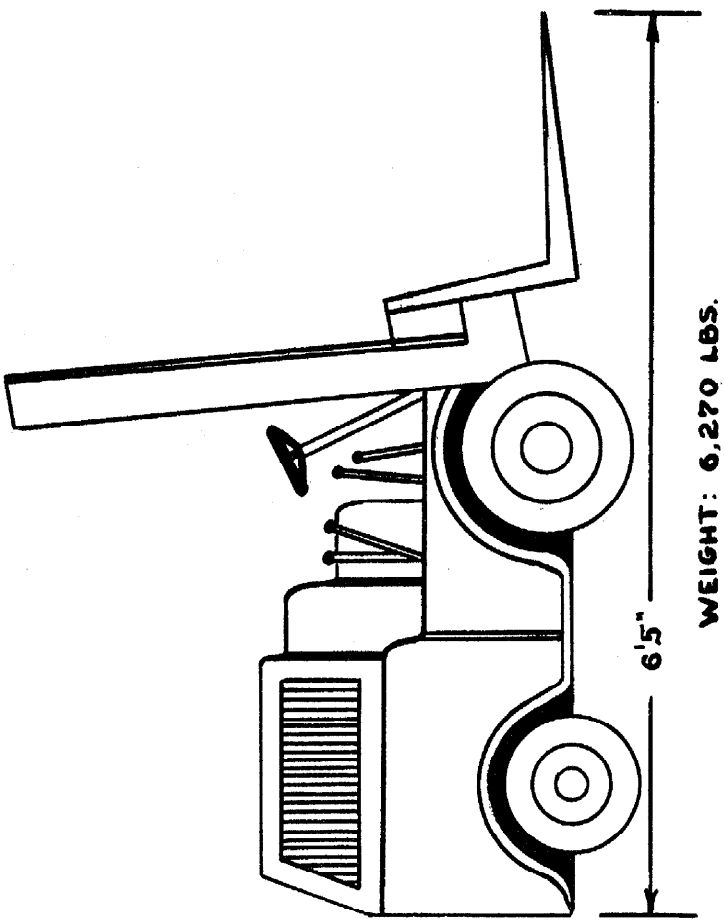


WEIGHT: 6,300 LBS.
PAYLOAD: 12,000 LBS.
OVERALL CUBE: 175 CU.FT.

TM. 9-790A.
TM. 9-1790A.
PARTS LIST: SNL G-123

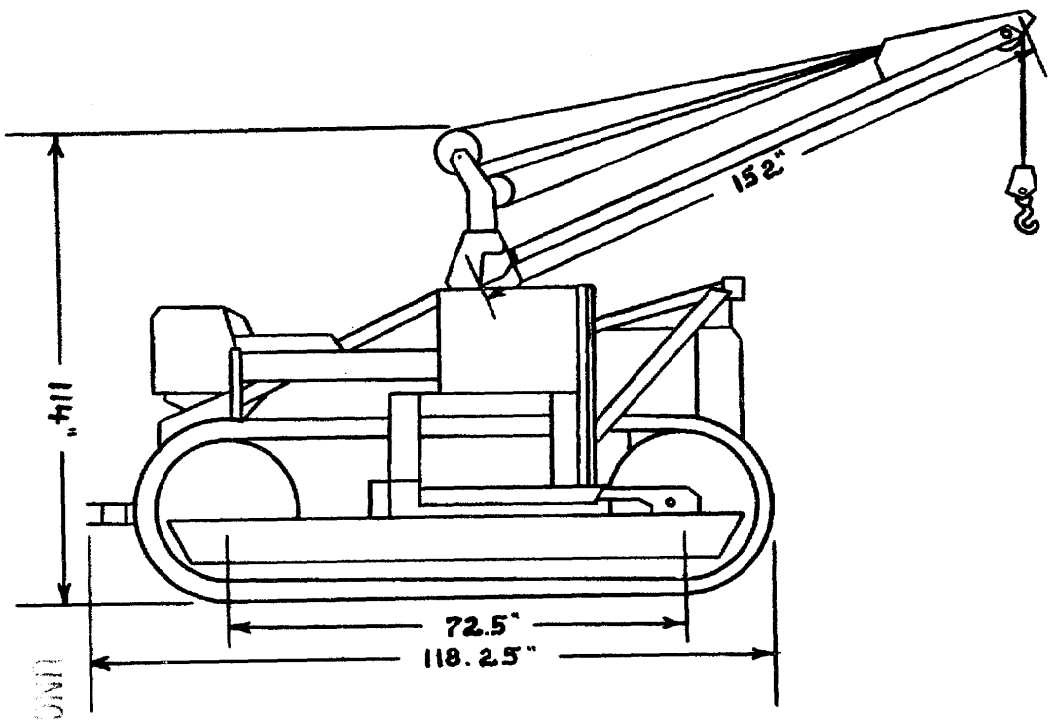
FINGER LIFT

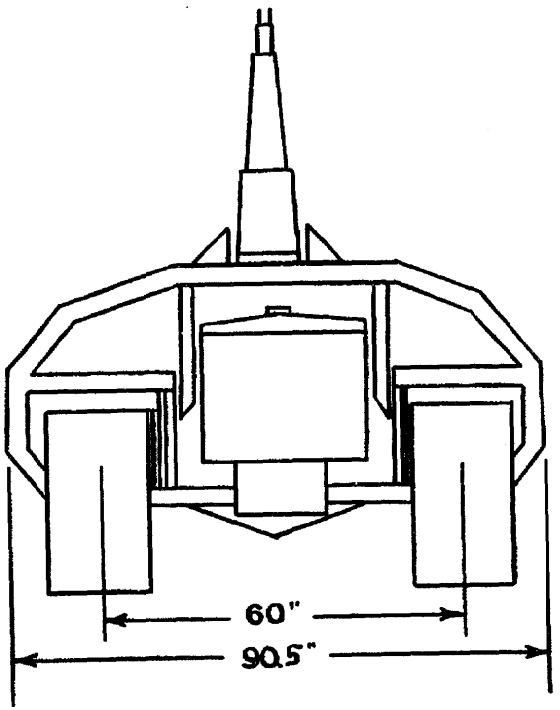




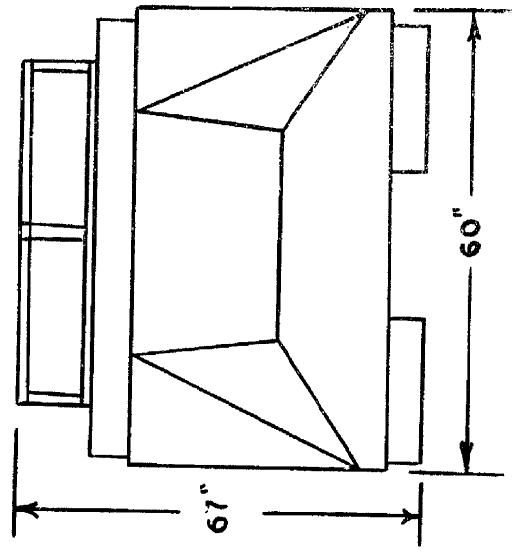
PARTS LIST: SNL G-99

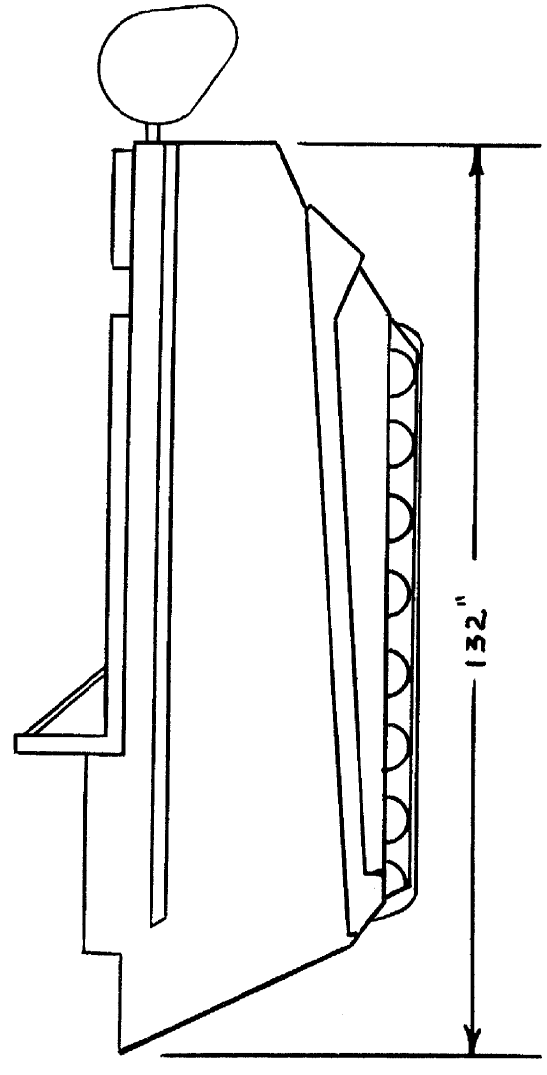
TRACTOR, CRANE, M5
2-TON

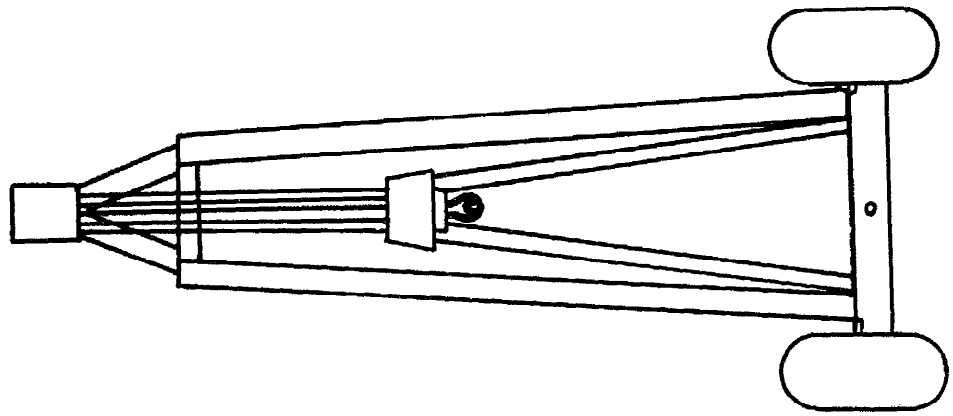


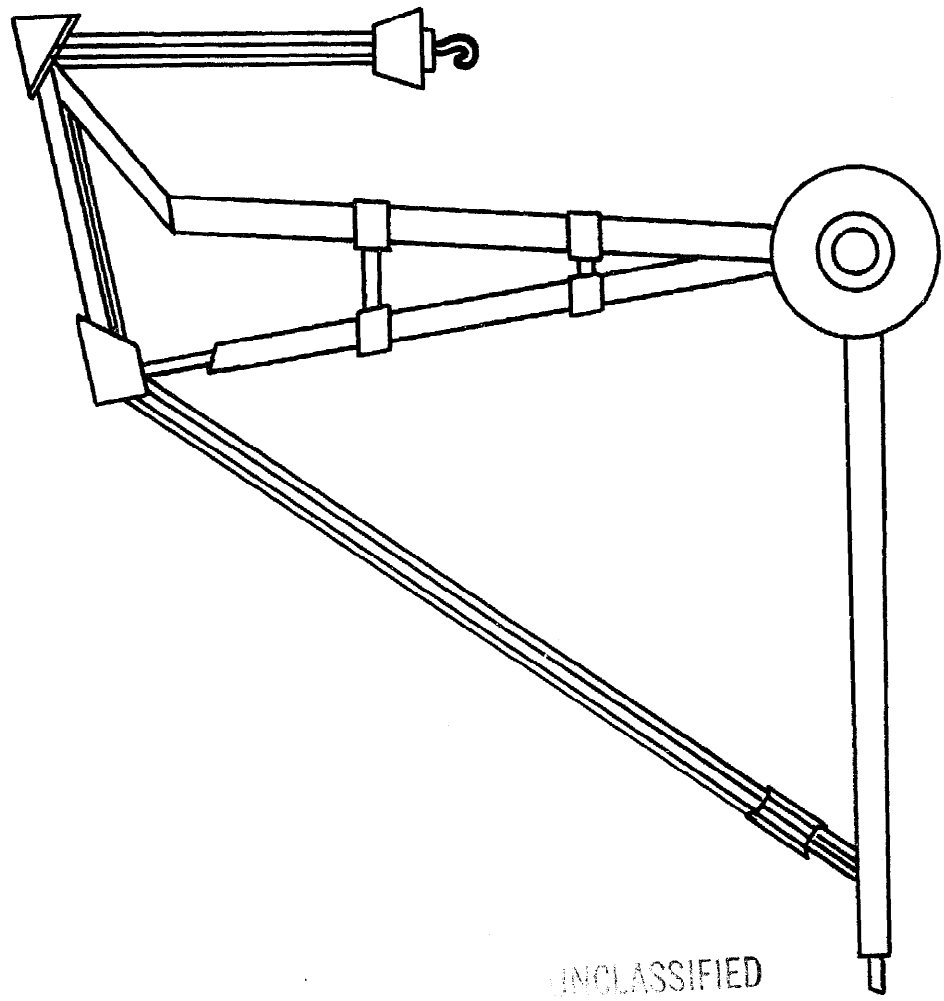


WEIGHT: 18,725 LBS.
BOOM CAP: 4,000 LBS.

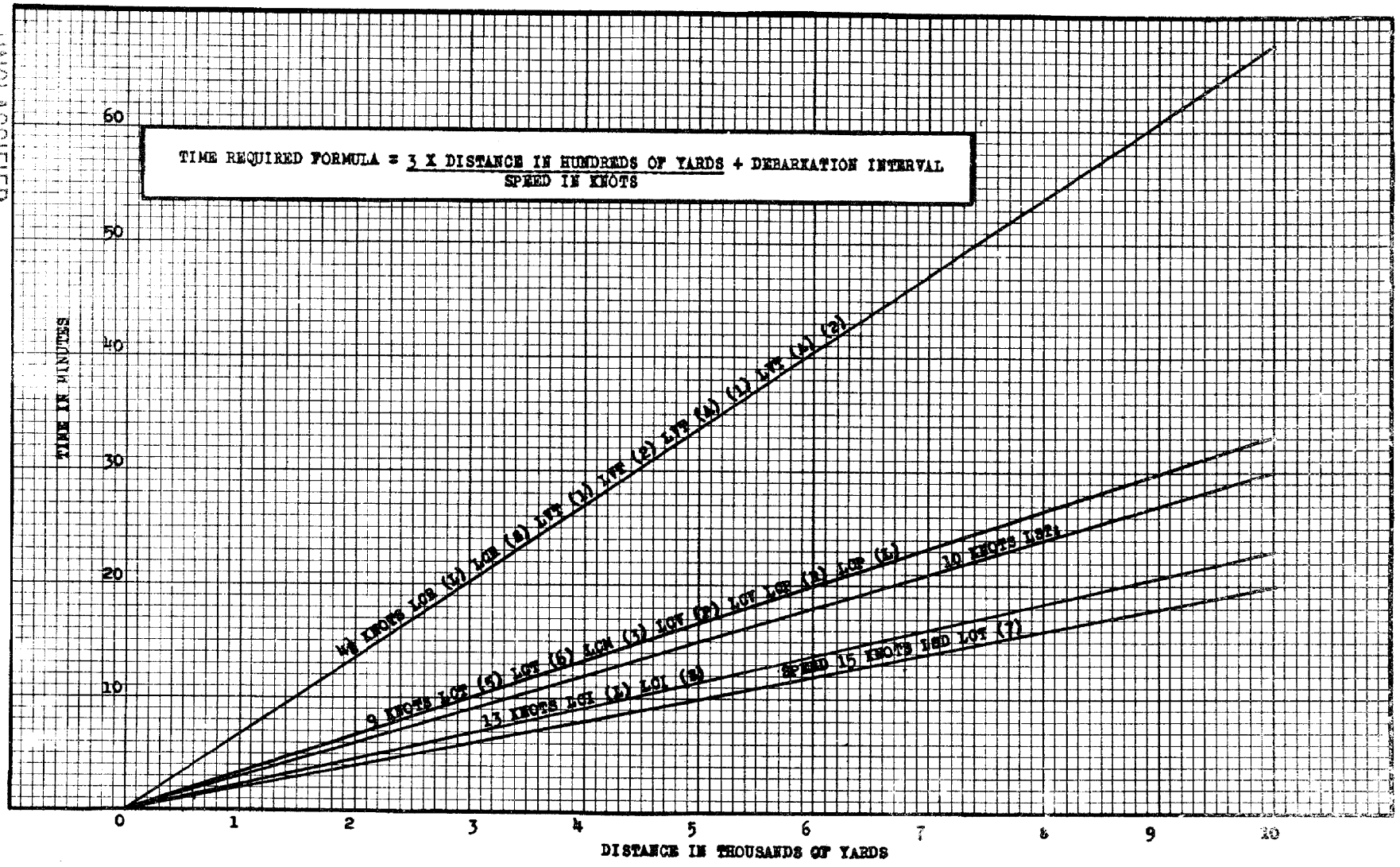








CHERRY PICKER



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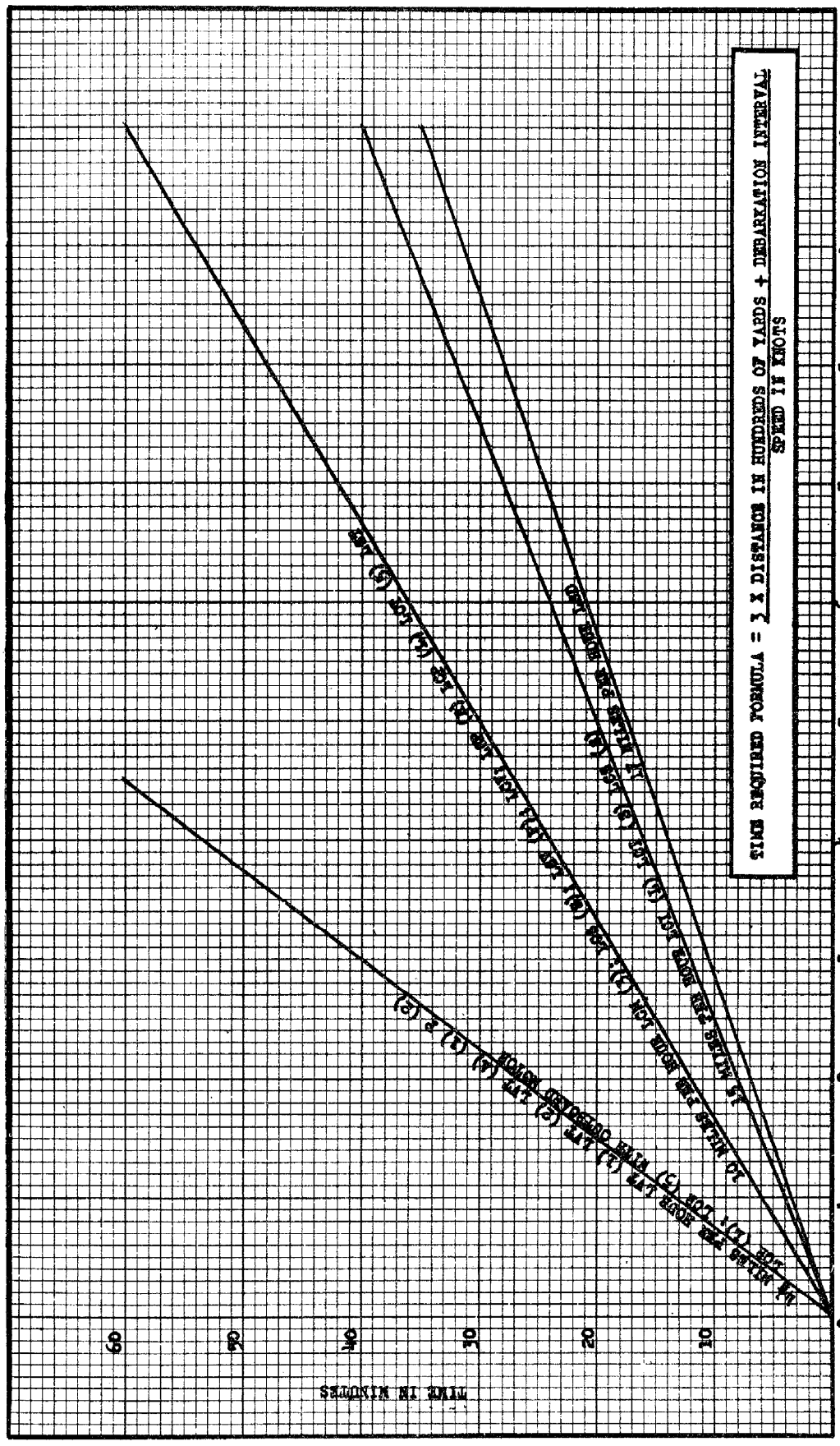
TIME REQUIRED FORMULA = 3 X DISTANCE IN HUNDREDS OF YARDS + DEBARKATION INTERVAL
SPEED IN KNOTS
DISTANCE IN MILES
TIME IN MINUTES
0
1
2
3
4
5
6
7
8
9
10
10
20
30
40
50
60

CHAPTER IV

M A T E R I E L

WEIGHTS AND DIMENSIONAL DATA

REFERENCE: ATF #9, Cir Dated 28 May and 21 June 43; also 7th Inf Div Data Sheet, dated 4 Mar 43 & TM 9-2800

VEHICLES	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT	ACTUAL SHIP TONS	SQ.FT. PLUS 25%	CU.FT. PLUS 50%	BROKEN STOWAGE SHIP TONS
Ambulance	½ ton 4x4	16'3"	6'4"	7'6"	102	770	5340	19	128	1155	28
Ambulance	3/4 ton 4x4	16'3"	6'6"	7'6"	105	790	5920	19	131	1185	29
Car (Ford)	5-Pass Lt Sedan	16'2"	6'2"	5'8"	98	558	3179	13	123	837	20
(Plymouth)	5-Pass Lt Sedan	16'7"	6'1"	5'8"	101	575	3190	14	126	862	21
(Packard)	5-Pss Med Sedan	17'5"	6'4"	5'4"	110	583	3700	14	137	874	21
Truck	¼-ton Willys										
	(Top Up)	11'	5'2"	5'10"	57	330	2325	8	71	495	12
(Top Down Steer Whl. Remvd)		11'	5'2"	4'4"	57	199	2325	4	71	298	7
	¼-ton Ford '42	11'	5'2"	4'4"	57	247	2325	6	71	370	9
Truck	¼-ton Amph.	15'3"	5'5"	4'3"	82	351	3420	8	103	526	13
Truck	½-ton Carryall	15'10"	6'4"	6'4"	100	635	3400	15	125	951	23
Truck	3/4-ton Carryall	15'5"	6'9"	6'9"	97	702	5750	17	130	1054	26
Truck	½-ton Comm.w/w	15'9"	6'3"	5'5"	99	540	4975	13	124	811	20
	(Top Up)	15'9"	6'3"	6'11"	99	692	4975	17	124	1035	25
Truck	½-T.Comm.wo/w	14'11"	6'3"	5'5"	94	511	4640	12	117	767	19
	(Top Up)	14'11"	6'3"	6'11"	94	654	4640	16	117	981	24
Truck	3/4T.Comm.w/w	14'8"	6'6"	5'2"	96	500	5675	12	120	750	18
	(Top Up)	14'8"	6'6"	6'10"	96	652	5675	16	120	979	24
Truck	3/4T.Comm.wo/w	13'10"	6'6"	5'2"	85	442	5375	11	106	663	16
	(Top Up)	13'10"	6'6"	6'10"	85	577	5375	14	106	866	21

Weights and Dimensional Data

VEHICLE	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT	ACTUAL SHIP TONS	SQ.FT. PLUS 25%	CU.FT. PLUS 50%	BROKEN STOWAGE SHIP TONS
Truck	½-T.Pick-up	15'1"	6'4"	6'9"	95	643	4640	16	119	965	24
	(Top Up)	15'1"	6'4"	7'4"	95	700	4640	17	119	1051	26
	½-T.Emer.Rep.	15'7"	7'7"	6'9"	119	804	5120	20	148	1206	30
Truck, Cmd.	½-T.Radio 4x4	14'10"	6'4"	5'5"	94	511	4770	12	117	767	19
	(Top Up)	14'10"	6'4"	6'11"	94	654	4770	16	117	981	24
Truck	½-T.Wpn.Car.w/w	15'11"	6'4"	5'5"	100	546	4775	13	126	820	20
	(Top Up)	15'11"	6'4"	7'4"	100	740	4775	18	126	1110	27
	½-T.Wpn.Car.wo/w	15'1"	6'4"	5'5"	95	517	4240	12	119	776	19
	(Top Up)	15'1"	6'4"	7'4"	95	700	4240	17	119	1051	26
Truck	3/4 T.Wpn. Carr. w/w	14'8"	6'11"	5'2"	101	529	5550	13	127	793	19
	(Top Up)	14'8"	6'11"	6'10"	101	694	5550	17	127	1042	26
	3/4 T.Wpn.Carr. wo/w	13'11"	6'11"	5'2"	96	501	5250	12	120	752	18
	(Top Up)	13'11"	6'11"	6'10"	96	657	5250	16	120	986	24
Truck	1½-T. 4x4 Cargo w/w	19'3"	7'2"	7'3"	138	1001	8215	25	172	1501	37
	(Top Up)	19'3"	7'2"	8'8"	138	1202	8215	30	172	1803	45
	1½-T.Cargo wo/w	18'8"	7'2"	7'3"	134	972	7545	24	167	1458	36
	(Top Up)	18'8"	7'2"	8'8"	134	1168	7545	29	167	1752	43
Truck	1½-T. Dump w/w	19'2"	7'2"	7'3"	138	995	7830	24	172	1492	37
	(Top Up)	19'2"	7'2"	9'1"	138	1259	7830	31	172	1889	47
	1½-T. Dump wo/w	18'8"	7'2"	7'3"	134	995	7830	24	167	1492	37
	(Top Up)	18'8"	7'2"	9'1"	134	1259	7830	31	167	1889	47
Truck (Ord)	1½-T.Small Arms Rep. 4x4	19'8"	8'0"	9'7"	155	1565	9710	39	194	2347	58
Truck 6x6	2½-Ton Air Compressor	21'4"	7'8"	8'0"	162	1308	13680	32	203	1962	49
Truck	2½-Ton Amphibious	31'0"	8'0"	7'7"	248	1880	13700	47	310	2820	70
Truck (Ord)	2½-T. L.W.B. 6x6	21'3"	8'0"	9'9"	170	2366	11920	59	212	3549	88
Truck (Cargo)	2½-T. L.W.B. 6x6 w/w	22'5"	7'4"	7'4"	164	1138	10920	28	205	1707	42
(Top Up)	(Top Up)	22'5"	7'4"	9'2"	164	1508	10920	37	205	2263	56

Weights and Dimensional Data

VEHICLE	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT	ACTUAL SHIP TONS	SQ.FT. PLUS 25%	CU.FT. PLUS 50%	BROKEN STOWAGE SHIP TONS
Truck (Cargo)	2½-T.L.W.B.6x6 wo/w	21'3"	7'4"	7'4"	156	1134	10215	28	195	1701	42
	(Top Up)	21'3"	7'4"	9'2"	156	1431	10215	35	195	2146	53
	2½-T.S.W.B.6x6 w/w	20'4"	7'4"	7'4"	148	1078	11000	26	185	1617	40
	(Top Up)	20'4"	7'4"	9'2"	148	1360	11000	34	185	2040	51
Truck	2½-T. SWB 6x6 wo/w	19'2"	7'4"	7'4"	140	1022	10040	25	175	1533	38
	(Top Up)	19'2"	7'4"	9'2"	140	1231	10040	30	175	1847	46
	2½-T. Dump 6x6 w/w	19'1"	7'3"	9'8"	137	1321	10620	33	171	1981	49
Truck	2½-T. Wrecker 6x6 w/w	25'10"	7'4"	10'7"	189	2003	11165	50	236	3004	75
Truck	4-Ton Wrecker 6x6 w/w	24'8"	8'0"	9'10"	195	1750	21700	43	244	2187	54
Truck	4-T.Prime Mvr SWB w/w	22'4"	8'0"	8'4"	179	1490	18400	37	224	2235	55
	(Top Up)	22'4"	8'0"	9'10"	179	1760	18400	44	224	2640	66
Truck	10-Ton Wrecker (M-1)	29'0"	8'4"	10'1"	192	1933	27130	48	240	2899	72
Half-Track	M-2	19'7"	6'5"	6'3"	125	786	14200	19	157	1179	29
	(Top Up)	19'7"	6'5"	7'5"	125	920	14200	23	157	1381	34
Hand Cart	2-Wheeled	7'7"	4'3"	4'1"	32	131	100	3	40	197	4
Motorcycle	Solo	7'7"	3'1"	3'4"	23	78	539	1	28	117	2
Trailer	C. P.	24'1"	7'6"	9'1"	187	1640	3450	41	234	2050	51
Trailer	¼-Ton 2-Wheel Cargo	9'0"	4'8"	3'5"	42	140	550	3	52	211	5
Trailer	1-Ton 2-Wheel Cargo	12'1"	5'11"	4'10"	50	140	1300	4	62	210	5
	(Top Up)	12'1"	5'11"	6'1"	50	240	1300	6	62	360	9
Trailer (Van)	½-Ton 2-Wheel P.A.	12'4"	7'4"	7'9"	62	485	2200	12	78	728	18
Trailer	Water, 250-Gallon	11'5"	5'11"	4'10"	68	326	1500	8	85	489	12
Trailer, Athey 6-T, To Top of End & Side. Gates in Place Bows above.		14'6"	7'5"	11'2"	87	972	6300	24	109	1458	36

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Weights and Dimensional Data

VEHICLE	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT	ACTUAL SHIP TONS	SQ.FT. PLUS 25%	CU.FT. PLUS 50%	BROKEN STOWAGE SHIP TONS
Trailer, Athey	To Top of Bed only, w/ End, Side Gates and Bows lashed Top of Bed	14'6"	7'5"	5'3"	87	456	6300	11	109	685	17
Trailer, Athey	To Top of Bed only, w/ End, Side Gates & Bows stowed beneath vehicle or other stowage place	14'6"	7'5"	4'5"	87	390	6300	9	109	585	14
Trailer, Athey	8-Ton	23'5"	8'0"	4'6"	187	843	8000	21	234	1264	31
	20-Ton	25'0"	9'3"	4'3"	225	955	14700	23	281	1432	35
	(Top Up)	25'0"	9'3"	11'0"	225	2475	14700	61	281	3712	92
Tractor, D-4	w/o To Top of Wdn Cab	11'4"	6'9"	7'6"	76	573	11940	14	95	859	21
Tractor,	w/o Cab to Top Back of Seat, Air Cleaner and Exhaust Extension Remvd.	11'4"	6'9"	6'4"	76	484	11940	12	95	726	18
Tractor, D-4	W/Dozer	15'8"	9'9"	8'0"	153	1222	11940	30	191	1833	45
Tractor, D-6	W/W to Top of Cab	15'4"	7'11"	8'4"	121	1007	21150	25	151	1511	37
Tractor, D-6	To Top of Cab (Storm Curtain)	15'4"	7'11"	8'7"	122	1046	21150	26	152	1570	39
Tractor	W/o Cab to Top of Back of Seat, Air Cleaner and Exhaust Extension Remvd.	15'4"	7'11"	6'6"	122	793	21150	19	152	1189	29
Tractor, D-6	WO/W To Top of Cab	13'4"	7'11"	8'4"	105	877	21150	21	131	1316	32
Tractor	To Top of Cab (Storm Curtain)	13'4"	7'11"	8'7"	105	904	21150	22	131	1356	33
Tractor	WO/Cab to Top of Back of Seat, Air Cleaner and Exhaust Extension Remvd.	13'4"	7'11"	6'6"	105	685	21150	17	131	1027	25

UNCLASSIFIED

Weights and Dimensional Data

VEHICLE	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT	ACTUAL SHIP TONS	SQ.FT. PLUS 25%	CU.FT. PLUS 50%	BROKEN STOWAGE SHIP TONS
Tractor, D-6	w/Dozer Rear Winch, Hoist Operated W/Cab w/o Blade Blade 13' wide	17'4"	9'7"	9'2"	166	1520	21150 2050	38	207	2280	57
Tractor, D-6	W/O Cab & Blade, uprite Hoist Frame Remvd. U-frome on Blade 13' wide.	16'4"	9'7"	6'4"	156	990	21150	24	195	1485	37
Tractor, D-6	W/O Cab & Blade, uprite Frame & U-Frame Remvd.	15'4"	7'11"	6'4"	122	772	21150	19	152	1158	28
Tractor, D-6	W/Dozer, w/o Winch, Hydraulic Hoist to Top of Cab w/Dozer(Storm Curtain Type) Blade. 8'2" Wide	14'10"	8'2"	8'7"	121	1038	23740	25	151	1557	38
	w/o Dozer to Top of Cab	13'4"	6'9"	8'7"	89	771	21150	19	112	1157	28
w/o Cab,	W/Dozer Blade Incl.	14'10"	8'2"	6'6"	121	786	23740	19	151	1179	29
Tractor, D-8	W/22" Treads wo/w	15'3"	8'8"	7'6"	131	988	32600	24	164	1483	37
Tractor, D-8	w/22W Tread w/w/&/Dozer	19'0"	11'0"	10'0"	209	2090	41414	52	261	3135	78
Tractor	H - D-7	12'1"	6'9"	7'2"	82	591	16300	14	103	886	22
Tractor	TD-18	15'11"	7'10"	7'10"	124	976	30000	24	156	1464	36
Tractor	D-7 w/angle dozer	20'6"	13'7"	9'5"	278	2622	32903	65	348	3933	98
Tractor	Crane - 1-Ton	22'0"	5'9"	9'2"	125	1138	10796	28	157	1707	42
Tractor	Crane - 6-Ton M-4	13'0"	8'0"	14'8"	104	1520	22750	38	130	2280	57
Tractor	Amphibious	21'0"	9'10"	8'0"	206	1651	20784	41	258	2463	61
T-15	Lt.Cargo Carrier	11'0"	5'0"	5'7"	55	307	3390	7	69	460	11

Weights and Dimensional Data

VEHICLE	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT	ACTUAL SQ.FT. SHIP TONS	SQ.FT. PLUS 25%	CU.FT. PLUS 50%	BROKEN STOWAGE SHIP TONS
Hand Carrier	2 W/Ammo Carrier (Hand Drawn)	5'8"	3'4"	1'11"	18	36	85	1	23	54	1
Tractor	M-1 (IHC-TD-18)	16'	7'10"	7'10"	125	979	30000	24	156	1468	36
Tractor	M-5 (Gasoline)	16'	8'4"	8'8"	132	1150	23000	28	165	1725	43
Tractor	Heavy-M1-D-7	16'2"	8'2"	9'0"	132	1188	30100	29	165	1782	44
Tractor	M-5 (Gasoline) (Windshield down, no canopy)	15'11"	8'4"	6'8"	132	884	23000	22	165	1327	33
O.D.P. Distillation Unit (2 Pkgs) each approx. 5500#		16'9"	6'3"	7'6"	105	787	11070				

CAPACITIES

In the following vehicles, the space figured for cargo is that available when the vehicle is stowed on board ship, and therefore applicable for Combat Loading.

Type	Inside Dimensions	Cu.Ft.	Max. Weight (Pay Load)
2½-Ton LWB, Cargy 6x6	11'9" x 6'6" x 3'1"	241	5000
2½-Ton SWB, Cargy 6x6	9' x 6'6" x 3'1"	180	5000
1½-Ton, Cargo, 4x4	9' x 5'10" x 3'1"	161	3000
1-Ton Trailer	7'11" x 3'9" x 3'5"	101	2000
¼-Ton Trailer	6' x 3'2" x 1'6"	28	500
6-Ton Athey	11' x 6'8" x 3'3"	238	12000
20-Ton Athey	17'11" x 8'8" x 3'	466	40000
2½-Ton Amphibious Truck	12'4" x 6'10" x 2'1"	175	5000
Amphibious Tractor	8'3" x 7'3" x 4'	239	5000
3/4-Ton Weapons Carrier		147	2000
½-Ton Weapons Carrier		102	1500

NOTE: (1) Tarpaulin bows have been removed in case of cargo trucks.

(2) Capacity of Athey Trailers figured to include to top of gates only.

(3) Amphibious 2½-ton truck and amphibious Tractor capacities are figured to top of gunwale.

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WATER PROOFING OF VEHICLES

INTRODUCTION

Vehicles must be water-conditioned for amphibious operations. Even on ideal beaches, where there is a normal rise or fall of tide, hazards of weather, abnormal tides, or the possibility of a boat wave missing the correct beach may result in the landing craft grounding some distance from dry land. This will necessitate movement of the vehicle to shore in water above its safe fording depth, which varies from one foot five inches, (1'5") on up.

In the case of the corrugated beach, channels of deeper water may be encountered just ahead of where the craft grounds. This may involve fording a distance of some 200 or 300 yards, starting at a depth of three (3) or (4) feet of water. Therefore, certain protective measures must be taken to insure that there is no mechanical failure during or after immersion of the vehicle in water. It is not intended that we use the vehicle as a water craft, but that it be sufficiently waterproofed in order that the engine will run, without undue damage, for a short period of time through water of a depth that would stop an ordinary vehicle without such water conditioning.

To successfully water-condition a vehicle, systematic and thorough steps are necessary.

METHODS OF WATER-CONDITIONING VEHICLES

I. ELECTRICAL SYSTEM:

(a) BATTERY: Cover the terminals and cable connections with material provided. Next seal the battery filler plug vents with grease or petroleum jelly. Wooden match sticks in the filler plug vents make a good seal and are easily removed. However, less danger to the battery will result if these vents are sealed with grease, since the internal pressure generated will blow out this type of seal before the danger point is reached.

(b) STARTING MOTOR: A collar of waterproofed putty or caulking seal is worked around the starting motor where it enters the flywheel housing. A sleeve of oil cloth is fitted around the entire motor and is worked into this putty collar. It is then made fast into the putty by a loop of soft wire. The open end of the sleeve is then sealed with putty and pulled up tight with wire. The starter switch and battery cable connections are covered with waterproof putty or caulking material.

(c) IGNITION COIL: The primary and secondary leads are enclosed in soft rubber tubing or are wrapped with rubber tape. An oil cloth sleeve is then fitted around the entire assembly and fastened with putty and wire. The ends are filled with putty and brought up close around the lead wires with wire. This joint is covered with rubber tape.

(d) DISTRIBUTOR: All leads - - primary, secondary, and spark plugs - - are either enclosed in a soft rubber tube or wrapped with tape. This is brought down to the contact and the rubber nipples are placed over the rubber-enclosed wire. Next, a collar of putty is worked around the base of the distributor body. A sheet of rubber is cut to fit over

Water Proofing

(d) DISTRIBUTOR (cont'd.)

the cap and the leads are inserted through this sheet. The rubber is pulled down around the distributor body and made secure with wire. An oil cloth sleeve is then worked into the putty collar and made fast with wire. The open end of the sleeve is filled with putty and brought up close around each lead wire. This joint is sealed with rubber tape.

(e) SPARK PLUGS: The leads from the distributor are either enclosed in rubber tubing or wrapped with rubber tape. A four (4) inch length of garden hose is sealed around each plug into a collar of putty stuck on the block. The leads are then connected and the end of the hose filled with putty and bound with rubber tape.

(f) GENERATOR: The generator is water-conditioned in the same manner as the starting motor.

(g) REGULATOR: All orifices are plugged with putty and the entire assembly is enclosed in oil cloth. The oil cloth is worked around each wire entering the regulator and made water tight with putty and rubber tape.

(h) ELECTRIC HORN: Wrap in oil cloth and bind with copper wire.

II. POWER TRANSMISSION SYSTEMS:

(a) TRANSMISSION, DIFFERENTIALS, AND TRANSFER CASE: All vent or breather-holes must be sealed with waterproof putty.

(b) FRONT AND REAR AXLES: Same as above.

(c) GASKETS AND GREASE RETAINER SEALS: All gaskets and grease-retainer seals should be inspected prior to water-conditioning. Grease retainers on all wheels should be in good condition to prevent entrance of water into wheel bearings. Any questionable seals should be replaced.

III. MISCELLANEOUS:

(a) EXHAUST PIPE: The tail-pipe should be extended to approximately four (4) feet above ground level, either by means of flexible metallic tubing fixed to the end of the tail-pipe, or rubber tubing clamped onto the end of the tail-pipe.

(b) FAN BELT: The fan belt is removed to prevent the fan from throwing water on the motor.

(c) CRANKCASE BREATHER: The breather may be sealed by means of a wooden plug, or putty.

(d) OIL LEVEL BAYONET GAUGE: Remove oil bayonet guage and place in the tool box. Then plug the hole with a wooden plug.

(e) MASTER BRAKE CYLINDER: Stop up the hole or holes in the master brake cylinder filler cap with putty.

(f) FUEL PUMP: Stop up the hole or holes in the base of the fuel pump with putty.

(g) RADIATOR: A ground sheet, shelter half, or some such waterproof material should be clamped under the hood so that it hangs down in front of the radiator, and then loosely secured to the front axle. This will prevent a bow wave from surging back through the radiator and over the motor.

(h) RADIATOR CAP: If the radiator cap is not of the "air seal" type, it may be sealed by working putty under the edge of the cap and around the neck of the filler. Adhesive tape may be used for the same purpose.

(i) The quality of all rubber hose should be checked. It must be virile, and if the quality is questionable, the hose in question should be replaced. All connections should be tight.

(j) The undercarriage and fenders may be coated with oil to prevent future rusting.

III. MISCELLANEOUS: (cont'd)

(k) All chipped paint areas should be painted to prevent formation of rust and scale.

(l) All wiring should be checked for quality and possible "shorting" dangers. The distributor should not be sealed if the vehicle is to remain long in storage before being landed. Prolonged covering causes condensation of moisture inside the distributor body with a "short" resulting.

DRIVER'S INSTRUCTIONS

(a) Since repair facilities probably will not be available for some hours or even days after the vehicles are landed, the responsibility for the continued operation of vehicles falls largely on the drivers. For this reason they must be thoroughly instructed in the care of their vehicles after landing. There are several steps to be taken, which, if not properly and promptly performed by the drivers, may cause the vehicle to cease functioning.

(1) BEFORE LANDING:

(a) Drivers should first be instructed how to handle their vehicles between the landing craft and the beach. The following instructions should be given:

(1) While vehicles are being driven through the water, the use of clutch and brakes should be avoided and the choke SHOULD NOT BE USED.

(2) DO NOT start the motor until the landing craft is a few hundred yards from the beach. Since the fan belt is disconnected, the motor will heat rapidly. Although the motor should be well warmed before leaving the craft, starting the motor too early will cause it to be

overheated when it is needed most to pull the vehicle onto the beach. Drivers should constantly watch the temperature gauge for signs of dangerous overheating.

(3) Just prior to debarking, set the hand throttle at a fast idling speed to reduce the possibility of the motor being killed while driving off the boat. The vehicle should be driven slowly and steadily down the ramp and off into the water. It must be kept moving steadily through the water and NOT ALLOWED to stop.

(2) WHILE LANDING:

(a) Use the lowest gear and all driving wheels (4 or 6 depending on the type of vehicle). Do not shift gears while the vehicle is in the water, as attempting to do so may cause the vehicle to stall, after which it is almost impossible to get it in motion again.

(b) If the water is deep, there may be a slight drop off the end of the ramp. The driver should not be alarmed by this, since the water will have a cushioning effect. He should be able to take his vehicle smoothly off the ramp.

(3) AFTER LANDING:

(a) The driver should next be instructed in the care to be given the vehicle after it is landed. Certain portions of the water-conditioning materials must be removed immediately upon "hitting" the beach to prevent injury to the vehicles, while others may be removed at a later time. The following steps should be taken immediately upon reaching dry ground.

(1) Remove the oil-cloth or other covering from the generator and connect the fan belt. At the same time, remove the radiator cover from the front of the radiator, thus permitting passage of air.

(2) Remove the covering from the distributor cap and body. Continued operation with the covering on the vent holes will cause condensation of moisture and consequently "shorting".

(b) The following steps should be taken from thirty (30) to sixty (60) minutes after landing:

(1) Remove the crankcase breather plug, and seals from the hydraulic brake master cylinder. Incidentally, the brakes will be partially out of action until they dry off. It has been found that light pressure on the brake pedal while the vehicle is in the water will keep the linings dry. If they do become wet, however, a few applications of the brake after coming ashore will rectify this. This should be done at the earliest opportunity and NOT left until the brakes are first needed.

(2) Remove the seals from the vent holes in the battery filler caps.

(c) At the first available opportunity within the next twenty-four (24) hours, the following should be done:

(1) Clear all remaining vent holes- - transmission, transfer case, differentials, axles, etc.

(2) As soon as possible, check the following: water in crankcase, transmission, differentials and axles, and check battery to see if salt water has penetrated.

(3) If the presence of water in the lubricants is suspected, drain and refill with clean oil, but make certain the new oil is available BEFORE emptying old oil.

(d) As soon as possible, and not later than a few days after landing, the waterproofing material should be entirely removed and every detail of the vehicle inspected, cleaned, and greased as necessary. Particular care must be taken to insure that all ventilation holes are clear, and that all electrical gear is dry and free from corrosion.

(e) Preserve as much of the water-conditioning material as possible for future use.

(f) Sea water in contact with ferrous metals forms caustic soda which attacks aluminum very rapidly. Sea water and oil form an emulsion which has a very injurious effect on steel bearings and pistons.

SERVICE ECHELON MAINTENANCE

(a) After motor service facilities have been established, the vehicle should be given a thorough cleaning to prevent corrosive action of the sea water. A 6,000 mile inspection, including a complete change of all lubricants, should be performed.

MATERIALS

(a) Necessary materials for waterproofing vehicles are contained in Kits, Waterproofing,WV-6, Universaal Type.

(b) Each kit contains a manual, TB 700-39, 800-18, 10-1000-28, dated August 28, 1943, which is complete with illustrations and instructions for waterproofing each part on all type vehicles.

(c) Technical advice and assistance in preparing all Task Force vehicles will be furnished by Motor Transport Officers.

SUMMARY

(a) Care must be taken in all steps of water-conditioning.

(b) Drivers must be thoroughly instructed, both in driving through water and sand, and in servicing their individual vehicles.

(c) Vehicles must be carefully serviced once ashore, and given a 6,000 mile inspection as soon as possible.

(d) Patience, care, and practice are required to prepare vehicles successfully for amphibious operations.

WATERPROOFING OF VEHICLES FOR DEEP WATER FORDING

SECTION I

TANKS AND TANK-LIKE VEHICLES

1. Composition of Kits:

a. T-0 kit, fording, tank, "common."

Item	Description	Quantity
Rope	5/16" sash cord	60 ft
Welding electrode	1/8" modified 18-8	5 lb
Tape, non-hygroscopic, adhesive	4" wide, "Utilitape," Industrial Tape Co., New Brunswick, N.J., or "Mystik" Tape, Chicago Show Printing Co. Chicago, Ill.	7 60 rolls per 5 kits
Paint brush	3" or 4" wide	1
Sealing compound	Asphaltic adhesive (Hull) Intercoastal Paint Co., East St.Louis, Ill.	5 gal
Compound, engine sealing	AXS 858, Coroc, CX66, Cook Paint and Varnish Co., Detroit, Michigan, or Eloma No. 31A, Penola Inc., Detroit, Mich.	1 gal
Cloth	36" x 50 ft	1 piece
Grease, asbestos		5 lb

b. LT-3 kit, fording, adapter and stack, light tank, M3A1.

Item	Description	Quantity
Rear adapter	Plain carbon steel	1
Stack	Plain carbon steel	1
Canvas	18x60" with 1" loop on one 18" side	1 piece

c. LT-5 kit, fording, adapter and stack, light tank, M5A1 or 75-mm howitzer motor carriage, M8.

Item	Description	Quantity
Rear adapter	Plain carbon steel	1
Stack	Plain carbon steel	1
Canvas	18x60" with 1" loop on one 18" side	2 pieces

d. MT-S kit, fording, medium tank stack.

Item	Description	Quantity
Stack, D90216	Plain carbon steel	2

e. MT-1 kit, fording, adapter, medium tank, M4A1.

Item	Description	Quantity
Rear adapter	Plain carbon steel	1
Front adapter	Plain carbon steel	1
Rubber turret seal, C152770	Rubber	1

f. MT-2 kit, fording, adapter, medium tank, M4A2.

Item	Description	Quantity
Rear adapter	Plain carbon steel	1
Front adapter	Plain carbon steel	1
Rubber turret seal, C152770	Rubber	1

g. MT-3 kit, fording, adapter, medium tank, M4A3.

Item	Description	Quantity
Rear adapter	Plain carbon steel	1
Front adapter	Plain carbon steel	1
Rubber turret seal, C152770	Rubber	1

h. MT-4 kit, fording, adapter, medium tank, M4A4.

Item	Description	Quantity
Rear adapter	Plain carbon steel	1
Front adapter	Plain carbon steel	1
Rubber turret seal, C152770	Rubber	1

i. SPA-7 kit, fording, adapter and stack, 105-mm howitzer motor carriage.

Item	Description	Quantity
Standard stack	Plain carbon steel	1
Adapter, rear	Plain carbon steel	1
Shield, front hull		1

j. SPA-10 kit, fording, adapter and stack, 3-inch gun motor carriage, M10.

Item	Description	Quantity
Standard stack	Plain carbon steel	1
Adapter, rear	Plain carbon steel	1
Stack and adapter--air intake	Front	1

k. SPA-70 kit, fording, adapter and stack, 76-mm gun motor carriage, T-70.

Item	Description	Quantity
Exhaust stack, D90216	Plain carbon steel	1
Exhaust adapter, E10492	Plain carbon steel	1
Air intake cover, D94180		1
Driver's door stack assembly, D94175		1
Windshield wiper hose	1/8" I.D.x2 ft long	2
Bolts	3/8"x1"	18
Nuts	3/8"	18
Plate washers	3/8"	36

2. Vehicle Kit Requirements.

a. Complete waterproofing of a particular vehicle necessitates the use of two or more kits. The kits required for each vehicle are listed below:

Vehicle	Kits
Light tank, M3A1	T-0 and LT-3
Light tank, M5 or M5A1	T-0 and LT-5
75-mm howitzer motor carriage, M8	T-0 and LT-5
Medium tank, M4A1	T-0, MT-S, and MT-1
Medium tank, M4A2	T-0, MT-S, and MT-2
Medium tank, M4A3	T-0, MT-S, and MT-3
Medium tank, M4A4	T-0, MT-S, and MT-4
105-mm howitzer motor carriage, M7	T-0 and SPA-7
3-in. gun motor carriage, M10	T-0 and SPA-10
76-mm gun motor carriage, T70	T-0 and SPA-10

WATERPROOFING OF VEHICLES FOR DEEP WATER FORDING

SECTION II

WHEELED AND HALF-TRACK VEHICLES

1. Composition of Kits:

a. WV-6 Kit, Fording, Universal 1/4 - 2½-ton.

Item	Description	Quantity
Flexible metal exhaust pipe	2" I.D., 10 ft long with universal flange	1
Universal exhaust flange adapters	(set of 4)	1 set
Universal exhaust flange gaskets	(set of 5)	1 set
Soft iron wire	18 gage	10 ft
Air intake hose	2½" I.D.x3ft long (3-ply radiator hose)	1
Air intake hose top	Sheet metal	1
Hose clamp	For 2½ I.D. hose	1
Air intake hose adapter	To adapt hose to carburetor air horn	1
Ventilating hose	5/8" I.D.x10 ft long	1 piece
Ventilating hose clamps	For 5/8" I.D. hose	3
Air intake vent clamp	2½" hose clamp with 2 connections for 5/8" hose	1
Crankcase vent adapter	Wood with metal connection	1
Bundy tubing	1/8" O.D. x 4" long	1 piece
Windshield wiper hose	1/8" I.D. x 6 ft long	1 piece
Gray insulating enamel	No.4374, Westinghouse Electric Co.	1 pt
Compound, engine sealing	Coroc CX66 Cook Paint and Varnish Co., Detroit, Michigan, or Eloma 31A, Penola, Inc., Detroit, Michigan	1 qt
High temperature cement	To seal flexible exhaust pipe, Prestite Engineering Co., St. Louis, Mo.	6 lb 2 per box of 5 kits
Paint brush	1½" wide	
Tape, non-hygroscopic, adhesive	"Utilitape," AXS871, 2" wide, Industrial Tape Co., New Brunswick, N.J., or "Mystik" tape, Chicago Show Printing Co., Chicago, Ill.	60 yds per box of 5 kits
Grease, asbestos		10 lb
Cloth	18" square	1 piece

b. WV-7 Kit, Fording, Universal 4-10-ton.

Item	Description	Quantity
Soft iron wire	18 gage	10 ft
Air intake hose	2½" I.D. x 3' long (3-ply radiator hose)	1
Hose clamp	For 2½" I.D. hose	1
Air intake hose top	Sheet metal	1
Ventilating hose	5/8" I.D. x 7' long	1
Hose clamp	For 5/8" I.D. vent hose	4
Air intake vent clamp	2⅓" hose clamp with two connections for 5/8" hose	1
Crankcase vent adapter	Wooden plug with metal connection for hose	1
Air compressor vent plate	Metal plate with connection for hose	1
Bundy tubing	1/8" O.D. x 4" long	1
Windshield wiper hose	1/8" I.D. x 6' long	1 piece
Gray insulating enamel	No.4374 Westinghouse Electric Co.	1 pt
Compound, engine sealing	Coroc CX66, Cook Paint and Varnish Co., Detroit, Michigan, or Eloma 31A, Penola, Inc., Detroit, Michigan	1 qt
Paint brush	1½" wide	2 per box of 5 kits
Moistureproof tape	"Utilitape," AXS871, 2" wide, Industrial Tape Co. New Brunswick, N.J.	60 yd roll per box of 5 kits
Grease, asbestos		10 lb

c. HT-1 Kit, Fording, Half-track; Scout Car, M3A1; Light Armored Car, M8.

Item	Description	Quantity
Flexible metal exhaust pipe	2" I.D. x 10' ft long with flange	1 piece
Exhaust flange adapter	For half-track and scout car (set of 2)	1 set
Exhaust flange gaskets	Exhaust flange to manifold gaskets (set of 3)	1 set
Air intake hose	8' long, one end 2 3/4" I.D., one end 3" I.D., wire-reinforced non-collapsible hose	1 piece
Wire	Soft iron - 16 or 18 gage	10 ft
Vent hose	5/8" I.D. x 15/16" O.D. x 7" long	1 piece

Item	Description	Quantity
Clamps	For vent hose, 5/8" I.D.	4
Air intake vent clamp	2 3/4" hose clamp with two connections for 5/8" I.D. hose	1
Crankcase vent adapter	Wooden plug with metal connections for hose	1
Bundy tubing	1/8" O.D. x 4" long	1
Windshield wiper hose	1/8" I.D. x 6' long	1
Gray insulating enamel	No.4374 Westinghouse Electric Co.	3 qts for 5 kits
Grease, asbestos		10 lb
Compound, engine sealing	Coroc, CX66, Cook Paint and Varnish Co., Detroit, Michigan, or Eloma 31A, Penola Inc., Detroit, Michigan.	1 qt
High temperature cement	To seal flexible exhaust pipe, Prestite Engineering Co., St. Louis, Mo.	2 gals per 5 kits
Paint brush	1½" wide	2 per 5 kits
Tape, non-hygroscopic, adhesive	"Utilitape," AXS-871, 2" wide, Industrial Tape Co., New Brunswick, N.J. or "Mystik" tape, Chicago Show Printing Co. Chicago, Ill.	60 yd per box of 5 kits

2. Vehicle Kit Requirements:

a. The WV-6 Kit contains all necessary materials to waterproof any vehicle of 1/4-ton to and including 2 1/2-ton capacity.

b. The WV-7 Kit has all materials to waterproof those vehicles from 4-ton to 10-ton capacity.

c. The HT-1 Kit contains all material to waterproof half-track vehicles manufactured by White, Autocar, and Diamond T, scout car, M3A1, and light armored car, M8.

Item	Description	Quantity
*Crancase breather seal	Special washer (ord. dwg. no. A-7041251) and gasket (ord. dwg. no. A-7041250) used with standard hex-head cap screw 3/8", 1 6/8" long.	1 ea
*Crankcase vent adapter clamps	Ord. dwg. no. A-704-1253.	3 ea
Wooden plugs	Ord. dwg. no. A-704-1252.	4 ea
*Metal plugs	Ord. dwg. no. A-704-1255.	4 ea
Waterproof paper, gasket material, Spec HH-P-96	Sheet 6" x 6"., 1/32" thick	1 sheet

*These items are not used on Allis-Chalmers, HD-7W Tractor, Return to stock.

**Used only on tractors equipped with air compressors.

2. Tractor Kit Requirements:

a. The kit contains all necessary materials to waterproof the following tractors:

Caterpillar, D4, D6, and D7.
International Harvester Co., TD-9, TD-14, and TD-18.
Allis-Chalmers, HD-7W.

WATERPROOFING OF WEAPONS FOR DEEP WATER FORDING

SECTION I

SMALL ARMS

1. General:

The following instructions are designed to protect small arms against complete immersion during deep water fording operations or surf landings, and still permit immediate use of the material after landing. They will serve as a general guide for supplementing supervision of actual waterproofing by trained personnel.

2. Materials:

a. The materials for the preparation of small arms for deep water fording are listed below.

Cover, waterproof, small arms (film type) (Specification No. P.Q.D. No. 377):

Type 1. Cover, waterproof, pistol.
Type 2. Cover, waterproof, rifle.
Type 3. Cover, waterproof, submachine gun.
Type 4. Cover, waterproof, machine gun.

Tape, adhesive, non-hygroscopic, 2-inch (same type as used on tanks for overseas shipment).

Oil, lubricating, preservative, medium (landing operations).

Grease, asbestos.

Grease, water pump, U. S. Army 2-109, may be used as a substitute for grease, asbestos.

3. Waterproofing Instructions:

a. Before operations are started, the weapon should be properly lubricated, placed in the waterproof cover, and securely tied.

b. The muzzle of each mortar should be sealed with non-hygroscopic adhesive tape, and further protected by an application of asbestos grease along the seams of the tape. Gears and working parts of elevating and traversing mechanisms should be lubricated with medium preservative lubricating oil (landing operations). Exposed surfaces of ring joints, sleeve joints, and other possible points of entry of water should be protected by applying asbestos grease. Work the grease well up against all points of the surfaces being covered so as to fill in all cracks, seams, holes and crevices. Be sure that it is smoothed down well and adheres at the edges.

c. Machine gun mounts should be handled in the same manner as mortar mounts--the objective being to prevent the entry of water by using the asbestos grease.

d. For any other type of small arms material not covered by these specific instructions, medium preservative lubricating oil (landing operations) should be used.

e. As soon as possible after landing operations are completed, the waterproofing material should be removed. Parts subjected to salt water should be washed with fresh water, throughly dried, cleaned, and properly lubricated as described in the pertinent technical manuals.

WATERPROOFING OF WEAPONS FOR DEEP WATER FORDING

SECTION II

ARTILLERY

1. General:

The succeeding paragraphs in this section contain general instructions that are applicable to all types of artillery. The instructions are designed to protect artillery against complete immersion during deep water fording operations or surf landings and still permit immediate use of the materiel after landing. They will serve as a general guide for supplementing supervision of actual waterproofing by trained personnel. Only the significant points are covered in the detailed instructions. Necessity for extreme care in all steps cannot be overemphasized. Every seam, joint, or opening must be completely sealed. When waterproofing is completed, the materiel should be carefully inspected to make sure all openings and parts have been properly treated.

a. Service Prior To Waterproofing:

(1) Clean gun (or howitzer) and carriage thoroughly.

(2) Lubricate all points ordinarily lubricated daily, weekly, and monthly in accordance with pertinent War Department Lubrication Guide. Lubricate points ordinarily lubricated every 6 months if they have not been done recently.

(3) Apply medium preservative lubricating oil to the bore of the tube and breech mechanism. In the case of the 40-mm gun, apply the oil to the casing and automatic load assemblies.

(4) Tighten bolts and nuts in all covers or openings such as oil gears transmission cases, electrical fixture boxes, etc.

(5) Remove all oil and grease from points to which waterproofing compound or materials are to be applied.

(6) Put materiel in traveling position.

b. Materials:

The materials for the preparation of artillery for deep water fording are listed below.

Item	Substitute	Specification	Source
Grease, asbestos			Ord.
	1. Grease water pump	USA 2-109	Q.M.C.
Cement (Bostik 692)			British
Cement (Bostik 292)			Ord.
Cover, protective, individual (gas cape)			Q.M.C.

Item	Substitute	Specification	Source
	1. Cotton, oiled 2. Vinylite		British Ord.
Tape, adhesive, non-hygroscopic "Utilitape" 6" wide, 4" wide		AXS-871	Ord.
Solvent, dry-cleaning		Fed.P-S-661a	Ord.
Oakum	1. Burlap 2. Rope		Ord.
Oil, lubricating, preservative, medium.		AXS-674	Ord.
Grease, O.D., No. 0		AXS-781	Ord.

c. Use of Materials:

(1) Grease, asbestos, is used to fill all cracks and joints, and to cover over rivets, bolts, and taped surfaces. It is used on breechblocks, elevating and traversing mechanisms, axles, and trails. NOTE: Grease should never be applied to fire control instruments.

(2) Cover, protective, individual (gas cape), is cut to proper size for covering on-carriage sighting equipment as specified in detailed instruction.

(3) Cement (Bostik), is used to seal waterproof sheets and cement them to metal surfaces.

(4) Oil, lubricating, preservative, medium, is used for lubricating breech mechanisms and gun bores.

(5) Be sure that all parts to which asbestos grease, Bostik cement, or tape is to be applied are thoroughly clean and dry. This is necessary to secure adhesion and to prevent water from working around or under the waterproofing materials.

(6) When applying asbestos grease, work it well up against all points of the surface being covered so as to fill in all cracks, seams, holes and crevices. Be sure that it is smoothed down well and adheres at the edges.

(7) When applying waterproof sheet, put cement on both the metal and the edge of the cloth to be sealed down, and press firmly in place. Seal all edges carefully, giving particular attention to the folds of cloth, as water can easily enter through hidden openings in a fold.

(8) Make doubly sure that all electrical equipment is perfectly sealed as instructed.

(9) Unless otherwise noted, all instructions using the term:

"Seal," refer to asbestos grease.

"Cement," refer to Bostik.

"Waterproof sheet," refer to gas cape or alternate waterproof covering.

Date 1 September, 1944.

CLASS III REQUIREMENTS

List of Approved Class III Requirements.

Basic Chart for Computing Class III Requirements.

APPROVED CLASS III REQUIREMENTS

	Item		Symbol	USA Specification	NSD Stock No. Pearl	Units of Issue
1	AvGas	100 Octane			(L) 7-G-165	53 Gal Drum
2	AvGas	100 Octane				5 Gal Can
3	MoGas	80 Octane		2-103A	(L) 7-G-253	53 Gal Drum
4	MoGas	80 Octane				5 Gal Can
5	White Gas				(L) 7-G-255	53 Gal Drum
6	White Gas					5 Gal Can
7	Kerosene				14-K-245	53 Gal Drum
8	Kerosene				14-K-235	5 Gal Can
9	Diesel Oil	50 Cetane			(L) 7-0-145-10	53 Gal Drum
10	Diesel Oil	50 Cetane				5 Gal Can
11	Luboil	SAE 10	9110	2-104B	14-0-2190-5	53 Gal Drum
12	Luboil	SAE 10	9110			5 Gal Can
13	Luboil	SAE 30	9250	2-104B	14-0-2190	53 Gal Drum
14	Luboil	SAE 30	9250		14-0-2195	5 Gal Can
15	Luboil	SAE 50	9500	2-104B	14-0-2190-10	53 Gal Drum
16	Luboil	SAE 50	9500			5 Gal Can
17	AvLube	SAE 50	1100		14-0-2582-14	53 Gal Drum
18	AvLube	SAE 60	1120		14-0-2583-8	53 Gal Drum
19	AvLube	SAE 70	1150		14-0-2583-14	53 Gal Drum
20	Grease GP #1		2107	2-107	14-G-1177-25	35 Lb Can
21	Grease GP #1		2107		14-G-1177-110	110 Lb Drum
22	Grease GP #2		2108	2-108	14-G-1305-25	35 Lb Can
23	Grease GP #4 WP		2109		14-G-1384-5	5 Lb Can
24	Grease GP #4 WP		2109		14-G-1384-25	35 Lb Can
25	Grease WB-HD		2110	2-110	14-G-1425-25	35 Lb Can
26	Gearlube Universal	SAE 90		Fed VV-L-761	14-L-188-15	110 Lb Drum
27	Gearlube Universal	SAE 90			14-L-188-30	225 Lb Drum

BASIC CHART FOR COMPUTING CLASS III REQUIREMENTS

1. Symbols.

a. Symbols used in column 3 of Chart.

MG	MoGas	D	Diesel Fuel
AG	AvGas	K	Kerosene
WG	White Gas		

2. Luboil.

a. 3% of total gallons of AvGas and MoGas.
b. 3.5% of total gallons of Diesel fuel.
c. Luboil to be supplied in the following percentages.

1.	5%	SAE 10	9110
2.	70%	SAE 30	9250
3.	25%	SAE 50	9500

3. AvLube.

a. 4% of total gallons of AvGas.

4. Gearlube, SAE 90.

a. 4% of total gallons of AvGas and MoGas.
b. 4% of total gallons of Diesel fuel.

5. Kerosene.

a. .5% of total gallons of MoGas and Diesel fuel.

6. White Gasoline.

a. 2.5 Gal. per man per month, provided number of using units not available.
b. Number of units known, use amounts shown in Chart.

7. Hydraulic Brake Fluid (HB).

a. .5 Gal. per each 1000 gallons of AvGas, MoGas and Diesel fuel.

8. Greases.

a. General Purpose #1	1.0% of total Gals. AvGas & MoGas	3.0% of total Gals. Diesel fuel
b. General Purpose #2	.5% of total Gals. AvGas & MoGas	1.0% of total Gals. Diesel fuel
c. General Purpose #4	.1% of total Gals. AvGas & MoGas	.1% of total Gals. Diesel fuel
d. Wheel Bearing HD	.2% of total Gals. AvGas & MoGas	.2% of total Gals. Diesel fuel
e. Graphite	50 Lbs. per each 100,000 Gals. AvGas, MoGas and Diesel fuel.	

9. Note.

a. Amphibious trucks will require 2 times the quantity of GP #1 grease and wheel bearing HD grease as required for standard vehicles.

b. Radial engines, transmissions and differentials in LVT's require SAE 50 luboil.

c. Figures arrived at in paragraphs 4 and 8 in determining percentages of gearlube and greases are in pounds - not gallons.

BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES

1	2 Item	3 Type Fuel	4 Est Gals Per Hour Combat	5 Est Gals Per Hour Garrison	6 Est Hrs Per Day Combat	7 Est Hrs Per Day Garrison	8 Est Gals Per Day Combat	9 Est Gals Per Day Garrison	10 Est Gals 30-Days Combat	11 Est Gals 30-Days Garrison
1	Motorcycle	MG		.5		4		2		60
	Ambulance:									
2	¼-ton, 4x4	MG	1	1	10	1	10	1		30
3	½-ton, 4x4	MG	1.5	1.5	10	1	15	1.5		45
4	Car, passenger, 4x2	MG		1.5		3		4.5		135
5	Station Wagon, 4x2	MG		1.5		3		4.5		135
6	Station Wagon, 4x4	MG	2	2		4		8		240
	Carrier:									
7	Light Cargo, M28 (T-15)	MG	3	2.5	12	4	36	10		300
8	Light Cargo, M29C (Amphibian)	MG	4	2.5	12	2	48	5		150
9	Personnel, Half-Track, M2, M3, & M5	MG	6		10		60			
	Trucks, Amphibian:									
10	¼-ton, 4x4 (JEEP)	MG	3		12		36			
11	2½-ton, 6x6 (DUKW)	MG	8	4	12	4	96	16		480
	Truck:									
12	¼-ton, 4x4	MG	1.5	1	10	4	15	4		120
13	¼-ton, 4x4, radio equipped	MG	1.5	1	14	1	21	1		30
14	½-ton, 4x2, pick-up	MG		1		4		4		120
15	3/4-ton, 4x4, weapons carrier	MG	2	2	10	5	20	10		300
16	1-ton, 4x4 (All Types)	MG	2	2	10	4	20	8		240
17	1½-ton, 4x4, panel, radio equip. (K-51)(f/SCR-299)	MG	2	2	7		14			
18	1½-ton, 4x4, Army K-54	MG	2.5	2.5	10	4	25	10		300
19	2½-ton, 4x4, prime mover	MG	4	4	4	1	16	4		120
20	2½-ton, 6x6, cargo, w/winch	MG	3	3	8	4	24	12		360
21	2½-ton, 6x6, searchlight	MG	3	3	8	4	24	12		360
22	2½-ton, 6x6, van, Army K-60	MG	3	3	4	2	12	6		180
23	2½-ton, 6x6, van, radio, Army K-53	MG	3	3	4	2	12	6		180
24	2½-ton, 6x6, artillery repair, M9A1, w/load	MG						5		150
25	2½-ton, 6x6, automotive repair, M8A1, w/load A	MG						5		150
26	2½-ton, 6x6, electric repair, M18A1, w/load	MG						5		150

BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2	3	4	5	6	7	8	9	10	11
	Item	Type Fuel	Est Gals Per Hour		Est Hrs Per Day		Est Gals Per Day		Est Gals 30-Days	
			Combat	Garrison	Combat	Garrison	Combat	Garrison	Combat	Garrison
	Truck (Cont'd):									
27	2½-ton, 6x6, instrument bench, M23A1, w/load	MG						5		150
28	2½-ton, 6x6, instrument repair, M10A1, w/load A	MG						5		150
29	2½-ton, 6x6, machine shop, M16A1, w/load A	MG	3		3		9	6		180
30	2½-ton, 6x6, small arms repair, M7A1, w/load	MG						5		150
31	2½-ton, 6x6, welding, M12A1, w/load	MG	3		3		9	6		180
32	2½-ton, 6x6, dump	MG	3	3	10	8	30	24		720
33	3-ton, 6x4, cargo, K8F	MG		3		6		18		540
34	4-ton, 4x4, Army K-32, prime mover	MG	4	4	6	2	24	8		240
35	5-6-ton, 4x4, van, Army K-31-A	MG	4	4		1		4		120
36	5-6-ton, 4x4, Army K-62	MG	4	4		1		4		120
37	6-ton, 6x6, van, communication, Army K-56	MG	4	4		2		8		240
38	10-ton, 4x2, low bed, stake body	MG		3		5		15		450
39	10-ton, 6x6, heavy wrecker, M1	MG		5		2		10		300
40	4x2, fire, 500 gallon	MG		2.5		1		2.5		75
41	3-4-ton, warehousing, finger-lift	MG		.5		8		4		120
42	7½-ton, warehousing, finger-lift	MG		.75		8		6		180
43	Tractor, K-10	MG		3		6		18		540
44	Tractor, f/tank recovery vehicle	D	5	5	6	1	30	5		150
45	Tractor, wrecking, 7½-ton	MG	5	5	12	2	60	10		300
46	Radar, Spec. White & Autocar	MG	6	6	3	1	18	6		180
47	6-ton, Hyster crane	MG		.75		8		6		180
48	w/crane, 10-ton	D	3	3	12	3	36	9		270
49										
50										
	Tractor:									
51	Crawler type, w/dozer & winch, airborne	MG	1.5	1.5	6	4	9	6		180
52	Rubber tired, w/hyd, operated 1½ yd. scraper	MG		2		8		16		480
53	Medium, w/rubber tire, general purpose, w/brush cutter	MG		2.5		8		20		600
54	T-9 International	MG		3		8		24		720
55	TD-9 International	D	3	3	12	8	36	24		720
56	TD-14 International	D	4	4	12	8	48	32		960
57	TD-18 International	D	5	5	12	8	60	40		1200

BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2	3	4	5	6	7	8	9	10	11
	Item	Type Fuel	Est Gals Per Hour		Est Hrs Per Day		Est Gals Per Day		Est Gals 30-Days	
			Combat	Garrison	Combat	Garrison	Combat	Garrison	Combat	Garrison
	Tractor (Cont'd):									
58	HD-7 Allis Chalmers	D	3	3	12	8	36	24		720
59	HD-10 Allis Chalmers	D	4.5	4.5	12	8	54	36		1080
60	HD-14 Allis Chalmers	D	6	6	12	8	72	48		1440
61	R-4 Caterpillar	MG	3.5	3.5	12	8	42	28		840
62	D-4 Caterpillar	D	2	2	12	8	24	16		480
63	D-6 Caterpillar	D	4	4	12	8	48	32		960
64	D-7 Caterpillar	D	4.5	4.5	12	8	54	36		1080
65	High speed, 18-ton, M4	MG	15		3		45			
66	High speed, 13-ton, M5	MG	10		3		30			
67	High speed, 38-ton, M6	MG	15		3		45			
68										
69										
	Tank:									
70	Light	MG	5		14		70			
71	Medium	D	8		14		112			
72	Medium (Army)	MG	10		14		140			
73										
	LVT:									
74	M-K II (Unarmored)	MG-AG	10		16		160			
75	M-K II (Armored)	MG-AG	10		16		160			
76	M-K I (Armored)	MG-AG	10		16		160			
77										
	Trailer:									
78	1-ton, 2-wheel, greasing	MG	.5	.5	4	8	2	4		120
79	1-ton, 2-wheel, high pressure cleaning unit	MG		.5		10		5		150
80	1-ton, 2-wheel, welding combination	MG	2	2	6	5	12	10		300
81	3-ton, 2-wheel, sterilizer shower	D		1		8		8		240
82	3-ton, water purification	WG	1	1	24	24	24	24		720
83	4-ton, 4-wheel, shoe and textile repair	MG		1.5		8		12		360
84	5-ton, 4-wheel, machine shop	MG	1	1	4	8	4	8		240
85	6-ton, 2-wheel, van type laundry	MG		4		16		64		1920
		D		6		16		96		2880

BASIC CHART FOR COMPUTING CLASS II SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2	3	4	5	6	7	8	9	10	11
	Item	Type Fuel	Est Gals Per Hour		Est Hrs Per Day		Est Gals Per Day		Est Gals 30-Days	
			Combat	Garrison	Combat	Garrison	Combat	Garrison	Combat	Garrison
	Trailer (Cont'd):									
86	2-wheel, Chrysler, fire fighting	MG		1		2		2		60
87	Oil refiner	MG								
88	4-wheel, welder, electric	MG	1.5	1.5	4	6	6	9		270
89										
90										
	Distillers, Water:									
91	1500 Gal. per day (Badger)	WG	1	1	24	24	24	24		720
92	2000 Gal. per day (Cleaver Brooks)	WG	1	1	24	24	24	24		720
		D	3	3	24	24	72	72		2160
93	10,000 Gal. per day	WG		1.75		24		42		1260
		D		10		24		240		7200
94										
	Pumps:									
95	3", Centrifugal	MG		1		5		5		150
96	3", Double diaphragm	MG		1		5		5		150
97	4", Centrifugal	MG		2		5		10		300
98	Set, centrifugal, 55 GPM, gasoline driven	MG		.5		5		2.5		75
99										
	Power Units - Generator Units:									
100	1 KVA, CDO-73004A, f/TBW	WG	.25	.25	12	12	3	3		90
101	1.5 KVA, 1E21	WG	.5	.5	12	12	6	6		180
102	2 KVA, PE-173, f/SCR-602	WG	.75	.75	8	12	6	9		270
103	2.5 KVA, PE-75, f/SCR-624	WG	.75	.75	15	8	11.25	6		180
104	2.5 KVA, generator unit, 110V-60cy, portable	MG	.75	.75	12	12	9	9		270
105	3 KVA, generator unit, (Army) WG	MK	1	1	10	10	10	10		300
106	4 KVA, OFA, f/SO-7M	WG	1	1	12	12	12	12		360
107	5 KW, generator unit, (Army) WG	MK	1.2	1.2		10		12		360
108	7.5 KVA, Continental, f/MK-16	WG	2	2	12	12	24	24		720
109	7.5 KVA, PE-99, f/TC-2	WG	2	2	24	24	48	48		1440
110	9.4 KVA, generator unit, 110V-60cy, trailer mtd. WG	MK	2	2	10	10	20	20		360
111	10 KVA, PE-95G, f/SCR-299	WG	2	2	24	24	48	48		1440
112	15 KW, generator unit, (Army) WG	MK	2.5	2.5	10	8	25	20		600

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BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2 Item	3 Type Fuel	4 Est Gals Per Hour Combat	5 Est Gals Per Hour Garrison	6 Est Hrs Per Day Combat	7 Est Hrs Per Day Garrison	8 Est Gals Per Day Combat	9 Est Gals Per Day Garrison	10 Est Gals 30 Days Combat	11 Est Gals 30 Days Garrison
	Power Units - Generator Units (Cont'd):									
113	15 KW, generator unit, (Army)	D	2.75	2.75	10	8	27.5	22		660
114	16.5 KVA, generator unit, f/searchlight	WG	2	2	4	2	8	4		120
115	25 KVA, PE-74, f/SCR-270	WG	3	3	24	24	72	72		2160
116	25 KVA, PE-84, f/SCR-268	WG	3	3	24	12	72	36		1080
117	25 KVA, PE-137A, f/SCR-527	WG	3	3	24	12	72	36		1080
118	30 KVA, M7, f/SCR-584	WG	3	3	15	15	45	45		2700
119	30 KVA, M7, f/90mm AA guns (1 per 4 guns)	WG	3	3	8	2	24	6		360
120	30 KW, generator unit, 120V-60cy, trailer mtd.	D	4	4		12		48		1440
121	50 KW - 60 KW, generator unit, (Army)	D								
122	100 KW, generator unit, (Army)	D								
123	3 KVA, M5, f/40mm AA guns (1 per gun)	WG	1	1	10	4	10	4		120
124										
125										
	Compressor, Air:									
126	Portable	MG	.4	.4	4	8	1.6	3.2		96
127	60 cu.ft. capacity, trailer mounted	MG	1	1	10	8	10	8		240
128	105 cu.ft. capacity, trailer mounted	MG	2.5	2.5	5	8	12.5	20		600
129	210 cu.ft. capacity, trailer mounted	MG-D	3	3	5	8	15	24		720
130										
131										
	Range, field, M-37 (Diesel or WG):									
132	1-Unit	WG						3		90
133	1-Unit	D						3		90
134										
135										
	Miscellaneous:									
136	Asphalt plant, 24-ton									
137	w/dryer	MG		3		8		24		720
138	w/burner	D		1.5		8		12		360
139	w/mixer, pugmill	MG		3		8		24		720
140	w/stabilizer, soil	MG		3		8		24		720

BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2	3	4	5	6	7	8	9	10	11
	Item	Type Fuel	Est Gals Per Hour		Est Hrs Per Day		Est Gals Per Day		Est Gals 30-Days	
			Combat	Garrison	Combat	Garrison	Combat	Garrison	Combat	Garrison
	Miscellaneous (Cont'd):									
141	Asphalt plant, 100-ton									
142	w/conveyor	MG		2		8		16		480
143	w/dryer	MG		6		8		48		1440
144	w/burner	D		2		8		16		480
145	w/finisher	MG		2		8		16		480
146	w/heater, 3 car	MG		.5		8		4		120
147	w/burner	D		15		8		120		3600
148	w/loader	MG		5		8		40		1200
149	w/mixer, asphalt	D		6		8		48		1440
150	w/pump, asphalt	MG		3		8		24		720
151	Charger, battery, portable	MG		.5		8		4		120
152	Cleaning unit, (Army)	K		2.5		8		20		600
153	Crane, truck mounted									
154	3/8 yd.	MG	3	3	15	12	45	36		1080
155	3/4 yd. 10-15-ton	D	3	3	15	12	45	36		1080
156	3/4 yd. 20-ton	MG	3.5	3.5	15	12	52.5	42		1260
157	Crushing and Screening plant									
158	7 cu.yd. per hr.	MG	2.5	2.5	10	5	25	12.5		375
159	50 TPH (2 unit)	D								
160	25 cu.yd. per hr. (2 unit)	MG	5	5	10	5	50	25		750
161	100 TPH (5 unit)	MG								
162	150 TPH (9 unit)	D								
163	150 TPH (9 unit)	MG	74	74	10	5	740	370		11100
164	Derrick, stiffleg, 30-ton	MG	2.5	2.5	10	6	25	15		450
165	Distributor, Bituminous	MG	3	3	12	2	36	6		180
166	Burner	D	5	5	12	2	60	10		300
167	Burner	MG	1	1	12	2	12	2		60
168	Ditching Machine									
169	8 ft.	MG	6	6	12	5	72	30		900
170	5 ft.	MG	4	4	12	5	48	20		600
171	Trencher	MG	2	2	12	5	24	10		300
172	Earth auger, self powered & propelled, 4-wheel	MG	2	2	12	6	24	12		360

UNCLASSIFIED

BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2	3	4	5	6	7	8	9	10	11
	Item	Type Fuel	Est Gals Per Hour		Est Hrs Per Day		Est Gals Per Day		Est Gals 30-Days	
			Combat	Garrison	Combat	Garrison	Combat	Garrison	Combat	Garrison
	Miscellaneous (Cont'd):									
173	Flame thrower, portable	D					5			
174	Flame thrower, (tank installation)	D					135			
175	Floodlight units	MG	1.2	1.2	10	4	12	4.8		144
176	Graders									
177	Diesel	D	3	3	15	8	45	24		720
178	Gasoline	MG	2.5	2.5	15	8	37.5	20		600
179	Hammer, gasoline, portable	MG						3		90
180	Kettles, Asphalt									
181	Burner	MG		2.5		8		20		600
182	Kitchen (Army)	MG						15		450
183	Lantern, gasoline	MG						.25		7.5
184	Lantern, kerosene	K						.2		6
185	Mixers, concrete									
186	7 cu.ft.	MG	1	1	14	5	14	5		150
187	14 cu.ft.	MG	2	2	14	5	28	10		300
188	34 cu.ft.	MG	5	5	14	5	70	25		750
189	rotary tiller	MG	2	2	14	5	28	10		300
190	Motor, outboard, 5 H.P.	MG		.5		2		1		30
191	Portable shops, Comp. air (Diesel)	D	3	3	10	5	30	15		450
192	Refrigerator, walk-in-type, 600 cu.ft.	MG		1.5		15		22.5		675
193	Regrigerator, 8 cu.ft.	K		.4		15		6		180
194	Rig, well, self powered, 4-wheel	MG	2.5	2.5	12	10	30	25		750
195	Roller, road									
196	2½-ton	MG		.75		4		3		90
197	5-10-ton	MG	2.5	2.5	12	4	30	10		300
198	10-15-ton	MG	3	3	12	4	36	12		360
199	Sawmill, portable	MG	2	2		10		20		600
200	Saw, tilting table	MG	.5	.5		5		2.5		75
201	Scrapers, mtd.	D	4	4	14	6	56	24		720
202	Shovel, crawler mtd.									
203	3/8 yd.	MG	2	2	15	8	30	16		480
204	1/2 yd. - 3/4 yd.	MG	2.5	2.5	15	8	37.5	20		600
205	1 yd. - 2 yd.	D	3	3	15	8	45	24		720

BASIC CHART FOR COMPUTING CLASS III SUPPLIES
MARINE COMBAT AND GARRISON FORCES
(Cont'd)

1	2	3	4	5	6	7	8	9	10	11
	Item	Type Fuel	Est Gals Per Hour		Est Hrs Per Day		Est Gals Per Day		Est Gals 30-Days	
			Combat	Garrison	Combat	Garrison	Combat	Garrison	Combat	Garrison
	Miscellaneous (Cont'd):									
206	Sprayer, paint, portable	MG		.25		4		1		30
207	Sweeper, rotary	MG		3		5		15		450
208	Tournapull	D	5	5	10	4	50	20		600
209	Water heater	MG						4		120
210	Water purification unit, portable, 15 GPM	MG	.5	.5	24	24	12	12		360
211	**Liaison Planes** 73 Octane	AG					20			
212										
213										
214										
215										
216										
217										
218										
219										
220										
221										
222										
223										
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231										
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234										
235										
236										

AVERAGE ROUNDS AMMUNITION EXPENDITURE PER WEAPON PER DAY OF OPERATION

WEAPON	CINCPOA UNIT OF FIRE	7thInfDiv Marshall Islands (5 days)	165th RCT Makin Island (3 days)	2d Marine Division Tarawa (3 days)	7thInfDiv Attu	1stMarDiv Cape Gloucester (26 days)
Carbine, Cal. 30	45	36.8	55	45	6	16
Rifle, Cal..30	100	73	87	43	11-'03 5-M1	52
BAR, Cal..30	500	325	521	215	23	--
BMG, Cal..30	1500	1162	1154	1187	1008	923
Pistol, Cal..45	14	Negligible	Negligible	Negligible	--	--
SMG, Cal..45	200	121	55	Negligible	138	--
MG, Cal..50	600	420	139	400	122	173
60MM Mortar	100	67	61	49	19	19
(HE	97%	96%	100%	100%	—	—
(Illuminating	3%	4%	0%	0%	—	—
81MM Mortar	100	75	64	89	26	38
(HE Light	70%	54%	27%	0%	—	—
(HE Heavy	20%	28%	73%	94%	—	—
(WP Smoke	10%	18%	0%	6%	—	—
37MM Gun AT or Tank	100	49	39	20	21	19
(AP	85%	23%	—	—	—	—
(HE	10%	64%	—	—	—	—
(Cannister	5%	13%	—	—	—	—
37MM Gun AA	270	—	457	—	—	—
(AP	10%		—			
(HE	90%		—			
75MM Gun, SP or Tank.	100	29	43	425	—	5
(AP	50%	42%	50%	--		-
(HE	40%	55%	30%	100%		-
(WP	10%	5%	20%	—		-
75MM HOW Field & Pack	300	151	216	—	82	59
(HE w/M48 Fuze	150	47%	69%		—	—
(HE w/M54 Fuze	105	37%	30%		—	—
(HE - AT	15	7%	0%		--	—
(WP	30	9%	1%		—	—

AVERAGE ROUNDS AMMUNITION EXPENDITURE PER WEAPON PER DAY OF OPERATION - (Cont'd)

WEAPON	CINCPOA UNIT OF FIRE	7thInfDiv Marshall Islands (5 days)	165th RCT Makin Island (3 days)	2d Marine Division Tarawa (3 days)	7thInfDiv Attu	1stMarDiv Cape Gloucester (26 days)
105MM Howitzer Field & SP *		305	239	0	69	3
(HE AT		0%	0%		—	-
(HE w/M48 Fuze		45%	---		—	-
(HE w/M54 Fuze		42%	---		—	-
(WP Smoke		13%	---		—	-
Howitzer, 155mm Field M1	150	107	-	-	-	10
(HE w/MM47 or 51	70%	36%				—
(HE w/M55 or 67	20%	64%				—
(WP	10%	0%				—
Gun, 3" AT, Wheeled & SP	50	37	-	-	-	-
(AP	37.5	32				
(HE	12.5	5				
Launcher, 2.36" Rocket, AT (Bazooka).	6 Rockets	1	2	-	-	-
Pistol, Pyrotechnic or Very	10 Ass'td	4	-	Negligible	2	-
Launcher Rifle Grenades, AT	2 M9A1 Grenades	2	Negligible	10	-	-

* The CINCPOA UNIT OF FIRE has a different U/F for the 105MM How Fields than the 105MM SP, but because these were reported together they are also listed together on this comparison.

SPECIFICATIONS ESTABLISHED FOR LOADING SLED

1. Weight. The cargo sled was designed to handle a minimum load of 3,000 pounds. However, it was found that the sled could be handled better with a lighter load and 2,000 pounds was adopted as the most desirable weight. In loading sleds, with more than one type of material making up the load, it is important that the weight distribution be as symmetrical as possible to facilitate handling.

2. Heights of load. From the Transport Quartermaster's point of view, all the sleds should have the same height so that the cargo in the ships holds can be floored over when necessary. Because of the variety of materials palletized, this was not possible without using large amounts of dunnage and wasting shipping space. However, it was specified that the loaded sled should not exceed 40 inches from the bottom of the runner to the top of the load. This permitted the load itself to be 32 inches in height. It was desirable to limit the height of the loaded sled also from a stability standpoint. A lower center of gravity decreases the tendency of the sled to tip over while it is being lifted or towed.

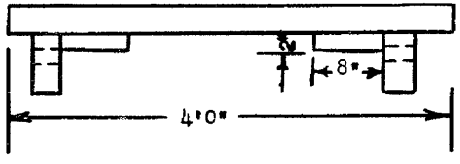
3. Arrangement. In some cases it was requested that certain combinations of supplies and equipment be secured on a single sled. This involved the arranging of the various sized boxes and articles so that a stable, secure load was obtained. This was accomplished by using the rigid materials to be loaded on a particular sled to make up the four corners and using any soft or non-rigid materials in the center. The load should be solid, square, and level on top so that the sleds can be stacked and, whenever necessary, dunnage should be used to accomplish this.

C A R G O S L E D

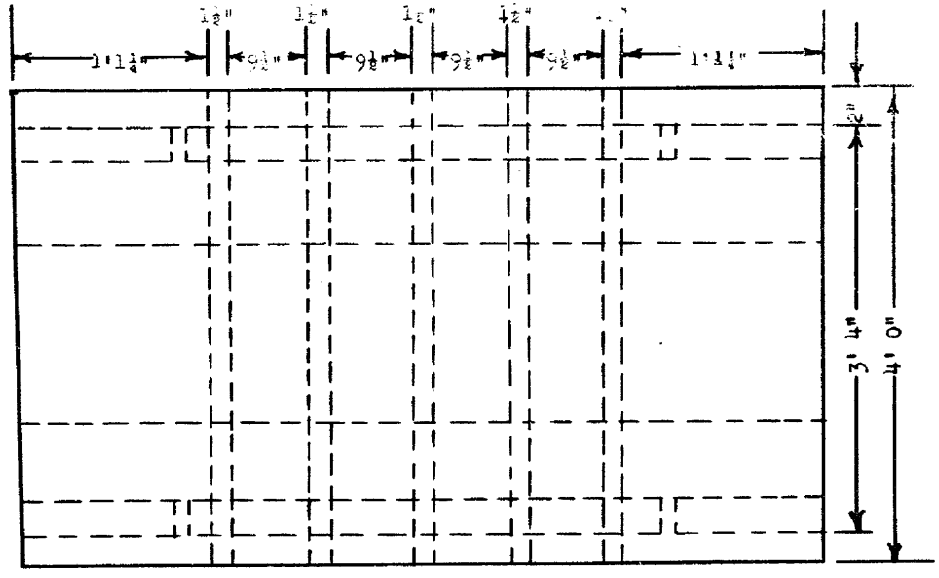
"Runner Type Pallet."

Characteristics.

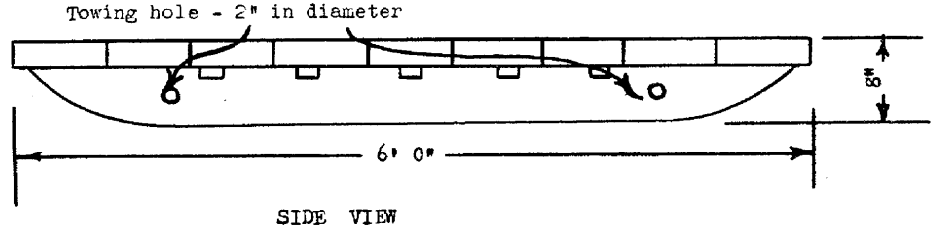
(1)	Weight of Pallet	200 Pounds
(2)	Loading area of Pallet	24 Sq. Ft.
(3)	Size of Pallet	4' x 6' x 8".
(4)	Maximum Load Carried.	3000 Pounds.
(5)	Maximum Height.	3½' Feet.
(6)	Slings, hauling-½" dia.	2 - 14 Feet Each.



END VIEW



TOP VIEW



SIDE VIEW

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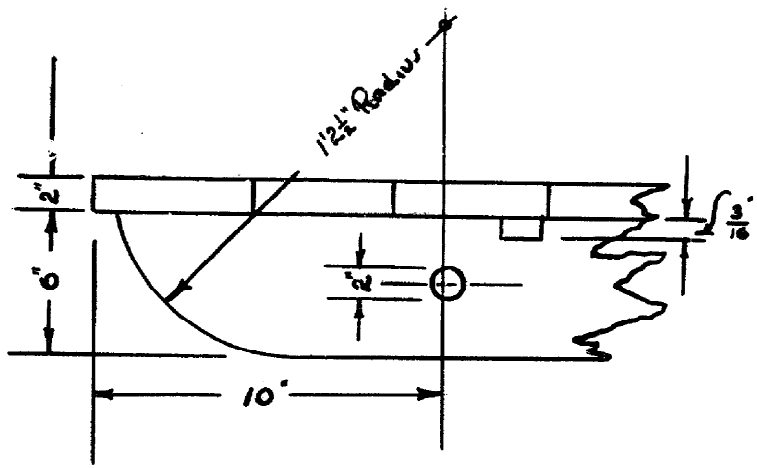
C A R G O S L E D

"Runner Type Pallet"



SECTION OF SIDE VIEW

Requirements of Materials for (1) one Pallet:

(1)

Strapping:

1¼"	113.5 Feet
3/4"	143.5 Feet
5/8"	143.5 Feet

(2)

Clips:

1¼"	6.7 unit
3/4"	8.6 unit
5/8	8.6 unit

(3)

Lumber:

1" x 6"	12.6 Feet
1" x 12"	.5 Feet
2" x 4"	3.5 Feet
2" x 6"	3.5 Feet
2" x 12"	.1 Feet

	PALLETIZED MATERIEL						
	ARTICLE	AMOUNT	WEIGHT (LBS.)		HEIGHT OF LOAD/SLED	VOLUME CU. FT.	CUBIC TONS
			LOAD	LOAD/SLED			
SIGNAL SUPPLIES	DR4, Reels W-110	18 reels/sled ($\frac{1}{2}$ mi./reel) 9 miles/sled	1,440	1,665	30.0"	60	1.50
	DR4, reels W-130	18 reels/sled (2 mi./reel) 36 mi./ sled	1,530	1,755	30.0"	60	1.50
	DR5, reels W-110	8 reels/sled (1 mi./reel) 8 mi./ sled	1,336	1,561	27.0"	54	1.35
	DR8, 6 reels/box W-130	14 boxes/sled (1-$\frac{1}{2}$mi./box) 21 mi./sled.	1,092	1,317	37.5"	75	1.88
ORDNANCE SUPPLIES	.30 cal. Ball 8-rd. clips, boxes	20 boxes/sled (1,344 rds./box) 26,880 rds./sled	2,260	2,485	23.5"	47	1.18
	.30 cal. Ball, 5-rd, clips, boxes	20 boxes/sled (1,500 rds./box) 30,000 rds./sled	2,280	2,505	23.5"	47	1.18
	.30 cal. A.P.	20 boxes/sled (1,500 rds./box) 30,000 rds./sled	2,240	2,465	23.5"	47	1.18
	.30 cal. M.G.	20 boxes/sled (1,250 rds./box) 25,000 rds./sled	1,860	2,085	23.5"	47	1.18

	PALLETIZED MATERIEL (Cont'd.)						
	ARTICLE	AMOUNT	WEIGHT (LBS.)		HEIGHT	VOLUME	CUBIC TONS
			LOAD	LOAD & SLED	LOAD & SLED	CU. FT.	
ORDNANCE SUPPLIES--CONTINUED	.50 cal. M.G., 9-1 or 2-1, boxes	20 boxes/sled (250 rds. / box) 5,000 rds./sled	1,960	2,185	23.5"	47	1.18
	.50 cal. M.G., 2 A.P. 2 Incend., 1 Tracer, boxes	20 boxes/sled (250 rds./box) 5,000 rds/sled	2,040	2,265	23.5"	47	1,18
	.30 cal. M.G. 250-rd. web belts, 4-1, 4 tins/crate	32 crates/sled (250rds,/ tin, 1,000 rds./crate,) 32,000 rds./sled	2,464	2,689	24.0"	48	1.20
	.30 cal. Carbine, boxes	24 boxes, sled (3,450 rds./box) 82,800 rds.,sled	2,640	2,865	21.0"	42	1.05
	.45 cal. Ball, boxes	27 boxes/sled (2,000 rds./box) 54,000 rds./sled	2,997	3,222	21.0"	42	1.05
	60-mm. Motar, clover-leafs, in crates	14 crates/sled (18 rds./clover-leaf) 252 rds./sled	1,456	1,681	40.0"	80	2.00
	81-mm. Motar, light, uncrated cloverleaf	30 cloverleafs/sled (3 rds./cloverleaf) 90 rds./sled	1,830	2,055	37.0"	74	1.85

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	PALLETIZED MATERIEL (Cont'd.)						
	ARTICLE	AMOUNT	WEIGHT (LBS.)		HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
			LOAD	LOAD & SLED			
ORDNANCE SUPPLIES-CONTINUED	81-mm. Mortar, heavy crated cloverleafs	30 cloverleafs/sled (3 rds./cloverleaf) 90 rds./sled	1,830	2,055	37.0"	74	1.85
	75-mm. Howitzer, crated cloverleafs	30 cloverleafs/sled (3 rds./cloverleaf) 90 rds./sled	2,400	2,625	38.0"	76	1.90
	75-mm. Gun, H.E. crated cloverleafs	30 cloverleafs/sled (3 rds. cloverleaf) 90 rds./sled	2,460	2,685	38.0"	76	1.90
	4.2 in. Mortar, chemical, boxes	28 boxes,/sled (2 rds./box) 56 rds./sled	1,848	2,073	21.0"	42	1.05
	75-mm. Gun, A.P., 3 cloverleafs, crate	8 crates/sled 9 rds./crate 72 rds./sled	1,864	2,089	27.5"	55	1.38
	37-mm, boxes	24 boxes/sled (20 rds./box) 480 rds./sled	2,328	2,553	37.0"	74	1.85
	40-mm. AA, boxes	16 boxes/sled (24 rds./box) 384 rds./sled	2,576	2,801	35.0"	70	1.75

	PALLETIZED MATERIEL (Cont'd)					
	ARTICLES	AMOUNT	WEIGHT (LBS) LOAD	WEIGHT (LBS) LOAD & SLED	HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
ORDNANCE SUPPLIES - CONTINUED	90-mm. AA boxes	10 boxes/sled (4 rds. box) 40 rds./sled	2,375	2,600	34.0"	68	1.70
	105-mm. Howitzer crated cloverleafs	16 cloverleaf/sled (3 rds./cloverleaf) 48 rds./sled	2,752	2,977	32.0"	64	1.60
	155-mm. Howitzer Powder, crates	18 crates/sled (2 charges/crate 36 charges/sled	774	999	38.5"	77	1.93
	155-mm. Howitzer Fuses and Primers boxes	12 boxes/sled (25 fuses/box) 300 fuses Fuses 6 boxes/sled (50 primers/box) 300 primers/sled Primers	975	1,200	17.0"	34	0.85
	3-in. Gun, boxes	12 boxes/sled (4 rds./box) 48 rds./sled	1,696	2,121	31.5"	63	1.58
	Grenade, Rifle Impact, T-2, boxes	56 boxes/sled (10 grenades/box) 560 grenades/sled	1,792	2,017	34.5"	69	1.73
	Grenade, A.T., M9A1, boxes	39 boxes/sled (10 grenades/box) 390 grenades/sled	1,209	1,434	28.5"	57	1.43

	PALLETIZED MATERIEL (Cont'd)						
	ARTICLE	AMOUNT	WEIGHT (LBS) LOAD	WEIGHT (LBS) LOAD & SLED	HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
ORDNANCE SUPPLIES	Signals, Ground and Air, boxes	Air--144 signals/box 4 boxes ea. Red,Green,Yellow/sled Ground--50 signals/box 1 box ea. M-17,M-18,M-19,M-20, M-21,M-22/sled	1,270	1,495	36.0"	72	1.80
	Signals, Ground, boxes	50 signals/box 2 boxes ea. M-17,M-18,M-19,M-20, M-21,M-22/sled	781	1,006	20.5"	41	1.03
QUARTERMASTER	"K" Rations, cases	36 cases/sled (12 rations/case) 432 rations/sled	1,476	1,701	33"	66	1.65
	"C" Rations, cases	33 cases/sled (8 rations/case) 264 rations/sled	1,254	1,479	32.0"	64	1.60
	Gasoline, 5-gal. cans	35 cans/sled (5 gal./can) 175 gal./sled	1,418	1,643	28.5"	57	1.43
ENGINEER	Barbed Wire, reels	16 reels/sled (420 yds./reel) 6,720 yds/sled	1,680	1,905	28.0"	56	1.40
	Angle Iron Pickets, bundles	25 bundles/sled (5 pickets/bundle) 125 pickets/sled	1,250	1,475	15.5"	31	0.78

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	PALLETIZED MATERIEL (Cont'd)						
	ARTICLE	AMOUNT	WEIGHT (LBS) LOAD	WEIGHT (LBS) LOAD & SLED	HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
ENGINEER SUPPLIES - - CONTINUED	Standard Explosive Sled No. 1	30 ea. Shaped charges 4,000 ft. Primacord 500 ft. Time Fuse	905	1,130	26.5"	53	1.33
	Standard Explosive Sled No. 2	80 ea. Bangalore Torpedoes, 5 ea. Cratering Charges 40 lb.) 1,000 ft. Primacord, 500 ft. Time Fuse, 40 ea. Fuse Lighters.	2,280	2,305	29.0"	58	1.45
	Standard Explosive Sled No. 3	32 cases (100 1/2 lb. blocks) TNT, 1,000 ft. Primacord 800 ft. Time Fuse, 40 ea. Fuse Lighters /sled	2,270	2,495	30.0"	60	1.50
	Standard Explosive Sled No. 4	33 ea. Cratering charges (40-lb), 1,000 ft. Primacord 500 ft. Time Fuse, 40 ea. Fuse Lighters /sled	1,830	2,055	33.0"	66	1.65
	Water Purification Unit Sled No. 1	60 ft. Suction Hose, 200 ft. Discharge Hose, 3 ea. Booster Pumps, 1box fittings 1 box Tools and Miscellaneous Supplies	1,254	1,479	40.0"	80	2.00

UNCLASSIFIED

	PALLETIZED MATERIEL (Cont'd)						
	ARTICLE	AMOUNT	WEIGHT (LBS) LOAD	WEIGHT (LBS) LOAD & SLED	HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
ENGINEER	Water Purification Unit Sled no. 2	1 ea. Canvas Tank and cover, 2 boxes Staves (20 ea.), 200 lbs. Alum, 100 lbs. Soda Ash	1,200	1,425	35.0"	70	1.75
	Water Purification Unit Sled No. 3	1 ea. Canvas Tank 1 ea. Chlorinator 1 ea. Filter	1,300	1,525	36.0"	72	1.80

UNCLASSIFIED

PALLETIZED MATERIEL (Cont'd)

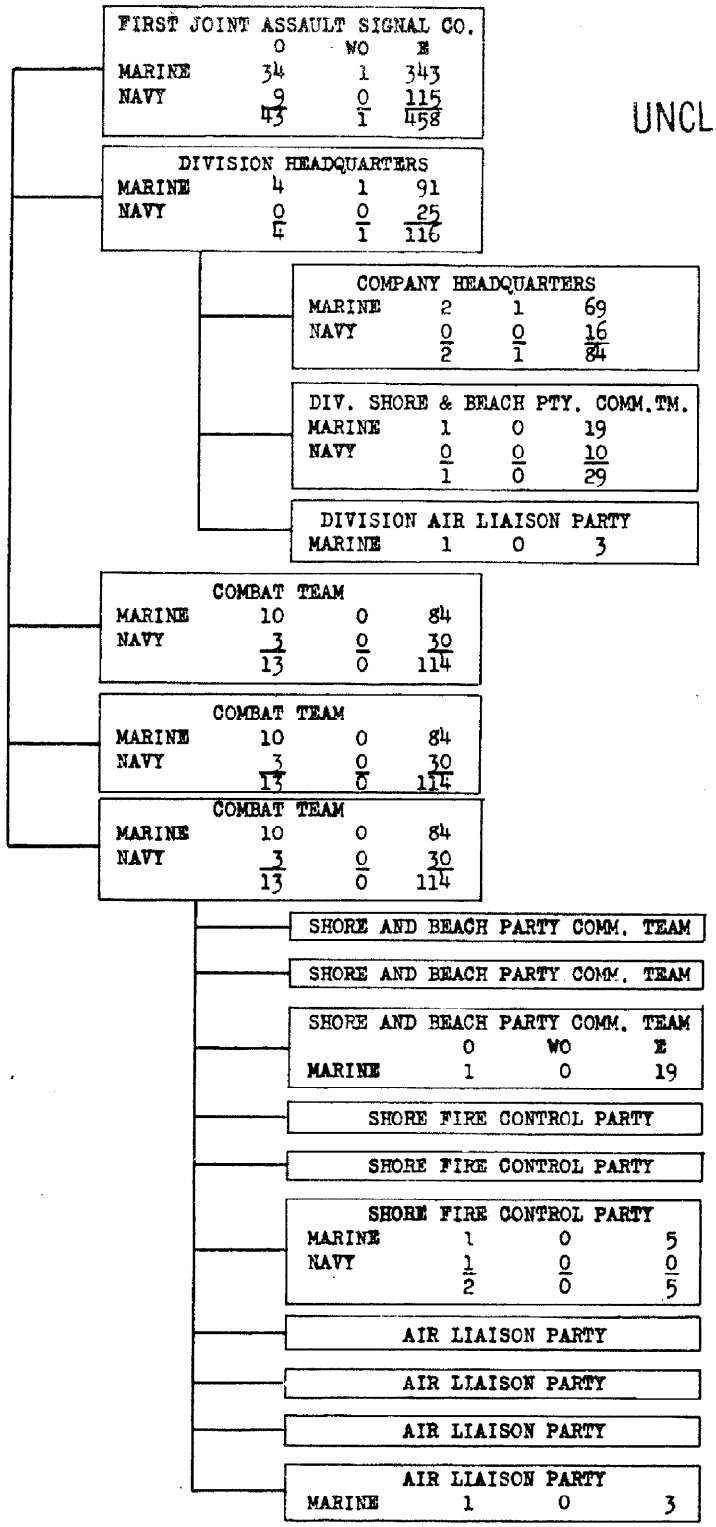
	ARTICLE	AMOUNT	WEIGHT (LBS) LOAD	WEIGHT (LBS) LOAD & SLED	HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
ENGINEER SUPPLIES - - CONTINUED	Standard Explosive Sled No. 1	30 ea. Shaped charges 4,000 ft. Primacord 500 ft. Time Fuse	905	1,130	26.5"	53	1.33
	Standard Explosive Sled No. 2	80 ea. Bangalore Torpodeos, 5 ea. Cratering Charges 40 lb.) 1,000 ft. Primacord, 500 ft. Time Fuse, 40 ea. Fuse Lighters.	2,280	2,305	29.0"	58	1.45
	Standard Explosive Sled No. 3	32 cases (100 1/2 lb. blocks) TNT, 1,000 ft. Primacord 800 ft. Time Fuse, 40 ea. Fuse Lighters /sled	2,270	2,495	30.0"	60	1.50
	Standard Explosive Sled No. 4	33 ea. Cratering charges (40-lb), 1,000 ft. Primacord 500 ft. Time Fuse, 40 ea. Fuse Lighters /sled	1,830	2,055	33.0"	66	1.65
	Water Purification Unit Sled No. 1	60 ft. Suction Hose, 200 ft. Discharge Hose, 3 ea. Booster Pumps, 1box fittings 1 box Tools and Miscellaneous Supplies	1,254	1,479	40.0"	80	2.00

	PALLETIZED MATERIEL (Cont'd)						
	ARTICLE	AMOUNT	WEIGHT (LBS) LOAD	WEIGHT (LBS) LOAD & SLED	HEIGHT LOAD & SLED	VOLUME CU. FT.	CUBIC TONS
ENGINEER	Water Purification Unit Sled no. 2	1 ea. Canvas Tank and cover, 2 boxes Staves (20 ea.), 200 lbs. Alum, 100 lbs. Soda Ash	1,200	1,425	35.0"	70	1.75
	Water Purification Unit Sled No. 3	1 ea. Canvas Tank 1 ea. Chlorinator 1 ea. Filter	1,300	1,525	36.0"	72	1.80

CHAPTER V

S I G N A L

Organization



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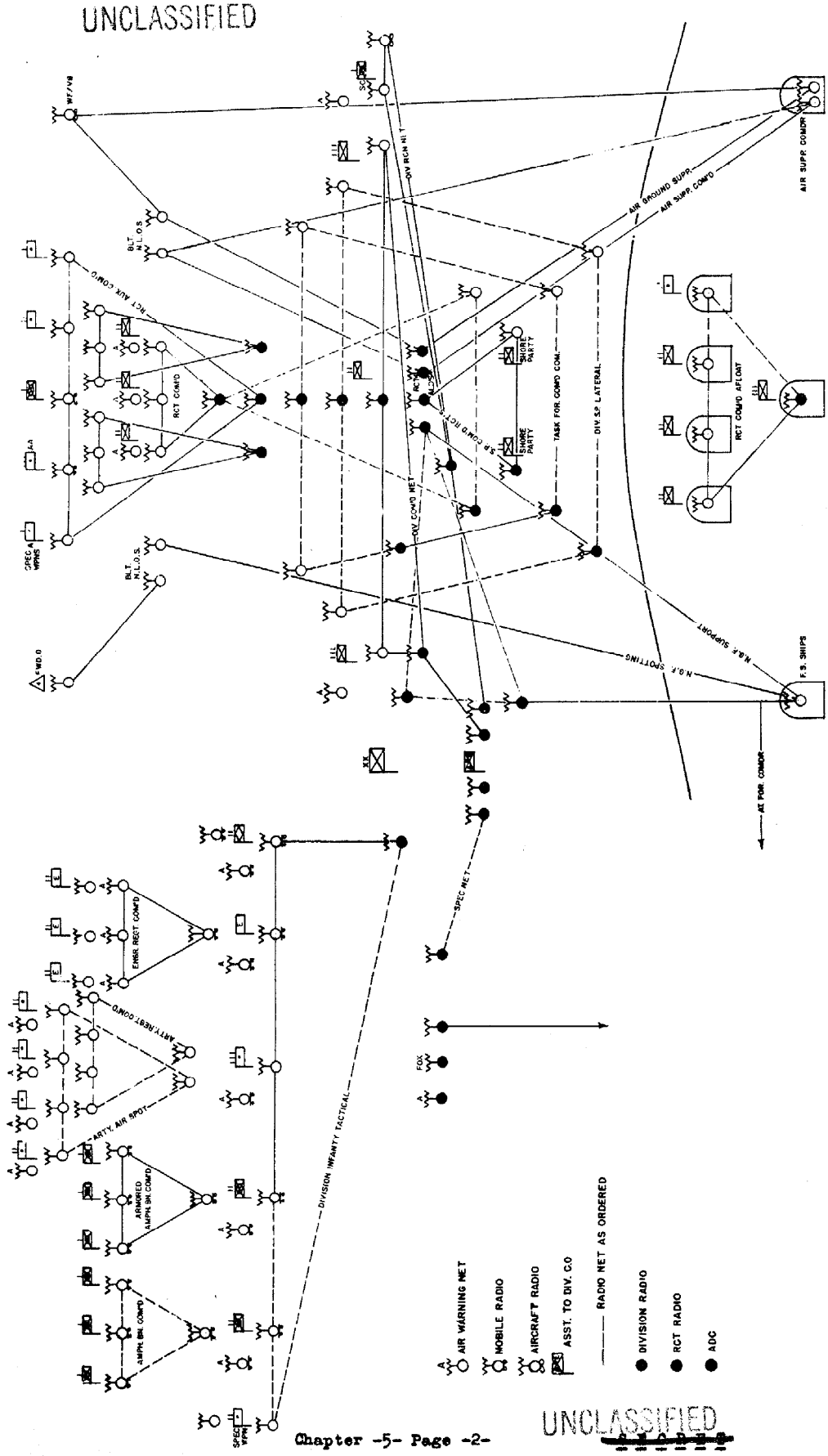
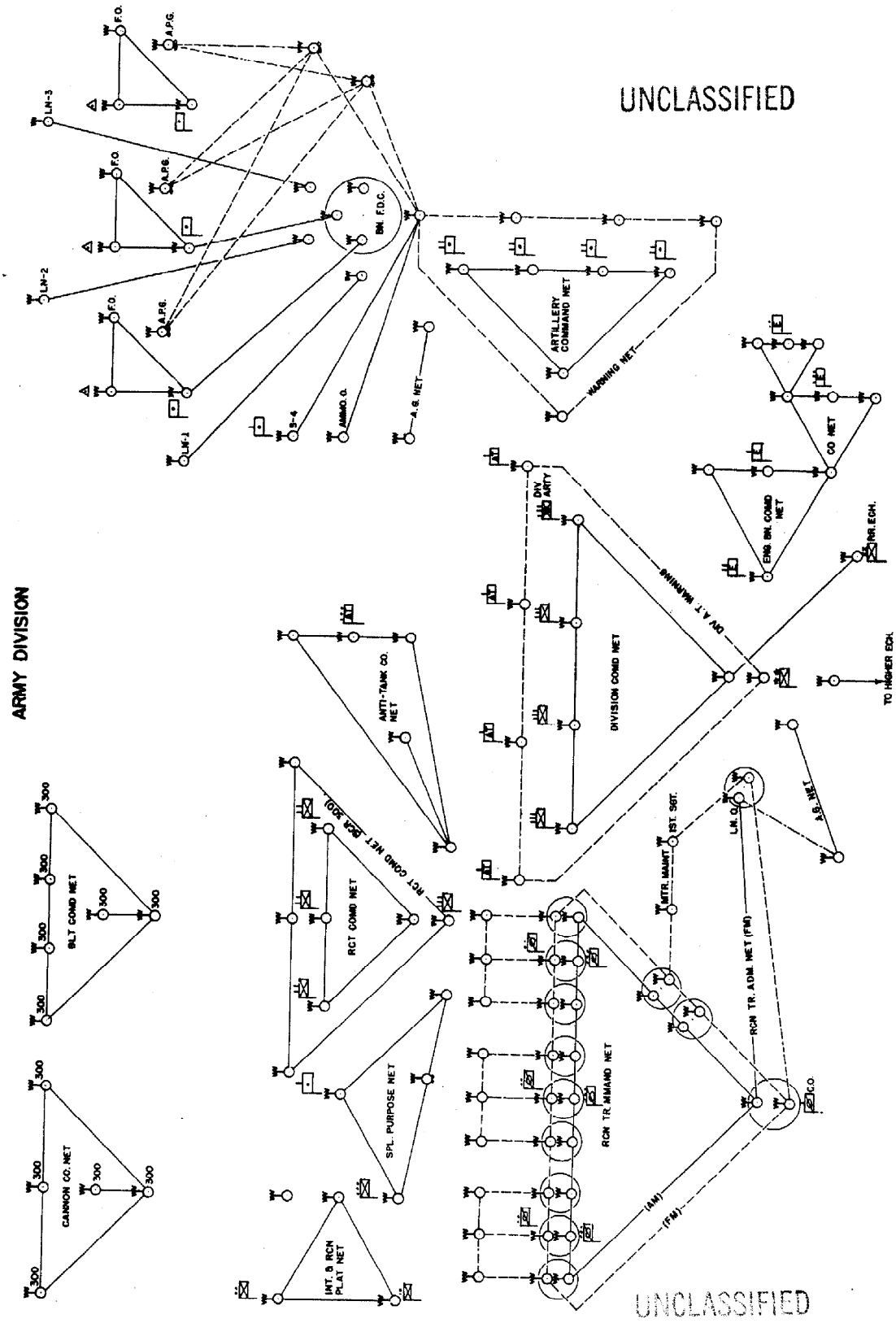
MARINE DIVISION




UNCLASSIFIED
ARMY DIVISION
F.O.
A.P.G.
LN-3
LN-2
LN-1
BN. F.D.C.
S-4
AMMO. O.
A.G. NET
ARTILLERY COMMAND NET
WARNING NET
DIV ARTY
DIV A.T. WARNING
DIVISION COMD NET
ENG. BN. COMD NET
CO NET
ANTI-TANK CO. NET
RCT COMD NET
SPL. PURPOSE NET
INT. & RCN PLAT NET
BLT COMD NET
CANNON CO. NET
RCN TR. COMMAND NET
MTR. MAINT 1ST. SGT.
LN. O.
A.G. NET
RCN TR. ADM. NET (FM)
(AM)
(FM)
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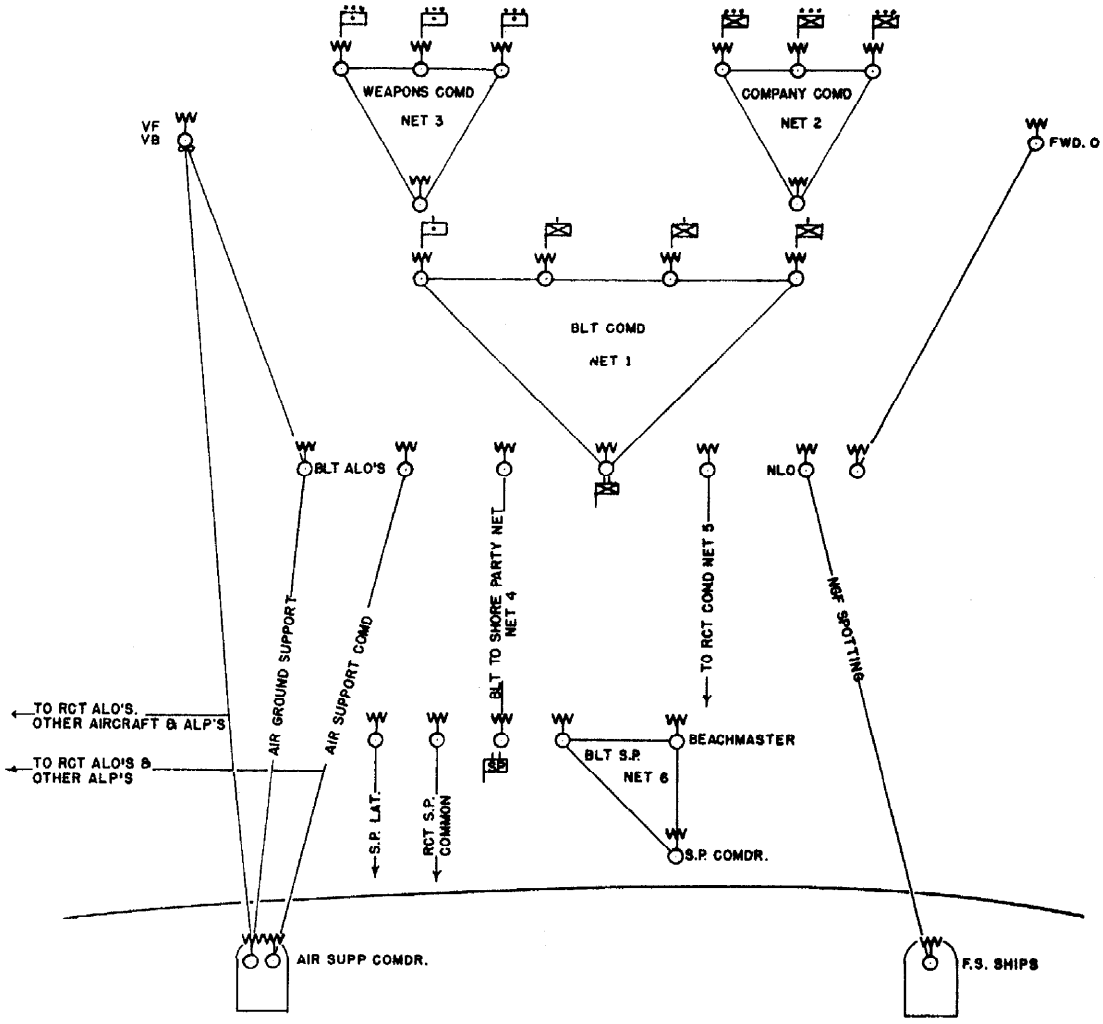
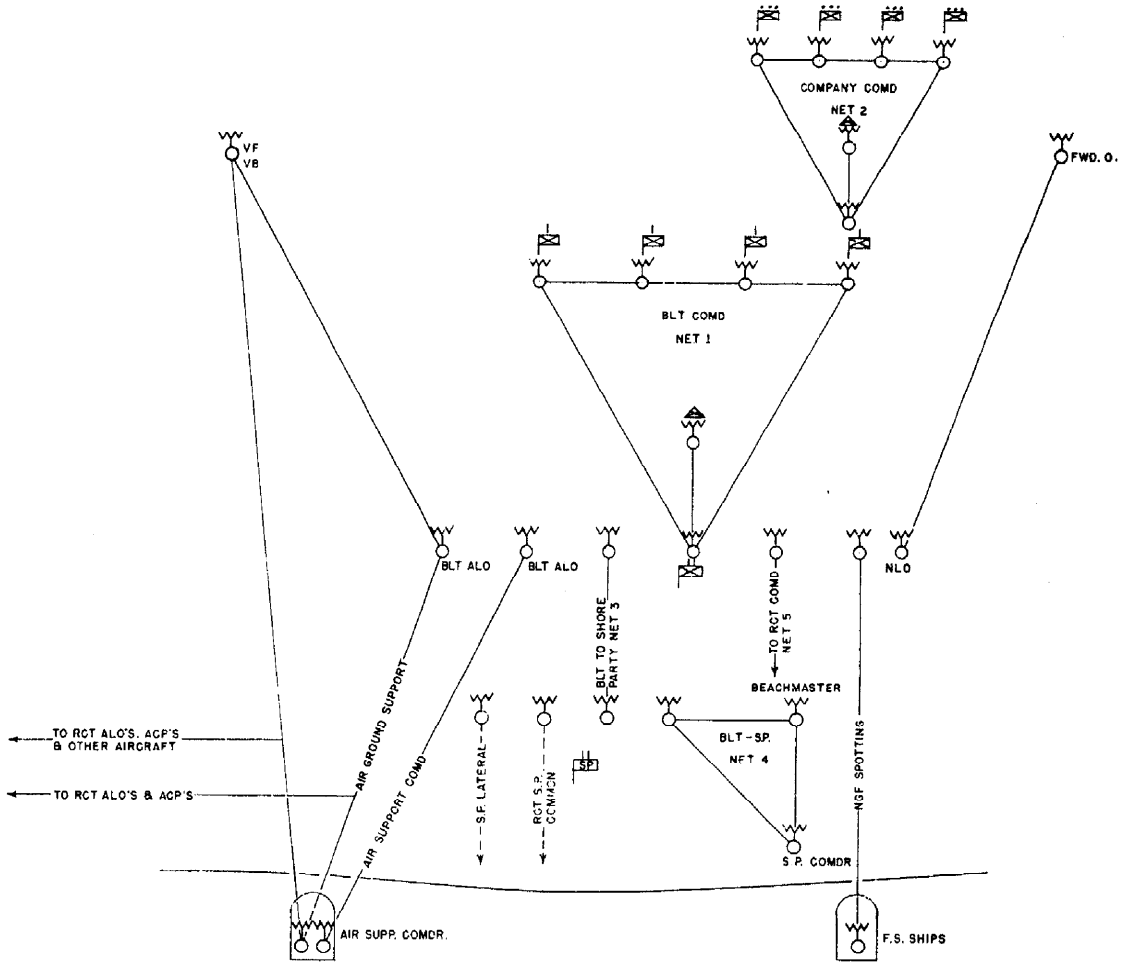
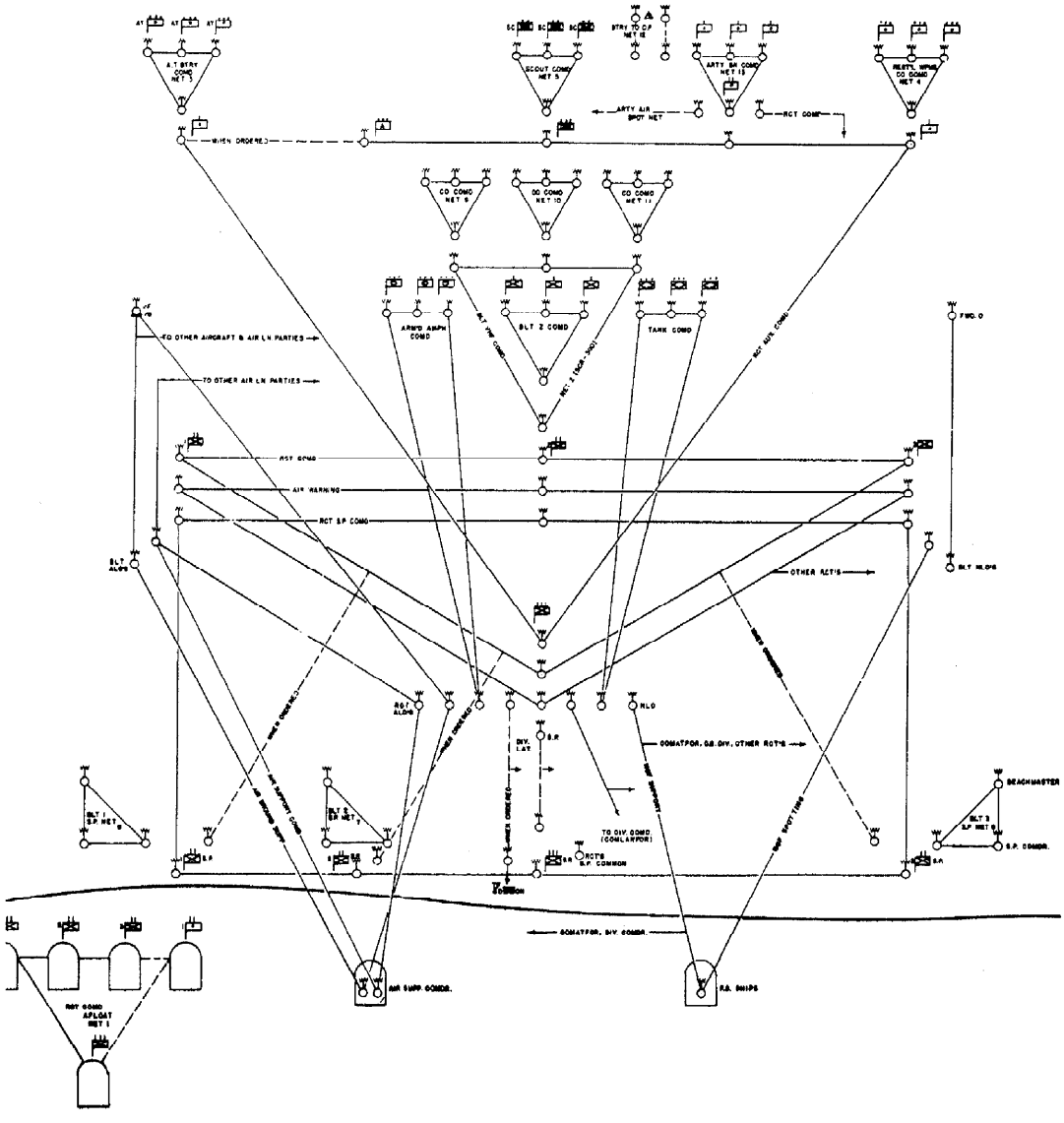
MARINE LANDING TEAM

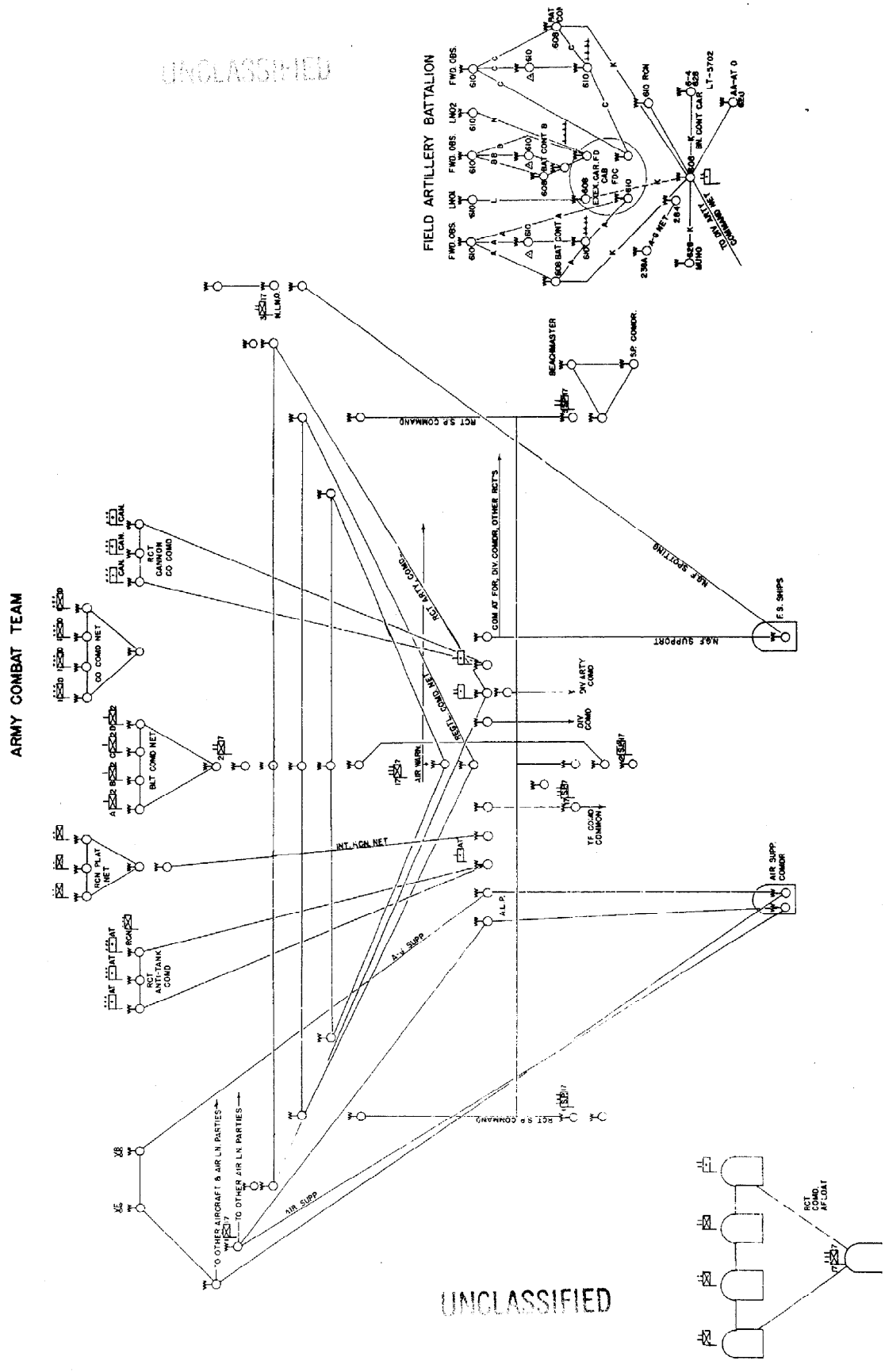


ARMY LANDING TEAM



MARINE COMBAT TEAM



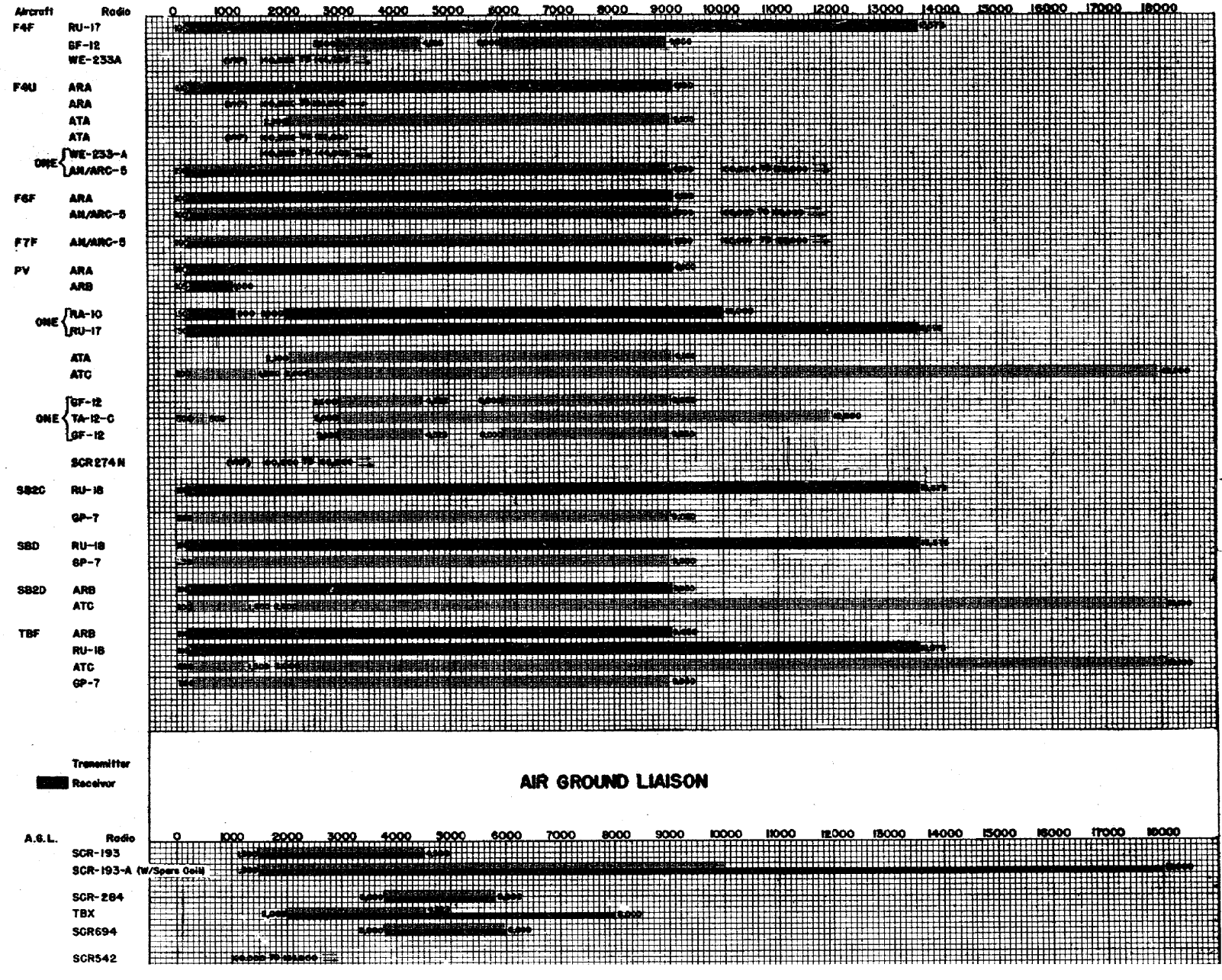


Receiver

AIRCRAFT RADIO FREQUENCY

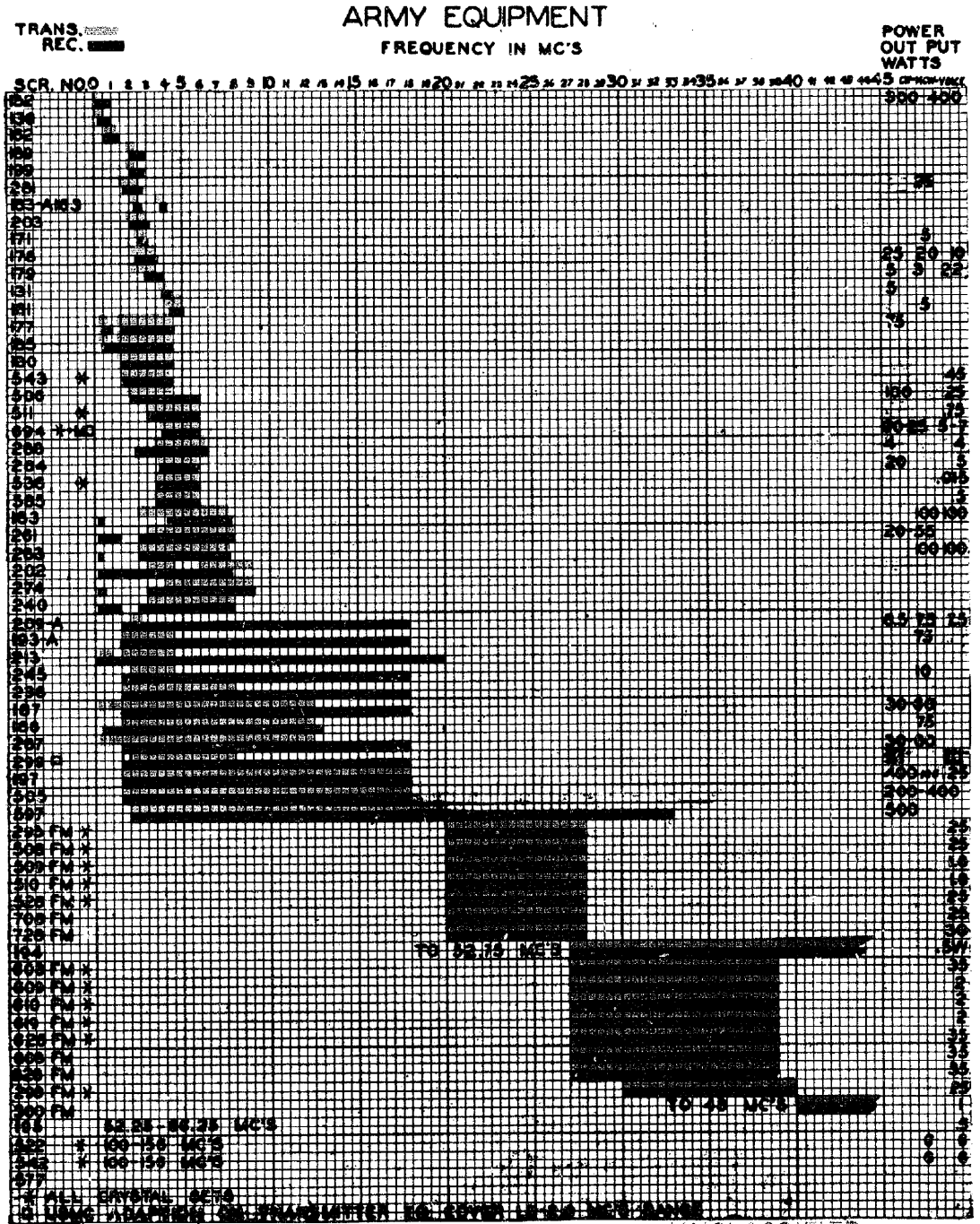
TABLES

FREQUENCY IN KILOCYCLES

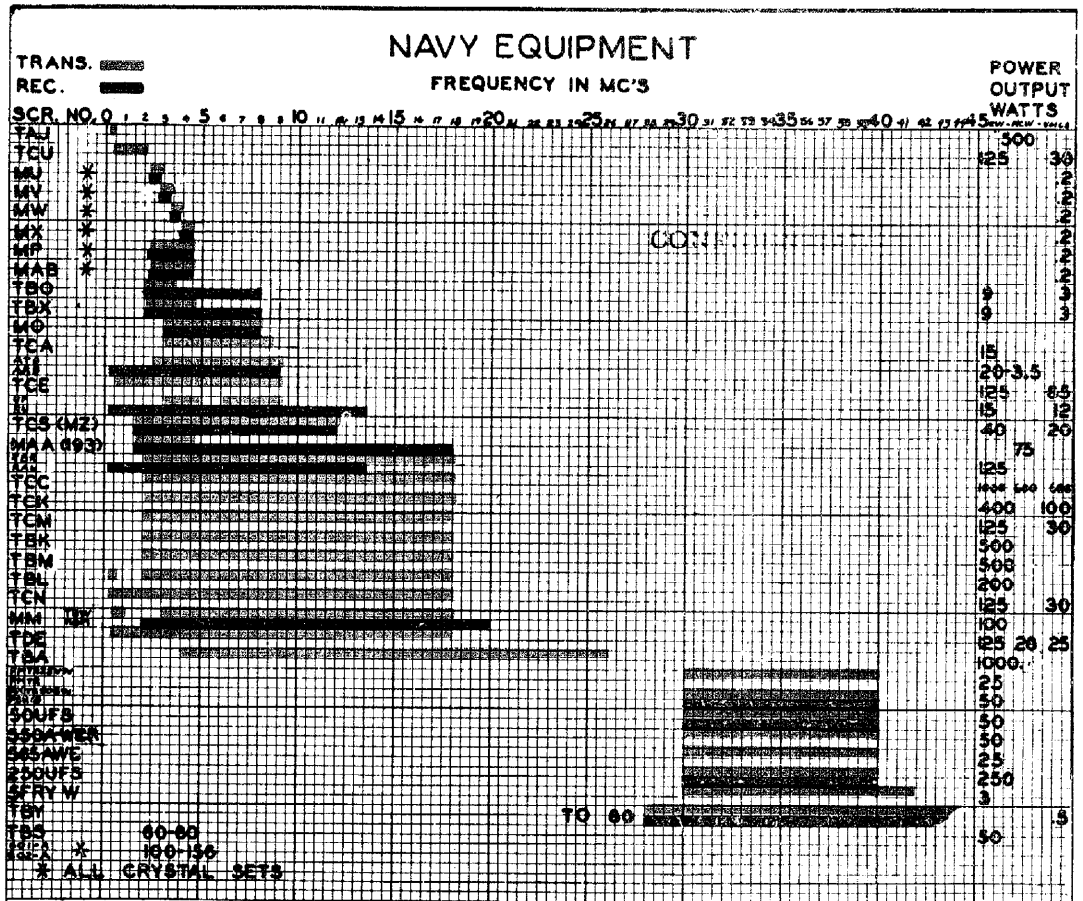


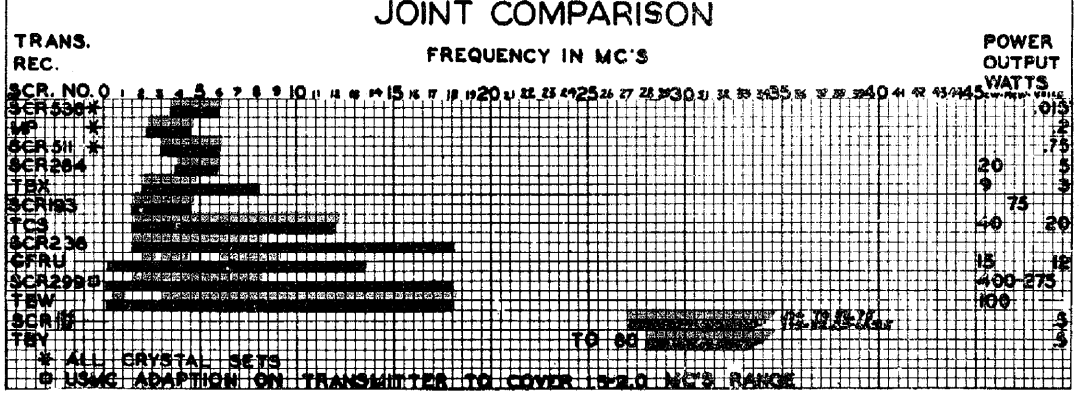
ARMY AND NAVY (MARINE CORPS)

RADIO EQUIPMENT FREQUENCY CHART



RADIO EQUIPMENT FREQUENCY CHART





ARMY AND NAVY (MARINE CORPS) RADIO EQUIPMENT

ARMY EQUIPMENT

SET NO.	OUTPUT (WATTS) A1	A2	A3	FREQUENCY IN M.C. TRANS.	REC.	RANGE (MILES) A1	A2	A3	WT. LBS.	SOURCE OF POWER TRANS.	REC.	TYPE AND USE	REMARKS	
131	5 (CW Only)			3.96 -	4.36	5			75	Hand Gen.	Dry Batt.	Portable (2 men or vehicle)	CW Only	Trans. BC 1-E Rec. BC 1-E
132A	300	to	400	.15 - .35	.1 - 1.0	750			3500	Gas Enc. Gen.	-do-	Ground Set		Trans. BC 127 REC. BC 127
136				.325 - .675	.32 - .95				975	-do-	-do-	-do-		Trans. BC 122 REC. BC 137
161	5 (CW Only)			4.37 -	5.1	5			76	Hand Gen.	-do-	Portable (1 man or vehicle)		Trans. BC 161 REC. BC 162
162				.85 - 1.5	.6 - 1.3	5 to	10		160	Motor Launch	Storage Batt.	Ship-Shore Communication in small boats.		Trans. BC 128 REC. BC 144
163A				2.3 - 2.7	2.3 - 2.7	40			154	Hand Gen.	Dry Battery	Special Purpose. Amplifier Pack	Improved SCR 163.	Trans. BC 157A REC. BC 157A
171	5(CW	Only)		2.64 - 3.04	2.64 - 3.04	15			75	-do-	-do-	Vehicular, ground operated.	Similar to SCR 131 and SCR 161	Trans. BC 156 REC. BC 156
177	75			.4 - 0.8 1.5 - 4.5	.4 - 1.0 1.5 - 4.5	100	70	30	860	Dynamotor, Power Unit PE 49-A.	12 Volt Storage Battery.	Ground Set	Similar to SCR 188 and SCR 177A and 177B.	Trans. BC AA191 REC. BC 189A
178	25	20	10	3.4 -	3.7	25	20	10	700	Hand Gen.	Dry Batteries	Vehicular		Trans. BC 187 REC. BC 186
179	5	3	22	2.4 - 3.7	2.8 - 4.0	25	20	10	203	-do-	-do-	Horse Carried		Trans. BC 187 REC. BC 186
180				1.5 -	4.5	50	60	30	900	Dynamotor and power unit.		Ground Set		Trans. BCAA191 REC. BC 189
AA183		100	100	2.5 - 7.7	.224 - .448 4.15 - 7.85 Coils for others.	Approx.	100		43.5	12 Volt Plane Battery.		Aircraft Command.		Trans. BC AA183 REC. BC AA179
AA185				.4 - .8 1.5 - 4.5	.4 - 4.7	750 (1.5 mc and up)	500	250	480	-do-		Observation (MCW only) Set also needed for CW reception		Trans. BC AA191 REC. BC AD219
187	30	to	60	.2 - .5 .6 - 1.5 1.5 - 12.5	1.5 - 18.	40 to several hundred.			750	-do-		AGL, AAL, Aircraft Installation.	Operates with 522.	Trans. BC 191 REC. BC 224
188A		75		1.5 - 12.5	1.5 - 18.	100	70	30	1150	Power Unit PE 75-A		Ground operated only	Similar to SCR 177 except freq.	Trans. BC 1916 REC. BC 3420
189				2.2 - 2.6	2.075-2.85				243	Dynamotor	Dry Batteries	Slow Tanks		Trans. BC 176 REC. BC 175
193A (NAVY MAA)		75		1.5 - 4.5	1.5 - 18.	40	40	20	700	Dynamotor	12 Volt Storage Battery	Vehicular	Similar to SCR 177	TRANS. BC 191A REC. BC 312
194		5		27.2 -	52.75			5	90	Dry Battery	BA 42	Short Range Liaison only.	Man pack, or vehicle.	Trans. BC 222 REC. BC 222
195		5		52.25 -	66.25			3	91	-do-	-do-	-do-	-do-	Trans. BC 322 REC. BC 322
197	400	175	125	1.5 -	18.	1000			15000	220/110 Volt 60cycle Gas Engine Gen.	Power Unit PE 75-A	Vehicular		Trans. BC 325 REC. BC 342
199				2.2 - 2.6	2.075-2.85				243	Dynamotor	Dry Batteries	Same as SCR 189 except used in other vehicles.		Trans. BC 176 REC. BC 175
202				3. - 4.52 6. - 9.05	.224-7.85				111	-do-	Dynamotor	Aircraft	REC. is SCR 152AA	Trans. CMS200: REC. BCAA179
203				2.2 - 3.06	2.1 - 3.1				161	Hand Gen.	Dry Batteries	Pack set for 1 pack animal.		Trans. BC 226 REC. BC 227
209	8.5	7.5	7.5	2.2 - 2.6	1.5 - 18.	30	20	5	163	PE-48	Dynamotor BD-69	Vehicular		Trans. BC 176A REC. BC 189
213				.26 - .8 1.5 - 4.5	.1 - 20.	100	70	40	800	Rotary Converter 60 Cycle A.C.	110-115V	Vehicular for fire director.		Trans. BC 191A REC. BC 167A
238A				1.5 - 8.1	1.5 - 18.	5 to	10		150	12 - 14 V D.C.		Short Range Liaison		Trans. BC 227A REC. BC 224A
240A				3.0 - 8.0 Crystal Controlled.	.2 - .4 .55 - 1.5 2.5 - 6.0					-do-		Aircraft Command		Trans. BC 338A REC. BC 225A
245		10		2.0 - 4.5	1.5 - 18.	45	35	20	285	Dynamotor	12-24V Batt.	Vehicular		Trans. BC 223 REC. BC 312
261A	20	to	55	3.0 - 8.	.2 - .4 .55 - 1.5 2.5 - 8.				158	24-28 Volt D.C.		Aircraft		Trans. BC 353A REC. BC 352A
274N				4.0 - 9.1	.19 - .55 3.0 - 9.1					-do-		Aircraft Command	3 receivers: 453A, 454A, 455A. 3 transmitters: BC 457A, 458A, and 459A.	
281A			25	1.7 - 2.75	1.7 - 2.75				93	115Volt 60 cycle A. C.		Marine set for Coastal and Harbor boats.	Voice only.	Trans. BC 4-1A REC. BC 4-1A
AN283		100	100	2.5 - 7.7	.201-.398 4.15-7.7	Approx.	30 to	100	433	24Volt plane Battery		Command Set, Aircraft.	Same as 183 except 24 volts.	Trans. BC 430 REC. BC 449
284	20		5	3.8 - 5.8	3.8 - 5.8	30		7	250	Hand Gen.	Dry Batteries	2 or 3 men or vehicle		Trans. BC 654 REC. BC 654
287	30	to	60	.26 - .5 .65 - 1.5 1.5 - 12.5	1.5 - 18.	50 to several hundred			250	24 Volts D.C.		Aircraft Liaison Set		Trans. BC 475 REC. BC 476
288	4		4	3.5 - 6.3	2.3 - 6.5	30		10	84	Hand Gen.	Dry Batteries	2 men portable		Trans. BC 474A REC. BC 474A
293*			25	20. -	28.	5	-	7	115	12-24V vehicle	Battery	Tank Units	Voice(FM)	Trans. BC 500 REC. BC 409. REC. also BC 500
298*			25	30. -	40.				100	6 Volt Vehicle	Battery	Fire Umpire	Voice (FM)	Commercial Model.
299*	275-400		200-300	2. -	18.	250		100	1000	Commercial 110V or Gas Engine	60 cycle AC Generator.	Mobile unit, complete with trailer.		Trans. BC 610 REC. BC 312, BC 342.
300			1	40. -	48.	5	to	7	32	Plug in Type	Battery.	Portable, man pack.	(Voice FM)	Trans. BC 1000 REC. BC 1000
505	200	to	400	1.5 -	18.	100	to	250		Trailer Dynamotor.		Truck and Trailer.		Trans. MP 100
506	100		25	2. - 4.5	2. - 6.	70		25	176	Vehicular 12-24 system.	24Volt power	Vehicular		Trans. BC 653 REC. BC 652
508*			25	80 channels separated. 20.	100 kc separated. 28.			7	181	12-24Volt Battery.		Vehicular	Voice (FM)	Trans. BC 604 REC. BC 603
509*			1.8	-do-	-do-			5	50	Dry Battery		Portable, man or vehicle.	Voice (FM)	Trans. BC 620 REC. BC 620
510*			1.8	-do-	-do-			5	50	Dry Battery or vibrator used with vehicle battery.		Vehicular	Voice (FM)	Trans. BC 620 REC. BC 620
511*			.75	3.0 - 6.0	3.0 - 6.0			5	20	Dry Battery	BA-49	Portable 1 man, horse or vehicle.	Voice only	Trans. BC 745 REC. BC 745
522*		6	6	100 - 156 4 pre-set	100-156	130 at	10,000	feet	91	28 Volts D.C.		Aircraft AGL		Trans. BC 625 REC. BC 624

ARMY EQUIPMENT CON'T

SCR NO. OR MODEL	OUTPUT (WATTS) A1	A2	A3	FREQUENCY IN MC TRANS.	REC.	RANGE (MILES) A1	A2	A3	WT LBS.	SOURCE OF POWER TRANS.	REC.	TYPE AND USE	REMARKS	
528 *			25	20. -	27.9			7	175	12 - 24V D.C.		Vehicular	Voice (FM)	Trans. BC 604 REC. BC 603
536 *			.015	3.5 -	6.0			1.5	6	Dry Batteries		Ultra Portable	Voice only.	Trans. BC 611 REC. BC 611
542 *		6	6	100. - 4 pre-set	156.	130 at	10000	feet.	91	12 Volts D.C.		Aircraft AGL		Trans. BC 625 REC. BC 624
543A *			45	1.7 - 6 pre-set	4.4	15 moving 20-30	stationary		181	PE 110V-115V	A.C.	Vehicular or field station.	Voice only	Trans. BC 669 REC. BC 669
577							50	50	435	600 W 110V Gas	Eng. Gen.	Vehicular		Trans. D 151142 REC. D 151143
585			.5	3.5 -	6.0			1		Batteries		Portable		Trans. BC 721 REC. BC 721
597	500			2.0 - 20.0	2.0 - 35.0	350		100		Power Plant 5-7.5 KVA Single Phase	110 V 60 cycle	Ground Set		Trans. BC 1127 REC. BC 997
608 *			35	27.0 -	38.9			10-15	306	12 or 24V Vehicle Battery with dynamotor.		Vehicular	Voice (FM)	Trans. BC 684 REC. BC 653
609 *			2	-do-	-do-			5	50	Dry Batteries		Vehicular or man pack	Voice (FM)	Trans. BC 659 REC. BC 659
610 *			2	-do-	-do-			5	65	-do-		-do-	-do-	-do-
619 *			2	-do-	-do-			5	25	-do-		-do-	-do-	-do-
628 *			35	-do-	-do-	10 moving 15 stationary			190	12 Volt Vehicle Battery		Vehicular	-do-	Trans. BC 684 REC. BC 683
694 *	20-25		5-7	3.8 -	6.0	15-30		7-15	17 (T-R)	12 Volt Vibr.	Vehicle Batt. and Gen.	Vehicular or man		Trans. BC 1136 REC. BC 1136
708			25	20.0 -	27.9	7 in	motion			12 or 24V Vehicle Battery		Vehicular	Voice (FM)	Trans. BC 603 REC. BC 603
728			30	-do-	-do-	-do-			100	-do-	-do-	-do-	-do-	Trans. BC 904 REC. BC 963
808			35	27.0 -	38.9	10 in	motion		225	-do-	-do-	-do-	-do-	
828			35	-do-	-do-	-do-	-do-		75	-do-	-do-	-do-	-do-	Trans. BC 924 REC. BC 923
NAVY (MARINE CORPS) EQUIPMENT														
ARB				.195 -	9.05							(TBF) Used with ATB		
ATB	3.5-25	2.8-	20	2.3 -	9.05	10	-	20	65	28 Volt Dynamotor		Vehicular, mobile	Uses ARB Receiver	
FMTR 25 VW			25	30. -	40.	10	-	15		Dual 6 Volt	Vibrator	Mobile Police(GALVIN)	Used with fixed frequency receiver.	
FMTR			25	-do-	-do-	-do-	-do-	-do-	54	6 Volt Dynamotor		Mobile Police(LINK)	-do-	
FSTR 50 BW			50	-do-	-do-		25			110Volts		Fixed Station(GALVIN)		
FSR 13				-do-	-do-					110Volts		Receiver for use with FSTR 50 BW (GALVIN)		
GF/RU	15		7	2.0 - 2.5 3. - 4.525 6. - 9.05	.195-13.575	40				Dynamotor, 28 Volt Input 360-425 Volts Output		Aircraft and Tanks		Trans. CW-52063A REC. CW-46051A-15
MAB *			.2	2.3 -	4.6	1			7	Dry Battery		Ultra Portable Pack Type Set	Crystal Controlled Transmitter and receiver.	
MK(TBW-RBM)	100			.35 - 1.0 3.0 - 18.1	.2 - 20.	500			850	Gas Eng. Gen. 110/220V sta. supply	12V Dynamotor	Ground Station Semi-Portable	MF Trans. CAY 52119 HF Trans. CAY 52120 REC.(RBM) ~~HF~~ CGT 46276	
MP *				Comprises	MU, MV,	MW,	MX							
MO *			25	3. - 8.	3. - 8.	25			75	6-12V Dyn. or 110V	Vibr.	Crystal Controlled Portable		
MU *			.2	2436, 2772	Crystals	1.5			6	Dry Batts. CBR-19027		Ultra Portable Paratroops	Trans. and REC. CGI 43029	
MV *			.2	3035, 3155	Crystals	1.5			6	-do-	-do-	-do-	-do-	
MW *			.2	3585, 3725,	3865 Crystals	1.5			6	-do-	-do-	-do-	-do-	
MX *			.2	3995, 4105,	4435 Crystals	1.5			6	-do-	-do-	-do-	-do-	
TAJ	500	250		.175 - .6					850	Motor Gen.		Destroyers, Light Cruisers	CRM 52142 CRM 52143	
TBA	1000			4. - 26.					880-975	-do-		Shore Stations, Battleships, Cruisers and Carriers	CG 52197 CG 52196 CG 52195	CG 52282
TBK	500			2. - 18.1					1092	-do-		Shore Stations	CAY 52166 CAY 52169	CAY 52170
TBL	200	100 MF only	50	.175 - .6. 2. - 18.1					1090	-do-		Shore Stations, Subs, Destroyers, and Cruisers.	CAY 52131 CAY 52132 CAY 52133	CAY 52133A CAY 52249
TBM	500	350	350	2. - 18.1					1092	-do-		Shore Stations	CAY 52170 CAY 52169	
TBO	9		3	2. - 3.5	2.0 - 4.0	30			113	Hand Gen.	Dry Battery	Portable (3 men) AGL, MGF, SFC	Trans. and REC. 43003	
TBR/RAL	125			2.0 - 18.0	.175 - 13.5	1000			4000	Gas Eng. Gen. 110 Volts	110 Volts	Ground Station Semi-Portable	Obsolete.	
TBS		50	50	60.0 -	80.0				300	Motor Gen.		Subs and Surface Craft.	Trans. CRR 52093 REC. CRP 46068	
TBX	9		3	2. - 4.525	2.0 - 8.0	30			113	Hand Gen.	Batteries	Portable (3 men) AGL, MGF, SFC	Trans. and REC. 43003	
TBY		.5	.5	28.0 -	80.0	5			40	Battery Pack	CGD 19010		Trans. and REC. CAY 43007	
TCA			15	2. - 9.05					310	110 - 115V	A.C.	Shore Air Control Towers	32 T-1 2 T-2	
TCC	1000	600	600	2. - 18.1					1640	220 V 3 Phase	A.C.	Shore Stations	1014 - 1 or 2	
TCE	125	125	40	.350 - 9.05					164	Motor Gen.		Ships, large or small	CAY 52151	
TCK	400		100	2. - 18.1					785	-do-		Ship and Shore	CG 52214	
TCM	125	30	30	2. - 18.1					410	115V/1/60		Ship and Shore	CG 52206	
TCN												Comprises both TCM and TCU		
TCS(M2)	40		20	1.5 -	12.0	75			141	12 Volt Input Dynamotor 400 Volt Output.		Semi-Portable. Ship Shore. Vehicular (Jeep)	Trans. COL 46159 REC. COL 52245	
TCU	125		30	.3 - 2.0					382	115V/1/60		Ship and Shore	CG 52205	
TCY		5		500kc					145	Dry Batteries		Emergency Portable Lifeboat	CPT 52236	
TDE	125	28	25	.3 - 18.1					966	Motor Gen.		Destroyers, Cruisers Auxilary	CAY 52367	

NAVY (MARINE CORPS) EQUIPMENT CON'T

SCR NO. OR MODEL	OUTPUT (WATTS) A1	A2	A3	WK AIRCRAFT IN MC TRANS.	REC.	RANGE A1	A2	A3	WT LBS	SO RCE OF POWER TRANS.	REC.	TYPE AND USE	REMARKS
5-PRX-W			3	30. -	40.	2			31	110V Vibr.		Portable Trans. and fixed station receiver	(LINK)
50UPS			50	-do-	-do-	25				110Volts		Fixed Station Trans. and fixed freq.receiver	(LINK)
250UPS			250	-do-	-do-	50				110Volts		Fixed Station (LINK)	
550-A-WKR			50	-do-	-do-	50				-do-		Fixed Station	REL
565-A-WR			25	-do-	-do-	10	to	15		6 Volt Dynamotor		Mobile Police REL	
601-A *				100-156								Not Portable.	Navy Commercial used with 602-A receiver
602-A *					100 - 156							-do-	Navy Commercial used with 601-A Transmitter
					ARMY RECEIVERS								
190					2.075-2.890						Dry Batts.	Slow Tanks	BC-175
AA 192					.224-7.85						Dynamotor Storage Batt.	Aircraft used with SCR 202.	BC-AA-179
210					1.5 - 4.5						-do-	Tanks, combat cars, scout cars.	BC-169
210-A					1.5 - 18.						-do-	Light Tanks	BC-312
243					.1 - 1.0						Batts. or 25-60 cyc. 110V A.C.		BC-197-A
244					.54 - 20.						-do-		2C-4530
294-A					20. - 28.						12 V D.C.	5 channel FM (Obsolete)	
295					2.0 - 5.8						Dry Batts.	Infantry. Ultra-portable	
BC344					.15 - 1.5						110-120 V 60 cycle A. C.		
593					2.0 - 6.0						Vibrator and storage Batt.	Vehicular or portable	BC-728-A
607					27. - 145.						110V 50-60cyc A.C. or DryBatt.		BC-787
714					3.8 - 6.0						12 V Batt. or Hand Gen.	Infantry, para-troops	BC 1137-A
719					.1 - .4 2.5 - 20.						110-120, 60cyc A. C.		
438					27. - 38.9						Dynamotor, 12-24V vehicle Batt.	Tank destroyers, Field Artillery.	BC-923
538-A					20. - 27.9						12 or 24V D.C	Vehicular	BC-603-A (FM)
					NAVY (MARINE CORPS) RECEIVERS								
*HAA					.01 - 1./ 5 bands				465		110/1/60 235 W.	Ship Board and Shore Stations.	A1, A2, A3
HAB					.1 - 30./ 8 bands				455		-do-	-do-	-do- (ICW)
HAG					.015 - 6./ 4 bands				93		6V.DC,180V.DC 77MA.105-120/1/	58-62,112W.	Ship-Shore (A1)
HAH					.3 - 23./ 7 bands				85		110/1/60 235 W.	Ship Board and Shore Stations	ICW
HAJ					.224-13.575/ 11 bands						115/1/60 or 48.6 W at 6V.DC.	Aircraft	
HAK					.015-.6/ 6 bands				117		110/1/60 60W	Ship-Shore	A3 not recommended.
HAL					.3 - 23./ 8 bands				112		-do-	-do-	
HAO					.5 bands .54 - 30./				114		115/1/58/62 60-60 W.	-do-	
HAS					.19 - 30./ 7 bands				150		110-120/1/50-60 110-120/1/25 4	Batt. -do-	
HAW					.175-.4 .48-30./2 bands				150		110/1/60/70W	-do-	
HAZ					.015-.6/ 4 bands				135		115/1/50-60, 40 W.	Ship	
HBA					-do-				147		110/115/120/1/ 55/65-66W	Ship and Shore	
HBB					.5 - 4.				334		115/1/60/100W	-do-	
HBC					4. - 27.				334		-do-	-do-	
HBG					.54 - 31.						115/1/50-60/ 60 W.	General Service	
HBH					.3-1.2 1.7-16./5 bands				85		115/1/50-60/ 70W	Ship - Shore	
HBJ					.04 - .4 .48-30./9 bands				148		110/120/1/50/60 230/1/50/60	-do-	
HBK					27.8 - 143./ 3 bands				57		117/1/60/80W	General Service	(AM & FM)
HBL					.015 - .6				100		115/1/50/60, 45 W.	Ship-Shore and General	A1 and A2
HBM					.2 - 20.				95		12V D.C. Storage Batt.	-do-	
HBO					.54-1.6. 5.65-15.6/3 bands				130		110/1/60,85W	Recreational	A2 and A3
HBP					3.-24./3 bands				2950		110-120/220-240/1/60-40	Shore Stations	
HBQ					132.-156/1 band				60		110-120/1/60/ 110 W.	-do-	A2 and A3
HBY					.55-43./6 bands				200		110-115-120/ 1/50-60/80W	Ship and Shore	
HBZ					2. - 5.6				5		2-1903A, 1-1903A.	Ultra Portable, Para-Troops	A-C
HCB					.55-30.5				15		110V or Dry Batts.	(S-29)	
HCP					3.-24./ 3 bands				2950		110/1/60-60	Shore Stations	

Weights and Dimensional Data

VEHICLE (SIGNAL)	TYPE	LENGTH	WIDTH	HEIGHT	ACTUAL SQ.FT.	ACTUAL CU.FT.	NET WEIGHT
Trailer	6½-Ton	23'6"	8'1"	9'6"	190	1805	13000
Truck	K51 (1½-Ton Carryall)	18'8"	7'5"	7'10"	136	1085	9975
Truck	2½-Ton, Rectifier	21'4"	8'0"	9'7"	171	1636	15000
Truck	2½-Ton, Antenna	21'4"	8'0"	9'7"	171	1636	15000
Truck	6-Ton, Prime Mover	24'0"	8'0"	10'8"	192	2048	34000
Truck	Work	21'4"	8'0"	9'7"	171	1636	15000

TRANSPORT QUARTERMASTER SECTION
HEADQUARTERS, V AMPHIBIOUS CORPS

RADAR EQUIPMENT

TBA NO.	VEHICLE	MAKE	MODEL OR SET	LENGTH	WIDTH	CU.FT.	WEIGHT
935-A	Trailer, operating	Highway Trlr Co.	CW-10191	20'	8'	1750	14550
935-A	Trailer, power	Highway Trlr Co.	CW-10192	20'	8'	1750	18950
935-B	Trailer, cargo	Trailer Corp. of Amer.		20'	8'	1500	3700
935-C	Radio Set, Crates (9)	Res.Ent.Lim.of Can.	SCR-602-T6			260	3500
935-C	Radio Set		SCR-602-T3(AN/TPS-1B)				
948	Trailer, operating	Fruehauf Trlr Co.	SCR-584	20'	8'	1620	19000
948	Trailer, spare parts	Fruehauf Trlr Co.	SCR-584	15'	8'	1460	16000
948	Trailer, antenna, K-28-A	Fruehauf Trlr Co.	SCR-268	15'	7'	1320	12150
948	Trailer, power, K-34-A	Fruehauf Trlr Co.	SCR-268	18'	8'	1500	16700
948	Trailer, antenna, K-28-B	Fruehauf Trlr Co.	SCR-268-B	17'	8'	1584	13104
948	Truck, K-56	White	SCR-268-B	24'	8'6"	2344	27270
948	Truck, K-60	GMC	SCR-268-B	21'	8'	1680	14540
948	Truck, K-60	GMC	SCR-268-B	21'	8'	1680	21840
948	Truck, K-60	GMC	SCR-268-B	21'	8'	1680	14240
949	Trailer, operating	Trailer Corp.of Amer.	SK-1M	20'	8'	1650	16000

UNCLASSIFIED

Weights and Dimensional Data

TBA NO.	VEHICLE	MAKE	MODEL OR SET	LENGTH	WIDTH	CU.FT.	WEIGHT
949	Trailer, power unit, spare	Trailer Corp.of Amer.	SK-1M	11'	6'6"	370	4000
949	Semi-trailer, de-humidifying	Trailer Corp.of Amer.	SK-1M	8'	6'6"	280	2000
949	Trailer, antenna	Fruehauf	SCR-270-B (Navy)	30'	7'6"	2700	24700
949	Trailer, power	Fruehauf	SCR-270-B "	18'	8'	1512	14000
949	Trailer, operating	Fruehauf	SCR-270-B "	18'	8'	1512	21600
949	Boxes, antenna (2 each set), each	Westinghouse Elec.	SCR-270-B "			228	800
949	Semi-trailer, antenna K-22-B	Fruehauf	SCR-270-B (Army)	30'	8'	2386	14275
949	Prime mover, K-32 (Autocar)	Autocar	SCR-270-B "	17'	8'6"	1204	12500
949	Truck, K-30	GMC	SCR-270-B "	25'	8'6"	2180	21595
949	Truck, K-31	GMC	SCR-270-B "	25'	8'6"	2180	24945
949	Truck, K-33	GMC	SCR-270-B "	27'	8'6"	1963	10125
949	Trailer, operating SKD-2226	Fruehauf	SCR-270-D (Navy)	18'	8'	1510	13610
949	Trailer, power SKD-2226-1	Fruehauf	SCR-270-D "	18'	8'	1510	17550
949	Trailer, antenna, K-64-C	Fruehauf	SCR-270-D "	30'	8'	1600	16740
949	Crates (4 each set), each		SCR-270-D "			266	720
949	Crates (2 each set), each		SCR-270-D "			15	135
949	Box, one		SCR-270-D "			225	145
949	Semi-trailer, antenna	Fruehauf	SCR-270-D (Army)	30'	8'	2386	14275

TBA NO.	VEHICLE	MAKE	MODEL OR SET	LENGTH	WIDTH	CU.FT.	WEIGHT
949	Prime mover, K-32	Autocar	SCR-270-D (Army)	17'	8'6"	1204	12500
949	Truck, K-31A	White	SCR-270-D "	26'	8'6"	2375	26196
949	Truck, K-62	White	SCR-270-D "	25'	8'6"	2275	29228
949	Truck, K-54	GMC	SCR-270-D "	27'	8'6"	1980	10100
951	Trailer, operating	Trailer Corp.of Amer.	SP-1M	20'	8'	1640	14000
951	Trailer, power (spare)	Trailer Corp.of Amer.	SP-1M	11'	6'6"	370	4000
951	Semi-trailer, de-humidifier	Trailer Corp.of Amer.	SP-1M	8'	6'6"	280	2000
951	Trailer, operations	Trailer Corp.of Amer.	SP-1M	20'	8'	1640	14000
951	Truck, spares, #1 K-60	GMC	SCR-527	21'	8'	1750	13000
951	Truck, spares, #2 K-60	GMC	SCR-527	21'	8'	1750	14010
951	Truck, power, #1, K-60	GMC	SCR-527	21'	8'	1750	16360
951	Truck, power, #2, K-60	GMC	SCR-527	21'	8'	1750	15850
951	Trailer, operating,	Fruehauf	SCR-527	20'	8'	1600	12500
951	Trailer, antenna, K-77A	Fruehauf	SCR-527	21'	8'	1690	10900
951	Trailer, antenna, K-76A	Fruehauf	SCR-527	21'	8'	1690	9650
953	Boxes & Crates (8), SW(AN/TPS-2)(602-T7)(CXCA)	General Electric Co.				75	600
953A	Truck, operating	Inter.Harvester Co.	SO-7M/12M	17'	8'	1100	5500
953A	Semi-trailer, spare parts	Trailer Corp.of Amer.	SO-7M/12M	7'	7'	400	1000

CHAPTER VI

ENGINEERING

MATERIAL AND LABOR REQUIRED FOR 300 YARDS OF WIRE ENTANGLEMENT.

Type of Entanglements	Pickets			Short	400-Yd. reels	Concertinas	Staples made of ½-in round drift pins	Weight of material per linear yd. of entanglement	Man-hours to erect 300-yd. of entanglement
	Extra Long	Long	Medium						
Double-apron 4-and 2-pace		91		182	12-13			10	54
Double-apron 6-and 3-pace		61		122	11-12			7	45
High-wire (less guy wires)		181			15-18			12	72
Low-wire 4-and 2-pace			91	182	9			7.5	45
Four-strand fence		91		2	3½-4			4	18
Double-belt concertina (pyramided)		92		4	2	90	270	14	36
Triple-belt concertina (pyramided)	46	92		6	3	135	270	21	90
Triple-belt Dannert concertina		146		4	2	54		15	27

1. Lower number of reels applies when screw pickets are used; higher number when U-shaped pickets are used. Add difference between these two to the larger number when wooden pickets are to be used.
2. Average weight when any issue metal pickets are used.
3. With exception of triple-belt concertina, man-hours are based on use of screw pickets. When driven pickets are used, add 20 per cent to man-hours. With experienced troops, reduce man-hours by one-third. Increase man-hours by 50 per cent for night work.

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C A M O U F L A G E—P A I N T S.

Name	Form issued	Mix	Remarks[1]
Oleoresinous paint (emulsifiable)[2]	Paste	Cloth: 1 part of paste to 3 of solvent. Other surfaces: Equal parts paste and solvent. Water, gasoline, or mineral spirits are suitable solvents.	Coverage 400-600 sq. ft. per gal. on cloth, 450-750 sq. ft. per gal. on wood or painted metal.
Cold-water protein binder paint[2]	Powder paste	10 lb. powder to 1 gal. water. 2 parts paste to 1 part water	This paint is stocked at present but its procurement is discontinued. Coverage on cloth 200-300 sq. ft. per gal.
Gasoline-soluble paint[3]	Powder	9 lb. powder to 1 gal gasoline.	Coverage 500-600 sq ft. per gal. on metal. Can be removed with gasoline.
Lusterless enamel[4]	Liquid	Ready-mixed. May be thinned with mineral spirits.	500-600 sq. ft. per gal. on metal.
Bituminous emulsions (pigmented[3] and nonpigmented)[5]	Viscous liquid	1 part paint to 1 to 2 parts water.	Coverage on wood 300-350 sq. ft. per gal. 100 sq. ft. per gal. on earth. Surfaces coated with this paint cannot be repainted with any other type of paint.
Ready-mixed oil paint	Liquid	Ready-mixed. May be thinned with mineral spirits or gasoline	400-475 sq. ft. per gal. on wood. 500-600 sq. ft. per gal on metal.
Cut-back asphalt (rapid cure)[5]	Liquid	Thin with gasoline.	100 sq. ft. per gal. on earth.

[1]Coverage figures are based upon undiluted paints.

[2]Available in the following standard colors:

Light green Sand Earth brown Loam Olive drab White

Dark green Field-drab Earth yellow Earth red-Black

[3]Available in O.D. only. [4]Available in O.D. and black only. [5]Available in natural (black) only.

DAILY WATER REQUIREMENTS.

Unit consumer	Conditions of use	Gallons per unit per day	Remarks
Man.....	In combat: Minimum.....	1/2	For periods not exceeding 3 days.
	Normal.....	1	Drinking and cooking only.
	In bivouac	2	Minimum for all purposes.
	Temporary camp.....	5	Desirable for all purposes at all times (does not include bathing).
	Temporary camp with bathing facilities...	15	
	Semipermanent camp	30—60	Includes allowance for waterborne sewage system.
	Permanent camp.....	60-100	
Horse, mule, or other large domesticanimals.....	Minimum.....	3—5	A horse can go for 48 hours without water,
	Normal.....	10	drinks from 3 to 5 gallons at a watering and requires 5 minutes to drink.
Motors (consumption per vehicle).....	Level and rolling country.....	1/8 to 1/2	Depends on size of vehicle.
	Mountainous country	1/4 to 1	Do.
Locomotives (consumption per locomotive.	Standard military	Variable	150 gallons per train mile.
	Commercial.....	Variable	200 gallons per train mile.
Shower bath.....	Semipermanent buildings (consumption per fixture).....	300	Depends on number of using personnel and frequencey of use.
Water closet.....	.....Do.....	40	Do.
Lavatory, basin or sink.....	.....Do.....	20	Do.
Urinal.....	.....Do.....	40	Do.

THICKNESS REQUIRED FOR PROTECTION AGAINST SINGLE SHOTS BY DIRECT-FIRE WEAPONS

MATERIALS		Small arms and MG (7.92) fire at 100 Yds.	AT Rifle (7.92 mm) fire at 100 Yds.	20-mm AT Fire at 200 Yds.	37-mm AT fire at 400 Yds.	50-mm AT fire at 400 Yds.	75-mm direct fire 500-1000 Yards.	88-mm direct fire 500-1000 Yards.	REMARKS
SOLID WALLS [1]									
Brick Masonry	(feet)	1½	2	2½	5				
Concrete[1]	do	1	1½	2	3½	4	4½	6½	Ordinary concrete walls.
Concrete (reinf.)[2]	do	½	1	1½	3	3½	4	5	Structurally reinforced.
Stone masonry	do	1	1½	2½	3½	4½	5		
Wood	do	2	3	4					These figures can be taken as guide only.
Timber	do	3	5						
WALLS OF LOOSE MATERIALS PACKED BETWEEN BOARDS [1]									
Brick rubble	do	1	2	2½	5	6			
Clay (dry)	do	3	4						Add 50 percent if wet.
Loam (dry)	do	2	3	4					Add 50 percent if wet.
Gravel, small stone	do	1	2	2½	5	6			
Sand (dry)	do	1	2	2½	5	6			Add 50 percent if wet.
SANDBAGS FILLED WITH: [3]									
Brick rubble	(inches)	20	30	30	60	70			
Clay (dry)	do	40	60						Add 50 percent if wet.
Loam (dry)	do	30	50	60					Add 50 percent if wet.
Gravel, small stone	do	20	30	30	60	70			
Sand (dry)	do	20	30	30	60	70			Add 50 percent if wet.

THICKNESS REQUIRED FOR PROTECTION AGAINST SINGLE SHOTS BY

DIRECT-FIRE WEAPONS

(con'td.)

LOOSE PARAPETS OF:[1]

Clay	(feet)	3½	5		Add 50 percent if wet.
Loam	do	3	4	5	Add 50 percent if wet.
Sand	do	2	3	4	Add 50 percent if wet.

1. Thickness given to the nearest half foot. 2. For 3,000 pounds per square inch concrete.
3. Thickness for walls made of sandbags given in multiples of filled bag widths. (10 inches)
4. One burst of five shots.

NOTE:

Protective thickness given is for a single shot only. Where direct-fire weapons are able to get five or six hits in th same area, the requred protective thickness is approximately twice that indicated.

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REQUIRED THICKNESS IN FEET OF OVERHEAD COVER FOR PROTECTION AGAINST PENETRATIONS PLUS EXPLOSION.

Protective material	High-explosive shell			General-Purpose bombs		
	75-mm	105-mm	155-mm	100-lb.	250-lb.	500-lb.
Reinforced concrete (4,000 lb./sq. in.)..	1 1/2	2 1/2	3 1/2	3 1/2	4 1/2	6
Stone masonry or plain concrete.....	2	3 1/2	5	6	8	9 1/2
Logs, 8-inch minimum diameter wired.....	3	5	7	7	9	12
Crushed stone.....	4	7	9	9	12	16
Tamped earth.....	8	14	18	18	24	32

NOTE. Protective thickness given is for a single hit only.

THICKNESS OF MATERIALS REQUIRED TO PROTECT AGAINST PENETRATION OF FRAGMENTS FROM PROJECTILES AND BOMBS EXPLODING AT A DISTANCE OF 50 FEET. Thicknesses listed in table will give protection at 25 feet except in rare cases.

Material	Thickness measured in—	High-explosive shell			General-purpose bomb			
		75-mm	105-mm	155-mm	100-pound	250-pound	500-pound	1,000-pound
Solid walls.....	Inches							
Brick masonry.....	.....	8	13	17	8	10	13	17
Concrete (plain).....	.....	8	15	18	9	12	15	18
Concrete (reinforced).	.....	7	12	15	7	9	12	15
Timber.....	.....	12	20	24	12	15	20	26
Walls of loose material packed between boards:	Inches							
Brick rubble.....	.....	15	24	30	16	20	24	30
Gravel, small stones..	.....	15	24	30	16	20	24	30
Earth.....	.....	20	30	36	20	24	28	36
Sandbags filled with[1]—	Inches							
Brick rubble.....	.....	20	30	30	20	20	30	30
Gravel, small stones..	.....	20	30	30	20	20	30	30
Sand.....	.....	20	30	30	20	30	40	40
Earth.....	.....	20	30	40	30	40	40	50
Parapets of[2]—	Feet							
Sand (dry).....	.....	2	3	3	2	3	4	4
Earth (dry).....	.....	2	3	4	3	4	4	5

[1]Figures given in multiples of width or thickness of sandbags.

[2]Figures given to nearest 1/2 foot.

TIME AND LABOR FOR CONSTRUCTING ENTRENCHMENTS*			
Type of Emplacement	Excavation (cuft)	Number of men working.	Approximate time (hours)
Shallow connecting Trench (10-yd Section)	150	6	1
Standard Trench, (10-yd. Sec. with one fire pos.	515	6	6½
Special Trench (2-yd.Sec.)	48	1	2½
One-Man Foxhole	35	1	1½
Two-Man Foxhole	60	2	2½
Prone Shelter	24	1	1

*Standard tools, average soil

58. REPAIR OF MINE CRATERS 58.	
Method of Repair	Man-Hours Required
With shovels only	4 x volume in cubic yards
With shovels and wheelbarrows	2 x volume in cubic yards
With shovels and trucks where distance is not over 200 yards and the number of trucks is one-quarter number of men	2 x volume in cubic yards
With shovels and scrapers or dozers	1 x volume in cubic yards
With standard bridge trestle and bents (trained workmen)	15 x diameter in yards
With timbers (trees in vicinity, trained workmen.)	60x diameter in yards

Note: The volume of a mine crater is approximately given by formula:

$$V = 0.4\ D^2 d$$

Where V = volume of crater in cubic yards
D = distance across top of crater in yards
d = depth of crater in yards

STEEL ROAD AND LANDING MATS

a. Characteristics and comparism of steel landing mats.

Type	Pierced Plank	Heavy Bar and rod	Irving grid	Light bar and rod	Sommerfeld
Weight (lb. per sq. ft.)	5.11	3.90	5.56	1.90	1.16
Unit weight and dimensions:					
Length	10'0"	12'0"	12'6"	12'0"	75'0"
Width	1'3"	3'0"	1'105/16"	3'0"	10'4½"
Depth	7/8"	1"	1"	3/4"	½"
Area Covered (sq. ft.)	12.5	36.0	23.24	36.0	778.12
Weight (lb.) including accessories	63.86	140.4	129.24	68.4	935
Bundles:					
Number and type of units	30 planks*	14 panels	16 panels	30 panels	1 roll
Weight (lb.) including accessories	1,928	1,966	2,076.6	2,052	935
Quantity for runway, 5,000 x 150:					
Number of units	60,000	20,833	32,269	20,833	964
Total weight (tons)	1,928	1,465	2,084.9	712.5	440.34
Cargo Space (cu. ft.)	32,084	81,222	72,092	59,084	36,111
Average laying speed (sq. ft. per man hr.)	125	65	65	125	175
Comparative camouflage potentialities	30 % open area	85 % open area	85 % open area	90 % open area	95 % open area

* Breaks-down into six subbundles of five each. One subbundle contains two 5-foot half panels and 4 full panels.

VEHICLE AND POSTED CAPACITIES STEEL PANEL FIXED BRIDGE, BAILEY TYPE
(tentative, subject to revision by further tests)

VEHICLE	MLC CLASS-TONS	SS			DS								TS								DD									TD									
		SPAN OF BRIDGE IN FEET																																						
		60	50	30	120	110	100	80	60	50	40		140	130	120	110	90	80	70		160	150	140	130	110	100	90		180	170	160	150	130	120	110					
		POSTED CAPACITY IN TONS																																						
		28	35	45	16	20	23	33	50	60	70		18	22	25	30	41	48	60		21	25	30	35	45	53	61		19	23	29	35	49	57	65					
Truck, 1½-T, w/1 T tir	6																																						
Truck, 1½-T, w/105mm How	6																																						
Tractor D-4 w/dozer	7																																						
Car armored light, M8	8																																						
Truck 2½-T w/1 T tir	9																																						
Truck 2½-T w/105mm How	9																																						
Car half-track M2	9																																						
Other vehicles under 10-T																																							
Grader med mtzd (Engr)	11																																						
Truck 4-T wrecker	11																																						
Tank light M2A4	12																																						
Truck, 2½-T w/155mm How carr M1	11																																						
Crane trk-mtd (Engr)	12																																						
Truck 4-T cargo (same as distributor water)	13																																						
Truck 4-T ponton	13																																						
Tank light M3	14																																						
Trk tractor 4-5T w/semi-tir fuel serv F-2(AC)	12																																						
Tractor D-7 w/dozer	15																																						
Truck wrecking C-1 (AC)	16																																						
Tank light M5	16																																						
Trk-tractor 5-6T w/semi-tir ponton	14																																						
Motor carriage M8	16																																						
H-10 Loading (ASSHO)																																							
Truck 6-T cargo	18																																						
Crane trk-mtd, w/crane atchments tir	15																																						
Truck 4-T w/155mm How carr M1	16																																						
Tank light 18-T	18																																						
Truck 6-T bridge	19																																						
Truck 2½-T w/8 T tir	17																																						
Tank medium M2A1	21																																						
Truck 7½-T cargo & prime mover	21																																						
Tractor D-4 w/dozer	22																																						
Truck 4-T cargo w/8 T tir	20																																						
Truck 6-T w/3-in AA M2A2	22																																						
Truck 6-T w/90mm AA M1	23																																						
Motor carriage M7	24																																						
Trk-tractor 6-T w/semi-tir wrecking C-2 H-15 loading	26																																						
Motor carriage M12	27																																						
Motor carriage M10	29																																						
Trk-tractor 7½-T w/semi-tir fuel serv F-1 (AC)	26																																						
Truck 7½-T w/155mm gun carr M2 & M3	28																																						
Trk-tractor 5-6T w/20-T semi-tir	32																																						
Truck 6-T w/16-T tir	31																																						
Tank medium M3	33																																						
Tank medium M4	34																																						
H-20 loading																																							
Truck 7½-T w/8-in gun carr M2 transp M1	34																																						
Truck 6-T w/20-T tir	37																																						
Truck 7½-T w/20-T tir	39																																						
Tank assault T-14	46																																						
Tank, heavy, M6	60																																						

LEGEND
SAFE
CAUTION
UNSAFE
SS
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w/ = WITH

PROPORTIONS, BATCH QUANTITIES, AND UNIT QUANTITIES FOR CONCRETE MIXES

Maximum size of coarse aggregate	Water-cement ratio: U.S.gal. Per Sack.	Slump: inches	Proportions by volume, dry compacted.			Materials for 1 batch in 14 cu.ft. mixer, assuming average damp materials.				Yield: cuft. of concrete per 1-sack batch	Cement 94 lb. sacks	Unit quantities of materials for 1 cubic yard of concrete			
						Water: U.S.Gal.	Cement 94 lb. Sacks.	Fine aggregate. cu.ft.	Coarse aggregate. cu.ft.			Weight (damp) Fine aggregate (tons)	Weight (damp) Coarse aggregate (tons)	Volume (damp-loose) Fine aggregate (cuyd)	Volume (damp-loose) Coarse aggregate (cu.yd)
1"	5	½-1	1	2.0	3.1	9.7	3	6.1	8.9	4.07	6.64	0.65	0.99	0.51	0.73
		3-4	1	1.7	2.5	14.1	4	7.2	9.3	3.56	7.59	0.63	0.91	0.49	0.67
		5-7	1	1.4	2.0	15.2	4	5.7	7.6	3.11	8.68	0.60	0.83	0.47	0.61
	5½	½-1	1	2.2	3.4	10.7	3	6.9	9.5	4.40	6.14	0.66	1.00	0.51	0.73
		3-4	1	1.9	2.9	11.5	3	5.8	8.3	3.95	6.83	0.64	0.95	0.50	0.70
		5-7	1	1.6	2.3	16.4	4	6.8	8.9	3.50	7.71	0.60	0.85	0.47	0.62
	6	½-1	1	2.5	3.8	11.4	3	7.9	10.8	4.92	5.48	0.67	1.00	0.52	0.73
		3-4	1	2.2	3.4	12.2	3	6.9	9.6	4.47	6.03	0.65	0.98	0.51	0.72
		5-7	1	1.9	2.4	13.1	3	5.8	8.0	3.95	6.83	0.64	0.92	0.50	0.67
	6½	½-1	1	2.8	4.1	8.1	2	5.8	7.9	5.32	5.07	0.70	1.00	0.54	0.73
		3-4	1	2.5	3.7	13.1	3	7.6	10.5	4.86	5.55	0.68	0.98	0.53	0.72
		5-7	1	2.2	3.3	13.7	3	6.9	9.6	4.54	5.95	0.65	0.92	0.50	0.69
	7	½-1	1	3.0	4.3	8.8	2	6.3	8.3	5.63	4.80	0.72	1.00	0.54	0.73
		3-4	1	2.7	4.0	9.3	2	5.5	7.6	5.24	5.15	0.68	0.98	0.53	0.72
		5-7	1	2.4	3.6	14.7	3	7.6	10.2	4.86	5.55	0.65	0.94	0.51	0.70
	8	½-1	1	3.4	4.9	10.2	2	7.0	9.4	6.29	4.30	0.72	1.00	0.56	0.74
		3-4	1	3.1	4.7	10.5	2	6.5	8.9	6.04	4.47	0.68	0.99	0.53	0.74
		5-7	1	2.8	4.0	11.0	2	5.8	8.3	5.64	4.79	0.66	0.96	0.51	0.74
	5	½-1	1	2.0	3.7	9.3	3	6.1	10.5	4.40	6.13	0.60	1.06	0.47	0.78
		3-4	1	1.7	3.0	10.2	3	5.4	8.6	3.88	6.96	0.58	1.00	0.45	0.73
		5-7	1	1.4	2.5	14.8	4	5.7	9.3	3.36	8.00	0.55	0.96	0.43	0.70
	5½	½-1	1	2.3	3.9	10.1	3	7.2	11.1	4.79	5.64	0.64	1.06	0.50	0.70
		3-4	1	2.0	3.4	11.1	3	6.1	9.6	4.30	6.28	0.61	1.03	0.47	0.78
		5-7	1	1.7	2.9	11.7	3	5.4	8.3	3.88	6.96	0.58	0.97	0.45	0.71

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**Example: Assume a mix with water-cement ratio of 8.0 and dry-compacted proportions 1 to 2.9 to 4.4. The damp loose proportions are 1 to 2.9 X 1.20 to 4.4 X 1.06 = 1 to 3.5 to 4.7. Free moisture carried by aggregate is 1/2 X 3.5 + 1/4 X 4.7 = 2.9 gallons. The net water to be added at the mixer is 8.0 - 2.9 = 5.1 gallons. A two-sack batch of this mix would require:

2 X 5.1 = 10.2 gallons of water added at the mixer
2 X 1 = 2 sacks of cement
2 X 3.5 = 7.0 cubic feet of damp-loose sand
2 X 4.7 = 9.4 cubic feet of damp-loose gravel

Batch quantities for each mix are shown for whole numbers of sacks of cement to give a batch volume not greater than 14 cubic feet.

3Unit quantities based on following assumptions: moderately wet sand carrying 4 percent moisture by weight (1/2 gallon per cubic foot) with damp-loose volume 1.20 times dry-compacted volume; moist gravel carrying 2 percent moisture by weight (1/4 gallon per cubic foot) with damp-loose volume 1.06 times dry-compacted volume.

To estimate quantities for a particular job, multiply unit quantities by the total volume in cubic yards of concrete to be placed, and add about 5 percent to cover unavoidable loss and waste.

***Example: 120 cubic yards of concrete are to be placed using a 1 to 2.3 to 3.6 mix (by dry-compacted volume), water-cement ratio 7 gallons per sack, and 1-inch maximum size aggregate. Estimate of quantities of materials needed with a 5 percent margin for unavoidable loss and waste is:

a. By volume:

Material	Concrete to be placed		Allowance for waste		Unit quantity from table		Quantity needed
cement:	120	X	1.05	X	5.15	=	649 sacks (162 barrels)
fine aggregate (sand):	120	X	1.05	X	0.53	=	67 cubic yards (damp-loose
coarse aggregate (gravel):	120	X	1.05	X	0.72	=	91 cubic yards (damp-loose)
b. By weight:							
cement:	120	X	1.05	X	5.15	=	649 sacks at 94 pounds each-61,000 pounds or 30.5 tons.
fine aggregate(sand):	120	X	1.05	X	0.68	=	86 tons (damp)
coarse aggregate (gravel):	120	X	1.05	X	0.99	=	125 tons (damp)

Proportions, batches, (cont'd.)

2	6	1/2 to 1	1 2.6 4.4	1 2.2 3.9	7.3	2	5.3	8.3	5.24	5.15	0.65	1.06	0.51	0.78
		3 to 4	1 2.2 3.8	1 1.9 3.4	11.9	3	6.9	10.8	4.73	5.70	0.62	1.04	0.48	0.76
		5 to 7	1 2.0 3.4	1 1.7 3.0	12.6	3	6.1	9.6	4.34	6.22	0.61	1.01	0.47	0.74
	6 1/2	1/2 to 1	1 2.8 4.7	1 2.4 4.2	7.9	2	5.8	8.9	5.64	4.80	0.66	1.07	0.51	0.79
		3 to 4	1 2.5 4.2	1 2.1 3.8	8.5	2	5.1	8.1	5.18	5.21	0.64	1.05	0.50	0.77
		5 to 7	1 2.2 3.8	1 1.9 3.4	13.4	3	6.9	10.8	4.80	5.62	0.61	1.03	0.47	0.76
	7	1/2 to 1	1 3.0 5.0	1 2.6 4.5	8.5	2	6.3	9.5	6.03	4.48	0.66	1.07	0.51	0.79
		3 to 4	1 2.7 4.5	1 2.3 4.0	9.1	2	5.5	8.5	5.51	4.90	0.64	1.05	0.50	0.77
		5 to 7	1 2.4 4.1	1 2.1 3.7	9.5	2	5.1	7.9	5.18	5.21	0.61	1.03	0.47	0.76
	8	1/2 to 1	1 3.4 5.5	1 2.9 4.9	9.9	2	7.0	10.4	6.62	4.07	0.66	1.07	0.53	0.79
		3 to 4	1 3.1 5.1	1 2.7 4.6	10.3	2	6.5	9.8	6.29	4.30	0.65	1.05	0.51	0.77
		5 to 7	1 2.8 4.6	1 2.4 4.1	10.9	2	5.8	8.7	5.77	4.68	0.64	1.03	0.50	0.75

[1]Proportions in table are computed using average values. They are intended as a guide for first trial mix. Aggregate proportions should be adjusted thereafter to give the desired workability (slump) without changing the water-cement ratio.

*Example: A two-sack batch using 1-inch maximum size aggregate, water-cement ratio 7 gallons per sack, slump 3 to 4 inches, and dry-compacted volumetric proportions of 1:2:3:3:6 is selected for trial. It turns out to be too wet (large slump) and appears to be oversanded. Investigation shows moisture content of aggregate about as shown in paragraph 132e: 4 percent and 2 percent by weight respectively in fine and coarse aggregates.

To adjust this mix, first increase amount of coarse aggregate with a corresponding decrease in added water, thus economizing on cement and tending to correct oversanded condition. Batch quantities from table are:

water.....9.3 gallons
cement.....2.0 sacks
fine aggregate.....5.5 cu. ft. (damp-loose)
coarse aggregate.....7.6 cu. ft. (damp-loose)

Suppose coarse aggregate for second trial is increased 0.4 from 7.6 to 8.0 cubic feet (damp-loose.) Adding 0.4 cubic feet coarse aggregate that carries 1/4 gallon free water per cubic foot (par. 132e) introduces 1/4 X 0.4, or 0.1 gallon extra water. Adjusted batch quantities for second trial then are:

water (9.3 - 0.1).....9.2 gallons
cement.....2.0 sacks
fine aggregate.....5.5 cu. ft. (damp-loose)
coarse aggregate.....8.0 cu. ft. (damp-loose)

[2]Batch quantities based on following assumptions: moderately wet sand carrying 1/2 gallon of free moisture per cubic foot with damp-loose volume 1.20 times dry-compacted volume; moist gravel carrying 1/4 gallon of free moisture per cubic foot with damp-loose volume 1.06 times dry-compacted volume. Water quantities have been adjusted for moisture carried by aggregate. Amount shown is to be added at the mixer.

FUNCTIONS OF NUMBERS.

Number	Square	Cube	Square root	Logarithm	Number	Square	Cube	Square root	Logarithm
1	1	1	1.0000	0.00000	26	676	17576	5.0990	1.41497
2	4	8	1.4142	.30103	27	729	19683	5.1962	1.43136
3	9	27	1.7321	.47712	28	784	21952	5.2915	1.44716
4	16	64	2.0000	.60206	29	841	24389	5.3852	1.46240
5	25	125	2.2361	.69897	30	900	27000	5.4772	1.47712
6	36	216	2.4495	.77815	31	961	29791	5.5678	1.49136
7	49	343	2.6458	.84510	32	1024	32768	5.6569	1.50515
8	64	512	2.8284	.90309	33	1089	35937	5.7446	1.51851
9	81	729	3.0000	.95424	34	1156	39304	5.8310	1.53148
10	100	1000	3.1623	1.00000	35	1225	42875	5.9161	1.54407
11	121	1331	3.3166	1.04139	36	1296	46656	6.0000	1.55630
12	144	1728	3.1641	1.07918	37	1369	50653	6.0828	1.56820
13	169	2197	3.6056	1.11394	38	1444	54872	6.1644	1.57978
14	196	2744	3.7417	1.14613	39	1521	59319	6.2450	1.59106
15	225	3375	3.8730	1.17609	40	1600	64000	6.3246	1.60206
16	256	4096	4.0000	1.20412	41	1681	68921	6.4031	1.61278
17	289	4913	4.1231	1.23045	42	1764	74088	6.4807	1.62325
18	324	5832	4.2426	1.25527	43	1849	79507	6.5574	1.63347
19	361	6859	4.3589	1.27875	44	1936	85184	6.6332	1.64345
20	400	8000	4.4721	1.30103	45	2025	91125	6.7082	1.65321
21	441	9261	4.5826	1.32222	46	2116	97336	6.7823	1.66276
22	484	10648	4.6904	1.34242	47	2209	103823	6.8557	1.67210
23	529	12167	4.7958	1.36173	48	2304	110592	6.9282	1.68124
24	576	13824	4.8990	1.38021	49	2401	117649	7.0000	1.69020
25	625	15625	5.0000	1.39794	50	2500	125000	7.0711	1.69897

Continued from 51 to 100 on page 2.

FUNCTION OF NUMBERS
(cont'd)

51	2601	132651	7.1414	1.70757	76	5776	438976	8.7178	1.88081
52	2704	140608	7.2111	1.71600	77	5929	456533	8.7750	1.88649
53	2809	148877	7.2801	1.72428	78	6084	474552	8.8318	1.89209
54	2916	157464	7.3485	1.73239	79	6241	493039	8.8882	1.89763
55	3025	166375	7.4162	1.74036	80	6400	512000	8.9443	1.90309
56	3136	175616	7.4833	1.74819	81	6561	531441	9.0000	1.90849
57	3249	185193	7.5498	1.75587	82	6724	551368	9.0554	1.91381
58	3364	195112	7.6158	1.76343	83	6889	571787	9.1104	1.91908
59	3481	205379	7.6811	1.77085	84	7056	592704	9.1652	1.92428
60	3600	216000	7.7460	1.77815	85	7225	614125	9.2195	1.92942
61	3724	226981	7.8102	1.78533	86	7396	636056	9.2736	1.93450
62	3844	238328	7.8740	1.79239	87	7569	658503	9.3274	1.93952
63	3969	250047	7.9373	1.79934	88	7744	681472	9.3808	1.94448
64	4096	262144	8.0000	1.80618	89	7921	704969	9.4340	1.94939
65	4225	274625	8.0623	1.81291	90	8100	729000	9.4868	1.95424
66	4356	287496	8.1240	1.81954	91	8281	753571	9.5394	1.95904
67	4489	300763	8.1854	1.82607	92	8464	778688	9.5917	1.96379
68	4624	314432	8.2462	1.83251	93	8649	804357	9.6437	1.96848
69	4761	328509	8.3066	1.83885	94	8836	830584	9.6954	1.97313
70	4900	343000	8.3666	1.84510	95	9025	857375	9.7468	1.97772
71	5041	357911	8.4261	1.85126	96	9216	884736	9.7980	1.98227
72	5184	373248	8.4853	1.85733	97	9409	912673	9.8489	1.98677
73	5329	389017	8.5440	1.86332	98	9604	941192	9.8995	1.99123
74	5476	405224	8.6023	1.86923	99	9801	970299	9.9499	1.99564
75	5625	421875	8.6603	1.87506	100	10000	1000000	10.0000	2.00000

FIBER ROPES, WIRE ROPES, AND CHAINS.[1]a. Properties of rope.

Diameter (inches)	Weight per 100 feet (pounds)		Minimum breaking strength (pounds)		Safe load capacity (pounds)	
	Wire rope	Fiber rope	Wire rope (Plain steel)	Fiber rope	Wire rope Safety factor of 2	Fiber rope Safety factor of 4
3/8	23	3.45	11,000	1,080	5,500	260
1/2	40	7.36	18,800	2,120	9,400	530
5/8	63	13.10	28,800	3,520	14,400	880
3/4	90	16.40	41,200	4,320	20,600	1,080
7/8	123	22.00	56,000	6,160	28,000	1,540
1	160	26.50	73,000	7,200	36,500	1,800
1 1/8	203	35.20	92,000	9,600	46,000	2,400
1 1/4	250	40.80	113,000	10,800	56,500	2,700
1 1/2	360	58.80	161,000	14,800	80,500	3,700
1 3/4		87.70		21,200		5,300
2		105.00		24,800		6,200

[1]Rules of thumb. Safe working stress may be approximated by the following formulas:

(1) Fiber rope: $T=D^2$
(2) Wire rope: $T=8D^2$
(3) Chain: $T=8D^2$

T is safe working stress in tons. D is diameter in inches. For chain, D is the diameter of metal of one side of link.

[2]Data is for sisal rope.

SAFE LOAD OF HOOKS.

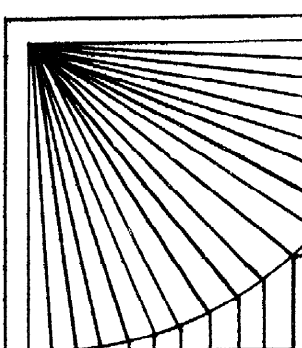
Diameter of metal (inches)	Inside diameter of eye (inches)	Width of opening (inches)	Safe load (pounds)
5/8	3/4	1	1,000
11/16	7/8	1 1/16	1,200
3/4	1	1 1/8	1,400
7/8	1 1/8	1 1/4	2,400
1	1 1/4	1 3/8	3,400
1 1/8	1 3/8	1 1/2	4,200
1 1/4	1 1/2	1 11/16	5,000
1 3/8	1 5/8	1 7/8	6,000
1 1/2	1 3/4	2 1/16	8,000
1 5/8	2	2 1/4	9,400
1 7/8	2 3/8	2 1/2	11,000
2 1/4	2 3/4	3	13,600
2 5/8	3 1/8	3 3/8	17,000
3	3 1/2	4	24,000

PROPERTIES OF CHAINS.

Normal size (inches)	Approximate weight per 100 feet (pounds)	Safe working load			
		Common iron (pounds)	High-grade iron (pounds)	Soft steel (pounds)	Special steel (pounds)
3/8	160	2,700	2,980	3,300	6,400
7/16	210	3,460	3,800	4,360	8,300
1/2	280	4,500	4,960	5,260	10,500
5/8	430	6,940	7,620	8,460	15,200
3/4	630	10,140	11,160	12,000	21,000
7/8	840	14,000	15,400	16,500	28,660
1	1,100	18,600	20,460	21,200	36,400

SLING LOAD CHART.

Load chart of sling stress at various angles of inclination with a load of 1,000 pounds.



Angle (degrees)	Total sling stress (pounds)	Total vertical load (pounds)
90	1,000	1,000
85	1,003	1,000
80	1,015	1,000
75	1,035	1,000
70	1,064	1,000
65	1,103	1,000
60	1,154	1,000
55	1,220	1,000
50	1,305	1,000
45	1,414	1,000

Total vertical load (pounds)	Total sling-stress (pounds)	Angle (degrees)
		0
1,000	11,473	5
1,000	5,759	10
1,000	3,863	15
1,000	2,924	20
1,000	2,366	25
1,000	2,000	30
1,000	1,743	35
1,000	1,555	40
1,000	1,414	45

STRESS IN EACH LEG OF A SLING ASSEMBLY IS FOUND BY DIVIDING THE TOTAL SLING STRESS BY THE NUMBER OF LEGS. IF THE LOAD IS OVER OR UNDER 1,000 POUNDS, DIVIDE THE LOAD BY 1,000 AND MULTIPLY BY THE TOTAL SLING STRESS FOUND IN THE TABLE FOR THE CORRESPONDING ANGLE.

WEIGHTS OF COMMON MATERIALS.

Material	Weight in lb. per cu. ft.
Aluminum:	
Cast	160
Wire	168
Asphalt	69-144
Brass	510-542
Brick	110-130
Bronze	545-555
Coal:	
Anthracite	97
Bituminous	84
Concrete:	
Reinforced	150
Plain	140-150
Copper, cast	549-558
Earth:	
Clay:	
Dry, compacted	100
Damp, plastic	110
Common:	
Dry, loose	65-88
Moist, compacted	100
Mud, wet:	
Fluid	104-120
Compacted	110-130
Sand:	
Dry, compacted	110
Damp, loose	94
Gravel, crushed rock:	
Damp loose	82-125
Dry, compacted	90-145
Ice	56
Iron:	
Gray cast	439-445
wrought	487-492
Lead	710
Lime	53-75
Masonry:	
Mortar rubble	155
Dry rubble	125
Rock, Solid:	
Granite	125-187
Shale	162
Soapstone	162-175
Trap	187-190
Salt	129-131
Snow:	
Fresh fallen	5-12
Wet, compact	15-20
Steel	474-494
Tar	75
Tin	455
Water:	
Fresh	62.4
Sea	64.0
Zinc	438

Petroleum products	Lb. per gal.
Asphalt cement	8.45
Liquid asphalt	8.30
Gasoline	5.62
Oil, lubricating	6.69

CONTENTS OF LUMBER IN BOARD FEET.

Size of piece (inches)	Length of piece (feet)							
	10	12	14	16	18	20	22	24
2 by 4...	6 2/3	8	9 1/3	10 2/3	12	13 1/2	14 2/3	16
2 by 6...	10	12	14	16	18	20	22	24
2 by 8...	13 1/2	16	18 2/3	21 1/3	24	26 2/3	29 1/3	32
2 by 10..	16 2/3	20	23 1/3	26 2/3	30	33 1/3	36 2/3	40
2 by 12..	20	24	28	32	36	40	44	48
2 by 14..	23 1/3	28	32 1/3	37 1/3	42	46 2/3	51 1/3	56
2 by 16..	26 2/3	32	37 2/3	42 2/3	48	53 1/3	58 2/3	64
3 by 6...	15	18	21	24	27	30	33	36
3 by 8...	20	24	28	32	36	40	44	48
3 by 10..	25	30	35	40	45	50	55	60
3 by 12..	30	36	42	48	54	60	66	72
3 by 14..	35	42	49	56	63	70	77	84
3 by 16..	40	48	56	64	72	80	88	96
4 by 4...	13 1/3	16	18 2/3	21 1/3	24	26 2/3	29 1/3	32
4 by 6...	20	24	28	32	36	40	44	48
4 by 8...	26 2/3	32	37 1/3	42 2/3	48	53 1/3	58 2/3	64
4 by 10..	33 1/3	40	46 2/3	53 1/3	60	66 2/3	73 1/3	80
4 by 12..	40	48	56	64	72	80	88	96
4 by 14..	46 2/3	56	65 1/3	74 2/3	84	93 1/3	102 2/3	112
4 by 16..	53 1/3	64	74 2/3	85 1/3	96	106 2/3	117 1/3	128
6 by 6...	30	36	42	48	54	60	66	72
6 by 8...	40	48	56	64	72	80	88	96
6 by 10..	50	60	70	80	90	100	110	120
6 by 12..	60	72	84	96	108	120	132	144
6 by 14..	70	84	98	112	126	140	154	168
6 by 16..	80	96	112	128	144	160	176	192
6 by 18..	90	108	126	144	162	188	198	216
6 by 20..	100	120	140	160	180	200	220	240
8 by 8...	53 1/3	64	74 2/3	85 1/3	96	106 2/3	117 1/3	128
8 by 10..	66 2/3	80	93 1/3	106 2/3	120	133 1/3	146 2/3	160
8 by 12..	80	96	112	128	144	160	176	192
8 by 14..	93 1/3	112	130 2/3	149 1/3	168	186 2/3	205 1/3	224
10 by 10.	83 1/3	100	116 2/3	133 1/3	150	166 2/3	183 1/3	200
10 by 12.	100	120	140	160	180	200	220	240
10 by 14.	116 2/3	140	163 1/3	186 2/3	210	233 1/3	256 2/3	280
10 by 16.	133 1/3	160	186 2/3	213 1/3	240	266 2/3	293 1/3	320
12 by 12.	120	144	168	192	216	240	264	288
12 by 14.	140	168	196	224	252	280	308	336
12 by 16.	160	192	224	256	288	320	352	384
14 by 14.	163 1/3	196	228 2/3	261 1/3	294	326 2/3	359 1/3	392
14 by 16.	186 2/3	224	261 1/3	298 2/3	336	373 1/3	410 2/3	448

PROPERTIES OF EXPLOSIVES.

Explosive	Relative strength (by weight)	Detonation by —
TNT.....	1.00	Issue cap.
Ammonium nitrate (cratering charge).....	1.25	Issue cap.
Nitrostarch.....	.90	Issue cap.
Composition C.....	1.35	Two issue-caps.
Composition C-2.....	1.35	Issue cap.
Chain demolition block, M 1.....	1.20	Issue cap.
Demolition block, M 2.....	1.20	Issue cap.
Guncotton, wet *.....	.95	
Ammonal *.....	1.25	
Dynamite, straight, 50 percent....	1.00	No. 6 commercial blasting cap.
Dynamite, gelatin, 60 percent.....	1.00	No. 6 commercial blasting cap.
Dynamite, ammonia (extra), 50 percent.....	1.00	No. 6 commercial blasting cap.
Blasting gelatin.....	1.90	No. 6 commercial blasting cap. (large charges must be primed).
Gunpowder.....	.33	Flame
Cord, detonatin, PETN.....	.....	No. 6 commercial blasting cap.

*British standard explosive. Detonation by British special primer requiring No. 8 commercial blasting cap.

All U. S. military explosives, except composition C, can be detonated by the issue cap. Tubular values give minimum strength cap that should be used.

EQUIVALENTS OF MEASURE

a. Lengths

Meters, m	Inches, in.	Feet, ft.	Yard, yd	Rods, r.	Chains, ch.	Miles, U.S.		Kilometers, km
						Statute	Nautical	
1	39.37	3.28083	1.09361	0.19884	0.04971	$0.^{3}_{0}6214$	$0.^{3}_{0}5396$	0.001
0.02540	1	0.08333	0.02778	$0.^{2}_{0}5051$	$0.^{2}_{0}1263$	$0.^{4}_{0}1578$	$0.^{4}_{0}1371$	$0.^{4}_{0}2540$
0.30480	12	1	0.33333	0.06061	0.01515	$0.^{3}_{0}1894$	$0.^{3}_{0}1645$	$0.^{3}_{0}3048$
0.91440	36	3	1	0.18182	0.04545	$0.^{3}_{0}5682$	$0.^{3}_{0}4934$	$0.^{3}_{0}9144$
5.02921	198	16.5	5.5	1	0.25	$0.^{2}_{0}3125$	$0.^{2}_{0}2714$	$0.^{2}_{0}5029$
20.1168	792	66	22	4	1	0.01250	0.01058	0.02012
1609.35	63360	5280	1760	320	80	1	0.86839	1.60935
1853.25	72962.5	6080.20	2026.73	368.497	92.1243	1.15155	1	1.85325
1000	39370	3280.83	1093.61	198.838	49.7096	0.62137	0.53959	1

*1 meter (m) = 10 decimeters (dm) = 100 centimeters (cm) = 1,000 millimeters (mm).

b. Surfaces and areas.

Sq.Meters m'	Sq.Inches sq. in.	Sq.Feet sq. ft.	Sq.Yards sq. yd.	Sq. Rods sq. r.	Acres A	Hectares ha.	Sq.Miles Statute	Sq. Kilometers, km'
1	1550.00	10.7639	1.19599	0.03954	$0.^{3}_{0}2471$	0.0001	$0.^{6}_{0}3861$	$0.^{5}_{0}1$
$0.^{3}_{0}6452$	1	$0.^{2}_{0}6944$	$0.^{3}_{0}7716$	$0.^{4}_{0}2551$	$0.^{6}_{0}1594$	$0.^{7}_{0}6452$	$0.^{9}_{0}2491$	$0.^{9}_{0}6452$
0.09290	144	1	0.11111	$0.^{2}_{0}3673$	$0.^{4}_{0}2296$	$0.^{5}_{0}9290$	$0.^{7}_{0}3587$	$0.^{7}_{0}9290$
0.83613	1296	9	1	0.03306	$0.^{3}_{0}2066$	$0.^{4}_{0}8361$	$0.^{6}_{0}3228$	$0.^{6}_{0}8361$
25.2930	39204	272.25	30.25	1	0.00625	$0.^{3}_{0}2529$	$0.^{5}_{0}9766$	$0.^{4}_{0}2529$
4046.87	6272640	43560	4840	160	1	0.40469	$0.^{2}_{0}1563$	$0.^{2}_{0}4047$
10000	15499969	107639	11959.9	395.366	2.47104	1	$0.^{2}_{0}3861$	0.01
2589999	.....	27878400	3097600	102400	640	259.000	1	2.59000
1000000	.....	10763867	1195985	39536.6	247.104	100	0.38610	1

Note. Notations $0.^{2\,3\,4}_{0\,0\,0}$, etc., indicate that the $0.^{2\,3\,4}_{0\,0\,0}$, etc., are to be replaced by 2, 3, 4, etc., ciphers. Example: 1 square rod = $0.^{5}_{0}9766$ = 0.000009766 square miles.

c. Volume and capacity

Cubic Decimeters, dm^3 or Liters, l	Cubic Inches, Cu. in.	Cubic feet, cu. ft.	Cubic Yards, cu. yd.	U.S. Quarts		U. S. Gallons		U.S. Bushes, bu.
				Liquid, l. qt.	Dry, d. qt.	Liquid, l. gal.	Dry, d. gal.	
1	61.0234	0.03531	$0.^{2}_{0}1308$	1.05668	0.90808	0.26417	0.22702	0.02838
0.01639	1	$0.^{3}_{0}5787$	$0.^{4}_{0}2143$	0.01732	0.01488	$0.^{2}_{0}4329$	$0.3^{2}_{0}720$	$0.^{2}_{0}4650$
28.3170	1728	1	0.03704	29.9221	25.7140	7.48055	6.42851	0.80356
764.559	46656	27	1	807.896	694.279	201.974	173.570	21.6962
0.94636	57.75	0.03342	$0.^{2}_{0}1238$	1	0.85937	0.25	0.21484	0.02686
1.10123	67.2006	0.03889	$0.^{2}_{0}1440$	1.16365	1	0.29091	0.25	0.03125
3.78543	231	0.13368	$0.^{2}_{0}4951$	4	3.43747	1	0.85937	0.10742
4.40492	268.803	0.15556	$0.^{2}_{0}5761$	4.65460	4	1.16365	1	0.125
35.2393	2150.42	1.24446	0.04609	37.2368	32	9.30920	8	1

U.S. dry measure: 1 bushel = 4 pecks = 8 gallons = 32 quarts = 64 pints.
U.S. liquid measure: 1 gallon = 4 quarts = 8 pints = 32 gills = 128 fluid ounces.
1 U.S. gallon = 0.83268 Imperial gallon.

d. Masses and weights.

Kilograms kg	Grains, gr.	Ounces		Pounds		Tons		
		Troy, oz. t.	Avoir., oz. av.	Troy, lb. t.	Avoir., lb. av.	Net, (Short), 2000 lbs.	Gross, (Long), 2240 lbs.	Metric, 1000 kg
1	15432.4	32.1507	35.2740	2.67923	2.20462	$0.^{2}_{0}1102$	$0.^{3}_{0}9842$	0.001
$0.^{4}6480$	1	$0.^{2}_{0}2083$	$0.^{3}_{0}2286$	$0.^{3}_{0}1736$	$0.^{3}_{0}1429$	$0.^{7}_{0}7143$	$0.^{7}_{0}6378$	$0.^{7}_{0}6480$
0.03110	480	1	1.09714	0.08333	0.06857	$0.^{4}_{0}3429$	$0.^{4}_{0}3061$	$0.^{4}_{0}3110$
0.02835	437.5	0.91146	1	0.07595	0.06250	$0.^{4}_{0}3125$	$0.^{4}_{0}2790$	$0.^{4}_{0}2835$
0.37324	5760	12	13.1657	1	0.82286	$0.^{3}_{0}4114$	$0.^{3}_{0}3674$	$0.^{3}_{0}3732$
0.45359	7000	14.5833	16	1.21528	1	0.00050	$0.^{3}_{0}4464$	$0.^{3}_{0}4536$
907.185	14000000	29166.7	32000	2430.56	2000	1	0.89286	0.90719
1016.05	15680000	32666.7	35840	2722.22	2240	1.12	1	1.01605
1000	15432356	32150.7	35274.0	2679.23	2204.62	1.10231	0.98421	1

1 long hundredweight (cwt.) = 1/20 long ton = 4 quarters = 8 stone = 112 lbs. = 50.8024 kg.

e. Forces on weights per units of area (pressure)

Kilograms per Sq. Centimeter, kg/em^2	Pounds per Sq.Inch lb./in.^{2}	Pounds per Sq. Foot, lb./ft.^{2}	Net Tons, (2000 lbs) per Sq.Foot	Atmospheres, Standard, 760mm	Columns of Mercury, (Hg) 13,59593 Sp.G.		Columns of water Max. Density 4° C	
					Millimeters	Inches	Meters	Feet
1	14.2234	2048.17	1.02408	0.96778	735.514	28.9572	10	32.8083
0.07031	1	144	0.07200	0.06804	51.7116	2.03588	0.70307	2.30665
0.$^3_0$4882	0.$^2_0$6944	1	0.00050	0.$^3_0$4725	0.35911	0.01414	0.$^2_0$4882	0.01602
0.97648	13.8889	2000	1	0.94502	718.216	28.2762	9.76482	32.0367
1.03329	14.6969	2116.35	1.05818	1	760	29.9212	10.3329	33.9006
0.$^2_0$1360	0.01934	2.78468	1.$^2_0$1392	0.$^2_0$1316	1	0.03937	0.01360	0.04461
0.03453	0.49119	70.7310	0.03537	0.03342	25.4001	1	0.34534	1.13299
0.10	1.42234	204.817	0.10241	0.09678	73.5514	2.89572	1	3.28083
0.03048	0.43353	62.4283	0.03121	0.02950	22.4185	0.88262	0.30480	1

f. Velocity.

Meters per second, m/sec.	Feet per second, ft./sec.	Miles per hour, M/h	Knots U. S.	Kilometers per hour km/h
1	3.28083	2.23693	1.94254	3.6
0.30480	1	0.68182	0.59209	1.09728
0.44704	1.46667	1	0.86839	1.60935
0.51479	1.68894	1.15155	1	1.85325
0.27778	0.91134	0.62137	0.53959	1
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
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CHAPTER VII

HOSPITALIZATION AND EVACUATION

EVACUATION OF CASUALTIES

Capacities of Transport.-- The following table gives the average capacities of the various types of transport used to move sick and injured men.

Vehicle	Men		
	Sitting	Recumbent	Average
Ambulance, air	16	10	13
Ambulance, animal-drawn	8	4	6
Ambulance, motor	10	4	6
Ambulance, cross-country	6	4	5
Truck, 1½-ton	10	4	5
Truck, 2½-ton	16	6	7

SECTION IV

EVACUATION AFLOAT

21. General:

a. Evacuation from shore in landing area:

The plan for this evacuation service will depend upon the number and relative locations of the landing beaches if there is more than one, which will usually be the case, as well as upon the number and locations of the troop and hospital ships in the landing area in relation to the shore. Widely separated or detached landing beaches require separate allotment to them of the necessary hospital ships, ambulance boats, personnel, and materiel for evacuation from shore to ship. Hospital ships at anchorage in the landing area are comparable to evacuation hospitals receiving patients from front line divisions in normal land operations. Beach heads are comparable to division hospital stations, and the boats plying between shore and hospital ships correspond to the Army ambulance companies in the Army scheme of evacuation.

b. Evacuation facilities afloat:

For evacuation from shore to ship the following means are employed.

(1) Small boats returning to ships from landing troops: The use of these boats in the initial stages of a landing operation for transporting wounded from shore to ship is uncertain and dependent on the military situation. They cannot be thus employed until the essential combatant troops and their equipment have been put ashore. Until the landing is secured, all other activities must yield to this paramount necessity. Thereafter, perhaps later in the first day's attack, these boats on their return trips to ships may carry casualties, preferably slightly wounded. While being thus used, these boats are not entitled to fly the Red Cross flag nor to the protective provisions of the Geneva Convention.

(2) Ambulance boats: These are motorboats of varying size and design assigned to the operative control of the Navy force surgeon. They fly the Red Cross flag and may be used only for the transportation of casualties, medical personnel, and medical materiel. When thus marked and employed, they are entitled to the protective provisions of the Geneva Convention. The joint medical plan should provide a reasonable number of these boats of approved patient capacity, design, and speed. They should be used primarily for the transportation of seriously wounded cases to hospital ships.

(3) Lighters and barges: Each of these, capable of carrying a large number of wounded on litters or stretchers, should be added to the ambulance boat service in the landing area, to the extent of the requirements, as rapidly as they can be made available after combatant troops and their equipment have been put ashore.

(4) Motor launch for the Navy force surgeon: A swift motor launch at the exclusive disposition of the Navy force surgeon and his staff assistants is highly desirable for the efficient administration of the naval evacuation service in the landing area. The assignment should be made before arrival in the operations area.

Note: Ship's boats generally are not well adapted for use as ambulance boats, especially those below the 40-foot motor launch (class B boat). The 50-foot motor launch (class A boat), except for its too low speed, is fairly satisfactory for this purpose. Loaded Army litters can be stowed in the class A and B boats as shown below:

ARMY LITTER

	On bottom	Second tier (across thwarts)	Total
50-foot launch.....	12	12	24
40-foot launch.....	6	8	14

c. Development of shore-to-ship evacuation:

As a rule, during the initial stages of a landing attack, comparatively few casualties can be removed from beaches. Although the landing of combat troops and materiel must have first consideration, it is highly desirable to have ambulance boats provided for the evacuation of the seriously wounded direct to hospital ships. In any event it is the responsibility of the Naval force surgeon to organize and develope his evacuation service step by step as rapidly as the situation permits; and the detailed plan should provide for the rapid organization of systematic evacuation from shore to ship.

22. Debarkation:

The debarkation of Army medical units and equipment is carried out in accordance with Army debarkation tables.

23. Phases of Landing Operations:

a. The dispositions and employment of the Army and Navy medical services conform to the three general phases of the landing operations in which, during the first phase, landings of combat teams on the assigned beaches are made and as rapidly as possible the attack on each beach is pushed with such reinforcements as are necessary or available until the beaches are secured from enemy light artillery fire. This requires as the objective for this phase the establishment of a line about 10,000 yards inland. The second phase consists of those further operations inland which secure the beaches from enemy medium artillery fire. This requires as the objective for this phase the establishment of a line at least 15,000 yards inland. The third phase includes the further land and air operations necessary to secure the objectives for which the landing was undertaken.

b. Simultaneous landings are made by as many combat teams on as broad a front as the boat facilities will permit without undue dispersion.

24. Army Medical Service During First Phase:

a. Medical detachments:

The medical detachments of combat units debark with the organization to which attached. In a combat battalion, two first-aid men wearing Red Cross brassards and carrying as much dressing material as they can, board the landing boats with each company.

It is their duty to land with and follow their companies closely, and to render such assistance to the wounded as may be possible. The remainder of the battalion medical detachment will normally go ashore in the later subwave which lands the battalion headquarters, the battalion surgeon accompanying the battalion commander. Ordinarily, only such medical equipment and supplies as may be hand carried can be landed at this time. The men should,however, carry as many dressings, blankets, litters, and as much splinting material as practicable. The detachments' transport and heaviest equipment follow later. The battalion medical detachment of an infantry assault battalion establishes an aid station at or near the beach at the best available site, where the battalion casualties are collected and treated as in land attacks. As the battalion advances inland, the medical section follows it and establishes successive aid stations according to the situation. The procedure followed by the medical section of an infantry reserve battalion is basically the same as that for the medical troops attached to an assault battalion in the landing, as is also that of the medical sections of field artillery and combat engineer battalions.

b. Regimental sections:

Regimental sections of regimental medical detachments will normally land with their own regimental headquarters and thereafter perform their duties in accordance with the normal practice in offensive operations. In some situations it may be necessary for the regimental section to take over temporarily a battalion aid station at the beach filled with wounded whom the battalion section has had to leave behind in order to follow its battalion.

c. Beach medical service:

(1) The Army beach medical service proper lands early as a section in the Army shore party and operates thereafter under the shore party commander. The duties of the evacuation officer in charge of this section are to:

(a) Organize and coordinate the Army medical service on the beach.

(b) Receive, sort, and classify, temporarily care for, and retain control of all casualties arriving at the beach; turn them over to the naval medical embarkation officer (par. 25) only as fast as the latter can dispose of them.

(c) Provide such shelter and protection for the casualties as are practicable.

(d) Establish and operate a medical supply point.

(e) Establish connections with other Army medical units on or near the beach.

(f) Assist in forwarding messages and supplies to medical units inland.

(g) Mark his station by the Red Cross and other identifying signs.

(h) Cooperate closely with the naval medical embarkation officer on his beach.

(2) Wounded may temporarily accumulate in large numbers on the beach. They must be segregated and the walking wounded rigidly controlled; especially must the latter be prevented from interfering with the activities of the beach party. Therefore, casualties ready for evacuation from the beach will be assembled at a location designated by the shore party commander, which should be located with due regard to suitable boat landings, cover from the enemy fire, location of the aid or collecting stations, and natural drift of the wounded. One or more such locations may be designated for each beach.

(3) Medical personnel to assist the evacuation officer should come from a corps medical regiment or other medical unit of low debarking priority. This personnel must be adequate for the many duties of the evacuation section of the shore party, which include the movement of all litter cases collected at the beach to a point on the shore from which they will be loaded into boats by the naval medical embarkation officer's personnel. In emergency, the evacuation officer may have to furnish litter bearers temporarily to assist in loading boats. The initial evacuation section of the shore party landing in the leading combat team may of necessity be only a skeletonized group. In such cases its early reinforcement will be provided for.

(4) It is highly important that the sorting, classification, and grouping of patients by the Army evacuation officer is done carefully and systematically. This assists the naval medical embarkation officer materially, permits greater economy in the use of boats and decreases later the secondary transfers from ship to ship.

d. Medical regiment divisional (or medical battalion, triangular division)

(1) Collecting companies: If conditions permit, the personnel of collecting companies land later during the first day's attack, taking with them such materiel as can be hand carried. Litter bearers of collecting companies move out to make contact with regimental and battalion aid stations and evacuate casualties from them to the beach. Other collecting companies personnel establish an initial collecting station near the beach. As the beach head is enlarged, collecting companies advance their collecting station inland, maintaining contact with the medical detachments in their zone of action. The transport and heavy equipment of collecting companies can be landed only after boats and simple docking facilities have become available for this use.

(2) Ambulance companies: The personnel of ambulance companies normally follow soon after the collecting companies. If casualties are heavy and the attainment of the first objective slow, the personnel of those companies should be used as litter bearers to assist in evacuating casualties to the medical stations on or near the beaches. In some situations it may be impossible to land the ambulances until the end of the first phase.

(3) Hospital companies: These companies usually cannot establish hospital stations ashore until the landed forces have gained beach heads at least 4 or 5 miles deep. Local topography may sometimes permit earlier establishment of these stations. If such is the case and if boat transportation to shore is available, advantage should be taken of such favorable circumstances to provide these facilities on shore for the care of casualties. Patients in hospital stations will be classified and held until called for by the Army evacuation officer. In opening the initial hospital station after landing, the hospital company may take over the patients and the site of a collecting station near the beach, the collecting company opening a new station further inland. When companies of two or more battalions of a medical regiment are operating on a beach, a commanding officer will be designated and a command post established for the control of such elements.

(4) Medical regiment headquarters and headquarters and service companies: These companies may be expected to land with corresponding echelons of the division headquarters. The division surgeon, however, should establish an advanced command post when the division command post is opened on shore.

(5) By the end of the first phase, part of the medical regiment of the divisions should be ashore, operating collecting stations, an ambulance service, and perhaps a hospital station near the beach. A medical supply point and dump will be in operation near the beach for the supply of medical units ashore.

Note: Medical organization of a Marine Corps brigade consists of four medical companies, each composed of a headquarters section, collection section, hospital section, and service section. These medical companies land and operate in accordance with the brigade medical plan.

25. Navy Medical Service During First Phase.

a. Navy Force Surgeon:

With the launching of the initial landing attack, the Navy force surgeon's office becomes the nerve center of the combined activities of the two medical services. The Army force surgeon must maintain close contact with the Navy force surgeon. This is easily done if both are embarked in the same ship. It is necessary that the Navy force surgeon receive prompt and frequent reports of the casualty situation on each landing beach. This will be done normally through signal communication from beach parties. A board in his office should show the bed capacity of each hospital ship in the landing area as well as that of troop ships previously prepared and staffed to receive slightly wounded from shore. On another board the evacuation officer or his staff keeps the current bed occupancy status of each receiving ship. This measure is of prime importance, since by means of it the actual bed situation throughout the fleet is known with approximate accuracy at all times, and boats returning from shore with patients are routed accordingly. Report of casualties and bed status are rendered to the Army and Navy staffs periodically; hourly, if called for.

b. Beach medical service:

(1) The naval evacuation service on a beach forms a section in the beach master's organization. The skeleton of this section, at least, should accompany the beach master in the first boat group and be reinforced to full requirements at the earliest opportunity thereafter. The task of the naval medical evacuation officer is to organize and operate the service of evacuation from the beach. His activities include:

(a) Establishment and marking with the Red Cross flag and other necessary identifying signs, an evacuation station at a site approved by the beach master.

(b) Establishing and maintaining close contact with the Army evacuation officer of the shore party.

(c) Reception of casualties from the Army evacuation officer and loading them into boats according to their classification for movement to designated receiving ships.

(d) Keeping the Navy force surgeon informed of the casualty situation on his beach through naval signal communication on the beach and by messages transmitted by naval personnel in boats carrying casualties from shore to ship.

(e) Forwarding to the Army evacuation officer messages and supplies received by him for the Army medical service ashore.

(2) If casualties are collecting in large numbers on the beach in the early stages of the attack, naval medical embarkation officers must be alert to take advantage of any opportunities to send as many of them as practicable to ships by returning boats. This is generally desirable although there may have to be a ship-to-ship transfer of these cases later.

c. Evacuation at end of first phase:

By the end of the first phase, evacuation from shore should have progressed to the use of a considerable number of improvised ambulance boats (previously used in landing combat elements) now provided with medical personnel and equipment from hospital ships or transports for the emergency treatment of casualties en route; perhaps a few regular ambulance boats entitled to fly the Red Cross flag; an organized ambulance boat service to most of the beaches; and the delivering of all casualties from beach evacuation stations to designated ships.

26. Army Medical Service During Second Phase.

During this phase, any remaining elements of the divisional medical regiments : medical battalion, triangular division), including transport, are landed and ce positions and missions similar to those assigned them in offensive land operions.

a. Corps medical regiment:

By the end of this phase,the corps medical regiment may be expected to have landed and relieved the divisional medical regiments of their functions at the beaches, allowing these elements to move forward in support of the action of the division.

b. Medical supply:

The medical supply service for the troops ashore is further developed in this phase; the medical supply point at the beaches is more systematically organized, supplies in the medical dump built up, and depleted stocks of the medical units inland replenished.

27. Naval Medical Service During the Second Phase:

By the end of this phase, the naval medical service should have succeeded in eveloping and systematizing the evacuation from shore and at the receiving end; hat is, in the fleet itself. This it is enabled to do through:

(a) Increased number of landing boats available for the use of the medical services.

(b) Inauguration of a regular ambulance boat service to the more important beaches

(c) Docking facilities, though limited, at important beaches.

(d) Use of a small number of barges and lighters now made available to the medical services, whereby wounded can be removed from a beach more expeditiously, comfortably, and in much greater numbers.

(e) Fewer transfers of patients from ship to ship. If casualties are heavy, evacuation from shore in the early stages of the landing is more or less an emergency measure and patients are brought in many instances to whatever ship may be most practicable for the boat carrying them. As communication from the beaches becomes well established, and hence the numbers and classification of casualties on each beach reach the Navy force surgeon with some regularity, delivery of casualties can be made to ships according to patients' classification and ships' vacant beds. This favorable development proceeds in like proportion with the increasing facilities noted in a to d above.

28. Army Medical Service During Third Phase:

a. Surgical hospitals generally may be landed and established early in this phase. Their use to the extent of their limited bed capacity is of distinct advantage to the most seriously wounded.

b. Evacuation hospitals, comparatively large units, should not be landed and established until a sufficient advance inland has been made to afford them suitable choice location and resonable assurance that they will not become involved in local reverses to our forces.

c. General and station hospitals in which definitive treatment is carried out cannot be opened until a secure oversea base has been established. If general hospitals then must be built, at least 4 months will probably be required for their erection and equipment. It may be possible to convert existing buildings to general hospital use in much less time. The oversea expeditionary plan may or may not contemplate the establishment of general hospitals in the occupied territory.

d. Army medical laboratories (mobile) will be landed as early in the third phase as their use becomes practicable and necessary.

e. Army medical depots will be established ashore at such time and points as conform to the supply plan of the expeditionary forces after a base has been secured.

29. Navy Medical Service During Third Phase:

a. In this phase the naval medical service may be expected to have at its disposition sufficient boats of suitable types to enable it to perfect shore to ship evacuation. Evacuation from some beaches will probably have ceased and the other beaches have been provided with adequate wharf and docking facilities. Hospital ships may be relocated at anchorage to shorten the average trip from beach to ship.

b. In this phase, in which the Navy is best equipped and organized to carry out its part of the evacuation service, the Army is gradually adding to its facilities for caring for its own casualties ashore. This augmentation continues until, if the Army is successful in its mission and general hospitalization in the occupied territory is contemplated, the Army will eventually hospitalize its casualties in its own establishments. If the Navy is then to continue evacuation for the Army to home ports or other bases, it will still evacuate that part of the Army's sick and wounded which have ceased to be military assets or whose recovery will be a matter of many months.

30. Medical Supply to Landing Beaches:

a. In land operations it is difficult to maintain an adequate supply of blankets, litters, and splinting material at advanced medical stations during combat in spite of the specific provisions made for an exchange of these items for every casualty carried to the rear. It is more difficult in joint landing operation. Both Army and Navy are involved in this supply to the landed medical units. All medical supplies are on board ship when the attack is launched. Medical personnel landing early can take with them only very small quantities of these items. In the early stages of landing, blankets, litters, and splinting materials cannot be exchanged with any degree of certainty, as troop landing boats, if sometimes used to remove wounded from the shore, may deliver their patients to ships not carrying medical supplies. Furthermore, the boats may not return directly to the beaches but go to another ship to take a boat load of troops ashore.

b. (1) Therefore, the supply of blankets, litters, and splinting and dressing materials on beaches by exchange cannot be relied upon. It is necessary that the joint medical plan make detailed provision for this supply during the landing operations, to include:

(a) That medical detachments landing take with them as many of these items as they can man-handle.

(b) That a medical dump be established promptly on each beach under the direction of the evacuation officer (shore party), with the necessary personnel to operate it.

(c) That boats in the early stages of the attack, landing supplies include some of these essential items of medical equipment.

(d) That as soon as ambulance boats are put into service, they build up, on their runs from ship to shore, as rapidly as possible and maintain ample reserves of blankets, litters, and splinting and dressing materials on each beach.

(e) That the naval medical embarkation officer (beach party) take all necessary action to facilitate this supply.

(f) That at the beach, exchange with litter bearers and ambulances bringing in casualties from inland be rigidly enforced.

(2) The measures given in (1) above apply especially to the critical first and second phases. Thereafter an organized and more extensive system of medical supply to the landed forces should be in operation.

c. (1) The Navy stretcher is designed for use on board ship. For the movement of large numbers of casualties from shore to ship it is unsatisfactory. Its employment for this purpose would further require the transfer of wounded from the Army litter to the Navy stretcher on the beach.

(2) In joint oversea expeditions it is desirable for the Navy to make the necessary adaptations (litter hoists, litter slideways, bunk straps, etc.) for the use of the Army litter in transferring Army casualties from shore to ship.

31. Alternative Procedure in Sorting and Classifying Casualties:

a. Ideally, the sorting and classification of sick and wounded is best carried out on shore, thus permitting boats carrying casualties to ships to be systematically and most economically employed, and at the same time reducing to the minimum the time taken and the discomforts to patients in the subsequent secondary evacuation from ship to ship. Practically, in confused and crowded condition of the beaches often occurring, the heavy inflow of wounded, the early scarcity and irregularity of casualty carrying boats, and the uncertainty of the particular ship to which any loaded boat will deliver its patients, shore sorting, as experience has shown, may be far from satisfactory.

b. An alternative procedure is to anchor a hospital ship off each beach, designate it as a sorting station, and at the same time fill it to capacity with casualties requiring early operation and others which are to be evacuated to a home port, transferring the rest to other ships. When this sorting ship is filled with the proper cases it leaves and is replaced at anchorage by another hospital ship. If occupied beaches are close together one sorting ship may serve more than one beach. This method was used extensively by the British at Gallipoli in 1915.

APPENDIX

ILLUSTRATIVE ESTIMATE OF HOSPITAL SHIP BEDS FOR A HYPOTHETICAL JOINT OVERSEA EXPEDITION

1. General:

The following estimates and computation of hospitalization afloat to accompany a hypothetical joint Army and Navy oversea expedition are meant to serve only as an illustration of how the problem may be approached in the preparation of the medical plan. It represents a situation requiring a large number of beds in class A, class B, and class D hospital ships, but not as high a percentage of such beds as might be necessary in another situation.

Note: For the purpose of this manual, class A hospital ships are those fully equipped hospital ships in commission in the Navy; class B hospital ships are those Navy hospital ships carried in the Navy Register, but not in commission in peacetime; class D hospital ships are those procured and converted and equipped as floating hospitals from commercial shipping and commissioned as hospital ships in the Navy.

The fewer the class A and class B hospital ships available for use in a joint Army and Navy oversea expedition the earlier should estimates be made for the number of beds required afloat in the area of operation. This is necessary because class D hospital ships must be procured, converted, equipped, and manned prior to the expedition's departure from the port of embarkation.

It should be noted that the division of sick and wounded according to their seriousness, between class A and B ships, and class D ships, as made in this illustrative situation, will not be an arbitrary one in practice, provided the class D ships have been converted into modern and fully equipped hospital ships.

2. Principal Data on Which Estimates Were Based:

a. Enemy army forces believed to be available: Strong in numbers; in fighting qualities, and in armanent and defense dispositions; skilled, stubborn, and reinforced resistance probable. Enemy naval resources available known to be much inferior to ours.

b. Army (and) Marine Corps expeditionary strength..... 40,000

c. Navy expeditionary strength..... 12,000

d. Operations area 8 days' fleet sailing time from port of embarkation and base.

3. Estimates:

a. Army sick en route to operations area hospitalized in their own transports (40,000+1,000x1.65x8 (days))	528
Navy sick en route hospitalized on their own ships: (12,000+1,000x1.65x8 (days))	158
Total expeditionary sick in hospital (on sick list) upon arrival in operations area	686

Additional Army and Navy sick, hospitalized during first 7 days in operations area (686 sick and 7,500 battle casualties deducted from aggregate strength)	506
Total expeditionary sick in hospital to include 7th day after arrival in operations area	1192
Total expeditionary sick requiring evacuation to include 7th day in operations area, 10 percent	119
15 percent of total Army strength being wounded patients, 80 percent of total battle casualties being wounded (initial H-hour to include 7th day)	6,000
One-third of wounded, serious, requiring class A and B hospital ship facilities	2,000
One-third of wounded, less serious, requiring class D hospital ship facilities	2,000
One-third of wounded retained ashore or in transports, as slightly wounded	2,000
Total Army casualties and Navy sick requiring evacuation at end of 7th day in operations area	4,119
Total hospital ship beds for Army and Marine Corps to accompany joint expeditionary forces	5,000

b. Twenty days may be assumed to be required for hospital ships in the operations area to make the turn around and begin loading patients again in the landing area, the expeditionary fleet must be followed from the port of embarkation at close intervals by additional hospital ships. The minimum number for this purpose for the Army forces (and Navy sick) are computed as follows:

Army sick hospitalized 8th to 20th day in operations area: (31,978+1000x1.65x13 (days))	686
Navy sick (estimated) hospitalized in same period	251
Total expeditionary sick hospitalized, 8th to 20th day	937
Total expeditionary sick, occurring 8th to 20th day, requiring evacuation from operations area, 10 percent	94
Additional 6 percent of remaining Army and Marine forces (31,603) in operations area being wounded patients, 8th to 20th day	1,896
One-third of wounded, serious, requiring class A and B hospital ship facilities	632
One-third of wounded, less serious, requiring class D hospital ship facilities	632

One-third of wounded retained ashore or on transports, as slightly wounded 632

Total Army casualties (and Navy sick) requiring removal from operations area, 8th to 20th day 1,358

Total additional hospital ship beds to reach operations area prior to 20th day 1,300

4. Provisions of Medical Plan for Army Forces (and Navy Sick):

(a) (1) Hospital ships to accompany expeditionary forces from port of embarkation:

Class A and B hospital ships with normal bed capacity..	2,500
Class D hospital ships with normal bed capacity	2,500
Total hospital ship beds accompany expedition	5,000

(2) To arrive in landing area 6th day after the expeditionary fleet:

Class A or B hospital ships with normal bed capacity...	450
Class D hospital ship with normal bed capacity of	450

(3)To arrive in operations area 12th day after the expeditionary fleet:

Class A or B hospital ships with normal bed capacity ...	450
Class D hospital ship with normal bed capacity	450
Total, second and third echelons	1,800
Aggregate hospital ship beds	6,800

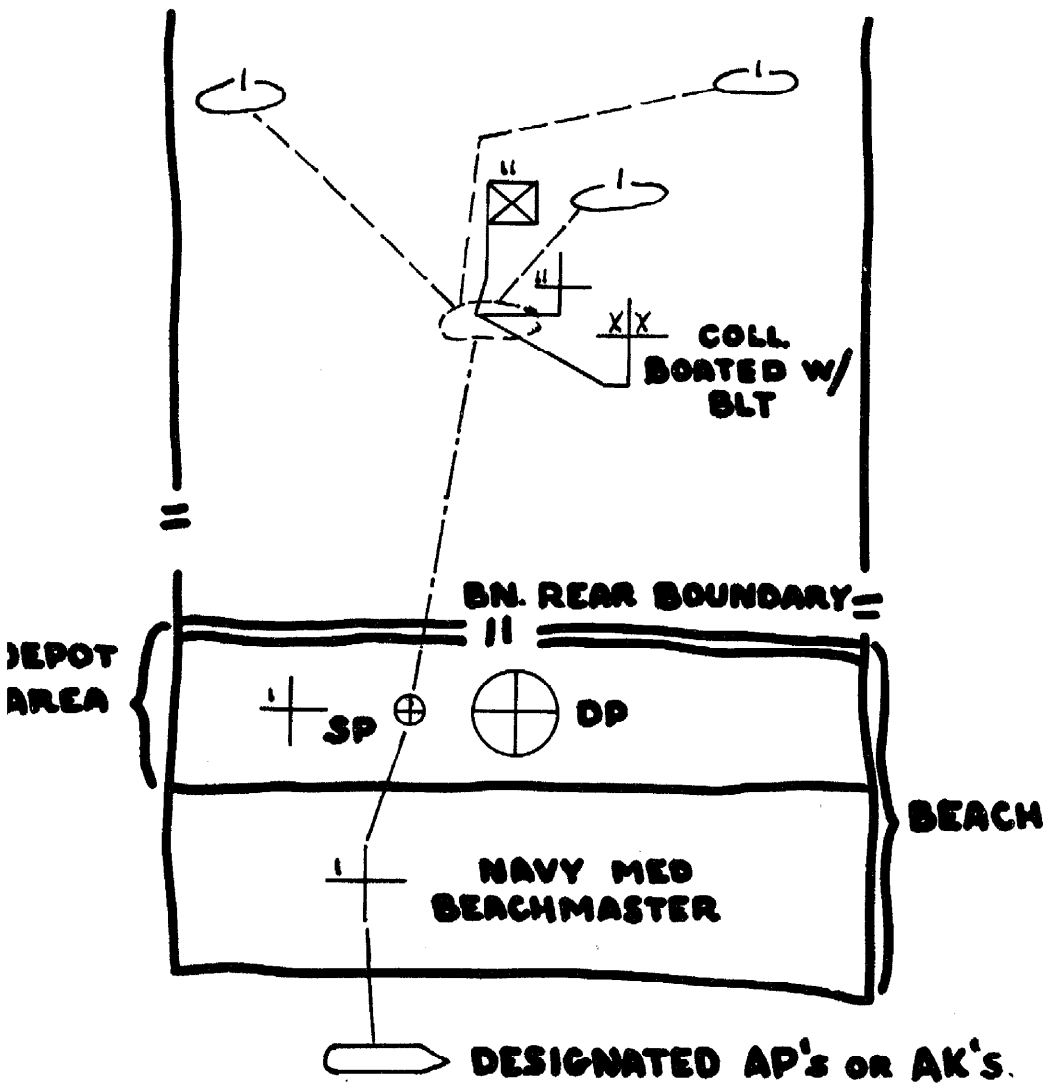
b. To the 6,800 hospital ship beds must be added such beds as are determined upon in the plan for the reception of the probable or the possible naval wounded.

c. (1) In this example, no factor of safety has been provided for the numerous possibilities of unforseen changes in conditions or in the situation, which might increase the hospital ship bed requirements. No allowance has been made for prisoner-of-war casualties. It is only rarely possible to utilize at one time 100 percent of hospital bed capacity.

(2) Ordinary prudence dictates that in the situation here assumed, a reserve of at least 10 percent of hospital ship beds be added. This reserve may initially be held, ready for sailing, at the port of embarkation.

(3) That the number of hospital beds provided for the situation indicated for the first 28 days after sailing from the port of embarkation is conservative, is apparent from the fact that 1,916 of the sick and 2,632 of the wounded, a total of 4,548, are held in landing area. A considerable percentage of the sick will have returned to duty by the end of this period, but of the wounded a majority will still be on a sick status, probably in part on land and in part on ship board. These sick and wounded may exceed the Navy's hospital resources even after all transports which can possibly be spared for the purpose have been hastily and indequately fitted out for their hospitalization.

(4) As to the use of transports for the return to the home port or other base of those sick and wounded who in this hypothetical situation have been moved in hospital ships, it is to be recognized that both categories (those in class A and B and those in class D hospital ships) are of such a serious character as to require the medical and surgical care and the facilities of properly equipped hospital ships. History furnishes examples of deplorable and even scandalous instances of the movements of great numbers of the sick and wounded of such joint expeditions from the operations area to a distant base in entirely inadequately converted and medically equipped troop transports; and consequently attended by wholesale deprivations and unnecessary suffering. In the main such conditions are to be ascribed to the initial failure to plan for and to provide as a part of the expeditionary shipping sufficient hospitalization afloat.



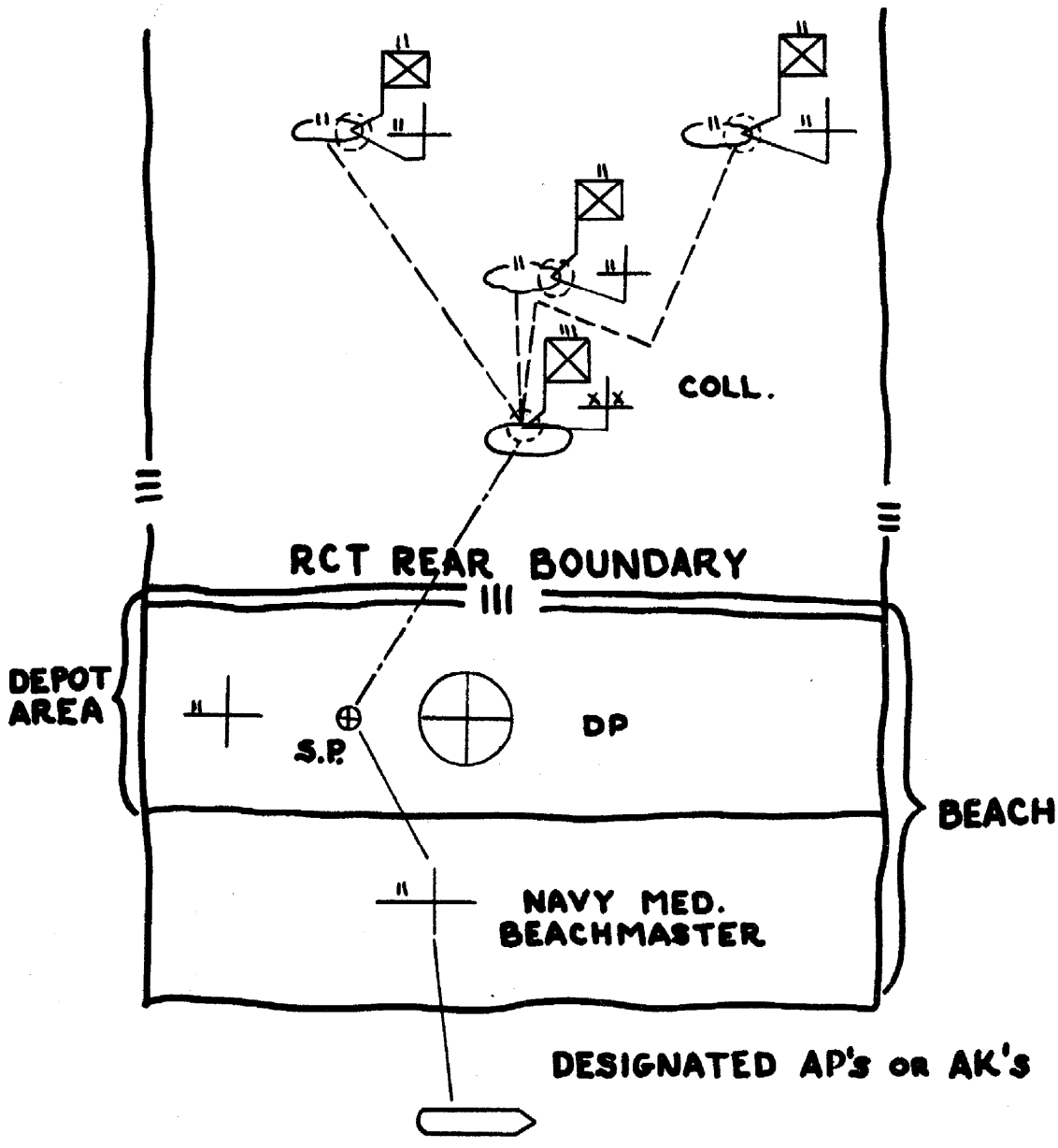
EVACUATION, BN. PHASE

----- EVACUATION BY HIGHER UNITS.

-·-·- EVACUATION BY RETURNING SUPPLY VEHICLES (NOT UNDER S.P. AID STATION)

⬭ AREA DEFENSE

⊕ EVACUATION CONTROL POINT



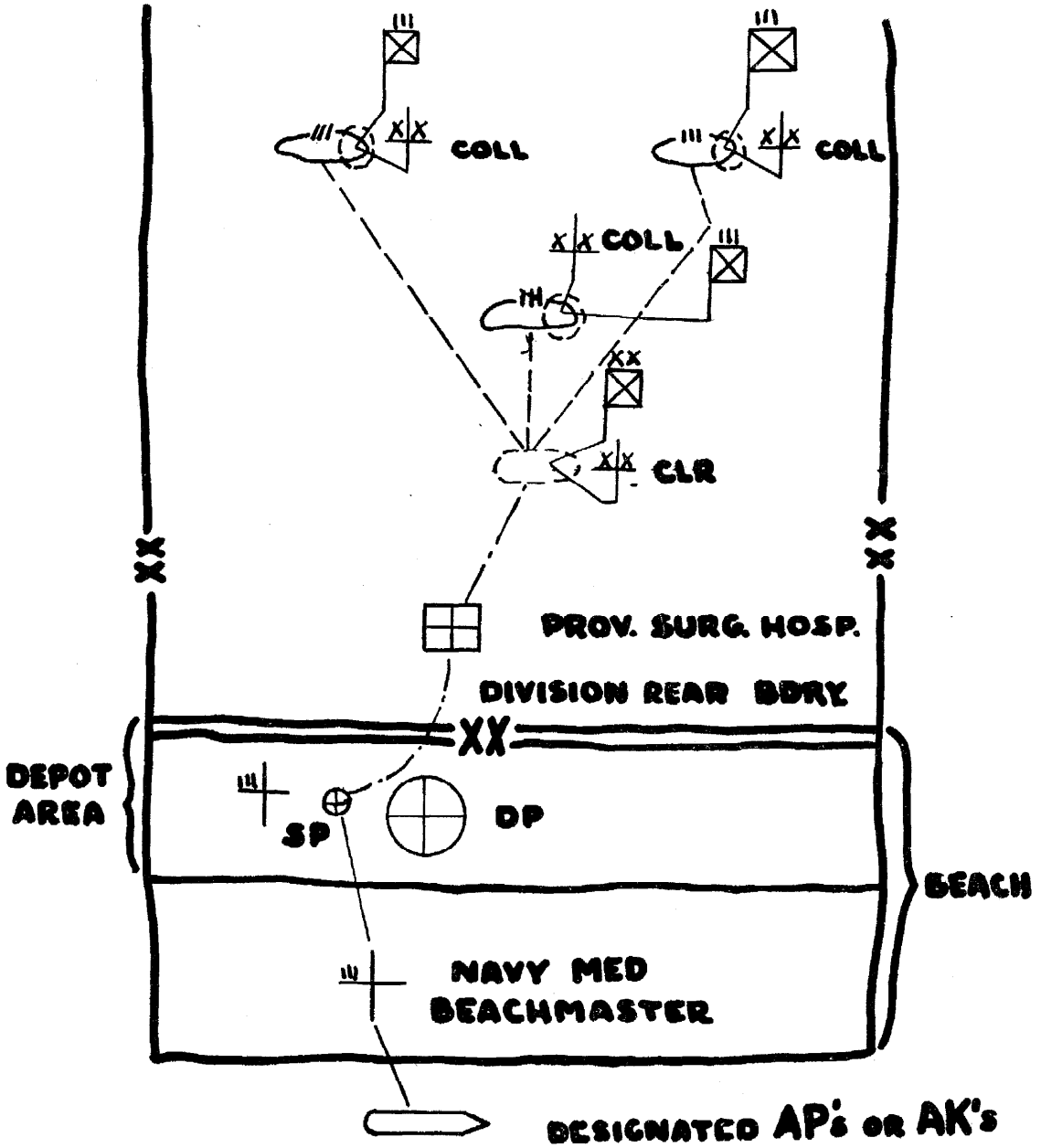
EVACUATION, REGIMENTAL PHASE

- - - - - - - EVACUATION BY HIGHER UNITS.

—·—·— EVACUATION BY RETURNING SUPPLY VEHICLES (NOT UNDER S.P. AID STATION)

⬭ AREA DEFENSE

⊕ EVACUATION CONTROL POINT



EVACUATION, DIVISION PHASE

——— EVACUATION BY HIGHER UNITS.

—·—·— EVACUATION BY RETURNING SUPPLY VEHICLES (NOT UNDER S.P. AID STATION)

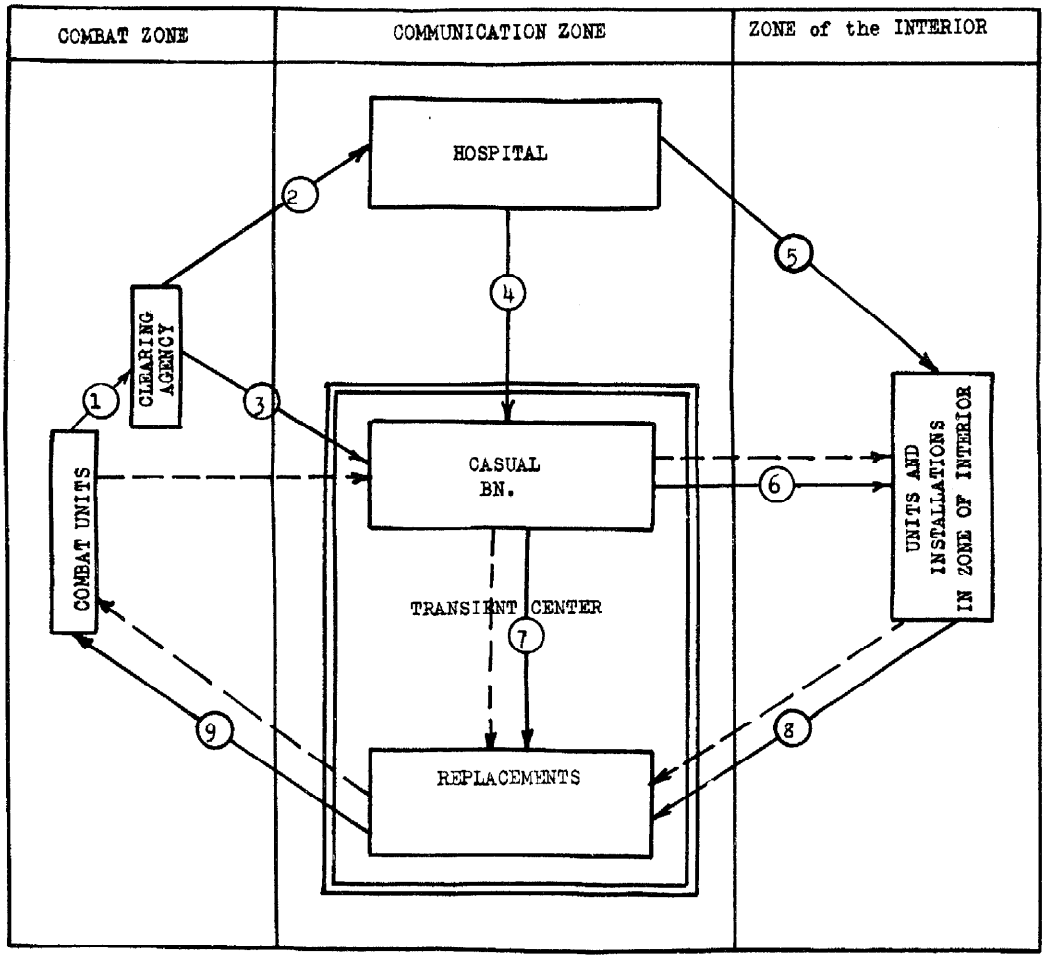
◌ AREA DEFENSE

⊖ EVACUATION CONTROL POINT

TRANSIENT CENTER, FLEET MARINE FORCE, PACIFIC

PROCEDURE FOR PROCESSING

EVACUATIONS AND REPLACEMENTS



LEGEND:

_____ INDIVIDUAL AND HEALTH RECORDS

- - - - SERVICE RECORD BOOKS

BATTLE CASUALTIES - ASSAULT OF ISLAND FORTRESSES

	Total Blue Landing Forces involved	Casualties			% of total Blue Landing Forces that are Casualties.	Evacuation Time (Hrs.)
		Killed	Wounded	Total		
ATTU	*12,000	*600 30%	*1400 70%	*2000 100%	16.6%	24
TARAWA ATOLL	*18,000	1056 29%	2557 71%	3613 100%	20.0%	***
MAKIN ATOLL	6,600	66 26%	187 74%	253 100%	3.8%	6.0
KWAJALEIN ATOLL — KWAJALEIN IS.	21,342	177 15%	1037 85%	1214 100%	5.6%	5.0
KWAJALEIN ATOLL — ROI-NAMUR IS.	20,104	195 26%	545 74%	740 100%	3.6%	2.5
ENIWETOK ATOLL	*10,000	299 27%	786 73%	1085 100%	10.8%	***
AVERAGES FOR ALL ACTIONS:		25.5%	74.5%	100%	10.0%	9.3

Notes: *To nearest round number.
**Final casualty report not yet in at this time.
***Undetermined as yet.