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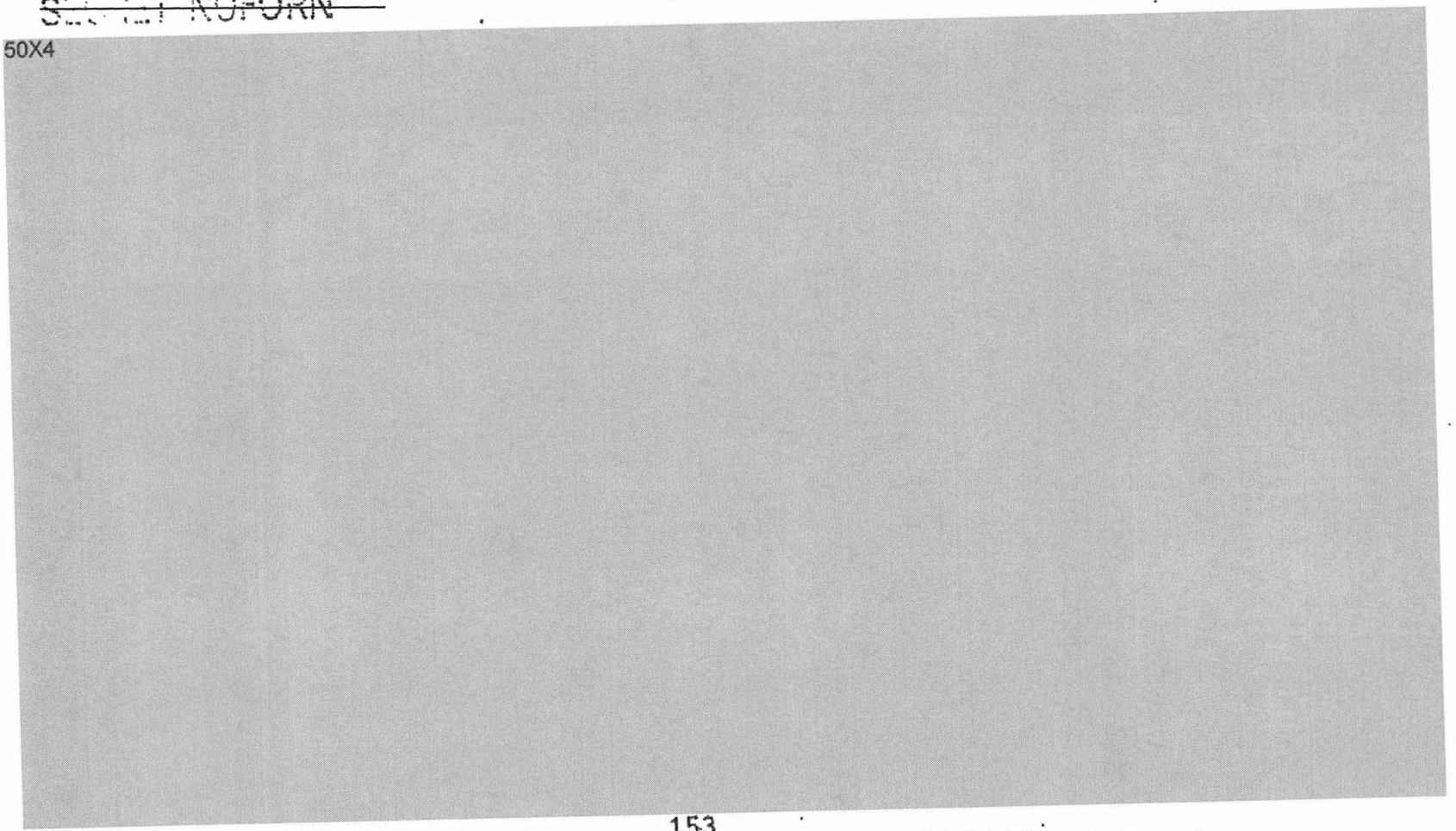

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ENCLOSURE 1
TO
APPENDIX A
PORT SEGMENTATION

This appendix gives information on port segmentation and routing of traffic. The following ports were considered:

Port Number	Port
101	Inchon
102	Pusan
103	Chinhae-Masan
104	Mukhojin-Ni (Mookho)
105	Kunsan
106	Ulsan-Man
107	Mockpo
108	Yosu
109	Pohang-Dong
110	Samchonpo
111	Kuryongpo-Hang
112	Suyong

Estimated traffic through the ports is based on reports of commercial shipping for the year 1967 plus, in some cases, an allowance for additional traffic because of the military emergency. In choosing convoy size and frequency an attempt was made to minimize interference with the normal flow of commerce. The first consideration in segmenting the port approaches was the determination of a line within which covert mining could be completely excluded. This determined the inner harbor segment or segments. Beyond this line segmentation was on the basis of water depth or geography.

Figure A-1 shows the approximate areas concerned with the red showing where covert mining is expected and the blue where this mining is excluded and inspection of traffic.

Port 101. Inchon

About 7,000,000 deadweight tons of shipping per year plus local traffic goes through this port. Four transits per day (average 3500 GRT ships) forms the important traffic to be protected. This is handled in the form of one two-way convoy each two days (8 transits per two-way convoy).

Close north end of channel to all traffic along Kuup, Chagyak To and Hang Do line (see H.O. 3246). Do as much surveillance of traffic in the channel as possible, but it is expected that enemy can mine during harassment phase by moving in and out with the fishing fleet.

Convoys will exit through two segments. Segment 1 extends from the harbor entrance about 45 miles in length, an average width of about 2,000 yards, and an average water depth of about 60 feet. Segment 2 extends the remainder of the way to the 30-fathom curve. It is about 50 miles in length with an average

width of about 15,000 yards.

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Port 102. Pusan

This is the most important South Korean port with about 22,000,000 deadweight tons of shipping per year (7000 transits). The important traffic to be protected was assumed to consist of one two-way convoy each two days (24 transits) and to average 4000 GRT per ship.

50X4

Port 103. Chinhae-Masan

These two ports are considered together since in protecting the naval base at Chinhae the approaches to the commercial port of Masan will also be protected. Masan has about 475,000 deadweight tons of shipping per year in and out of the port plus local traffic. Chinhae will have an estimated two transits per day. Average convoy size is taken as four transits with an average time between convoys of 1-1/2 days since daily access to Chinhae may be required. Access to the complex is controlled along a line from Haryu to Cho Do to Chagun Dae Som to Pam Som to Tongdu Mal (see H.O. 3247). Surface craft mining can be eliminated inside the harbor since close surveillance of the traffic is possible.

The first outer segment is about 5 miles long and an average of 13,400 yards wide and an average depth of 90 feet. The second segment is 3 miles long, about 26,000 yards wide with an average depth of 150 feet.

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Port 104. Mukhojin-Ni (Mookho)

This small east coast port is important principally for shipping coal. Average about one transit per day. Traffic organization is one two-way convoy each 4 days (4 transits). Port approaches cannot be closed.

50X4

Port 105. Kunsan

The port carries about 700,000 deadweight tons per year plus local traffic; one convoy each 5 days (4 transits) with the average size of ship in convoy about 1800 GRT.

50X4

Port 106. Ulsan-Man

Total traffic of more than 2,500,000 deadweight tons; one two-way convoy each two days (four transits).

50X4

Port 107. Mockpo (Mokp'o)

About 200,000 deadweight tons traffic per year; one convoy (four transits) each four days.

50X4

Convoys would transit a single segment about 12 miles long and an average of 80,000 yards wide, with an average water depth of 110 feet.

Tide range is 9 feet. Bottom is rocky with some sand and mud.

Port 108. Yosu

About 300,000 deadweight tons of shipping transits per year; one two-way convoy each two days (eight transits). Generally small ships averaging 500 GRT or less.

Close entrance to Yosu in the narrows of Yosu Haeman (See H.O. Chart 5494).

Convoys transit a single segment 16 miles in length, average width 22,000 yards and average water depth 100 feet. There is a 9 foot tidal range. Bottom is mud and sand.

Port 109. Pohang-Dong

About 80,000 tons of shipping transits each year; one convoy every four days (four transits).

Exclude covert mining inside the 5 fathom curve. Convoys transit through two segments: #1 length 1.5 miles, average width 3400 yards, and average depth 45 feet; #2 length 5 miles, average width 10,000 yards, and average water depth 90 feet. Bottom is sand and mud. Tidal range is less than one foot.

Port 110. Samchonpo

About 7,000 tons of shipping transits each year; one convoy per five days (four transits).

Exclude covert mining inside a line closing Purvis Inlet across from Suu Do to Sang Do and northward (see H.O. Chart 3240). Convoys transit a single segment 10 miles long, an average of 22,000 yards wide, and an average water depth of 90 feet. Tidal range is 8 to 9 feet. Bottom is mud with patches of sand and shell.

Port 111. Kuryongpo

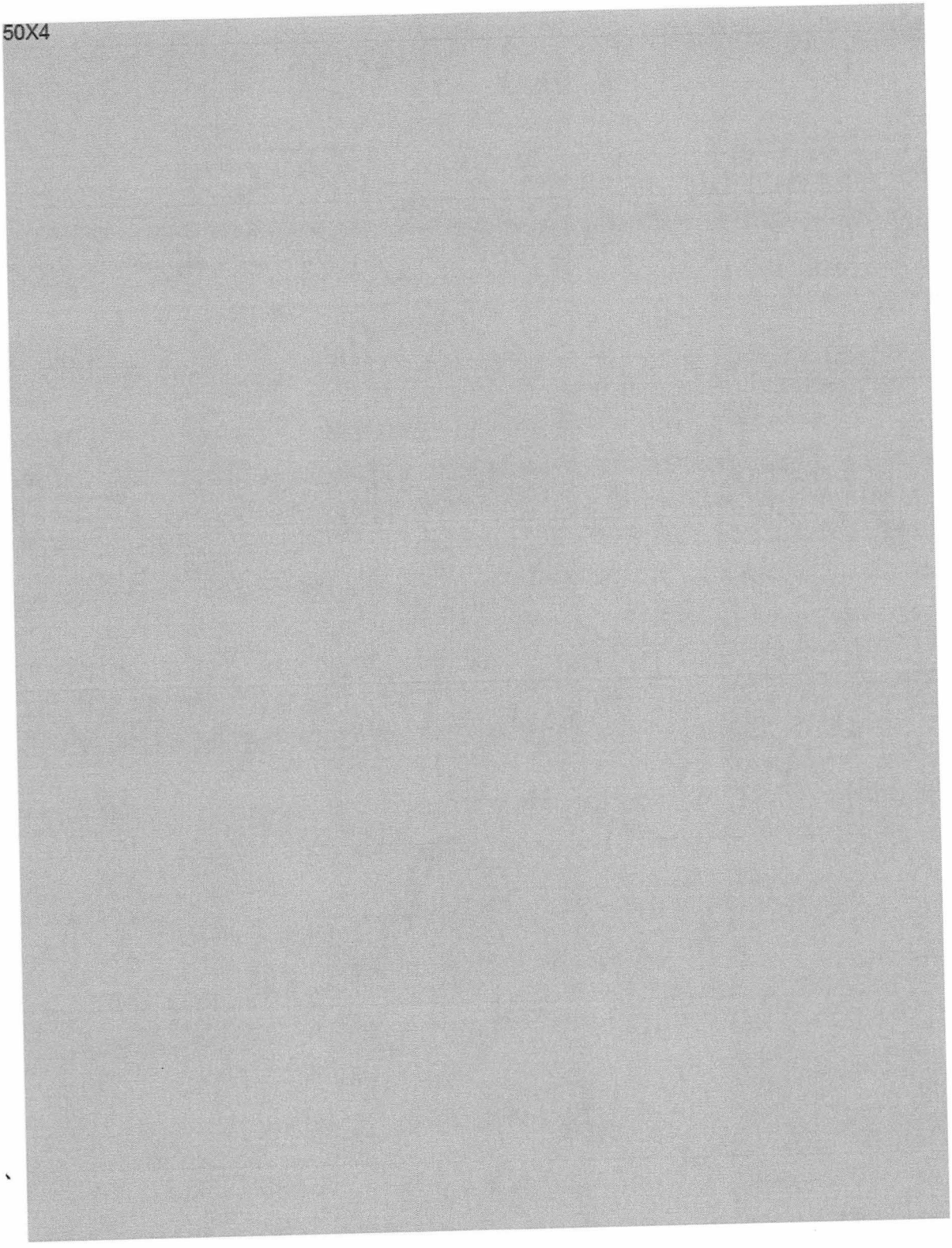
Estimated traffic of one convoy per five days (four transits). Exclude covert mining inside the 5 fathom curve. Convoys transit a single segment 1 mile in length, average width 6000 yards, average depth 60 feet.

Port 112. Suyong

Port is approximately six miles northeast of Pusan. It is used for unloading ammunition from large ships using lighters and mechanical handling equipment brought in from Pusan. One convoy each five days (four transits).

Exclude covert mining within the 5-fathom curve. Convoys transit two segments: #1 length 1 mile, average width 6,000 yards, average depth 50 feet;

#2 length 1 mile, average width 20,000 yards, and average depth 100 feet. Bottom is muddy and rocky. Tidal range is about 4 feet.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ENCLOSURE 2
TO
APPENDIX A

RELATIVE EFFECTIVENESS OF MINESWEEPERS IN ROK PORTS

This appendix considers the question of using minecraft other than MSC's for defense of the ports of the Republic of Korea. MSO's, MSI's, MSB's, and MSC (0)'s were considered. The MSO was included for completeness and because US MSO's might be available in an emergency. Performance attributed to the various types of craft was approximately that indicated by NWP 27 (A) and USNMDL Report 170.

All of the minecraft considered can operate a magnetic sweep (the M MK 5(a) or the M MK 7(b) and simultaneously operate either the A MK 4(v) or the A MK 6(b) acoustic sweep. Moreover, all of the craft operate the magnetic-acoustic sweep combination at a sweep speed of about 5 knots. The principal difference in sweeping coverage rate is that due to the difference in the maximum magnetic sweep current with which the sweepers can energize their magnetic sweeps. The maximum current capability of the various craft (while pulsing) is approximately:

MSO	7500 amperes
MSC	4500 amperes
MSI	3000 amperes
MSC(0)	3000 amperes
MSB	2200 amperes

The MSO uses configuration B of the M MK 7 (b) magnetic sweep further enhancing its swept path.

Performance varies from port to port because of the average water depth of the various segments and other factors. The variation from port to port is small enough, however, than one equivalency table is adequate, particularly in view of the considerable variation in magnetic sweeping environment expected between ports. Based on sweeping capability a one and ignoring sweeper risk, the following relationship is established with the effectiveness of the MSC taken as 1.00:

MSO	1.40
MSC	1.00
MSI	0.90
MSC (0)	0.90
MSB	0.65

That is, one MSO is equivalent to 1.4 MSC's while one MSB is equivalent to about 2/3 of an MSC.

As indicated in the report, sweeper risk is not a driving factor in any of the situations considered. The MSC (0), however, has a considerably higher magnetic signature than the other craft and incurs additional risk from magnetic mines, particularly in shallow water. MSC (0)'s should not be used exclusively

to defend a port if keeping that port open is important. On the other hand, the signature of the MSB is substantially lower than that of the other craft and the use of MSB's to sweep shallow water segments (15 to 45 feet) is preferable from the standpoint of sweeper risk. Very few of the ROK port segments would involve this shallow water sweeping provided mining is excluded from the inner segments as indicated.

ENCLOSURE 3
TO
APPENDIX A
SELECTION OF RANDOM CHANNELS

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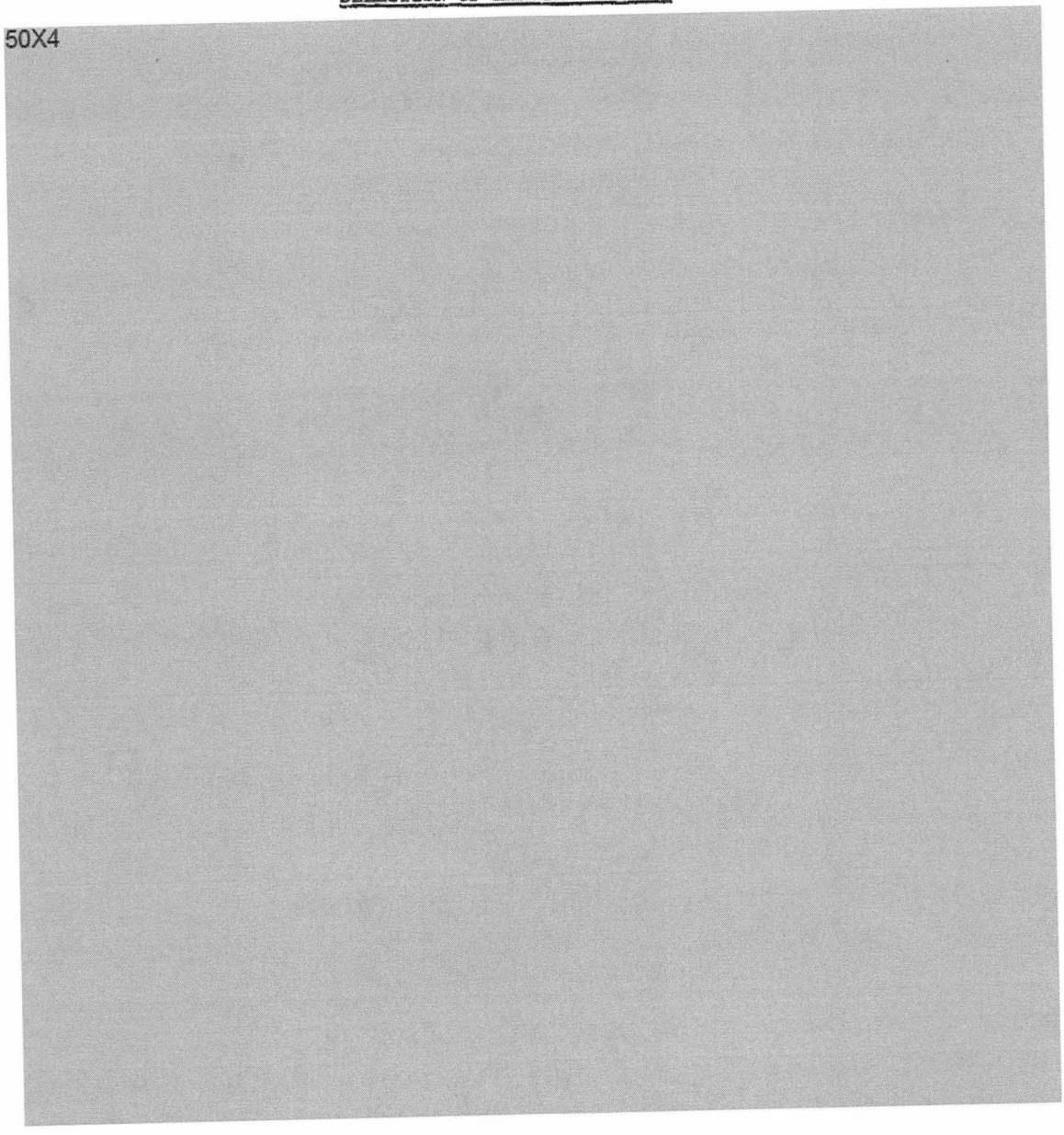

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1. CNO Report, "A Study of US Mine Countermeasures 1972 (U)" (February 1967) SECRET NOFORN

2. DIA memorandum S-5808/AP-4A of 13 September 1968, "North Korean Naval Capabilities (U)" SECRET NOFORN

3. NIS 41B Section 35

4. NWP 27(A)

5. US Navy Mine Defense Laboratory Report 170, "Preliminary Generalized Instructions for Minesweeping Operations (U)" CONFIDENTIAL

APPENDIX B
BASE SUPPORT COSTS (U.S. Dollars)

Activity	FY69	FY70	FY71	FY72	FY73-74
UNITS Includes staffs of ROKN HQ, COMROKFLT, COMFLOT ONE, COMFLOT FIVE, COMFLOT SIX, COMSERVRON 51, COMINRON 31, METU, and Communications. In addition operational SBs, FBs, and Radar Sites are included.	154,804	182,192	187,658	195,164	208,825
NAVY SUPPORT Includes Chinhae Naval Base Command, Four Naval Stations, The Naval Supply Center, the Naval Ordnance/Ammunition Depot and material for small craft assigned.	125,564	130,587	134,353	141,034	143,758
SHIPYARD Includes shipyard maintenance material for work performed on non-fleet units.	85,344	87,904	91,318	94,936	102,276
NAVAL BEACH GROUP Also includes miscellaneous small craft assigned.	22,806	23,490	24,630	25,771	26,600
SCHOOLS Includes Naval Training Center, Naval Academy, Recruit Training Center, Fleet Training Group, and the Naval Command and Staff College.	83,086	83,086	86,409	86,409	90,564
HOSPITALS Includes hospitals at Chinhae, Pohang and Seoul. ($175,000 is service-funded for care of ROKN/ROKMC Vietnam casualties.)	495,631	525,369	525,369	569,976	569,976
PUBLIC WORKS Includes shore facilities maintenance and vehicle and equipment support costs.	370,546	377,546	390,720	396,420	418,070
FOLLOW-ON-SPARES For equipment programmed in FY67 and FY 68 including the $100 augmentation package.		112,565			
ATTRITION For required replacement of vehicles and equipment.	224,818	224,818	227,066	227,066	245,231

APPENDIX B

BASE SUPPORT COSTS (CONT.) (U.S. Dollars)

Activity	FY69	FY70	FY71	FY72	FY73-74
SUPPLY OVERHAULS (SOAP)	372,390	372,390	372,390	372,390	372,390
PERSONNEL SUPPORT Provides raw material for winter clothes and shoes for ROKN.	224,818	242,803	262,227	262,227	285,827
SUPPORT ACTIVITY POL Provides POL and POL products for vehicles, equipment, industrial shore facilities, heating, cooking and approximately 95 miscellaneous service craft in the ROKN inventory.	368,647	403,613	442,974	485,251	485,271
ANNUAL TOTAL	2,528,454	2,766,363	2,745,114	2,856,664	2,948,788

APPENDIX C

ANNUAL COST OF OPERATING SHIPS IN THE ROKN INVENTORY (U.S. Dollars)

Ship Type	Number	Supplies and Equipage	POL	Overhaule**	Restricted Availabilities**	Ammunition (Ship)	Ammunition (Other)	Total
DD	3	64,784	183,120	31,615	1,661	190,300	13,896	485,376
APD	2	29,409	56,525	21,882	357	77,620	2,728	188,521
PG	4	20,834	69,242	21,882	398	77,620	2,728	192,704
DE	3	29,870	82,013	14,665	338	67,874	9,848	204,608
PF	4	20,472	67,985	11,887	717	74,195	17,458	192,714
PC	4	14,089	27,507	12,691	726	18,180	3,707	76,900
PCE	7	16,064	32,908	8,652	199	34,903	8,155	100,881
PCEC	4	17,575	47,017	12,691	506	45,900	5,544	129,233
LSMR	1	23,548	43,348	13,614	210	33,270	172,472	286,462
LSM	11	18,492	31,288	13,614	521	19,227		83,162
LST	8	21,032	19,679	19,054	301	41,448		101,514
MSC/MSC(O)	10	10,768	19,305	8,222	224	7,742		46,261
ARL	1	147,067	20,011	19,054	541	91,100		277,773
AKL	5	8,773	22,650	6,931	226	6,561		45,141
AO(YO)	4	8,736	20,654	3,870	170	8,246		41,676
ATA	2	10,963	13,332	5,653	34	17,020		47,002
LCPL	10		3,870					3,870*
SB(40')	4		1,188					1,188*
FB(65')	9		2,851					2,851*
LPB(95')	9	30,166	10,737					40,903

* Includes fuel only. Other support costs are absorbed by the base support funding and the ARL.
** These estimates are for material only. Labor and overhead are funded by the ROK defense budget.

APPENDIX D
TABLE D-1
(U.S.dollars)

Major Items Included in Navy CLOPIR Alternative

Item	Quantity	Total Cost Investment	O and M
1. Development of additional radar sites	21	1,001,280	154,875
2. Radar systems (Raytheon 1645)	37	481,000	48,100
3. Landing Craft (LCU) 1626 type	6	6,000,000	60,000
4. WPB 95' Cape Class Cutter	19	13,722,237	912,000
5. Patrol Craft, Fast 50' (PCF)	18	3,600,000	360,000
6. Boat repair facilities	3	201,705	10,065
7. PCL Facilities	3	412,020	60,000
8. Suction Dredge (IM type)	1	300,000	15,000
9. ACC	2	10,500,000	300,000
10. MSL/MSM	29	6,380,000	435,000
11. Rehabilitation of Mokpo Naval Station	1	44,500	1,000
12. SLD-2 ECM Equipment	6	90,000	6,000
13. Harbor Lift	—	2,231,110	109,056
14. Harbor Defense Craft	12	558,400	29,596
15. Fleet communications and electronics modernization	—	2,551,160	221,840
16. Other communications improvement(related to anti-infiltration equipment)	—	3,739,835	293,434
17. Radar site installation, support costs and equipment (includes armament).	—	2,509,149	335,434
18. Ship Spare Parts	—	65,868	5,928
19. Ship Fuel	—	250,000	
20. Repair Revitalization	—	1,407,346	114,684
21. Naval Base Fire Protection	—	196,000	4,900
22. Logistical lift vehicles	124	446,842	
23. Ammunition		425,000	63,750
24. Supply Readiness		1,372,218	
25. Medical Modernization		100,118	9,111
TOTALS		58,585,788	3,549,773

TABLE D-2

PRIMARILY COUNTER-INFILTRATION ITEMS (NAVY)

No.	Item	12 Months Cost ($US) Investment	O&M
N-1	Radar Sites	1,001,280	154,875
N-2	Radars, Raytheon 1645	481,000	48,100
N-3	Tractor Dozer, S23	57,700	8,390
N-4	Grader, Road, Motorized, 12 foot	25,500	3,354
N-5	AN/UPC58 Radio Systems	562,668	38,987
N-7	AN/VRC46 Radio Systems	122,901	8,973
N-8	FM-5 Radio	33,600	2,400
N-10	Generator, 30 KW, AC, 60 cycle	238,740	126,438
N-11	Generator, 60 KW, AC, 60 cycle, DED	65,556	48,420
N-12	Truck, Cargo, 1 Ton, M-601 WW	111,300	19,152
N-14	Truck, LF, 6,000 pound, GED, PT	15,042	3,015
N-15	Truck, Utility, 1/4 Ton, M-606	14,992	3,136
N-16	Landing Craft, Utility, LCU, 1626 Type	6,000,000	60,000
N-18	Patrol Craft, Fast, 50-foot (PCF)	3,600,000	360,000
N-20	POL Facility	412,020	60,000
N-22	Pontoon (AMMI) Pier/Dry Dock	90,000	5,000
N-24	Sector Command Center	173,420	10,980
N-26	WPB/PCF Personnel Support Facilities	60,600	1,315
N-27	Fresh Water and Security for Existing Radar Sites	300,750	7,500
N-30	Transponder, SST-119X (Motorola)	9,000	450
N-32	AN/VRC Receiver PP 2953 Power Converter	31,808	2,863
N-33	TT48 F/UG Teletypewriter Systems	100,782	9,096
N-34	TT253/UG Teletypewriters	49,024	4,416
N-42	C45 Sub-MG M3A	10,656	960
N-44	MG, 50 Cal. BRG	31,864	3,100
N-45	45 Cal Pistol	5,994	540
N-48	49546 Speaker	10,428	924
N-49	TA-312/PT	8,232	735
N-50	Electronics Test Equipment	43,884	2,932
N-51	Binoculars	25,740	2,574
N-52	Searchlights	41,000	3,690
N-53	CO_2 Fire Extinguishers	4,611	415

No.	Item	12 Months Cost ($US) Investment	O&M
N-54	Emergency Lighting	8,945	1,716
N-55	Navigation Equipment	7,616	736
N-56	Signal Pistol, AN/M8	2,910	265
N-57	Shotguns	9,072	1,260
N-58	Other Support Equipment	88,960	4,448
N-59	Other Hand Tools	24,706	1,204
N-60	Ship Spare Parts	65,868	5,928
N-61	Installation Costs for Electronics	103,400	0
N-62	Individual Equipment	760,647	30,409
N-63	Spare Parts for Vehicles and Generators	14,750	0
	TOTALS	14,826,966	1,048,696

TABLE D-3

ITEMS THE PROVISION OF WHICH WILL NOT IMMEDIATELY INCREASE COMBAT CAPABILITY (NAVY), EITHER BECAUSE THEIR FULL EFFECTIVENESS DEPENDS ON OTHER ITEMS NOT IMMEDIATELY AVAILABLE OR BECAUSE THE RELATION OF THE ITEMS TO COMBAT IS REMOTE

ITEMS WHICH CONTRIBUTE BOTH TO COUNTER-INFILTRATION AND CONVENTIONAL WARFARE

No.	Item	12 Months Cost ($US) Investment	O&M
N-19	Boat Repair Facility	201,705	10,065
N-29	Rehabilitate Naval Station MOKPO	44,500	1,000
N-64	Ship Fuel	250,000	0
N-65	Repair Revitalization	1,407,346	114,684
N-72	Supply Readiness	1,372,218	0
N-73	Medical Modernization	100,118	9,111
	TOTALS	3,375,887	134,860

APPENDIX E

IMPROVEMENT OF EXISTING FORCES

B.1 Communications Improvements

AN/URC-58 - Single-side band transceivers for all ships that do not have either AN/URC-58 or AN/URC-32 on order. This equipment is required to give ROKN SSB capability and compatability with all units including US ships. (44 sets included at $6,800 per set)

AN/SRC-21 - UHF transceivers for all ships that do not presently have this equipment or have it on order. This gear is required for communications with aircraft and other ships and stations, it replaces or supplements TED and AN/URR-13 series. (49 sets at $4,700 per set)

FM-5 - VHF FM transceivers for LCPL, SB, FB to provide communications between boats, boats and ships, and between boats and coast watches. (63 sets at $500 per set)

TT48F/UG or AN/UGC-5B - Teletype equipment for all ships down to ATA's that is not already on order, required to provide ROKN with more reliable accurate and rapid communications. (46 sets at $2,520 per set)

R1051 - SSB receivers programmed for all ships with TTY to provide the required frequency stability for reliable TTY operations. (46 sets at $3,400 per set)

AN/URA-17 - SSB-TTY converter, to make SSB signals compatible with TTY operations, for all TTY ships. (46 sets at $788 per set)

Figures include $425,712 for test equipment, ancillary equipment and installation costs.

B.2 Electronics Improvements

AN/SQS-4 - Sonar equipment to replace the sonar on DD-92 which cannot be supported with spares. (1 set included at $120,000 per copy)

AN/SPS-10 series or AN/SPS-53 - Radar equipment to replace outdated and difficult-to-support radars on applicable ships. Desire minimum types of equipment to reduce training and parts problems. (23 sets at $22,000 a copy)

AN/SPA-25 - Radar repeater to provide scope for AN/SPS-10 equipped ships, and additional scope on larger ships where ship does not have or is not on order. (23 sets at $5,500 a copy)

AN/SLR-2 - ECM equipment for 3 DE's required to give ROKN additional ECM capability. (3 sets at $18,400 a copy)