TABLE OF CONTENTS

TABLE OF CONTENTS III
DEDICATION VI
FOREWORD VII
INTRODUCTION IX
ACKNOWLEDGEMENTS X

1. A BRIEF INTRODUCTION TO NAVAL WARFARE IN THE AGE OF THE BATTLESHIP 1
1.1 THE WARSHIP 1
1.1.1 THE BATTLESHIP 1
1.1.2 THE BATTLECRUISER 1
1.1.3 THE CRUISER 2
1.1.4 THE DESTROYER 2
1.1.5 THE SUBMARINE 2
1.1.6 THE AIRCRAFT CARRIER 2
1.1.7 THE MONITOR 2
1.2 THE WEAPONS 2
1.2.1 THE GUN 3
1.2.2 THE TORPEDO 3
1.2.3 THE AIRCRAFT 3
1.2.4 THE AIRSHIP 3
1.3 GUNNERY AND FIRE CONTROL 4
1.4 TACTICAL DOCTRINE 4
1.5 FORMATIONS AND MANEUVERS 5
1.5.1 LINE AHEAD 5
1.5.2 LINE ABREAST 5
1.5.3 LINE OF BEARING 5
1.5.4 COLUMN OPEN ORDER 6
1.5.5 CIRCULAR AND DIAMOND 6
1.5.6 MANEUVERS 6

2. AN OVERVIEW OF THE SEEKRIEG 5 SYSTEM 7
2.1 GAME SCALES 8
2.2 PROBABILITY SYSTEM 8
2.3 DAMAGE SYSTEM 8
2.4 COMMAND SYSTEM 9
2.5 SEQUENCE OF PLAY 9
2.5.1 TURN PHASES 10
2.6 GAME OPERATIONS DIRECTOR 10
2.7 DISPUTE RESOLUTION 10
2.8 ROUNDING 10
2.9 RULE 6 10
2.10 RULES AND CHARTS 10

3. PRE-GAME PREPARATION 11
3.1 PRE-GAME TASKS 11
3.2 THE SHIP LOG SHEETS 11
3.2.1 GENERAL INFORMATION AND HISTORY 12
3.2.2 GUN BATTERY DIAGRAM 12
3.2.3 GUN DATA 13
3.2.4 PENETRATION TABLE 13
3.2.5 FIRE CONTROL TABLE 14
3.2.6 OTHER DATA 14
3.2.7 BATTLE RATING, TARGET SIZE, AND SHIPBOARD AIRCRAFT DATA 14
3.2.8 TORPEDO BATTERIES AND MINES 15
3.2.9 RAPID FIRE BATTERIES 15
3.2.10 GUNFIRE RECORD 15
3.2.11 DAMAGE TIERS 16
3.2.12 DP, SPEED, TURNS AND OTHER INFO 16
3.2.13 ARMOR 17
3.2.14 BRIDGE COMMAND RECORD 17
3.2.15 TRACKING DAMAGE EFFECTS 17
3.2.16 TRACKING SHIPBOARD FIRES 17
3.2.17 SPEED LOSS DUE TO TURNS 17
3.3 COMMAND RATINGS 17
3.4 CREW RATINGS 18
3.5 AMMUNITION & SHELL TYPES 18
3.6 WEATHER CONDITIONS AND VISIBILITY 18
3.7 BATTLE RATING 18
3.8 DAMAGE CONTROL RATING 19
3.9 GAME TABLE FORMATIONS 19
3.10 GAME MARKERS 19

4. COMMAND PHASE 21
4.1 COMMAND PHASE SEQUENCE 21
4.2 BRIDGE COMMANDS 22
4.2.1 LIST OF BRIDGE COMMANDS 22
4.2.2 GUN BATTERY ORDERS 24
4.2.3 LOSS OF BRIDGE COMMAND CAPABILITY 25
4.3 FLAG COMMANDS 25
4.3.1 FLAG COMMAND LOGS 26
4.3.2 UNIT IDENTIFIERS IN FLAG COMMANDS 26
4.3.3 BATTLE ORDERS 26
4.3.4 SUBORDINATE FLAG COMMANDS 27
4.3.5 FLAG COMMAND SIGNAL METHOD 27
4.3.6 LOSS OF FLAG COMMAND CAPABILITY 28
4.3.7 VISIBILITY OF FLAG SIGNALS 28
4.3.8 LIST OF FLAG COMMANDS 29
4.4 GRAND TACTICAL MOVEMENT 30

5. MOVEMENT PHASE 31
5.1 MOVEMENT PHASE SEQUENCE 31
5.2 SHIP MOVEMENT 31
5.2.1 ACCELERATION 31
5.2.2 DECELERATION 32
5.2.3 STANDARD TURNS 32
5.2.4 EMERGENCY TURNS 33
5.2.5 EVASIVE ACTION 33
5.2.6 REVERSE MOVEMENT 33
5.2.7 IMPULSE MOVEMENT 33
5.2.8 COLLISIONS AND RAMMING 34
5.2.9 RAMMING 34
5.2.10 COLLISIONS 35
5.2.11 FORMATION SPEED 35

6. COMBAT PHASE (GUNFIRE) 37
6.1 PRE-PHASE MEASUREMENTS 37
6.1.1 LINE OF SIGHT AND MASKING 37
6.1.2 ARC OF FIRE 38
6.1.3 RANGE TO TARGET 38
6.1.4 DEPRESSION OF GUNS 38
6.1.5 TARGET ASPECT 38
6.1.6 SIGHTING AND VISIBILITY 39
6.2 HIT DETERMINATION 39
6.3 HIT PROBABILITY - H1 39
6.3.1 VISIBILITY 39
6.3.2 SMOKE 40
6.3.3 EVASIVE ACTION / EMERGENCY TURNS 40
6.3.4 TARGET ACQUISITION 40
6.3.5 FIRING SHIP UNDER FIRE 40

6.3.6 OVER CONCENTRATION & BARRAGE....40
6.3.7 SIZE OF TARGET SHIP....40
6.3.8 SPOTTER AIRCRAFT....40
6.3.9 BATTLE FACTOR....40
6.3.10 FIRE CONTROL SOLUTION....40
6.4 FIRE CONTROL SYSTEMS....41
6.4.1 VISUAL FIRE CONTROL....41
6.4.2 TABLE OF FIRE CONTROL SYSTEMS....41
6.4.3 CLOSE-RANGE FIRE CONTROL....42
6.4.4 RADAR AND FIRE CONTROL....42
6.4.5 BLIND FIRE....42
6.5 TARGET ACQUISITION....42
6.5.1 ACQUIRING THE TARGET....42
6.5.2 CORRECTED FIRE....42
6.5.3 BARRAGE FIRE....43
6.6 REACTION FIRE....43
6.7 DETERMINING NUMBER OF HITS....43
6.8 DETERMINING HIT LOCATIONS....44
6.8.1 HIT LOCATIONS....44
6.9 ARMOR AND PENETRATION....45
6.9.1 PENETRATION VERSUS TARGET ARMOR....45
6.9.2 UNARMORED TARGETS....45
6.9.3 ARMORED TARGETS....45
6.9.4 HIGH-EXPLOSIVE (HE) SHELLS....46
6.9.5 GRAPPLE AND BOARD....46
6.10 GENERAL DAMAGE....46
6.11 DAMAGE EFFECTS....46
6.11.1 DAMAGE EFFECTS ROLL....46
6.11.2 DAMAGE EFFECTS DESCRIPTIONS....47
6.11.3 DAMAGE EFFECTS LOCATIONS....47
6.11.4 DAMAGE SEVERITY....47
6.11.5 ADDITIONAL DAMAGE EFFECTS....48
6.12 RAPID FIRE BATTERIES....48
6.12.1 CALCULATING HITS FROM RF BATTERIES....48
6.12.2 CALCULATING DAMAGE FROM RF BATTERY HITS....48
6.12.3 DAMAGE TO RF BATTERIES....49
6.12.4 DAMAGE TO AA CAPABILITY....49
6.12.5 RF BATTERY AMMUNITION....49

7. COMBAT PHASE (TORPEDOES AND MINES)....51

7.1 TORPEDO FIRE LIMITATIONS....51
7.1.1 TYPES OF MOUNTS AND FIRING ANGLE....51
7.1.2 ENVIRONMENTAL RESTRICTIONS....52
7.1.3 RELOADING TORPEDOES....52
7.1.4 SIGHTING TORPEDO WAKES....52
7.2 TORPEDO FIRE....52
7.2.1 TORPEDO SPREADS....52
7.2.2 DETERMINING FIRING ANGLE....52
7.2.3 MULTI-TUBE MOUNTS....52
7.2.4 MOVEMENT OF TORPEDOES....52
7.2.5 TORPEDO SPREAD TEMPLATES....52
7.2.6 CHECKS FOR POSSIBLE TORPEDO HITS....53
7.3 TORPEDO HIT CALCULATION....53
7.3.1 RTE AND RANGE CALCULATION....53
7.3.2 TARGET ANGLE AND SHIP LENGTH....54
7.3.3 HIT PROBABILITY....54
7.3.4 CHECKING FOR DUDS....54
7.4 TORPEDO DAMAGE....54
7.4.1 TORPEDO PISTOLS....54
7.4.2 DP CAUSED BY TORPEDOES....54
7.4.3 DAMAGE EFFECTS FROM TORPEDOES....54
7.5 MINES....54
7.5.1 MINEFIELDS....55
7.5.2 DAMAGE DETERMINATION - MINES....55
7.4.3 DAMAGE EFFECTS FROM MINES....55

8. DAMAGE PHASE....57

8.1 DAMAGE CONTROL RATING....57
8.2 DAMAGE CONTROL....57
8.2.1 DAMAGE STATUS CHECKS....58
8.3 FIGHTING SHIPBOARD FIRES....58
8.3.1 DAMAGE CONTROL AND FIRES....58
8.3.2 DAMAGE EFFECTS FROM FIRES....58
8.4 LOSS OF DAMAGE CONTROL....58
8.5 DAMAGE TIER ADJUSTMENTS....58
8.5.1 DAMAGE TIER TABLE....59
8.5.2 CROSSING A DAMAGE TIER....59
8.5.3 CROSSING MULTIPLE DAMAGE TIERS....59
8.6 MORALE CHECKS....59
8.7 DAMAGE REPAIR....59
8.8 OTHER ADJUSTMENTS....60

9. NIGHT ACTIONS....61

9.1 SIGHTING AND VISIBILITY....61
9.2 ILLUMINATION....61
9.2.1 ILLUMINATION BY STARSHELL....61
9.2.2 ILLUMINATION BY SEARCHLIGHT....61
9.2.3 RADAR AND IFF....62

10. ENVIRONMENTAL CONDITIONS AND SMOKESCREENS....63

10.1 TIME OF DAY....63
10.2 WEATHER CONDITIONS....63
10.2.1 THE BEAUFORT SCALE....63
10.2.2 DETERMINING WEATHER CONDITIONS....63
10.2.3 SEA STATE....64
10.2.4 VISIBILITY CODES....64
10.2.5 CLOUDS AND CEILINGS....64
10.2.6 FOG....64
10.2.7 RAIN AND SNOW SQUALLS....65
10.2.8 EFFECTS ON SHIPBOARD OPERATIONS....65
10.2.9 EFFECTS OF WEATHER ON GUNNERY....65
10.3 SMOKE AND SMOKESCREENS....65
10.3.1 TYPES OF SMOKE....65
10.3.2 SMOKESCREENS....65
10.3.3 BATTLE SMOKE....66
10.3.4 SMOKE FLOATS....66
10.3.5 MOVEMENT OF SMOKE....66
10.4 RADAR AND WEATHER....66

11. OPTIONAL RULES AND VARIANTS....69

11.1 OPTIONAL RULES....69
11.1.1 OVERS AND UNDERS....69
11.1.2 SALVO DISPERSION....69
11.1.3 CROSS-DECK GUNFIRE....70
11.1.4 THE “LON” ROLL....70
11.1.5 MAGAZINE FIRES....70
11.1.6 DUDS AND DEFECTIVE AMMUNITION....70
11.1.7 OPTIONAL FORMATION SPEED....71
11.1.8 BATTERIES OF ONE OR TWO GUNS....71
11.1.9 RANDOM EVENTS MATRIX....71
11.1.10 VARIABLE PENETRATION....71
11.1.11 SOFT-CAPPED AP SHELLS....71
11.1.12 OPTIONAL COORDINATED FIRE....71
11.1.13 EXPOSED ORDNANCE AND MUNITIONS....72
11.1.14 END-ON GUNFIRE (BOW/STERN)....72
11.1.15 TORPEDO HIT DETERMINATION – OPTIONAL METHOD....72

12. AIR OPERATIONS....75

12.1 SHIPBOARD AIRCRAFT....75
12.1.1 LAUNCHING SHIPBOARD AIRCRAFT....75
12.1.2 GUNFIRE SPOTTING MISSIONS....75

12.1.3 SEARCH AND STRIKE MISSIONS 76
12.1.4 RECOVERY OF SHIPBOARD AIRCRAFT....76
12.2 CARRIER OPERATIONS....76
12.2.1 CARRIER SHIP LOGS....76
12.2.2 CARRIER OPERATIONS LOG....77
12.2.3 CARRIER DECK CYCLES....77
12.2.4 ENVIRONMENTAL FACTORS....77
12.2.5 STRIKE PREPARATION....77
12.2.6 FLIGHT DECK MISHAPS....78
12.2.7 LAUNCH OPERATIONS....78
12.2.8 ALTITUDES....78
12.2.9 FLIGHT TIME AND STRIKE RANGE....78
12.2.10 NAVIGATIONAL ERROR....79
12.2.11 DROP OUTS AND DUD AIRCRAFT....79
12.2.12 RAID DETECTION AND CAP....79
12.2.13 AIR TO AIR COMBAT....79
12.2.14 AIR CREW QUALITY....81
12.2.15 AA FIRE....81
12.2.16 SCREENING AA FIRE....82
12.2.17 ATTACKS ON SHIPS....82
12.2.18 KAMIKAZE ATTACKS....83
12.2.19 AIRCRAFT RETURN AND RECOVERY....83
12.2.20 NIGHT CARRIER OPERATIONS....83
12.2.21 CARRIER OPERATIONS LOG EXAMPLE....84
12.3 LAND-BASED AIRCRAFT....84
13. MERCHANT VESSELS AND CONVOYS....87
13.1 MERCHANT SHIPS....87
13.1.1 MERCHANT SHIP LOGS....87
13.1.2 MERCHANT HIT LOCATIONS....87
13.1.3 MERCHANT DAMAGE DETERMINATION....87
13.2 CONVOYS....88
13.2.1 CONVOY FORMATIONS....88
13.2.2 CONVOY SPEED....88
13.2.3 CONVOY MANEUVERS....88
14. SUBMARINES AND ASW....89
14.1 SUBMARINE OPERATIONS....89
14.1.1 SURFACED SUBMARINES....89
14.1.2 SUBMERGED SUBMARINES....89
14.2 ATTACKS BY SUBMARINES....89
14.2.1 ATTACK PLANS....89
14.2.2 MOVING INTO ATTACK POSITION....90
14.2.3 COMMITTING TO THE ATTACK....90
14.2.4 FIRING TORPEDOES....90
14.3 DETECTION AND ASW....90
14.3.1 DETECTION OF THE SUBMARINE....90
14.3.2 DEPTH CHARGE ATTACKS....91
14.3.3 DAMAGE DETERMINATION....91
14.3.4 SCREENS AND ESCORT VESSELS....91
15. THE STRATEGIC GAME....93
15.1 THE SCENARIO....93
15.1.1 SCENARIO PREPARATION....93
15.1.2 LIMITED INTELLIGENCE....93
15.1.3 STRATEGIC PHASE TURNS....94
15.1.4 ENVIRONMENTAL CONDITIONS....94
15.1.6 SHIP MOVEMENT....94
15.1.7 AIR RECONNAISSANCE....94
15.1.8 COMMUNICATIONS....95
15.2 RE-FUELING....95
15.2.1 COALING....95
15.2.2 FUELING....95
APPENDIX A – INDEX OF GAME CHARTS....97
APPENDIX B – NAVAL TERMS GLOSSARY....101
APPENDIX C - DESIGNERS' NOTES....105
APPENDIX D - FIRE CONTROL IN THE PRE-DREADNOUGHT ERA....111
APPENDIX E – SELECTED BIBLIOGRAPHY....117
APPENDIX F – DATA TABLES....119

APPENDIX A – INDEX OF GAME CHARTS

A1	GAME PROCESS FLOW	Outline of game processes and detailed description of game turn sequence
A2	COMMAND SYSTEM - BRIDGE COMMANDS	Listing of Bridge Commands along with detailed descriptions.
A3	COMMAND SYSTEM - FLAG COMMANDS	Listing of Flag Commands along with detailed descriptions.
A4	SHIP MOVEMENT AND GAME TURN LENGTH EXAMPLES	Lists ship movement in inches for various scales based on length of game turn.
A5	32 POINTS OF THE COMPASS	Lists directions and azimuth for the 32 points of the compass.
A6	PHONETIC ALPHABETS	Chart listing the phonetic alphabet for different countries
A7	BEAUFORT SCALE OF WIND VELOCITY AND SEA STATE CODES	The Beaufort Scale used to categorize weather conditions related to wind velocity
A8	RANDOM EVENTS MATRIX	Used to randomly determine special conditions applicable to a particular ship prior to the start of a game.
A9	GUNNERY SCALES	Lists equivalent range in yards for various game scales in 1/2" increments.
A10	TURRET DESIGNATIONS	Turret naming conventions used by Great Britain, Germany and the United States.
A11	FIRE CONTROL SYSTEM DATA	Descriptions of the fire control system classifications used in SEEKRIEG 5.
A12	TYPES OF PROJECTILES	Description of the four major shell classifications used in SEEKRIEG 5.
A13	AMMUNITION LOADOUTS	Chart showing some sample historical ammunition loadouts provided for reference.
A14	ARMOR TYPES	List of armor types and factors.
B1	COMMAND RATING DETERMINATION	Used to determine the Bridge and Flag Command Rating for a ship
B2	CREW RATING DETERMINATION	Used to determine the Crew Rating for a ship
B3	DAMAGE CONTROL RATING ADJUSTMENT	Used to adjust the damage control rating based on country, era and crew rating.
C1	VISIBILITY CODES	Description of the visibility codes used with CHARTS D1, D2 and D5.
C2	SMOKE AND SMOKESCREENS	Chart showing the duration of smokescreen effects based on wind speed.
C3	VISIBILITY OF SIGNALS	Chart showing the ranges at which various types of signals are visible.
C4	REDUCTION OF OPERATIONS	Chart showing percentage reduction of shipboard operations and reduction in accuracy of gunnery based on ship size and weather.
D1	SURFACE VISIBILITY - DAYLIGHT	Lists maximum visibility for sighting based on ship size and visibility conditions during daylight.
D2	SURFACE VISIBILITY - NIGHT	Lists maximum visibility for sighting based on ship size and visibility conditions during darkness.
D3	RADAR VISIBILITY	Lists maximum range for radar detection based on ship size.
D4	TARGET DETECTION PROBABILITY - NIGHT	Chart used to determine probability of target detection during night actions
D5	ILLUMINATION FOR GUNFIRE - NIGHT	Chart listing ranges required for adequate searchlight illumination of targets
E1	SPEED LOSS DURING MANEUVER	Chart indicating effective speed loss when maneuvering.
E2	NUMBER OF SEGMENTS PER TURN	Chart indicating the number of segments required based on degree of turn being performed.
E3	IMPULSE MOVEMENT - 5 SEGMENT	Chart indicating movement per impulse segment according to current speed.
E4	IMPULSE MOVEMENT - TURNS	Chart indicating the maximum degree of turn allowed per impulse segment according to degree of turn ordered.
F1	COMPASS ROSE	Illustrates all points of the compass and should be copied and placed on the game table for reference.
G1	ARC OF FIRE EXAMPLES	Diagrams describing the arcs of fire permitted for various types of gun mounts based on their position.
H1	HIT DETERMINATION ADVANCED METHOD	Table used to calculate probability of hit column on CHART I1.
I1	SURFACE GUNFIRE COMBAT RESOLUTION	Table used to determine number of hits based on hit probability and number of shells.

J1	HIT LOCATION - WARSHIP	Lists hit locations for short, medium and long ranges.
J2	HIT LOCATION - MERCHANT	Lists hit locations for merchant vessels.
J3	PENETRATION ADJUSTMENT BY SHELL TYPE	Used to adjust shell penetration values when using a shell type other than the type listed on the ship log penetration table.
J4	PENETRATION TABLE - HE SHELLS	Used to determine shell penetration when HE shells strike an armored target.
J5	VARIABLE PENETRATION (OPTIONAL)	Optional chart used to adjust penetration values due to difference in striking angles caused by the effects of weather on ship movement.
J6	CLOSE RANGE FIRE CONTROL	Chart used in place of fire control table on ship log whenever range to target drops to 4,500 yards or less.
K1	PENETRATION RESULTS - ARMORED TARGETS	Used to determine whether or not a shell penetrates when striking an armored target.
K2	PASS-THROUGH CHECK - ARMORED TARGETS	Used to determine the outcome of a pass-through shell.
K3	PENETRATION RESULTS - UNARMORED TARGETS	Used to determine whether or not a shell detonates or passes through when striking an unarmored target.
K4	SHELL DAMAGE FACTORS	Lists actual DP inflicted for both penetrating and non-penetrating hits based on shell type and detonation.
L1	DAMAGE DETERMINATION Warships 1880 to 1905	Used to determine the Damage Effect (DE) number on CHART M1
L2	DAMAGE DETERMINATION Warships 1906 to 1922	Used to determine the Damage Effect (DE) number on CHART M1
L3	DAMAGE DETERMINATION Warships 1923 to 1945	Used to determine the Damage Effect (DE) number on CHART M1
L4	DAMAGE DETERMINATION All aircraft carriers or like warships 1915-1945	Used to determine the Damage Effect (DE) number on CHART M1
L5	DAMAGE DETERMINATION Submarines, MTB and small vessels	Used to determine the Damage Effect (DE) number on CHART M1
L6	DAMAGE DETERMINATION All merchant vessels 1880-1945	Used to determine the Damage Effect (DE) number on CHART M1
M1	DAMAGE EFFECTS	Detailed description of all Damage Effects.
M2	DAMAGE SEVERITY	Used to determine severity when a severity level is required by the damage effect listed in CHART M1.
M3	DAMAGE STATUS CHECK	Used to determine success or failure of damage control actions.
M4	MORALE CHECK	Used to check for abandon ship.
M5	DAMAGE LOCATION DETERMINATION	Used to determine specific location of damage when multiple locations are possible.
M6	FLOODING DAMAGE DETERMINATION	Used in conjunction with CHART M1 to determine damage effects related to flooding.
M7	DAMAGE REPAIR	Used for long term (after battle) damage repairs.
N1	FIGHTING SHIPBOARD FIRES	Used to determine progress of fighting shipboard fires.
N2	SHIPBOARD FIRE DAMAGE EFFECTS	Used to determine probability of additional damage effects caused by serious shipboard fires.
O1	MERCHANT VESSEL CARGO	Used to determine cargo being carried by a merchant vessel.
P1	CARRIER OPERATIONS - DECK CYCLES	Used to determine launch, recover and arm/fuel capabilities of a carrier based on era and crew rating.
P2	AIRCRAFT – STRIKE RANGE	Used for quick determination of strike range for a particular aircraft based on endurance.
P3	AIRCRAFT – FLIGHT TIME TO TARGET	Used to determine number of minutes flight time required to reach a target.
P4	AIRCRAFT NAVIGATIONAL ERRORS	Used to determine the effect of possible navigational errors during flight to target.
P5	AIRCRAFT DROP-OUTS	Used to determine the number of drop out or dud aircraft during a strike operation.
P6	RAID DETECTION AND CAP VECTORING	Used to determine the number of turns a strike will be required to engage CAP before reaching the target.
P7	AIRCRAFT ALTITUDES	Table showing the various altitude levels used in AA and air combat.

P8	CARRIER OPERATIONS – AIRCRAFT MISHAPS	Used to determine loss of aircraft during launch and recovery operations.
P9	AIR-TO-AIR SIGHTING	Used to determine the probability of sighting during air-to-air combat.
Q1	AA FACTOR MODIFIERS	Used to develop a modifier to the AA rating in order to account for visibility, fire control, etc.
Q2	ADJUSTED AA FACTOR	Used in conjunction with CHART Q4 to determine hit probability of AA fire.
Q3	AIR TO AIR COMBAT RESOLUTION	Used in conjunction with CHART Q5 to resolve air-to-air combat
Q4	AIR TO AIR AND AA COMBAT PROBABILITY	Used to determine number of planes shot down by AA fire or during air combat.
Q5	AIRCRAFT RATE OF CLIMB	Provides rate of climb limits for aircraft according to type and era.
R1	HIT DERERMINATION – AIR ATTACKS	Used to determine hit probability for bomb and torpedo attacks by aircraft.
R2	AERIAL ORDNANCE DATA – TORPEDOES	Data for aerial torpedoes.
R3	AERIAL ORDNANCE DATA – BOMB PENETRATION	Used to determine penetration of bombs based on bomb type.
R4	AERIAL ORDNANCE – BOMB DAMAGE	Used to determine damage caused by bomb hits.
S1	AIR SEARCH ACCURACY	Table used by the game director to adjust the accuracy of a sighting report.
S2	CEILING AND CLOUD COVER	Tables used to determine density and altitude of cloud layers.
S3	WIRELESS TELEGRAPHY COMMUNICATIONS	Table showing approximate maximum ranges of wireless communication.
S4	REFUELING - COAL	Table used to determine approximate rate of refueling for coal burning ships.
S5	REFUELING - OIL	Table used to determine approximate rate of refueling for oil burning ships.
S6	FUEL CONSUMPTION	Table used to determine approximate fuel consumption at various cruising speeds.
S7	DETECTION PROBABILITY – UNIFORM RANDOM SEARCH	Used to determine probability of aircraft sighting surface ships during strategic phase map movement.
S8	MAP MOVEMENT SCALES	Provides movement in inches on maps of various scales according to speed of unit during strategic phase.
T1	TORPEDOES - RELATIVE TRACKING ERROR VERSUS RANGE	Used to determine an RTE value based on target speed and range.
T2	TORPEDOES - TARGET ANGLE VERSUS SHIP LENGTH	Used to determine a value to account for target angle and ship length.
T3	TORPEDOES - CALCULATION RESULT AND HIT PROBABILITY	Combines values from CHARTS T1 and T2 to produce a hit probability for torpedoes in a spread.
T4	TORPEDO DUD CHECK	Used to check for the possibility of dud torpedoes.
T5	TORPEDO DAMAGE TABLE	Used to calculate DP inflicted by torpedo hits
T6	TORPEDOES – CALCULATED MOVEMENT FOR GAME TURNS	Used as a quick reference to determine the distance traveled by torpedoes on the game table.
T7	TORPEDO RTE DETERMINATION – OPTIONAL METHOD	Optional method for determining RTE for torpedo spreads.
T8	TORPEDO HIT PROBABILITY – OPTIONAL METHOD	Optional method for determining torpedo hit probability based on RTE determined using CHART T7.
U1	MINEFIELDS – HIT PROBABILITY	Used to determine the probability of a ship striking a mine while traversing a minefield.
U2	MINE DETONATORS AND DAMAGE CLASS	Used in conjunction with CHART T5 to determine damage caused by mine hits.
V1	SUB MOVE TO FIRING POSITION (3 GAME TURNS)	Used to determine success of sub in reaching firing position.
V2	SUB DETECTION DURING FINAL TARGETING/TORPEDO FIRE	Used to determine detection of sub during final targeting.
V3	SUB DETECTION DURING GAME TURN AFTER TORPEDO FIRE	Used to determine detection of sub after torpedo fire.
V4	DEPTH CHARGE ATTACK	Used to determine outcome of depth charge attack on sub.
V5	DAMAGE BY DEPTH CHARGE	Used to determine damage to sub from depth charge attack.
V6	DEPTH CHARGE CLASSES	Used to determine class of depth charge (A or B) being used.
W1	HIT DETERMINATION – RAPID FIRE BATTERIES	Used to determine hits from guns classified as rapid-fire batteries.
W2	RAPID FIRE BATTERY DAMAGE DETERMINATION	Used to determine damage caused by hits from guns classified as rapid-fire batteries.
X1	RAMMING – TARGET SPEED FACTOR	Step 1 in determining damage caused by ramming.

X2	RAMMING – RAM SPEED FACTOR	Step 2 in determining damage caused by ramming.
X3	RAMMING – DAMAGE FACTOR	Step 3 in determining damage caused by ramming.
X4	RAMMING – TARGET ADJUSTMENTS	Used in conjunction with CHART X3 to adjust target ship damage.
X5	RAMMING – RAM SHIP ADJUSTMENTS	Used in conjunction with CHART X3 to adjust ram ship damage.

GAME DATA TABLES

Z1	WEATHER AREAS MAP	Map diagrams used to locate weather areas described in CHART Z2.
Z2	WEATHER DETERMINATION MATRIX	Probability-based tables for determining weather conditions for each location number from CHART Z1.
Z3	TORPEDO DATA TABLES	Tabular data regarding torpedoes in use during the 1880-1945 era.
Z4	RADAR DATA	Tabular data regarding various models of radar in use during the 1880-1945 era.
Z5	SUNRISE, SUNSET, DURATION OF TWILIGHT, LENGTH OF DAY	Chart showing time of sunrise and sunset as well as duration of morning/evening twilight by latitude for days of the year.
Z6	AIRCRAFT DATA	Tabular data regarding the major aircraft in service during the 1880-1945 era.