APPENDIX E

MOE RESULTS

1. Defense Efficiencies and Loss Probabilities for MOE Studies

A. Scenario #1 - Support of Amphibious Landing

SPECTRE Task Force

(1) Large CMD or (2) Med. CMD or (3) Small CMD
(4) Surface Strike PTX
(4) Surface MIW PTX
(2) Surface Patrol PTX
(2) Air Strike PTX
(4) Air MIW PTX
(1) Aegis Combatant
(2) LSD
(1) LHD
(14) Troop Carriers Airborne
(12) Troop Carriers Surface

Conventional Task Force

(4) Air Strike PTX
(4) Air MIW PTX
(1) Aegis Combatant
(2) LSD
(1) LHD
(14) Troop Carriers Airborne
(12) Troop Carriers Surface
(3) Surface Combatant
(1) SSN
(4) MHC

Opposing Threat

(10) shore launched ASMs
(200) anti ship shore fired gun projectiles
(200) anti air shore fired gun projectiles
(10) small ship launched ASMs
(50) small ship fired anti ship gun projectiles
(10) air launched anti-air missiles
(50) mines

Table E-1: Defense Efficiencies Scenario #1

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines
CMD	1.0	1.0	1.0	0.9	0.75	1.0	1.0
STRPTX/S	0.9	0.85	1.0	0.9	0.8	1.0	0.8
MIWPTX/S	0.85	0.8	1.0	0.85	0.8	1.0	0.95
PATPTX/S	0.9	0.95	1.0	0.9	0.95	1.0	0.8
STRPTX/A	1.0	1.0	0.9	1.0	1.0	0.9	1.0
MIWPTX/A	1.0	1.0	0.95	1.0	1.0	0.85	1.0
AEGIS	0.95	0.8	1.0	0.95	0.8	1.0	0.75
LSD	0.8	0.75	1.0	0.8	0.75	1.0	0.7
LHD	0.85	0.7	1.0	0.85	0.7	1.0	0.7
Troop Car/S	0.85	0.8	1.0	0.85	0.8	1.0	0.85
Troop Car/A	1.0	1.0	0.9	1.0	1.0	0.85	1.0
Surf Combat	0.9	0.8	1.0	0.9	0.8	1.0	0.75
SSN	1.0	1.0	1.0	1.0	1.0	1.0	0.75
MHC	0.85	0.8	1.0	0.85	0.8	1.0	0.95

Table E-2: Loss Probabilities Scenario #1

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines
CMD	0.0	0.0	0.0	0.15	0.05	0.0	0.0
STRPTX/S	0.3	0.15	0.0	0.3	0.1	0.0	0.3
MIWPTX/S	0.3	0.15	0.0	0.3	0.1	0.0	0.3
PATPTX/S	0.5	0.2	0.0	0.5	0.15	0.0	0.5
STRPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
MIWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
AEGIS	0.2	0.05	0.0	0.2	0.03	0.0	0.25
LSD	0.2	0.05	0.0	0.2	0.03	0.0	0.2
LHD	0.15	0.05	0.0	0.15	0.03	0.0	0.15
Troop Car/S	0.5	0.2	0.0	0.5	0.15	0.0	0.5
Troop Car/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
Surf Combat	0.25	0.1	0.0	0.25	0.05	0.0	0.25
SSN	0.0	0.0	0.0	0.0	0.0	0.0	0.5
MHC	0.3	0.15	0.0	0.3	0.1	0.0	0.3

B. Scenario #2 - Support of Small Amphibious Landing

SPECTRE Task Force

(1) Large CMD or (1) Med. CMD or (3) Small CMD
(4) Surface Strike PTX
(4) Surface Patrol PTX

(4) Air Strike PTX
(2) Air MIW PTX
(2) Air ASW PTX
(1) LHD
(10) Troop Carriers Airborne
(4) Troop Carriers Surface

Conventional Task Force

(4) Air Strike PTX
(2) Air MIW PTX
(2) Air ASW PTX
(1) Aegis Combatant
(1) LHD
(4) Troop Carriers Airborne
(4) Troop Carriers Surface
(1) SSN
(2) MHC

Opposing Threat

(5) shore launched ASMs
(100) anti ship shore fired gun projectiles
(100) anti air shore fired gun projectiles
(5) small ship launched ASMs
(25) small ship fired anti ship gun projectiles
(5) air launched anti-air missiles
(25) mines

Table E-3: Defense Efficiencies Scenario #2

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines
CMD	1.0	1.0	1.0	0.9	0.75	1.0	1.0
STRPTX/S	0.95	0.85	1.0	0.95	0.8	1.0	0.8
PATPTX/S	0.9	0.95	1.0	0.9	0.95	1.0	0.8
STRPTX/A	1.0	1.0	0.9	1.0	1.0	0.9	1.0
MIWPTX/A	1.0	1.0	0.95	1.0	1.0	0.85	1.0
ASWPTX/A	1.0	1.0	0.95	1.0	1.0	0.85	1.0
AEGIS	0.95	0.8	1.0	0.95	0.8	1.0	0.75
LHD	0.85	0.7	1.0	0.85	0.7	1.0	0.7
Troop Car/S	0.85	0.8	1.0	0.85	0.8	1.0	0.85
Troop Car/A	1.0	1.0	0.9	1.0	1.0	0.85	1.0
SSN	1.0	1.0	1.0	1.0	1.0	1.0	0.75
MHC	0.85	0.8	1.0	0.85	0.8	1.0	0.95

Table E-4: Loss Probabilities Scenario #2

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines
CMD	0.0	0.0	0.0	0.15	0.05	0.0	0.0
STRPTX/S	0.3	0.15	0.0	0.3	0.1	0.0	0.3
PATPTX/S	0.5	0.2	0.0	0.5	0.15	0.0	0.5
STRPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
MIWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
ASWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
AEGIS	0.2	0.05	0.0	0.2	0.03	0.0	0.25
LHD	0.15	0.05	0.0	0.15	0.03	0.0	0.15
Troop Car/S	0.5	0.2	0.0	0.5	0.15	0.0	0.5
Troop Car/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
SSN	0.0	0.0	0.0	0.0	0.0	0.0	0.5
MHC	0.3	0.15	0.0	0.3	0.1	0.0	0.3

C. Scenario #3 - Blockade

SPECTRE Task Force

(1) Large CMD or (1) Med. CMD or (3) Small CMD
(6) Surface Strike PTX
(4) Surface Patrol PTX
(6) Air Strike PTX
(2) Air MIW PTX
(2) Air ASW PTX
(2) Air AAW PTX

Conventional Task Force

(2) Air Strike PTX
(2) Air MIW PTX
(2) Air ASW PTX
(2) Air AAW PTX
(4) Surface Combatant
(1) SSN

Opposing Threat

(5) shore launched ASMs
(100) anti ship shore fired gun projectiles
(100) anti air shore fired gun projectiles
(5) small ship launched ASMs

(25) small ship fired anti ship gun projectiles
(5) air launched anti-air missiles
(25) mines
(4) submarine launched anti ship missiles
(4) submarine launched torpedoes

Table E-5: Defense Efficiencies Scenario #3

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines	Sub Launch ASM	Sub Lanuch Torpedoes
CMD	1.0	1.0	1.0	0.9	0.75	1.0	1.0	0.9	0.7
STRPTX/S	0.95	0.85	1.0	0.95	0.8	1.0	0.8	0.95	0.8
PATPTX/S	0.9	0.95	1.0	0.9	0.95	1.0	0.8	0.9	0.9
STRPTX/A	1.0	1.0	0.9	1.0	1.0	0.9	1.0	1.0	1.0
MIWPTX/A	1.0	1.0	0.95	1.0	1.0	0.85	1.0	1.0	1.0
ASWPTX/A	1.0	1.0	0.95	1.0	1.0	0.85	1.0	1.0	1.0
AAWPTX/A	1.0	1.0	0.9	1.0	1.0	0.9	1.0	1.0	1.0
Surf Combat	0.9	0.8	1.0	0.9	0.8	1.0	0.75	0.9	0.7
SSN	1.0	1.0	1.0	1.0	1.0	1.0	0.75	1.0	0.7

Table E-6: Loss Probabilities Scenario #3

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines	Sub Launch ASM	Sub Lanuch Torpedoes
CMD	0.0	0.0	0.0	0.15	0.05	0.0	0.0	0.15	0.3
STRPTX/S	0.3	0.15	0.0	0.3	0.1	0.0	0.3	0.3	0.5
PATPTX/S	0.5	0.2	0.0	0.5	0.15	0.0	0.5	0.5	0.8
STRPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0
MIWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0
ASWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0
AAWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0
Surf Combat	0.25	0.1	0.0	0.25	0.05	0.0	0.25	0.25	0.3
SSN	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5

D. Scenario #4 - Mine Clearance

SPECTRE Task Force

(2) Large CMD or (2) Med. CMD or (6) Small CMD
(4) Surface Strike PTX
(8) Surface MIW PTX
(4) Air Strike PTX
(8) Air MIW PTX
(4) Air AAW PTX

Conventional Task Force

(4) Air Strike PTX
(8) Air MIW PTX
(4) Air AAW PTX
(1) LHD
(2) Surface Combatant
(6) MHC

Opposing Threat

(10) shore launched ASMs
(100) anti ship shore fired gun projectiles
(100) anti air shore fired gun projectiles
(10) air launched anti-air missiles
(10) air launched anti ship missiles
(50) mines

Table E-7: Defense Efficiencies Scenario #4

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Air Launch AAM	Air Launch ASM	Mines
CMD	1.0	1.0	1.0	1.0	0.9	1.0
STRPTX/S	0.9	0.85	1.0	1.0	0.9	0.8
MIWPTX/S	0.85	0.8	1.0	1.0	0.85	0.95
STRPTX/A	1.0	1.0	0.9	0.9	1.0	1.0
MIWPTX/A	1.0	1.0	0.95	0.85	1.0	1.0
AAWPTX/A	1.0	1.0	0.9	0.95	1.0	1.0
LHD	1.0	1.0	1.0	1.0	0.9	1.0
Surf Combat	0.9	0.8	1.0	1.0	0.9	0.75
MHC	0.85	0.8	1.0	1.0	0.85	0.95

Table E-8: Loss Probabilities Scenario #4

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Air Launch AAM	Air Launch ASM	Mines
CMD	0.0	0.0	0.0	0.0	0.15	0.0
STRPTX/S	0.3	0.15	0.0	0.0	0.3	0.3
MIWPTX/S	0.3	0.15	0.0	0.0	0.3	0.3
STRPTX/A	0.0	0.0	0.5	0.5	0.0	0.0
MIWPTX/A	0.0	0.0	0.5	0.5	0.0	0.0
AAWPTX/A	0.0	0.0	0.5	0.5	0.0	0.0
LHD	0.0	0.0	0.0	0.0	0.15	0.0
Surf Combat	0.25	0.1	0.0	0.0	0.25	0.25
MHC	0.3	0.15	0.0	0.0	0.3	0.3

E. Scenario #5 - Escort Operations

SPECTRE Task Force

(1) Large CMD or (1) Med. CMD or (3) Small CMD
(6) Surface Strike PTX
(4) Air Strike PTX
(2) Air MIW PTX
(4) Air AAW PTX
(1) Aegis Combatant

Conventional Task Force

(2) Air Strike PTX
(2) Air MIW PTX
(2) Air AAW PTX
(1) Aegis Combatant
(2) Surface Combatant

Opposing Threat

(5) shore launched ASMs
(100) anti ship shore fired gun projectiles
(100) anti air shore fired gun projectiles
(5) small ship launched ASMs
(25) small ship fired anti ship gun projectiles
(5) air launched anti-air missiles
(10) mines

Table E-9: Defense Efficiencies Scenario #5

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines
CMD	1.0	1.0	1.0	0.9	0.75	1.0	1.0
STRPTX/S	0.95	0.85	1.0	0.95	0.8	1.0	0.8
STRPTX/A	1.0	1.0	0.9	1.0	1.0	0.9	1.0
MIWPTX/A	1.0	1.0	0.95	1.0	1.0	0.85	1.0
AAWPTX/A	1.0	1.0	0.9	1.0	1.0	0.9	1.0
AEGIS	0.95	0.8	1.0	0.95	0.8	1.0	0.75
Surf Combat	0.9	0.8	1.0	0.9	0.8	1.0	0.75

Table E-10: Loss Probabilities Scenario #5

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Ship Launch ASM	Ship Gun Anti Ship	Air Launch AAM	Mines
CMD	0.0	0.0	0.0	0.15	0.05	0.0	0.0
STRPTX/S	0.3	0.15	0.0	0.3	0.1	0.0	0.3
STRPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
MIWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
AAWPTX/A	0.0	0.0	0.5	0.0	0.0	0.5	0.0
AEGIS	0.2	0.05	0.0	0.2	0.03	0.0	0.25
Surf Combat	0.25	0.1	0.0	0.25	0.05	0.0	0.3

F. Scenario #6 - Special Operations

SPECTRE Task Force

(1) Large CMD or (2) Med. CMD or (3) Small CMD
(6) Surface Strike PTX
(6) Surface Patrol PTX
(4) Air Strike PTX
(4) Air AAW PTX

Conventional Task Force

(4) Air Strike PTX
(4) Air AAW PTX
(1) LHD
(2) PC

Opposing Threat

(10) shore launched ASMs
(100) anti ship shore fired gun projectiles
(100) anti air shore fired gun projectiles
(10) air launched anti-air missiles
(10) air launched anti ship missiles

Table E-11: Defense Efficiencies Scenario #6

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Air Launch AAM	Air Launch ASM
CMD	1.0	1.0	1.0	1.0	0.9
STRPTX/S	0.9	0.85	1.0	1.0	0.9
PATPTX/S	0.9	0.95	1.0	1.0	0.9
STRPTX/A	1.0	1.0	0.9	0.9	1.0
AAWPTX/A	1.0	1.0	0.9	0.95	1.0
LHD	1.0	1.0	1.0	1.0	0.9
PC	0.9	0.8	1.0	1.0	0.9

Table E-12: Loss Probabilities Scenario #6

	Shore Launch ASM	Shore Gun Anti Ship	Shore Gun Anti Air	Air Launch AAM	Air Launch ASM
CMD	0.0	0.0	0.0	0.0	0.15
STRPTX/S	0.3	0.15	0.0	0.0	0.3
PATPTX/S	0.5	0.2	0.0	0.0	0.5
STRPTX/A	0.0	0.0	0.5	0.5	0.0
AAWPTX/A	0.0	0.0	0.5	0.5	0.0
LHD	0.0	0.0	0.0	0.0	0.15
PC	0.3	0.15	0.0	0.0	0.3