

THE RECORD OF MISSILE
ATTACKS ON SHIPS

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WHY THE STUDY?

- “THE VALUE OF WARSHIP ATTRIBUTES” HAD TO SPECULATE ON ASCM AND DEFENSE EFFECTIVENESS
 - ASSUMED UNIFORM 10% LEAKER RATE
 - VARIATION: 50, 20, 10, 10, 10...%
- FULL UP AEGIS WITH BATTLESPACE DOES BETTER, BUT:
 - ASSUMES FULL UP LAYERS OF SAMs, PDs, SOFT KILL
 - ASSUMES AEGIS SHIP ITSELF IS NOT A TARGET
- NEW “LITTORAL WARFARE” ENVIRONMENT
 - NO BATTLESPACE & DEPTH OF FIRE
 - LOTS OF CLUTTER
 - THREAT OF SURPRISE
 - THREAT OF BLUE-ON-BLUE

STUDY APPROACH

- GATHER THE HISTORICAL FACTS: ALL INCIDENTS
 - UNCLASSIFIED RECORD
 - TOTAL OF 222 ASCMs
 - 25 BATCHES OF INCIDENTS, CALLED EVENTS
 - FIRST ONE THE EILAT IN 1967
- ARRAY FOR ATTACKER & DEFENDER PERFORMANCE
- ALSO WORK UP DAMAGE EFFECTS (OOA & SUNK)

THE ENGAGEMENTS, 1967-1973

- EILAT SUNK [1967] 4 STYX
- ORIT SUNK [1970] 4 STYX
- INDO-PAKISTAN WAR [1971] 9 STYX – 2 EVENTS
- ARAB-ISRAELI WAR [1973] 47 STYX – 5 EVENTS
- 54 GABRIEL – DITTO

TOTAL: 118

THE ENGAGEMENTS, 1980-1992

- TANKER WAR [1980-87] 53 MOSTLY EXOCET
- FALKLANDS WAR [1982] “10” EXOCET – 7 EVENTS
4 SEA SKUA – 1 EVENT
- GULF OF SIDRA [1986] 6 HARPOON
- USS STARK [1987] 2 EXOCET
- PRAYING MANTIS [1988] 1 HARPOON (IRAN)
5 HARPOON (USA)
5 STANDARD (USA)
- GULF WAR [1991] 2 SILKWORM
14 SEA SKUA
- SARATOGA-MAUVENET [1992] 2 SEA SPARROW

TOTAL: 104

SAMs VS. ASCMs

- ALL ENGAGEMENTS ARE IN LITTORAL WATERS
- ONLY ONE OF 220 (SIC) ASCMs WAS KILLED BY A SAM
- HMS GLOUCESTER SEA DART HIT SILKWORM FIRED AT USS MISSOURI ON 25 FEBRUARY 1991
- ALL OTHER SUCCESSES BY SOFTKILL & POINT DEFENSE

DATA ARRAY

TARGET TYPE	INCIDENTS	ASCMS	HITS	OOA	SUNK
DEFENSELESS	“5”	63	57½	42	12
w/o tanker war	4	10	5½	5	5
DEFENDABLE	10	38	26	13	6
DEFENDED	19	121	32	16	13

ASCM EFFECTIVENESS

DEFENSELESS TARGETS: 57½ HITS BY 63 SHOTS = .913
DEFENDABLE TARGETS: 26 HITS BY 38 SHOTS = .684
DEFENDED TARGETS: 32 HITS BY 121 SHOTS = .264

POST-1982 EFFECTIVENESS

DEFENSELESS: .98
DEFENDABLE: .63
DEFENDED .45

ASCM HIT PROBABILITY FOR DEFENDED TARGETS

- RAW LEAKER RATE = .264
- TO FIND HARD/SOFTKILL PERFORMANCE, NEED TO FACTOR OUT ASCMs THAT WOULD HAVE MISSED. FIND $P[\text{leaker} | \text{acquisition by ASCM}]$
- TAKE $P[\text{acquisition}]$ FROM DEFENSELESS & DEFENDABLES: $83\frac{1}{2}$ HITS BY 101 SHOTS = .827
- SO $P[\text{leaker} | \text{acquisition}] = .264 \div .827 = .320$ FOR ALL EVENTS

RECENT EVENTS (1982 ON)

- NUMBERS ARE SMALL ...
- $P[\text{hit}] = 9 \text{ HITS BY } 20 \text{ SHOTS} = .45$ (DEFENDED TARGETS)
- $P[\text{acquisition}] = 17 \text{ OF } 27 = .630$ (DEFENDABLE TARGETS)
- $P[\text{leaker | acquisition}] = .45 \div .630 = .714$
- NOT GOOD NEWS FOR DEFENDERS

HMS GLOUCESTER-SILKWORM EVENT

- ONLY A FEW EVENTS (SHEFFIELD, STARK, ETC.) INVOLVED SAM SHIPS
- GLOUCESTER HAD ONLY SAM SHOOTDOWN EVER
- GLOUCESTER PROCEDURES SOUND
- WOULDN'T HAVE KEPT USS MISSOURI FROM BEING HIT
- SURROUNDING TACTICS CONFUSED

CONCLUSIONS

- LITTORALS ARE WHERE THE ACTION IS
- RESTRICTED BATTLE SPACE
- MISSILES DOMINATED COMBAT EVENTS
- SCOUTING POWER AS IMPORTANT AS FIREPOWER
- SAMs ARE THE LEAST IMPORTANT DEFENCE
- INTERACTION BETWEEN LAND, SEA, AIR MISSILES
- NO SUCH THING AS “NAVAL COMBAT”; IT’S “LITTORAL COMBAT” INVOLVING WARSHIPS

DAMAGE DATA

- TO PUT OOA, AVERAGE WAS 1.2 HITS IN EXOCET EQUIVALENT
- TO SINK, AVERAGE WAS 1.8 HITS
- THESE WERE SMALL SHIPS
 - ONLY 7 ABOVE 2,000 TONS FLD FOR OOA, 4 FOR SINKING
- DAMAGE CURVES VERY FLAT
 - UP TO 3,500 TONS, EVERY WARSHIP OOA ALMOST ALWAYS WHETHER STYX, HARPOON, EXOCET, OR GABRIEL
 - ASCMs CARRY A LOT OF “OVERKILL”
- WORLD WAR II DATA ISN’T USELESS: SHOWS ORDNANCE TO PUT WARSHIP OOA INCREASES ONLY AS THE 1/3-POWER OF DISPLACEMENT
- TANKER WAR SHOWED BIG SHIPS HARD TO SINK W/ASCMs

DATA SOURCE

LIEUTENANT JOHN C. SHULTE, USN MASTERS THESIS

“AN ANALYSIS OF THE HISTORICAL EFFECTIVENESS
OF ANTI-SHIP CRUISE MISSILES IN LITTORAL
WARFARE”

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