Advancing Beyond the Beach:
Amphibious Operations in an Era of Precision Weapons

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Study methodology

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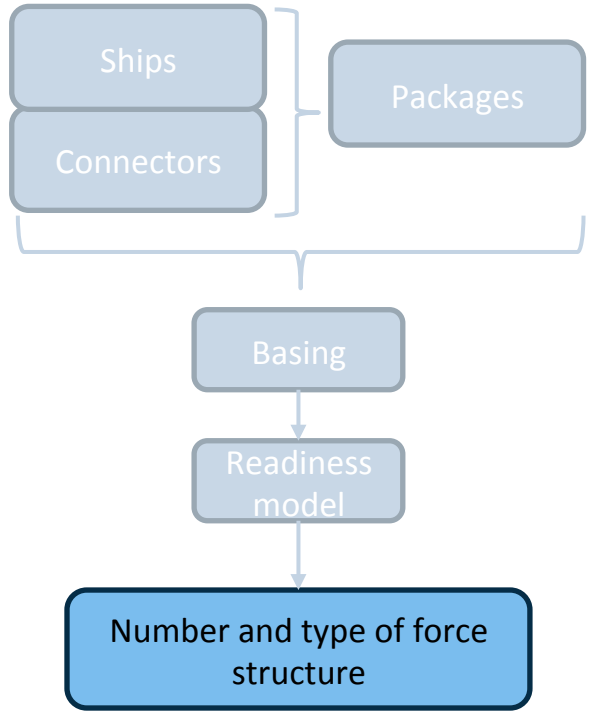
Naval missions	Strategic approach	Operational concepts	Demands for amphibious forces in:
Deter conflict	Denial and delay or punishment	• Expeditionary Advanced Bases • Air and missile defense • EMS warfare	• South & Central America • Northern Europe • Mediterranean Sea • Africa • Persian Gulf • Gulfs of Aden / Oman • Indian Ocean • South China Sea • East China Sea • Pacific Ocean • Arctic Ocean
Win the war at sea			
Respond to humanitarian crisis	Cooperative efforts with allies and partners	• Logistics • Amphibious raids • Surface warfare and strike • Blockade	
Maintain security			

Amphibious force structure



Contested areas make "rollback" challenging

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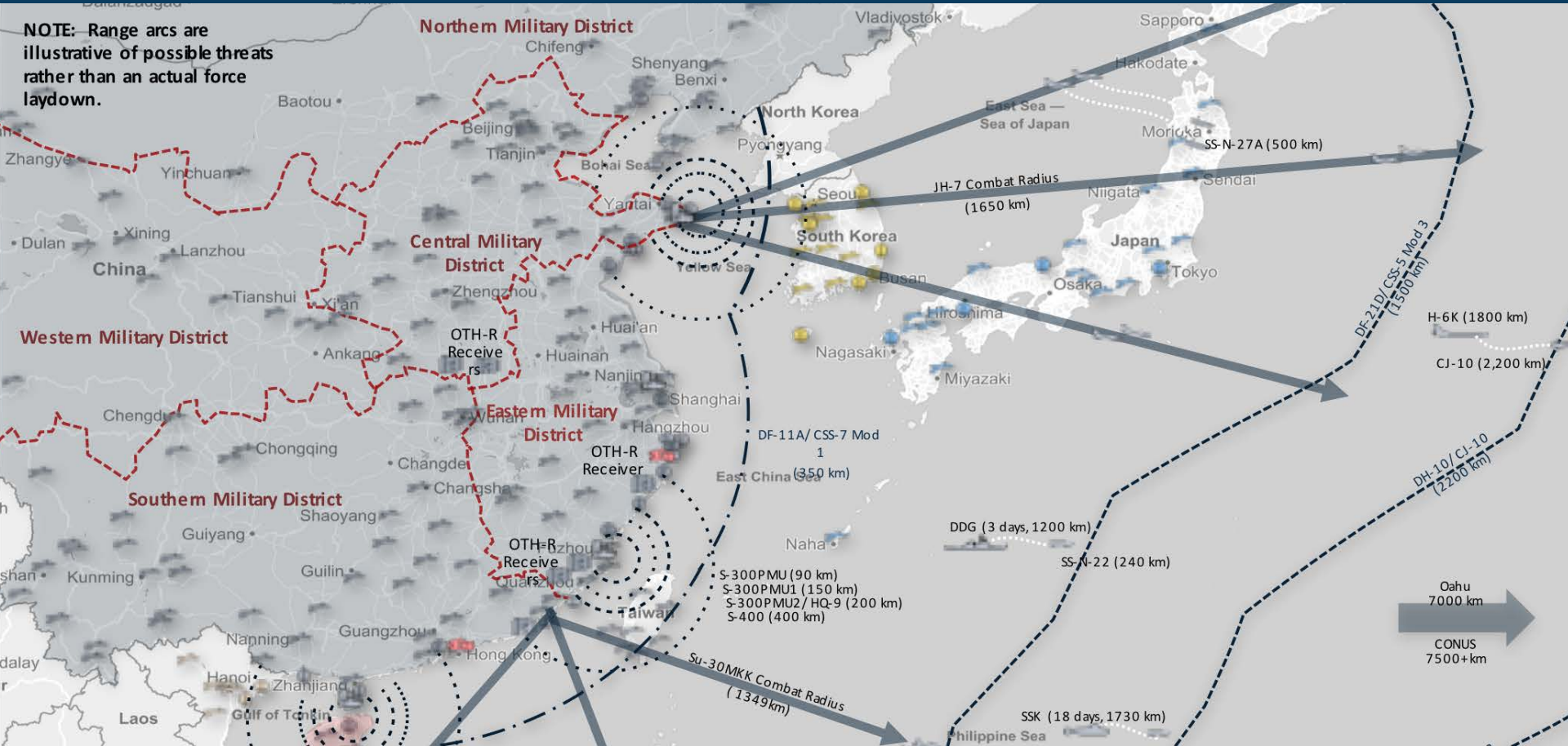

New deterrence approaches needed

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- **Today's force designed to deter by compellence after the fact**
  - Adversary commits aggression; U.S. surges forces to reverse gains
  - Requires months of force flow before "roll back" begins
  - E.g., Iraq (X2); notional plans for DPRK and Iran
- **Threatening a response after aggression is no longer effective**
  - China, Russia, and Iran can rapidly achieve likely objectives
  - Anti-access capabilities preclude traditional build-up
- **Future deterrence approach should include two elements:**
  - Deny or delay aggression: With survivable, forward postured forces
  - Punishment: Impose costs *immediately* to compel aggression to stop

Future deployed forces need to focus on deterrence through denial and punishment of an adversary's aggression

Iranian ASCMs can threaten entire Gulf

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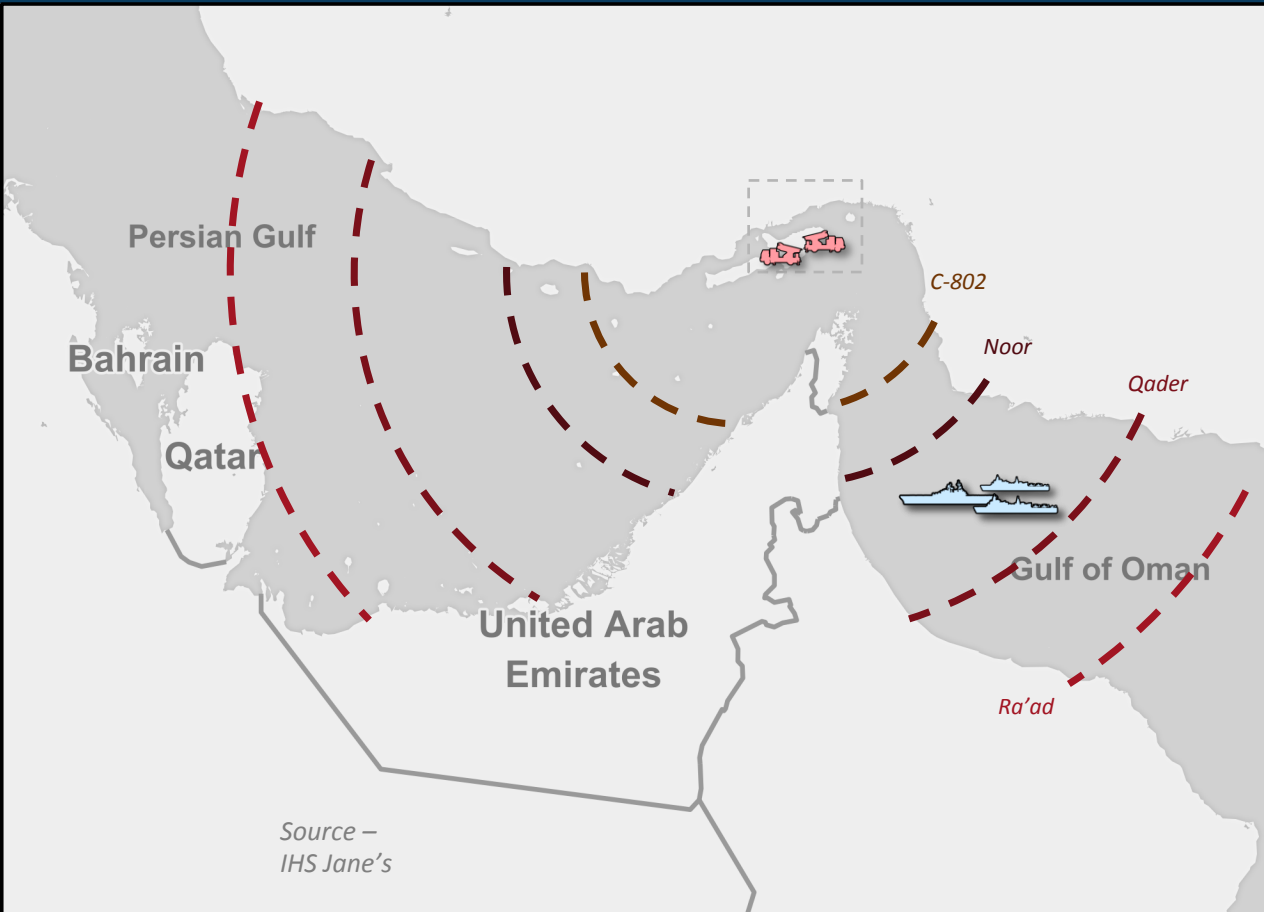

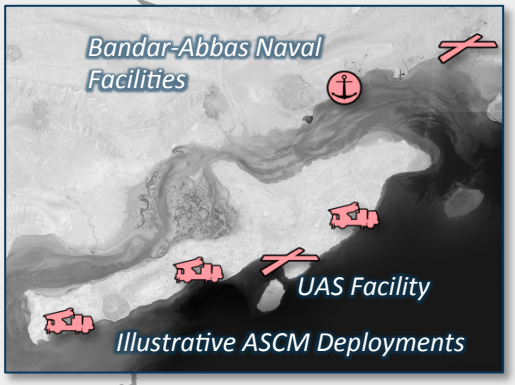

Iranian Ground-Launched Anti-Ship Missile Systems

System Family	System Designation	Export Designation	IOC	Range (nm)
		C-701	1990s	13.5
Kosar	Kosar-1		2004	8.1
Kosar	Kosar-3		2009	13.5
Kosar	Zafar		2012	13.5
Nasr	Nasr-1	TL-2/FL-6	2010	18.9
Karus			1996	21.6
		C-802	1993	64.8
Tondar			1998	64.8
Tondar	Noor		2002	97.2
Tondar	Qader/Ghader		2012	162.0
	Ra'ad/Saeqeh		2007	216.0

Islands threaten air & surface across SCS

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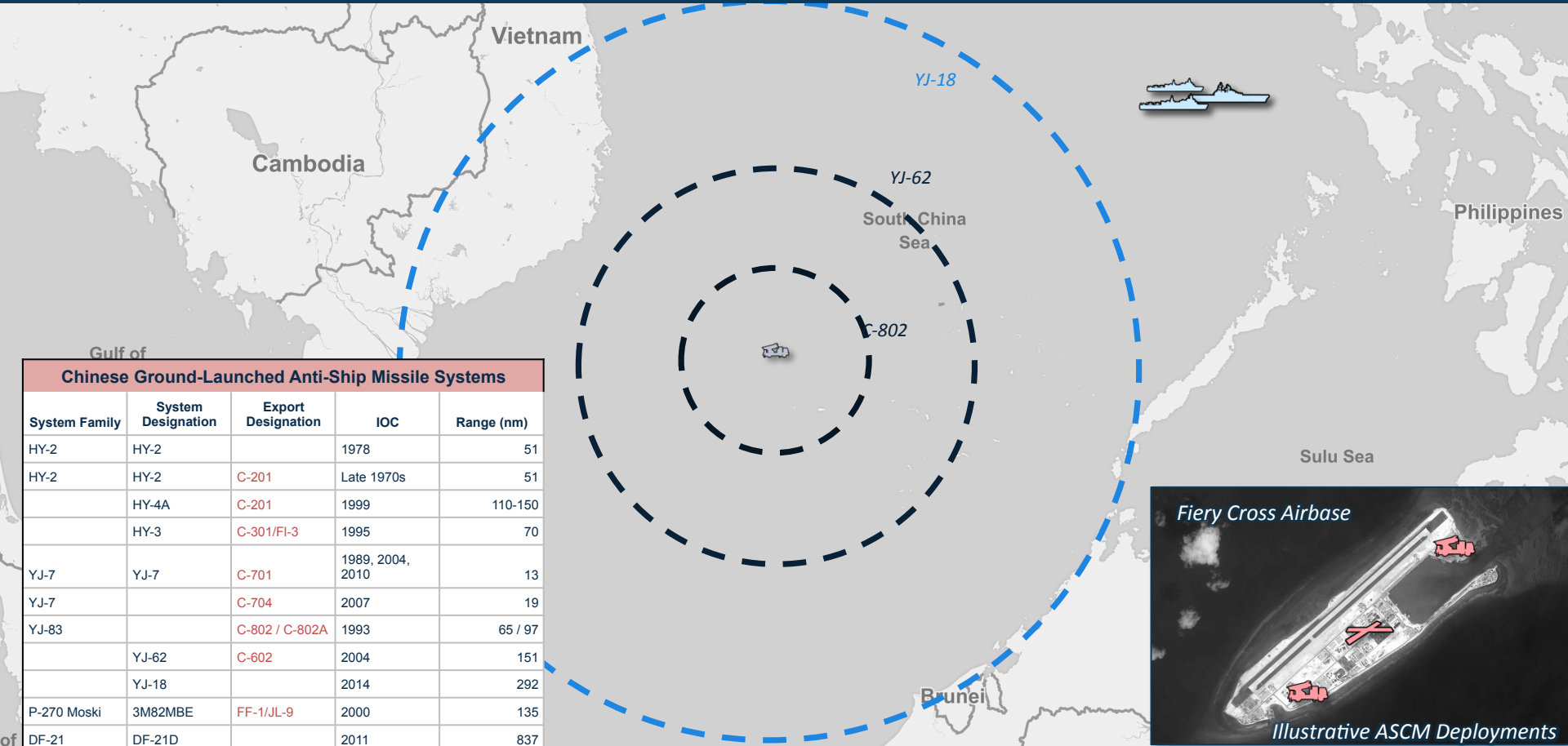

Chinese Ground-Launched Anti-Ship Missile Systems

System Family	System Designation	Export Designation	IOC	Range (nm)
HY-2	HY-2		1978	51
HY-2	HY-2	C-201	Late 1970s	51
	HY-4A	C-201	1999	110-150
	HY-3	C-301/FI-3	1995	70
YJ-7	YJ-7	C-701	1989, 2004, 2010	13
YJ-7		C-704	2007	19
YJ-83		C-802 / C-802A	1993	65 / 97
	YJ-62	C-602	2004	151
	YJ-18		2014	292
P-270 Moski	3M82MBE	FF-1/JL-9	2000	135
DF-21	DF-21D		2011	837

New platforms designed to increase reach

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- Operational Maneuver From the Sea for amphibious ops at long ranges
  - For Distributed Operations (DO)
  - To reduce threat from ASCMs
- Ship to Objective Maneuver
  - To reduce time of beach transition
  - Use vertical lift, new vehicle
- Major shortfalls
  - Not enough F-35Bs to support DO
  - One vehicle able to fit on MV-22

Surface connectors vulnerable or slow

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- Surface connectors needed for mobility, fires
  - Armored HMMV or JLTV
  - HIMARS, M777
- Landing Craft (Air Cushioned) – LCAC
  - Large payload
  - Relatively fast (40 kts); 300 nm range
  - Identifiable; lacks self defense
- Landing Craft (Utility) - LCU
  - Larger payload than LCAC
  - Slow (10 kts); 1200 nm range
  - Could blend into coastal shipping

Fires need same reach as troops

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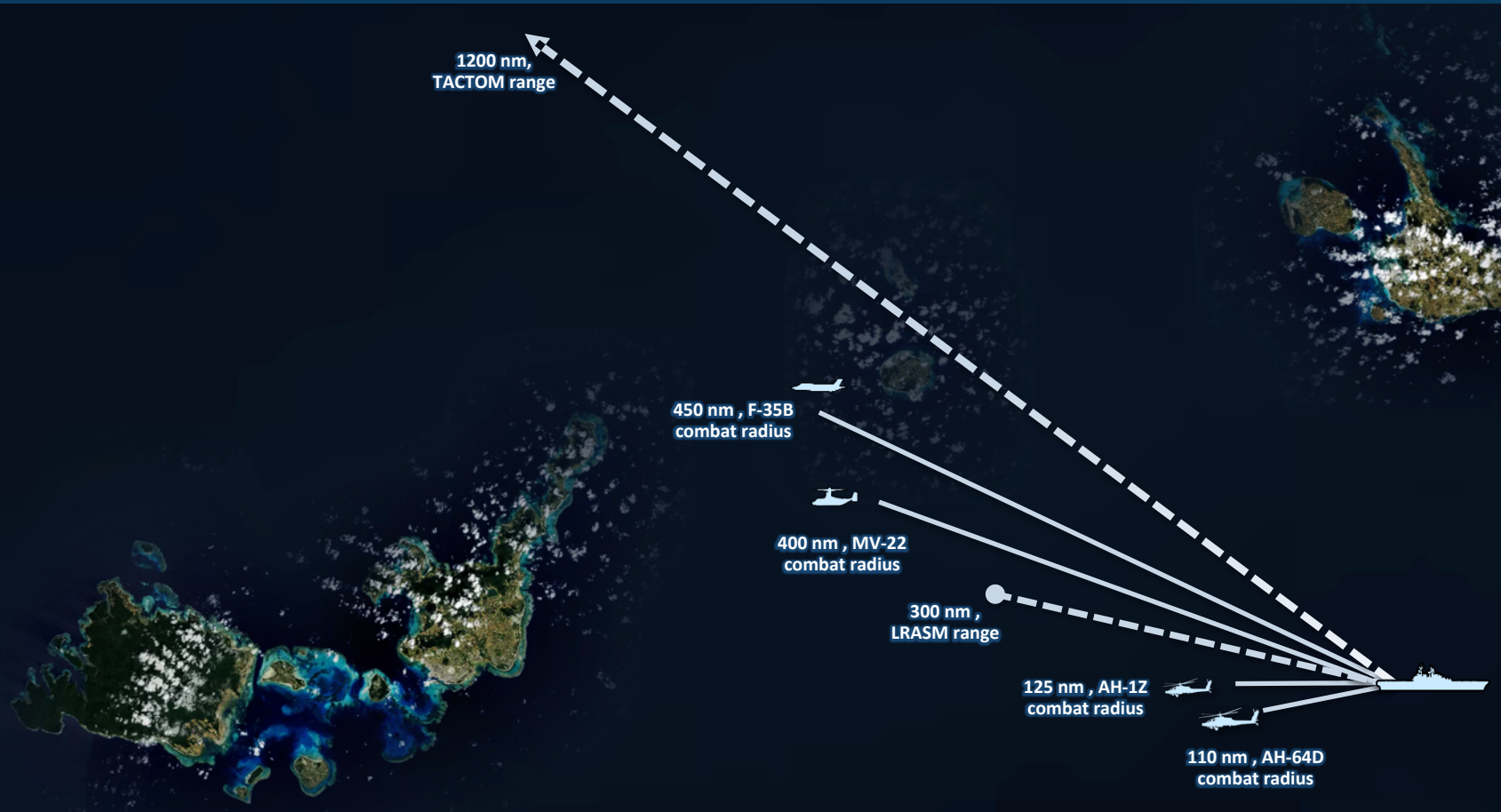

New Concepts

EABs can support a range of applications

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Defend EABs by increasing req'd salvo size

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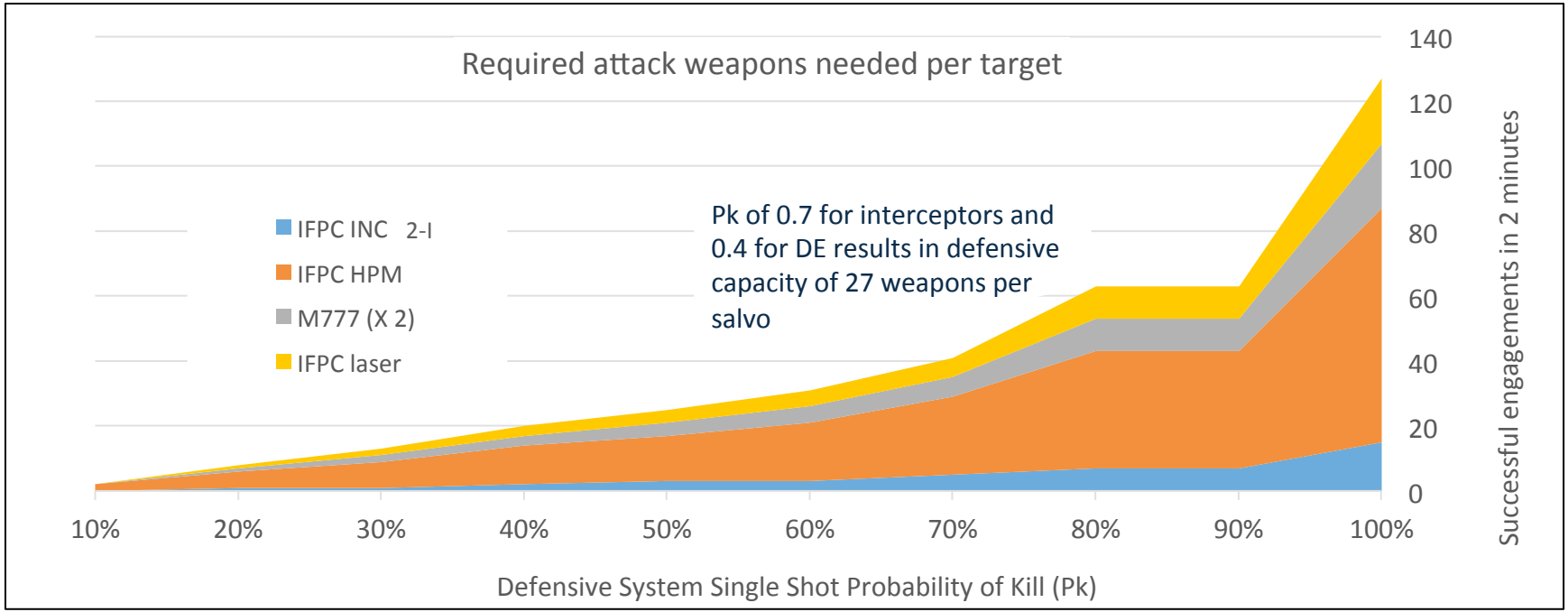

28 weapons required to exceed defensive capacity – for every target
Could result in hundreds of weapons needed to defeat a single EAB

New air defenses increase defensive capacity

- Indirect Fires Protection Capability (IFPC)
  - Inc 2-I w/ AIM-9X or Lower AD
  - Inc 3 with laser or HP RF weapons
- M777 w/ hypervelocity projectiles (HVP)
  - Requires Sentinel radar
  - Each can engage 1 weapon per salvo
- Defensive systems increase number of weapons required per target

Counter-ISR systems grow number of targets

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- EABs can be harder to defeat than ships
  - Can exploit terrain and foliage
  - Have many discrete targets
  - Easier to harden and reconstitute
- Passive defenses can help defend EABs
  - Do not need to be perfect
  - Only need decoy system to look like camouflaged real system
  - Increases number of targets to engage

EABs supported organically or by host nation

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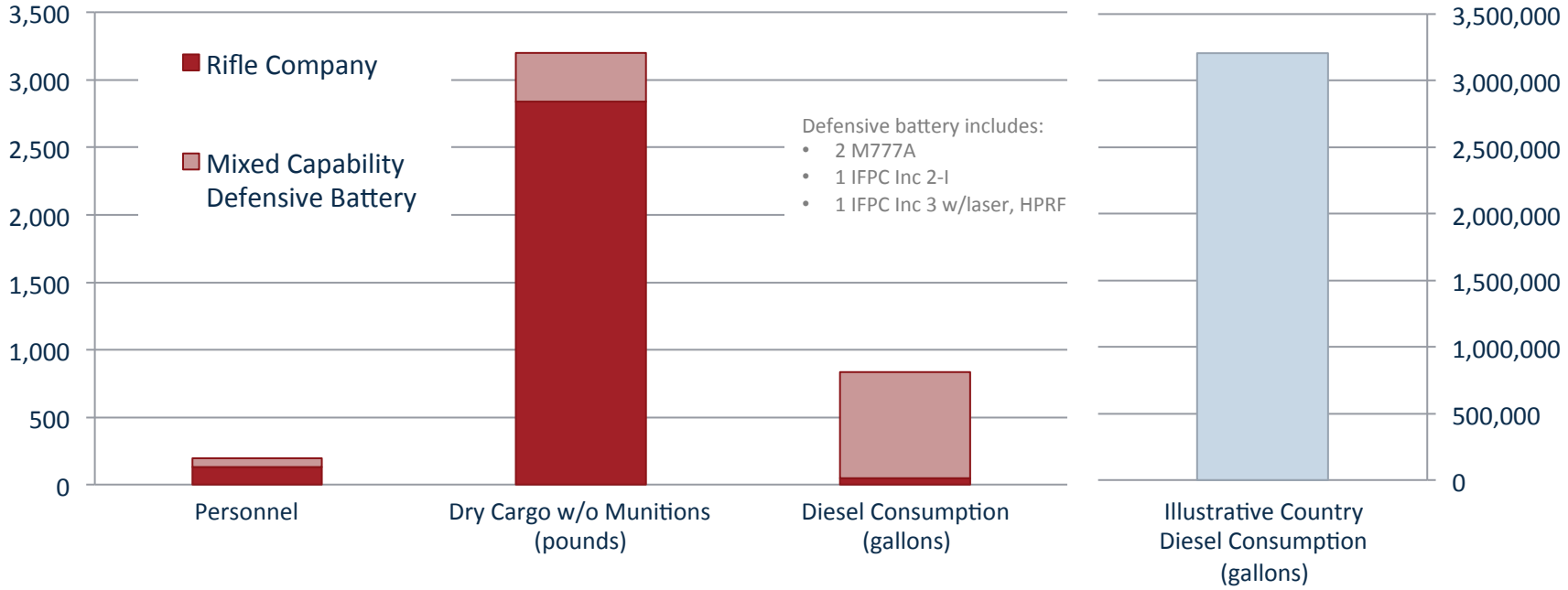

1-2 MV-22 flights per day could support the EAB; with FARP, an additional MV-22 flight could resupply fuel bladder

Cross-domain fires create barrier to enemy

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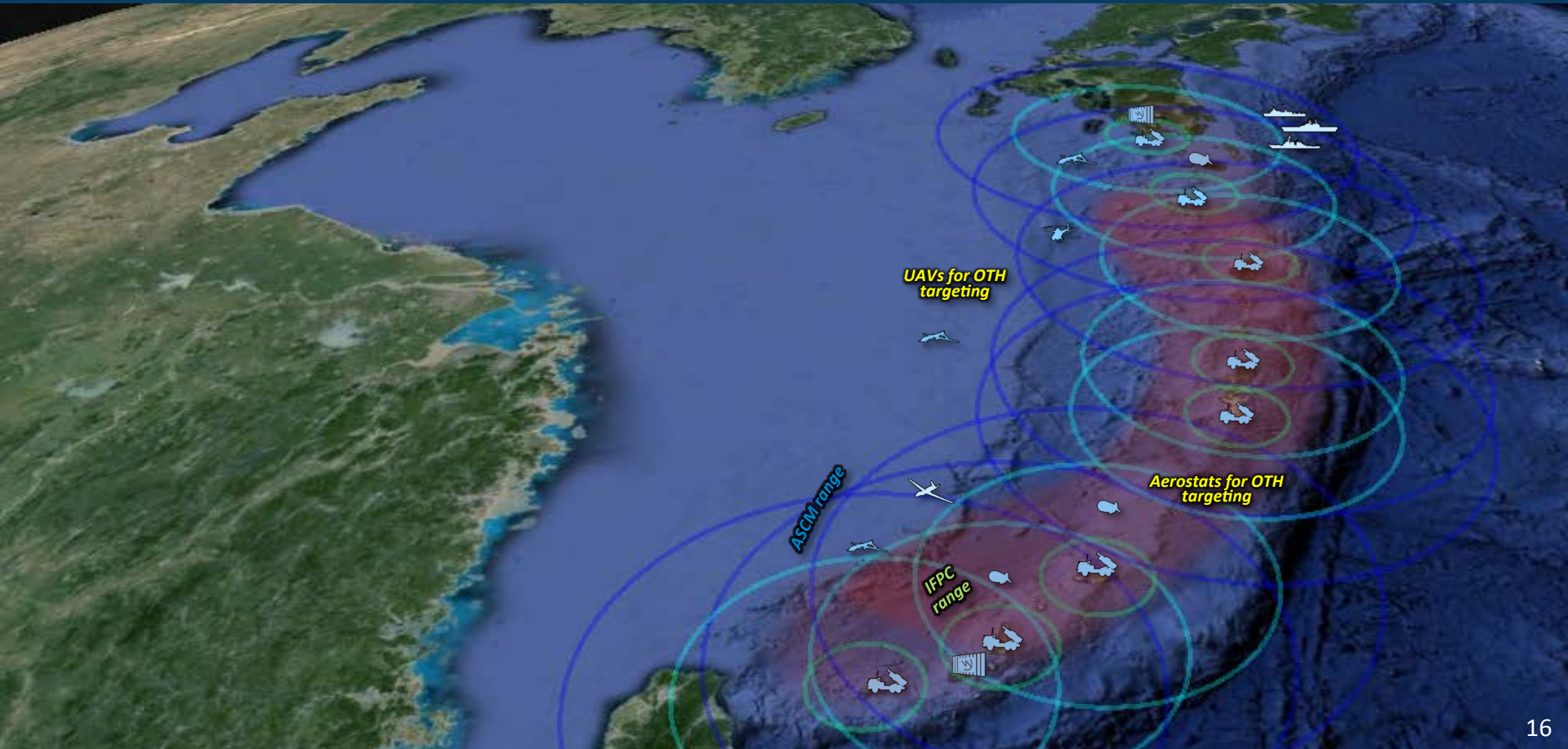

Blockade key to protracted conflict

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Amphibious raids to defeat threats to access

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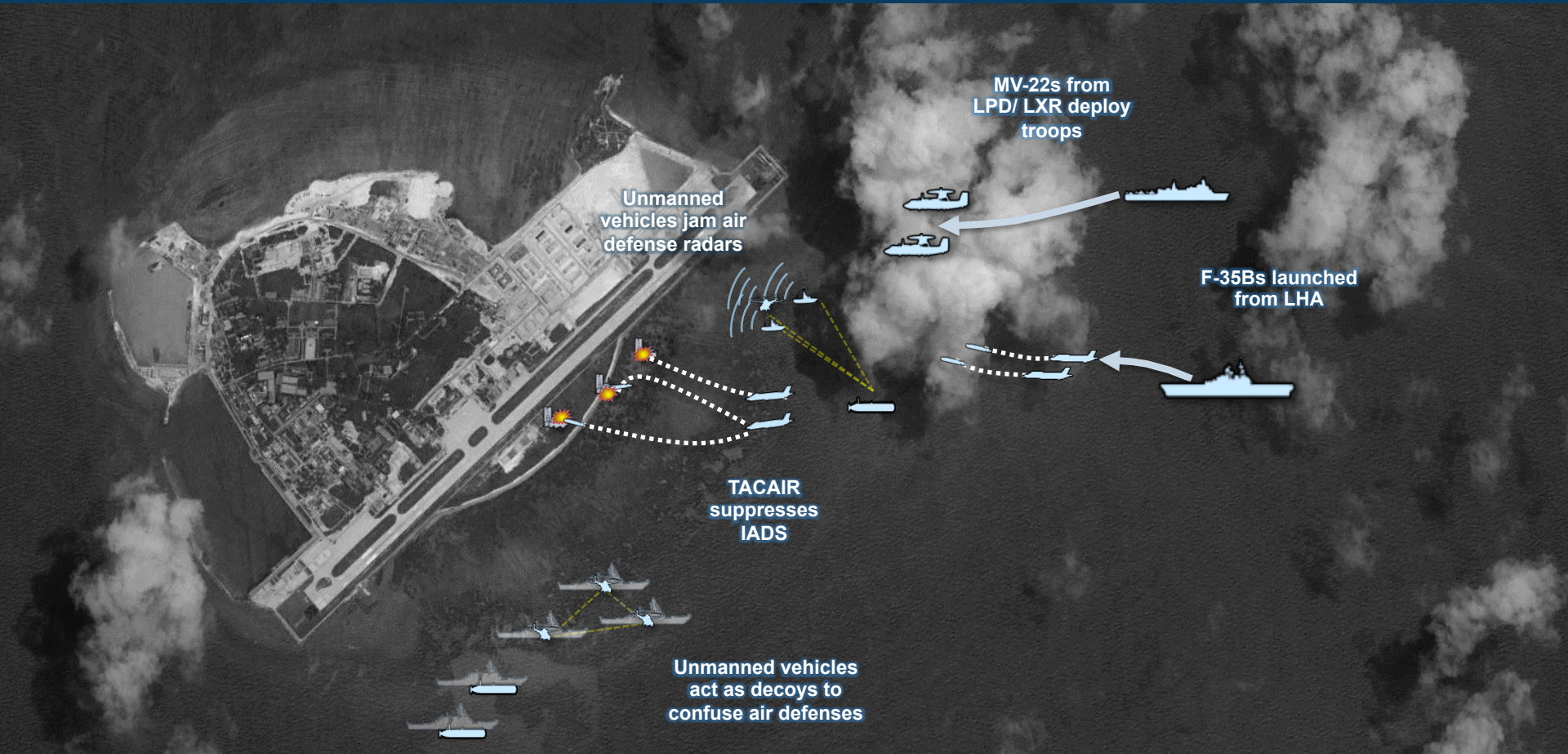

Amphibious forces can support SUW

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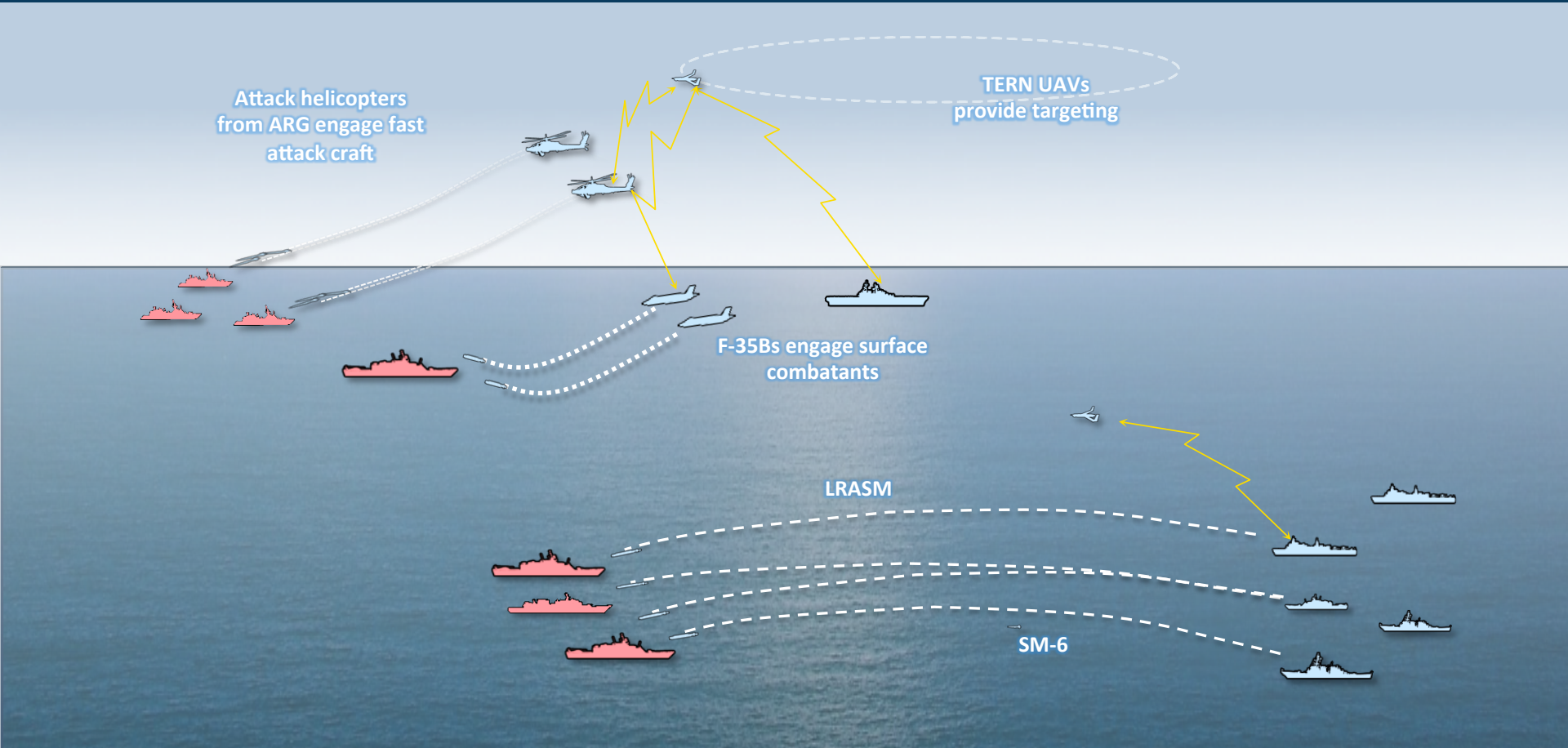

New amphibious posture to deny and punish

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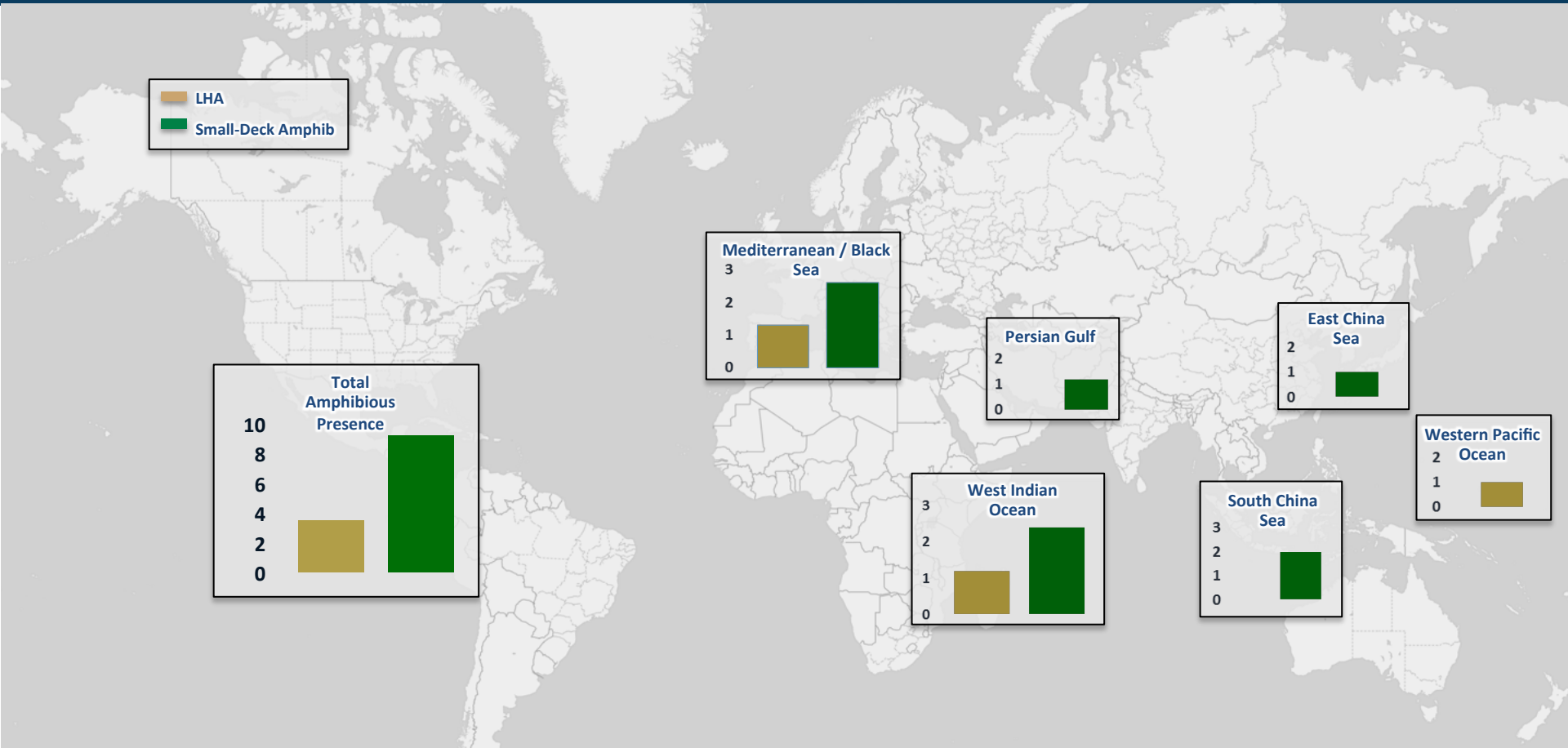

Capability Implications

Lighter vehicles can increase range & firepower

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- Marine vehicle weight has increased
  - IED threat in Iraq and Afghanistan
  - New vehicle acquisitions
- MV-22-compatible vehicles increase MAGTF's ability to project power at long-range
  - Internally Transportable Vehicle (ITV) and Expeditionary Fire Support System (EFSS)
- DARPA GXV-T program

Connectors optimized for ocean travel

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- "EFV-like" system no longer useful
  - 25 nm prohibitively close
- Surface connectors should be optimized for ocean transit rather than to fight on land
  - Quicker transit times
  - Ground vehicles without amphibious design tradeoffs
- EPF and UHAC both provide speed/range to MAGTF

Missiles increase MAGTF's long-range fires

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- Distributed ops will require fire support over long ranges
  - RIMPAC 2014 warfighting experiment
- Missile launchers with multi-mode weapons
  - Reduce logistical challenges
  - Maximize limited magazine space
- Long-endurance UAVs provide organic over-the-horizon detection capability

Missiles can support distributed ops

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Increase amphibious ship armament

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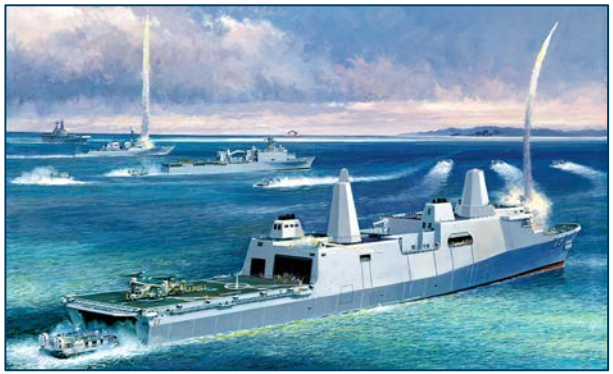

- Current amphibious ships lack offensive and defensive capability
  - Cannot participate in Distributed Lethality
  - Require escort when air threat present
- LPD-17 hull has sufficient space to support VLS
- Long-endurance UAVs and NIFC-CA will improve the reach of VLS-equipped amphibious ships

Rebalance amphibious loadouts to aviation

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- *America*-class Flight 0 ships add aviation capacity compared to LHDs
  - 40 percent more hangar space
  - Double cargo fuel payload
- Aviation-optimized LHAs will improve ARG's long-range striking power
  - 20+ F-35s linked via NIFC-CA to air and surface assets
- DoD should develop a CATOBAR variant to act as a light aircraft carrier (CVL)

Four-ship ARG increases capacity

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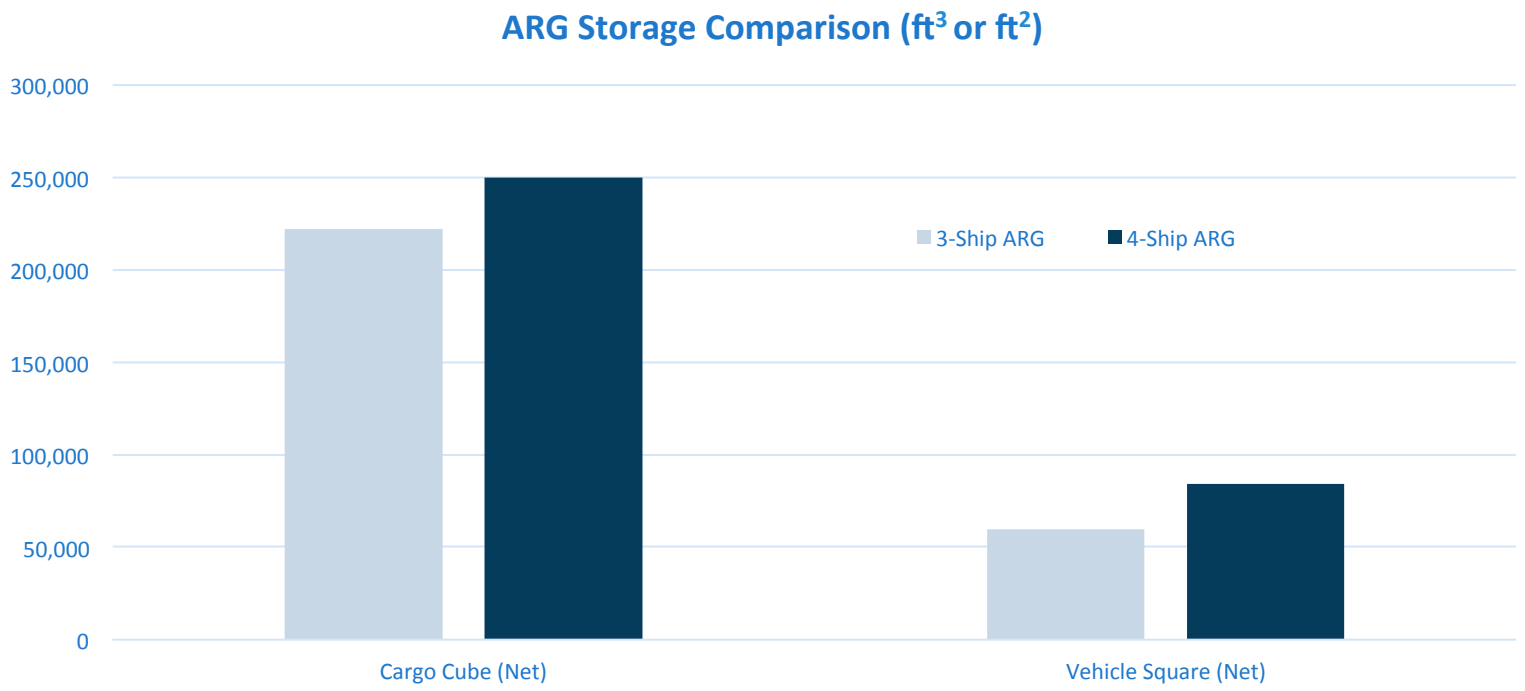

Four-ship ARG increases fires

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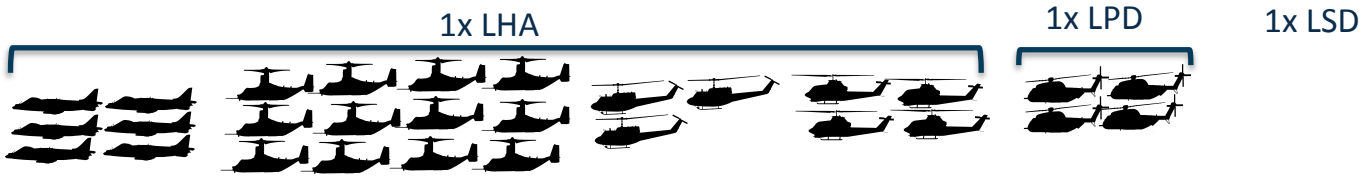
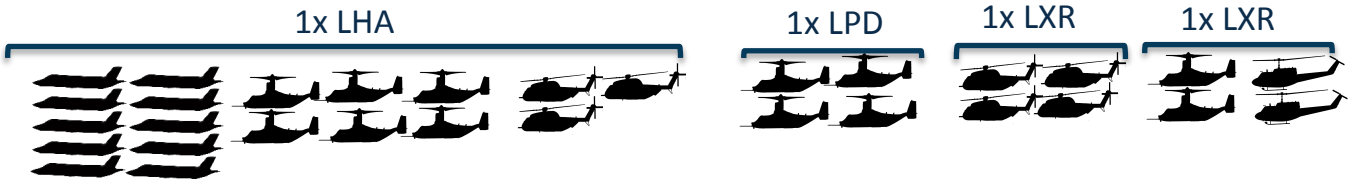
Current ARG: 6x AV-8B, 12x MV-22, 3x UH-1, 4x AH-1, 4x CH-53



Four-Ship ARG Strike Optimized: 20x AV-8B/ F-35B, 4x MV-22, 3x UH-1, 4x AH-1, 4x CH-53

Four-Ship ARG Fast Assault Optimized: 10x AV-8B/ F-35B, 12x MV-22, 7x CH-53, 2 K-MAX



STOVL fighter mission inventory will increase

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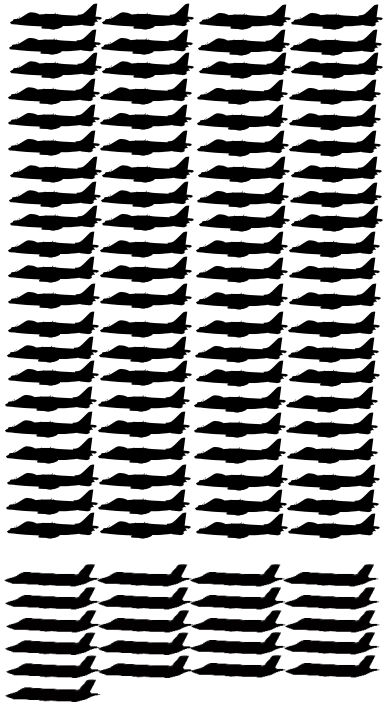
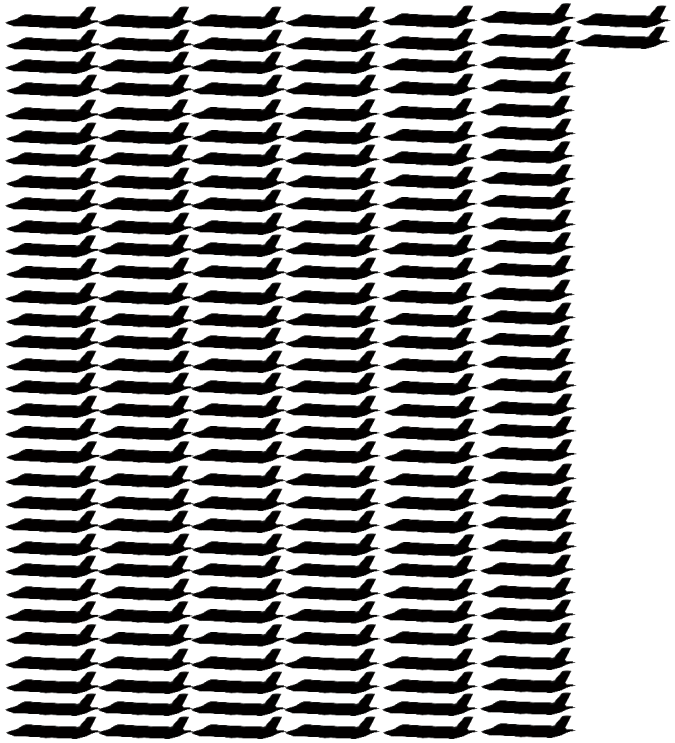
2016



84x AV-8B
(6 x VMA)

21x F-35B
(1 x VMFA)

2030s



194x F-35B
(14 x VMFA)

New readiness cycle will enable more presence

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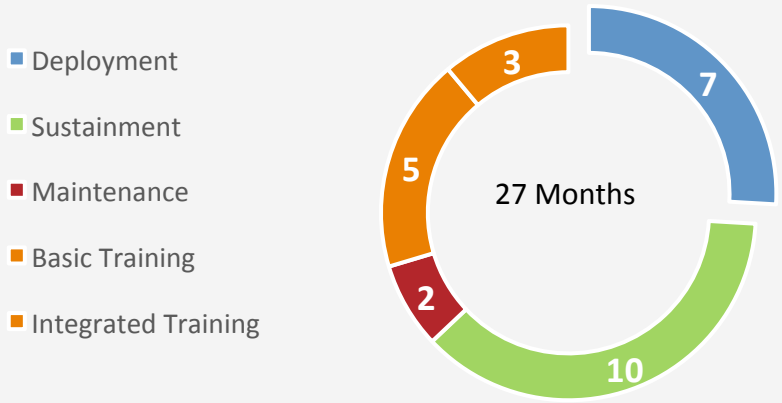
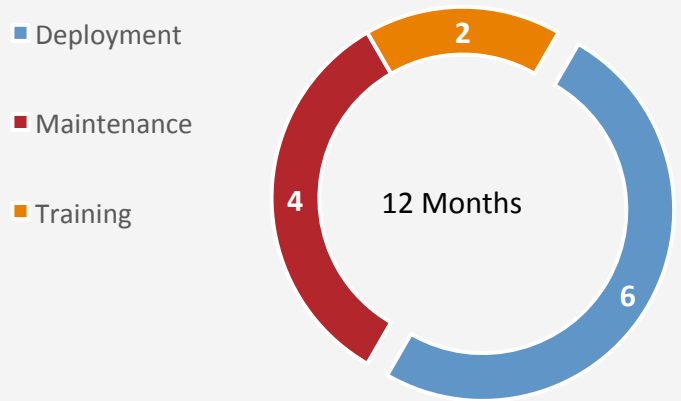
Current amphibious forces readiness cycle



Proposed amphibious force readiness cycle



Amphibious fleet should expand

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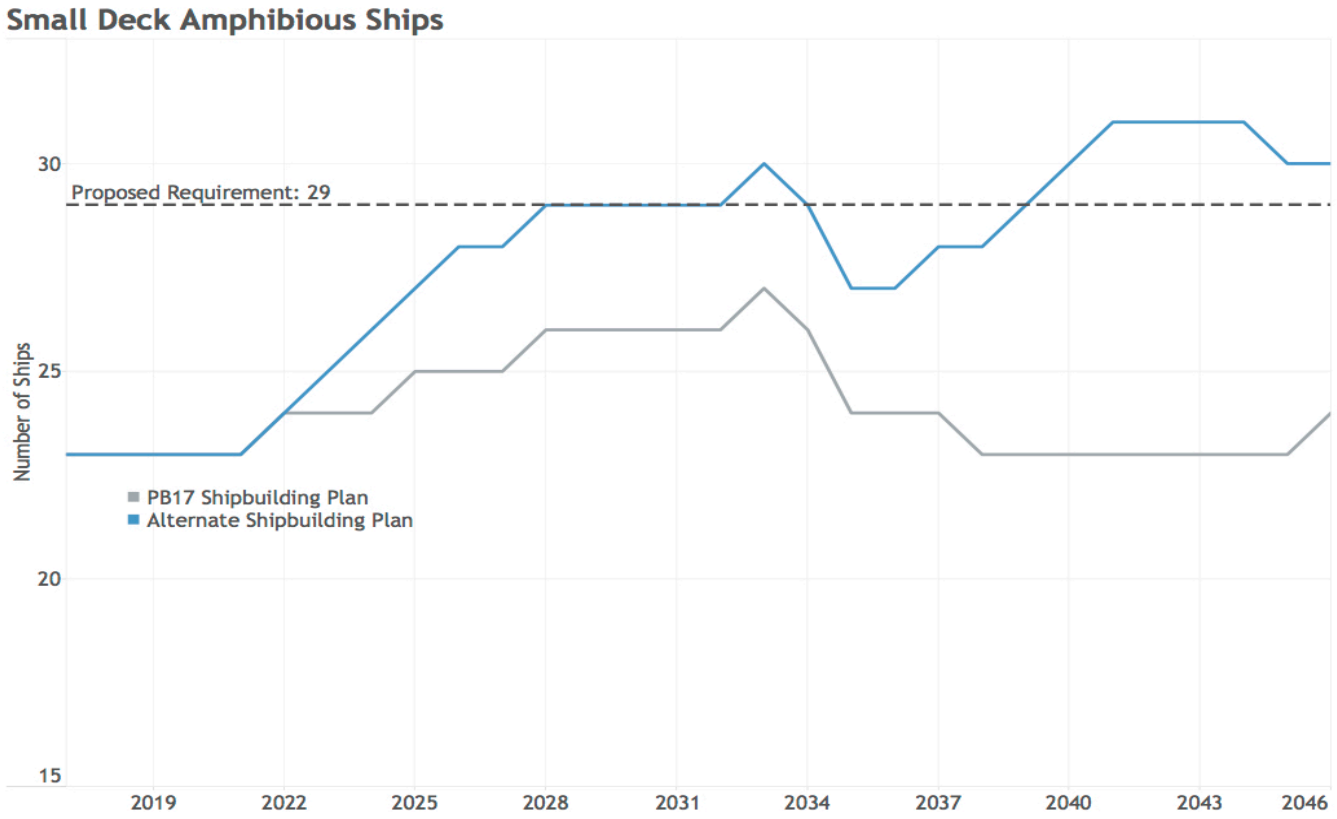

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