

Intelligence, Surveillance and Reconnaissance (ISR) in the Littoral Fight

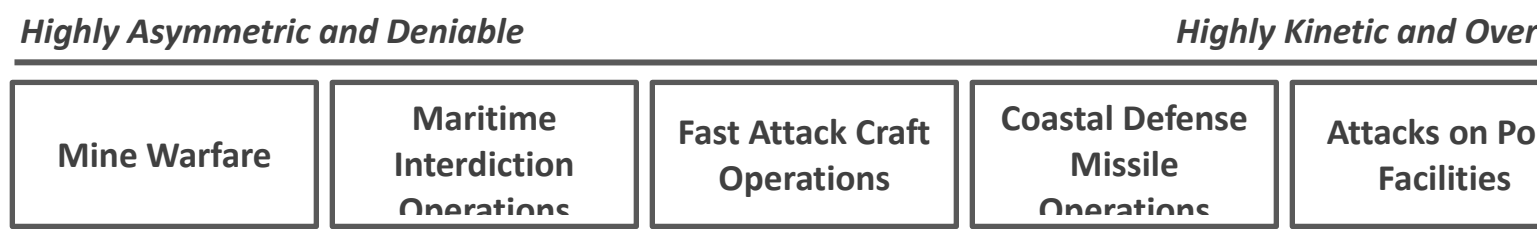
ISR has been our most significant force multiplier in the asymmetric ground fight in OIF and OEF. We need to take that advantage to the littorals.

Lieutenant Daniel T. Murphy, U.S. Navy

The next time we fight in the littorals, whether it is in the Arabian Gulf, Africa, Asia or elsewhere, our adversaries, if they are smart, will adopt the land tactics that have made insurgents effective in Iraq and Afghanistan. And, if we are smart, we will bring the same force-multiplying Intelligence, Surveillance and Reconnaissance (ISR) tools to the asymmetric maritime fight that has kept our casualty rates surprisingly low in the ground fight in OIF and OEF.

In the last two decades, naval strategies, orders of battle, and tactics have changed considerably. What has become clear in recent years is that, in a conflict with the US or western coalition navies, our adversaries will not carelessly deploy their blue water assets in a traditional fight against our highly equipped and highly trained forces. Rather, there is likely a spectrum of operations that they would pursue, starting with the highly asymmetric and deniable, and building potentially to the highly kinetic and overt.

EXAMPLE SPECTRUM OF OPERATIONS



Most of our potential adversaries’ naval operations would focus on restricting the freedom of movement at sea and delivering an adverse economic impact on the enemy. Watching the successes of insurgent ground-based asymmetric tactics in Iraq and Afghanistan, our adversaries will be emboldened in their ability to deliver similar asymmetric effects at sea.

In our asymmetric fights in OEF and OIF, “new ISR” has been our most significant force multiplier. New generation unmanned platforms like the MQ-1 Predator and MQ-9 Reaper have significantly extended our ground forces’ areas of observation outward. We have the ability to utilize the new ISR platforms *in concert* with some of our older generation manned (and in some cases, “re-sensored”) ISR platforms. Our ability to fuse, process and disseminate the *integrated* intelligence from these assets, will continue to give us an exponential advantage in information dominance. As a result, our ground forces today have earlier indications and warnings of threats, and invaluable persistent overhead views of the daily pattern of life and potential enemy intentions in an operational area. We can watch for changes in patterns, interpret those changes, assess the enemy’s intent and capabilities, and plan and execute our own operations accordingly. Defense Systems magazine recently reported, “Unmanned aircraft have fundamentally changed the accuracy and lethality of our soldiers’ weaponry, increased the safety of our soldiers, and even changed the way soldiers see and understand the terrain and situations the face during the conflict.”¹ In addition, the new platforms have the ability to quickly go kinetic, without the need to put ground forces in harm’s way. The net result of these new

capabilities is that, compared with previous conflicts, coalition troops in OIF and OEF have been tough to kill, and our operations have been difficult for the enemy to counter.

The Navy clearly sees the at-sea potential of new ISR tools, and the CNO said recently that he wants to see stealthy, unmanned aircraft on US carriers before 2018. Given the complexities of unmanned ISR platforms, the blue water fleet needs to move with a measured approach. According to the CNO, "Those complexities include landing an aircraft onto the deck of a carrier bursting with electromagnetic energy without a pilot in the cockpit."² However, although the new generation of ISR platforms are not quite ready for the blue water Navy, they are certainly ready for the littoral fight. There are multiple littoral flashpoints around the world where, if a conflict began, the Navy would potentially become the "supported command" in the protection of commercial sea lanes, port facilities, choke points, and riverine areas. To the littoral fight, the Navy and Coast Guard would bring an expeditionary capability set in our Riverine Forces, Maritime Expeditionary Security Squadrons, Port Security Units, mine warfare platforms, and other specialized units. However, as the supported force, the Navy must be ready to request effects from other services, especially ISR effects. Here are four examples:

I. Mine Countermeasures

Mine warfare is among the most asymmetric and deniable of naval operations, and delivers a big bang for the buck. Our adversaries could potentially wreak havoc in the shipping lanes by using dhows and other civilian-like vessels to lay mines during seemingly routine transits through choke points and congested areas. These operations would likely be conducted at night. By laying mines in a free-floating state, their origin would be more difficult to trace. Even if forensics did prove their origin, the enemy regime would still have a measure of deniability. If a determined enemy initiated a mine-warfare campaign in just one major commercial traffic area, U.S. and coalition traditional mine countermeasure capabilities would be stretched thin.

Compared with traditional mine warfare platforms, ISR assets like the MQ-1 Predator and MQ-9 Reaper and the new USAF MC-12 Liberty, a manned aircraft, are relatively ubiquitous and quick to deploy from land-based airfields in friendly littoral areas. Using synthetic aperture radar, video cameras, and forward-looking infrared (FLIR), these platforms have the persistency to watch over a chokepoint or waterway for an extended period of time, and could detect mine-laying vessels and activities. With an airborne signals intelligence payload, the platform can also listen to adversaries as they broadcast. The MQ-9 also carries ground moving target indicator (GMTI) technology that could potentially track contacts at sea. A Predator or Reaper could either queue a seaborne platform to intercept a vessel engaged in a mining operation, or, with its own armament, conduct a kinetic strike against the vessel. Depending on atmospheric and sea states, these platforms may even be able to hunt for mines along a narrow vector transit line, and queue scarce traditional assets to the location for sweeping and clearing. New ISR could potentially extend the battle commander's optical view of the battle space significantly beyond what can be seen from the bridge wing of a minesweeper, and these assets have significantly more persistency than ship-based rotary wing aircraft.

II. Countering Maritime Interdiction Operations (MIO)

In reaction to economic sanctions, or as part of a territorial sea or exclusive economic zone (EEZ) dispute, naval adversary forces could significantly disrupt the commercial vessel traffic flow simply by threatening or conducting basic visit, board, search, and seizure (VBSS) operations. In the shipping industry, time is money, and the margins continue to narrow. Just slowing down vessel traffic through key shipping lanes would have an economic impact that would ripple across the globe and down to the consumer. And this would be exactly the enemy's desired effect.

To counter such a strategy, a land-based Predator or Reaper could persistently watch over a commercial traffic area, vector merchant traffic away from the VBSS operations, vector friendly maritime security assets to provide protection, and if necessary, use kinetic force to prevent an enemy VBSS operation. Compared to the traditional mix of blue water assets and embarked security teams that would escort vessels through densely trafficked, high-threat areas, an ISR-focused solution would be more fast-reactive, cost-effective and sustainable.

III. Countering Fast Attack Craft

Some of our adversaries have significantly built up their small craft inventory in the last two decades, to include fast attack missile and torpedo craft. These assets, even if they were used in feint swarm attacks, rather than actual strike operations, could have a significant adverse effect on commercial vessel traffic flow. The large number of fast attack craft that our adversaries possess, their small size, high speed, and small radar signature, make these craft difficult to detect, track, deter and defeat. They are an especially dangerous foe when operating in congested sea lanes, in and around island archipelagos, around oil platforms, and in disputed territorial seas and EEZs.

Traditionally, we would counter a fast attack craft threat using blue water Navy and Coast Guard assets as escorts. If the waterway was a highly trafficked area like the Arabian Gulf, and if the threat continued for any significant period of time, the operation would quickly become unsustainable for the fleet. We would likely need to move commercial traffic into highly resource-intensive convoys, which would cause shipping delays and economic impacts. Inevitably, a determined adversary would effect a successful small craft attack against an escorted vessel, or possibly even against one of the escorting vessels.

Similar to the VBSS scenario above, and similar to the way shore-based aircraft helped protect shipping against German wolf packs in the Second World War, shore-based Predator, Reaper or MC-12 could extend the area of observation outward, watching over the traffic area, providing early indications and warnings of enemy small craft mobilizing for an attack against merchant vessels. They could vector surface and air-based assets to provide protection, or if necessary, go kinetic against a fast attack craft. ISR can extend the commander's view of the battle space significantly beyond what can be seen from the bridge wing of an escorting vessel. They can provide persistency over a waterway that a ship-based helicopter can not. Again, these land-based platforms would be more fast-reactive, cost-effective and sustainable for long-term operations.

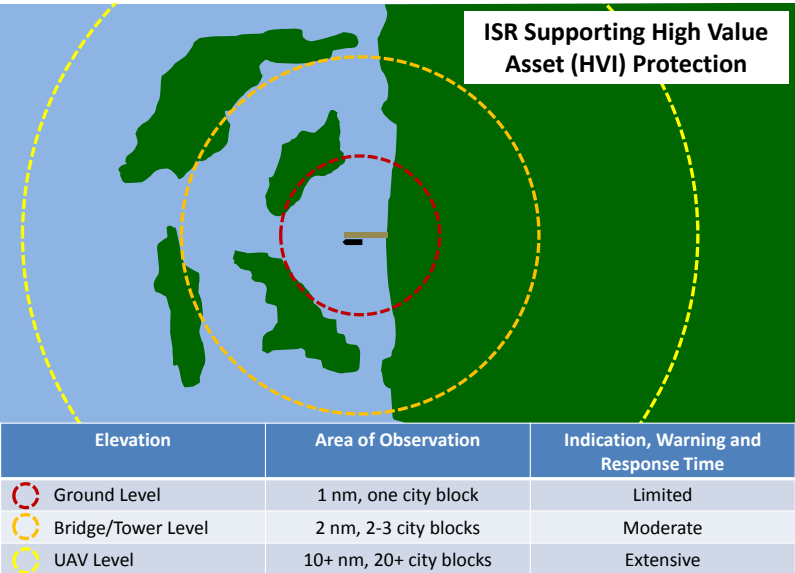
IV. Countering Attacks on Port Facilities

There are multiple dense commercial shipping areas around the world where, if our adversaries opted for an asymmetric fight, they would have a target-rich environment against vessels pier-side, port facilities, fuel farms, refineries, oil rigs, desalinization plants, and other key infrastructure. Protecting port facilities against shore-based and sea-based threats is the mission of the Naval Expeditionary Combat Command (NECC) and U.S. Coast Guard forces. These forces are already operating at a high operational tempo in CONUS, in the Arabian Gulf, and in other locations worldwide, protecting Navy and Military Sealift Command shipping in various ports and while they are in-transit. If the threat-level escalated in the Arabian Gulf or in one or two other hotspots in the world, our NECC and Coast Guard forces would be stretched thin.

Against the threat of individual or unit-level attacks from the shore side or from a waterway, the keys to success are indications, warnings and reaction time. Similar to force protection at sea against fast attack craft, the key is to extend the area of observation as far outward as possible. However, in this case, rather than defending a high-value asset transiting a shipping lane, the challenge is to extend the area of observation around a static vessel or facility, both on the landside and across the waterways. To provide force protection around a high-value asset in-port or around a port

facility, the Navy and Coast Guard employ shore-side security teams that patrol and defend assigned land-based sectors, and small boat units that patrol and defend waterway-based sectors. Both rely on threat indications and warnings. The earlier the indication can be detected, the earlier the reaction forces can be warned. The earlier we can be warned, the earlier we can react to counter the threat, and the greater chance we have of defeating the threat.

On the land side, and on the water side, visibility, and therefore, elevation is the key to reaction time. When we are able to place a lookout on an eighty-foot crane in a high-threat port facility, our area of observation increases exponentially. Elevation can help landside security teams gain visibility over multiple blocks in a commercial port area, rather than the single block that they would be able to observe from street level. For patrolling boat units, when elevation allows the horizon to be extended, we gain visibility over piers, islands, vessels and other blind spots. ISR assets can extend the area of observation even further than an eighty-foot crane. And, because full-motion video feeds can be networked, we can bring analysts to the fight that can study and understand a port’s pattern of life, and identify indication and warnings (I&W) trends. According to Chris Ames, director of strategic development at General Atomics (maker of the Predator), “At the heart of it, we’re delivering persistent situation awareness, which is really the most valued of commodities. That creates a transparent battlefield where you know where the threats are and can counter them.”³ Persistent full-motion video ISR could potentially make port security a less resource intensive effort because we would not need the same density of force protection assets. For a longer-term operation, an aerostat-based sensor that could queue a kinetic platform or quick reaction force would be a cost-effective option.



The Path Forward

ISR has been, and will continue to be our most significant force multiplier in any asymmetric ground fight. Now we need to begin to build strategies and tactics for how we would take that advantage to the littorals. Today, we have multiple potential adversaries on multiple continents that, with a small bit of coordination, could create a perfect storm of littoral hotspots for western coalition navies to cover. Even with a thousand ship navy, the challenge would be significant. We need to start preparing now to be able to bring our latest highly persistent and highly economical land-based ISR platforms to the littoral fight. We need to integrate those platforms with our traditional ISR order of battle in the littoral space in the same way we have done in the OEF and OIF ground fight. That integration, combined with our unmatched ability to fuse, process and disseminate information will be the essence of information dominance in the littoral space.

¹ Rosenberg, Barry, “New Capabilities Propel UAVs: Continuing advances have made drones critical to military operations,” *Defense Systems*, Aug 2010, page 19.

² Hoffman, Michael, “Unmanned Systems Remain Priority,” *Navy Times.com*, Aug 27, 2010.

³ Rosenberg, page 22.

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