

Horn of Africa: Threat Factors for Commercial Shipping and Forecast of Pirate Activity Through 2009

Scope Note

This assessment of factors affecting pirate success and the ability of commercial vessels to successfully evade attacks, was produced by the Office of Naval Intelligence (ONI) Piracy Team based on analysis of all reported events between 30 Nov 2008 and 31 August 2009 and updates and refines earlier ONI analyses.

Key Findings

- **Weather:** Weather continues to be the primary factor determining when pirates will operate. As the summer monsoon season draws to a close during September, pirates will intensify operations in the Horn of Africa region and the number of pirate-related incidents will increase.
- **Vessel Service Speed as a Factor of Target Selection:** Vessel speed remains a significant factor in merchant vessel vulnerability to boarding. However, while vessels transiting at lower speeds have a higher risk of being fired upon or boarded, pirates will attack vessels regardless of how fast they are steaming. Even vessels of low speed have successfully evaded attack by not stopping under threat.
- **Time of Day:** The majority of attacks still occur during daylight hours. An increase in nighttime piracy incidents was noted in 2009 when compared to 2008. Nighttime attacks likely will continue and may even increase.
- **Expansion of Operations in the Indian Ocean:** In 2009, pirates conducted operations farther from the coast of Somalia than ever before, to include attacks in the vicinity of the Seychelles and off the coast of Oman.
- **Target Selection:** There is no evidence to indicate pirates have the ability to employ sophisticated targeting, such as the Automated Identification System (AIS) to identify, track or target vessels.

Details

A. Weather

Weather conditions, which have the greatest operational impact on Somali pirates, will continue to improve as the summer monsoon season comes to an end during September. Once the weather clears and sea states become more conducive to small boat operations, ONI assesses with high confidence that pirate activity will increase off the east coast of

Somalia until the onset of the winter monsoon season in December. Conditions in the Gulf of Aden are already conducive to small boat operations. The relative lack of current pirate activity, when compared to last year, may be indicative of increased enforcement presence and increased defensive measures taken by the shipping industry. However, root causes of piracy still remain and a resurgence in Gulf of Aden activity could come at any time.

The Horn of Africa region experiences two strong monsoon seasons which cause significant sea state fluctuations. Analysis has shown considerable decreases in incidents when regional weather conditions included winds greater than 15 knots and wave heights greater than seven feet. During the monsoon, decrease in pirate incidents are common in the Indian Ocean due to the severe weather and pirate's inability to effectively operate skiffs in rough seas. While the Gulf of Aden is subject to monsoon seasons, it is affected to a lesser degree than the Indian Ocean, particularly during the summer monsoon when winds originate out of the southwest.

B. Vessel Speed as Factor of Target Selection and Attack Success

As previously assessed, pirates continue to successfully board vessels proceeding at speeds of 14 knots or less; however, they have demonstrated the ability to board a vessel at 17 knots when weather conditions were favorable. Actual speed of vessels during unsuccessful attacks and hijackings has been only inconsistently obtained. Operators and crew may wish to avoid implied liability if they admit to not using the maximum speed available to them. The result is that ONI's analysis of vessel vulnerability based on speed is incomplete and has had to be based on stated service speed rather than actual speed at the time of the incident. Victim vessel service speeds were obtained for 109 incidents occurring from December 2008 to 31 August 2009; 69 in the Gulf of Aden and 40 in the Indian Ocean.

In the Gulf of Aden, 54 ships reported coming under fire but were able to escape. These vessels had an average service speed¹ of 15 knots or greater; one vessel had a service speed of over 25 knots. The 15 hijacked ships in the Gulf of Aden had an average service speed of just under 14 knots; four vessels had service speeds of at least 15 knots or higher, but actual speed at the time of the incident is unknown.

¹ Service speed is defined as the designed operational speed of a vessel.

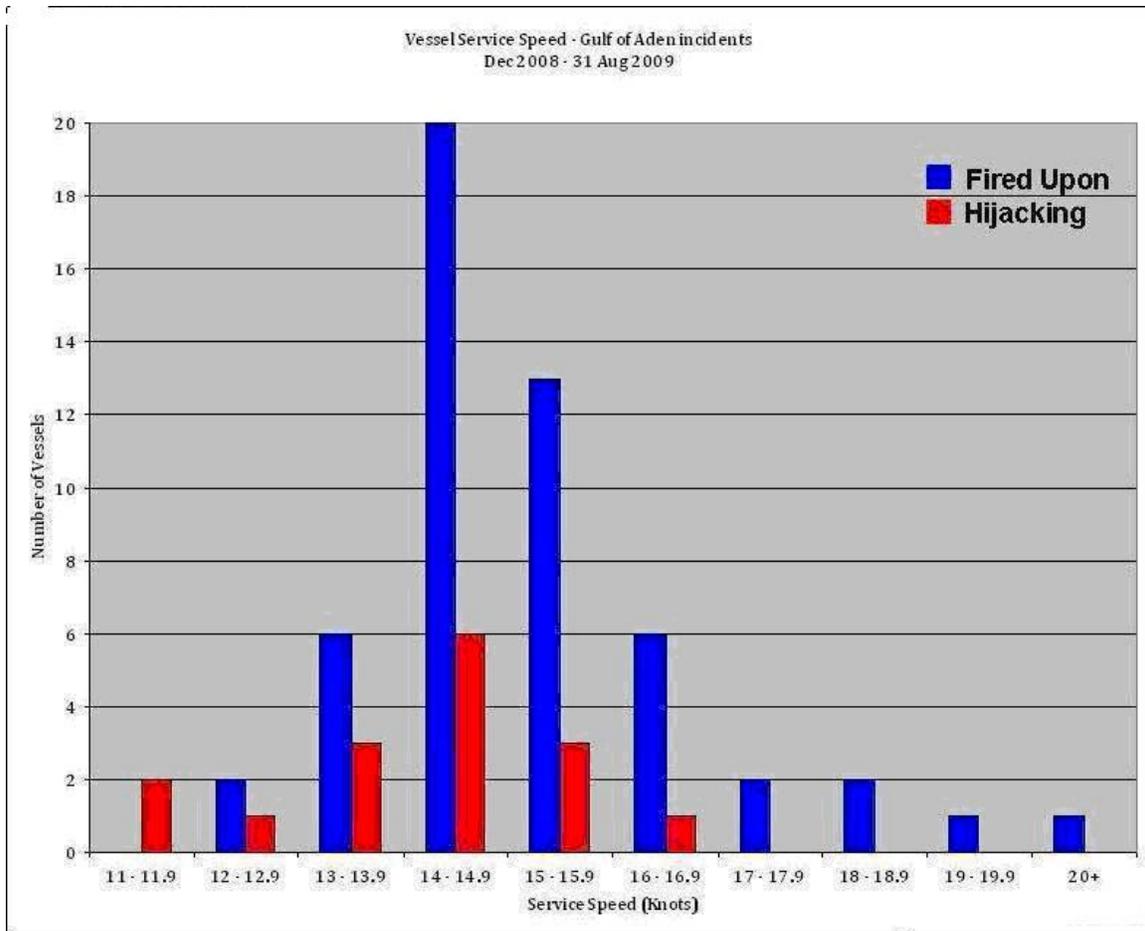


Figure 1. Vessel Service Speeds for Gulf of Aden Incidents

The average speed capacity of vessels hijacked in the Gulf of Aden is similar to that reported between July and November 2008. However, the average service speed of vessels that prevented boarding in 2009 was slower than the average during 2008 (17 knots). This is likely due to the improved defensive measures taken by mariners during attacks, including maintaining the best speed of which the vessel is capable.

In the Indian Ocean, 30 ships reported coming under fire but were able to escape. These vessels had an average service speed of over 16 knots. Ten ships were hijacked with an average service speed of just over 14 knots. However, two hijacked vessels had service speeds above 18 knots, including the container ship MAERSK ALABAMA, indicating that under the right weather conditions pirates can board faster vessels.

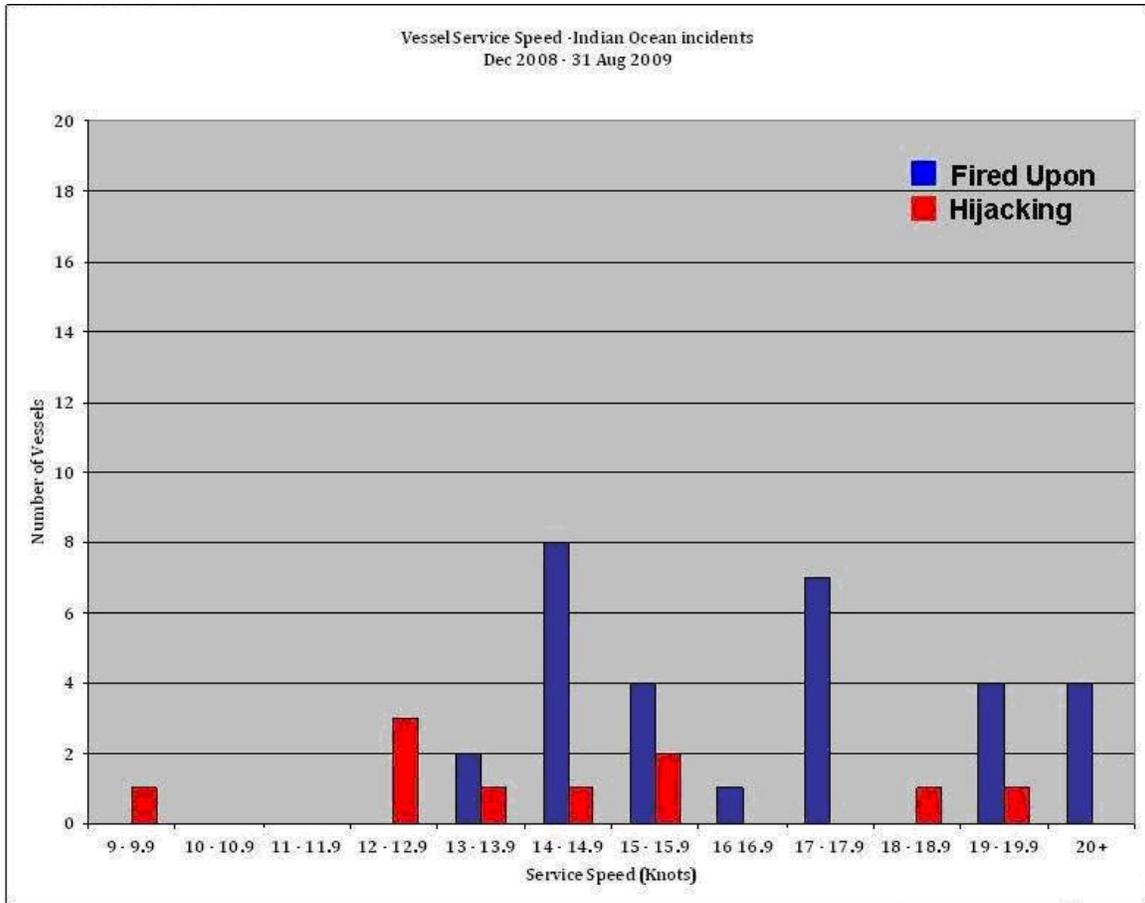


Figure 2. Vessel Service Speeds for Indian Ocean Incidents

Sea state in the Gulf of Aden is not as greatly affected by monsoon-generated weather as it is in the Indian Ocean. While the MAERSK ALABAMA hijacking occurred in the Indian Ocean at a speed greater than 17 knots, for example, the weather at the time was extremely calm with seas described as “glassy”.

ONI understands that ship operating speeds are influenced by several factors including fuel costs, terms and availability of charters, and material condition of the vessel including age, condition of the propulsion plant, and condition of the ship’s bottom.

Operation at reduced speeds due to economic factors is a business decision taken by ship owners or managers. For example, many tankers and bulk carriers with design service speeds between 14 and 16 knots “slow steam” by as much as 25 percent or more to conserve fuel. Furthermore, during slack economic periods, owners of tankers and bulk carriers may decide to operate at less than design service speeds due to a lack of work for their ships (charters). The decision to operate at reduced speeds due to a ship’s material condition may also be a safety consideration or to prevent damage to ship systems until repairs or maintenance can be accomplished.

Whatever the reason for operating at less than optimal speed, ships that transit slowly off the Horn of Africa increase their vulnerability to hijacking by providing pirates with a slow-moving target of reduced maneuverability, and by extending presence in high-risk areas.

Two container ships were hijacked during 2009, which mark the first since 2005. ONI still assesses that relatively high-speed long-haul container ships have a lower risk of being hijacked than other types due to their relative higher speeds when compared to other types of vessels and greater height of side over almost the entire vessel length. However, all vessels should be considered at risk by their presence in pirate prone waters depending on weather, sea state, and actual operating speed while transiting the region. Alternatively, ships at speeds below 14 knots have resisted boarding and have successfully escaped by the apparently straightforward action of maintaining course and speed despite rifle and RPG fire.

Recommendations that merchant ship crews respond to pirate attack by rapid cycling of ships' rudders and major course changes are assessed by ONI to be most effective only in areas such as the Strait of Malacca where pirate TTP stressed boarding and robbery of ships that offered few difficulties or that gave no evidence of any awareness of pirate presence. Since maneuvering inevitably negatively affects speed and since ONI assesses with high confidence that steady speed is a counter-piracy asset, no maneuvers that reduce the ship's speed are advised. IF the target ship is proceeding in any but flat calm conditions, mariners under attack are advised to alter course to head into wind and wave, creating disturbed water down both sides of the ship and preventing creation of a lee that would favor pirate small boat operations.

C. Time of Day

Somali pirates appear to have made marginal gains in executing nighttime attacks since ONI's initial report of vessel vulnerability and pirate tactics, techniques and procedures (TTP). An increase in pirate willingness and capability to act in hours of darkness complicates commercial ship self-defense and the ability of coalition forces to respond effectively to reported attacks. As total incidents continue to rise and the international community maintains its strong counter-piracy presence off the Horn of Africa, the proportion of nighttime incidents likely will increase, due to greater risk of interdiction or capture during daylight hours.

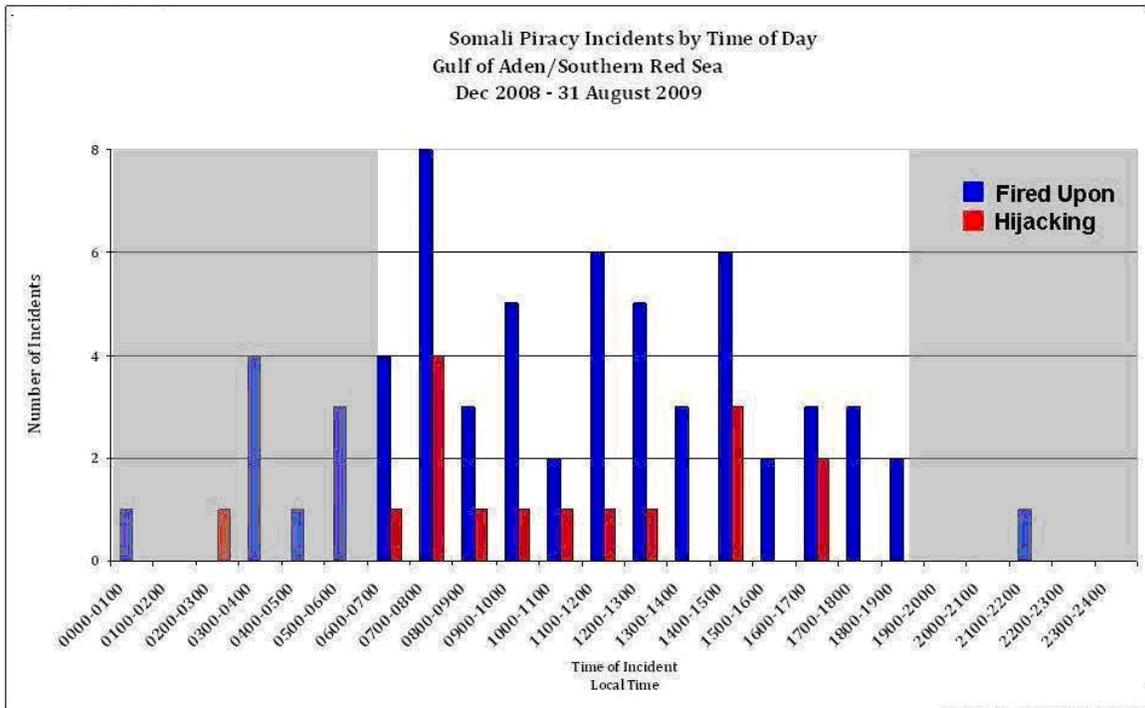


Figure 3. Piracy Incidents by Time of Day in Gulf of Aden and Southern Red Sea

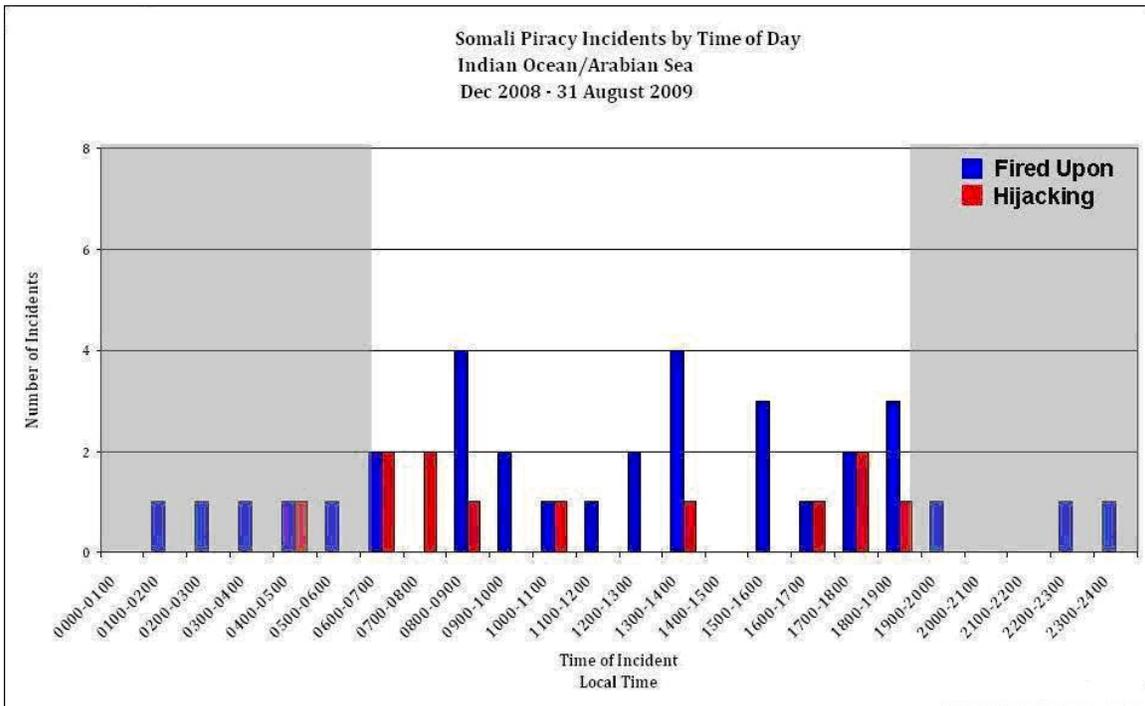


Figure 4. Piracy Incidents by Time of Day in Indian Ocean and Arabian Sea

From 1 December 2008 through 31 August 2009, 122 piracy incidents occurred in which the time of the incident was reported. Of these, 20 incidents occurred during periods of darkness² and can be categorized by location (Gulf of Aden/Southern Red Sea or Indian Ocean/Arabian Sea) and by type of incident (fired upon or hijacked).

Three vessels were hijacked during periods of darkness, one in the Gulf of Aden/Southern Red Sea and two in the Indian Ocean/Arabian Sea; of the seventeen vessels fired upon at night, eight were in the Gulf of Aden/Southern Red Sea and nine were in the Indian Ocean/Arabian Sea. In comparison, between August and December 2008, only two incidents were reported as occurring during hours of darkness.

The increase in number of incidents occurring during hours of darkness is likely due in part to the increase in total number of piracy incidents in 2009 as compared to the previous year. In all of 2008, a total of 86 piracy-related incidents occurred, while by 31 August 2009, the number of incidents reached 121. Statistically, with more pirates operating, the probability of nighttime encounters increases. Also, pirates operating in the area may see darkness as a way to avoid detection and capture by these patrols. While ONI cannot state definitively that these nighttime attacks represent a change in pirate TTP, they represent a strong potential for complicating ship self-defense measures, making approaching boats more difficult to identify and the intent of those aboard them more difficult to assess..

Currently, ONI assesses that lunar illumination is not a factor when predicting pirate activity. Lunar illumination ranged from 0% to 100% during the 20 incidents occurring from December 2008 to August 2009, of which 11 occurred during periods of greater than 50% illumination and nine occurred during periods of less than 50% illumination. With no clear evidence showing activity during specific moon phases, no predictive assessment can be drawn. Overall, ONI assesses that nighttime pirate incidents likely will increase both in the Gulf of Aden/Southern Red Sea and the Indian Ocean/Arabian Sea pirate operational areas.

D. Expansion of Operations in Indian Ocean

In 2009, pirates have displayed the capability to conduct operations with success at unprecedented distances off the east coast of Somalia, reaching as far as 910NM from the coast.

In April and May 2009, five attacks occurred within a 170NM radius of Port Victoria, Seychelles; two of these attacks resulted in hijackings. Four additional incidents occurred, one of which occurred 275NM east of the Seychelles, and three of which occurred south of the Seychelles-- a distance of 880NM from Somalia. There has been no information to indicate that pirates are launching attacks from the Seychelles, although it is possible they may seek refuge on smaller islands nearby.

² Period of darkness, for purposes of this study, is defined as periods exhibiting no illumination which could be attributed to sunlight.

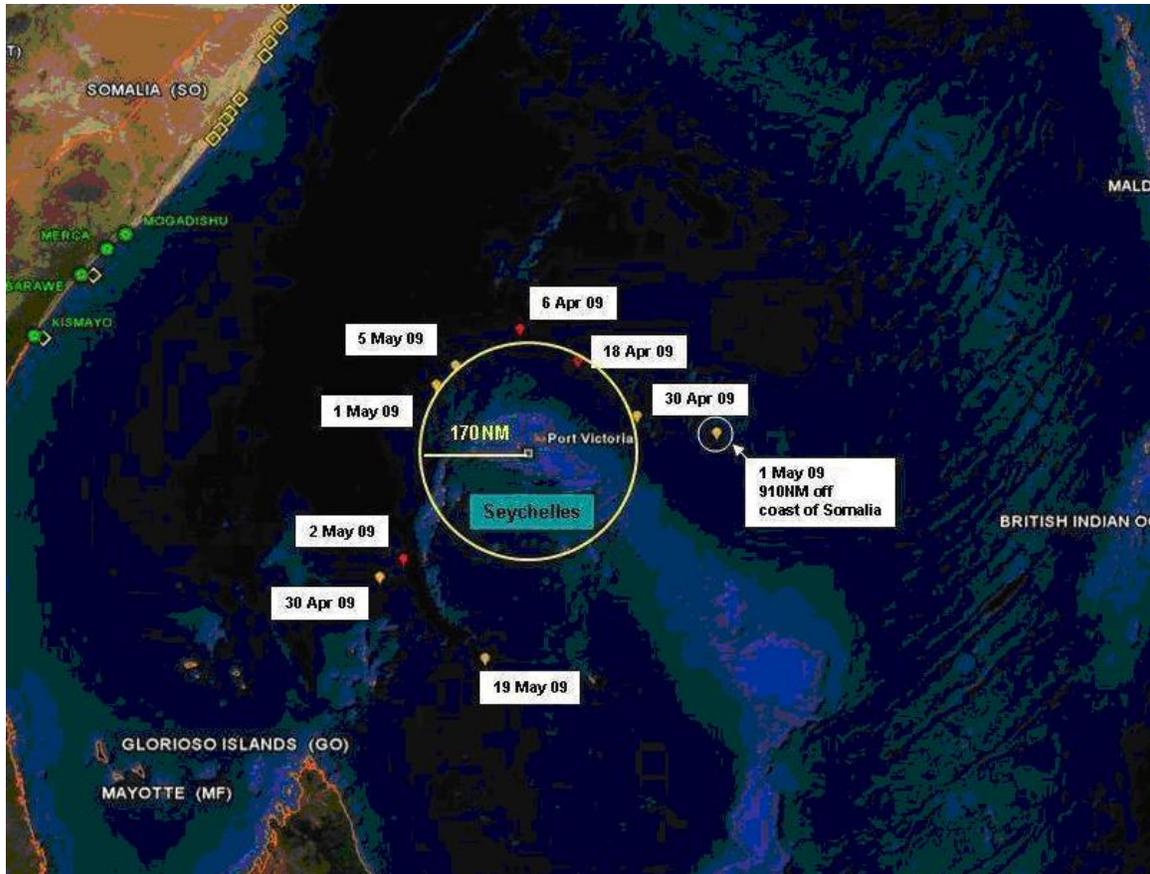


Figure 5. Map of Piracy Incidents in Vicinity of the Seychelles

The months of April and May, which fall during the transition between the summer and winter monsoon seasons, are typically when weather in the Indian Ocean is at its calmest, and may have provided conditions enabling pirates to venture further from traditional operating areas and into shipping lanes previously reported to be safe for mariners. Advisories warn mariners to transit at distances of at least 600NM beyond the coast of Somalia in order to avoid pirate operating areas. The International Maritime Bureau (IMB) and Maritime Security Centre Horn of Africa (MSCHOA) advise “vessels not making scheduled calls to ports in Somalia should keep as far away as possible from the Somali coast, preferably more than 600NM from the coastline and when routing north/south consider keeping east of 60E longitude until east of the Seychelles.” As such, pirates are forced to venture farther from Somalia to find potential victims. The lack of nearby ships combined with calm sea states likely influenced pirates to extend their operational radius during April and May this year. These conditions will replicate during the fall transition period inclusive of October and November. Accordingly, attacks far from Somalia are anticipated.

In June, pirates also expanded operations off Somalia further to the northeast when the vessel CHARELLE was hijacked in Omani territorial waters approximately 780NM

distant. Two days earlier, another vessel had been attacked off the Omani coast, approximately 570NM NE of Somalia.

Heavy coalition presence in the Gulf of Aden and well prepared merchant vessels may have driven pirates to operate in areas with fewer patrols and less prepared victims. As the monsoon season draws to a close, and with a heavy naval presence patrolling the Gulf of Aden, pirates may continue to expand their operations toward the northeast, or possibly into the southern Red Sea.

E. Target Selection:

Pirates travel to known shipping lanes and loiter until a target of opportunity approaches. There is no credible evidence to show pirates have demonstrated the ability to make use of sophisticated targeting methodologies, such as the Automatic Identification System (AIS) to track and target vessels. Evidence does exist suggesting pirates possess a rudimentary understanding of radar and its potential for helping to identify high density sea lanes.

No evidence of pirate “intelligence cells” based in London or elsewhere has ever been developed. Further, reports that pirates are using Suez Canal transit or port departure data for targeting fail to explain how prediction of precise time and position where a pirate skiff would encounter a ship based on them could be achieved. With the possible exception of vessels calling on Somali ports, there are no cases where successful pirates have learned their victim's identity or cargo until after they have gained control.