

How The US Coast Guard Uses Game Theory To Protect New York City [PHOTOS]

Robert Johnson | May 29, 2013, 10:56 AM | 62,229 | 7

Recommend 83 | Share 2 | Tweet 47 | 6 | Email More

From a small room in a Pakistan house, the U.S. Coast Guard (USCG) was shaken to its core in 2011.

Within the data seized from Osama bin Laden's Abbottabad compound was the al Qaeda plan to blow up oil tankers in U.S. waters to create an “[extreme economic crisis](#).”

Protecting tankers at home is part of what the USCG does, and faced with a fixed amount of resources and a growing threat, it got innovative.

The USCG looked to game theorists — mathematicians who specialize in a unique brand of numerical models — to help them do more with less resources.

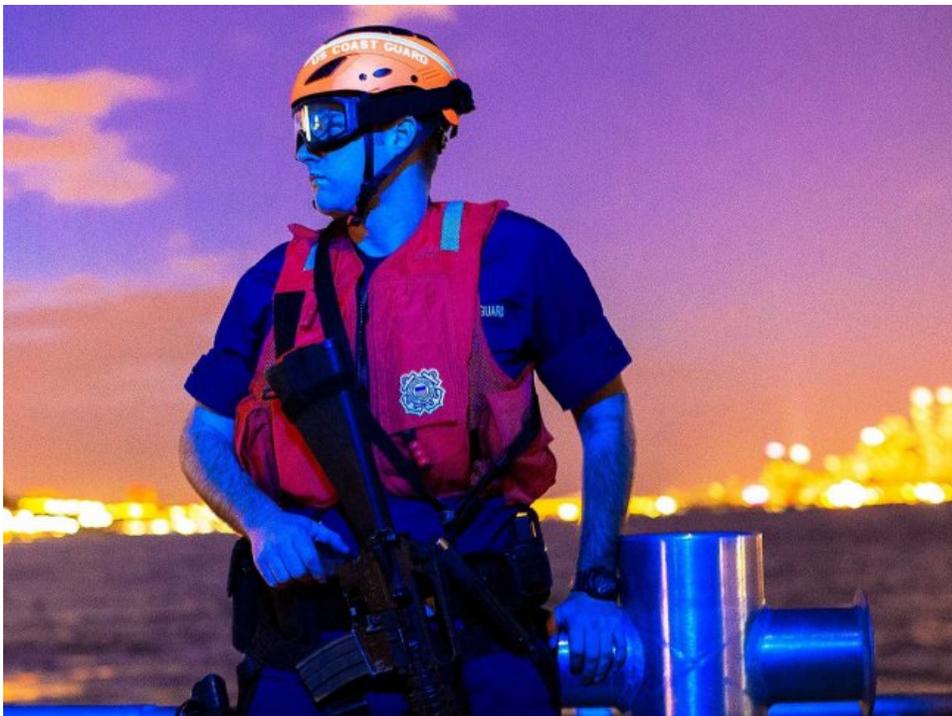
The result was the [Port Resilience Operational / Tactical Enforcement to Combat Terrorism \(PROTECT\) Model](#). PROTECT is the real reason millions of New Yorkers feel safe riding the Staten Island Ferry each year, and ship captains and crews traveling through feel secure.

It is why cruise line passengers never have to worry about their ship going down in a fiery wad of metal and overpriced booze, the target of a terrorist strike no one saw coming.

We spent the day with Coast Guard Sector New York as they patrolled the ferries, ships, and the sensitive infrastructure around the city of New York to understand just how it all works.

This is what we saw.

In order to appreciate what a beautiful target a Staten Island Ferry actually is, it helps to think like a terrorist.



Robert Johnson/Business Insider



Robert Johnson/Business Insider

The largest ferry carries more passengers than the newest and biggest cruise ships.



Sinking just one could put up to 4,500 people into the waters of New York Harbor, and undermine the entire city's sense of security.



Robert Johnson/Business Insider

That sense of security comes from 75,000 people a day, and 21 million people a year riding the ferry with little to no incident.



Robert Johnson/Business Insider

So thinking about the unthinkable isn't really on the top of the mind for sea-going travelers.



Robert Johnson/Business Insider

But it is the Coast Guard's job to think of nothing else.



Robert Johnson/Business Insider

And with just a handful of boats they manage to safeguard all ferries and ship traffic ...



Robert Johnson/Business Insider

And key infrastructure that could grind New York to a halt were they ever attacked.



It may seem too big a task for a small group of boats, but some brilliant mathematicians strongly disagree.



Robert Johnson/Business Insider

The game theory application created for the Coast Guard's port security is so well respected the team behind it received a Wagner Prize in April 2013.



USCG

The idea is pretty simple.



Robert Johnson/Business Insider

The Coast Guard can't be in all places at one time.



Robert Johnson/Business Insider

It is also impossible to make its patrols without being seen by enemy operatives. These aren't enemy operatives, only onlookers.



Robert Johnson/Business Insider

The model then casts the patrolling problem as a "Bayesian Stackelberg game."



Bayesian Stackelberg game.

Which is a fancy way of saying that the random team on a ferry here ...



Robert Johnson/Business Insider

Armed with weapons and radioactivity detectors ...



Robert Johnson/Business Insider

Work along with night patrols...



On a Coast Guard cutter like this...



Robert Johnson/Business Insider

Or a patrol boat like this...



Robert Johnson/Business Insider

Along with the pilot of every craft on patrol...



To create a string of numbers based on several immediate factors.



Robert Johnson/Business Insider

Those numbers get included in the algorithm that tells the patrols where each tour will take them.



Robert Johnson/Business Insider

Patrols are still armed with an M240B machine gun ...



M-16 rifles...



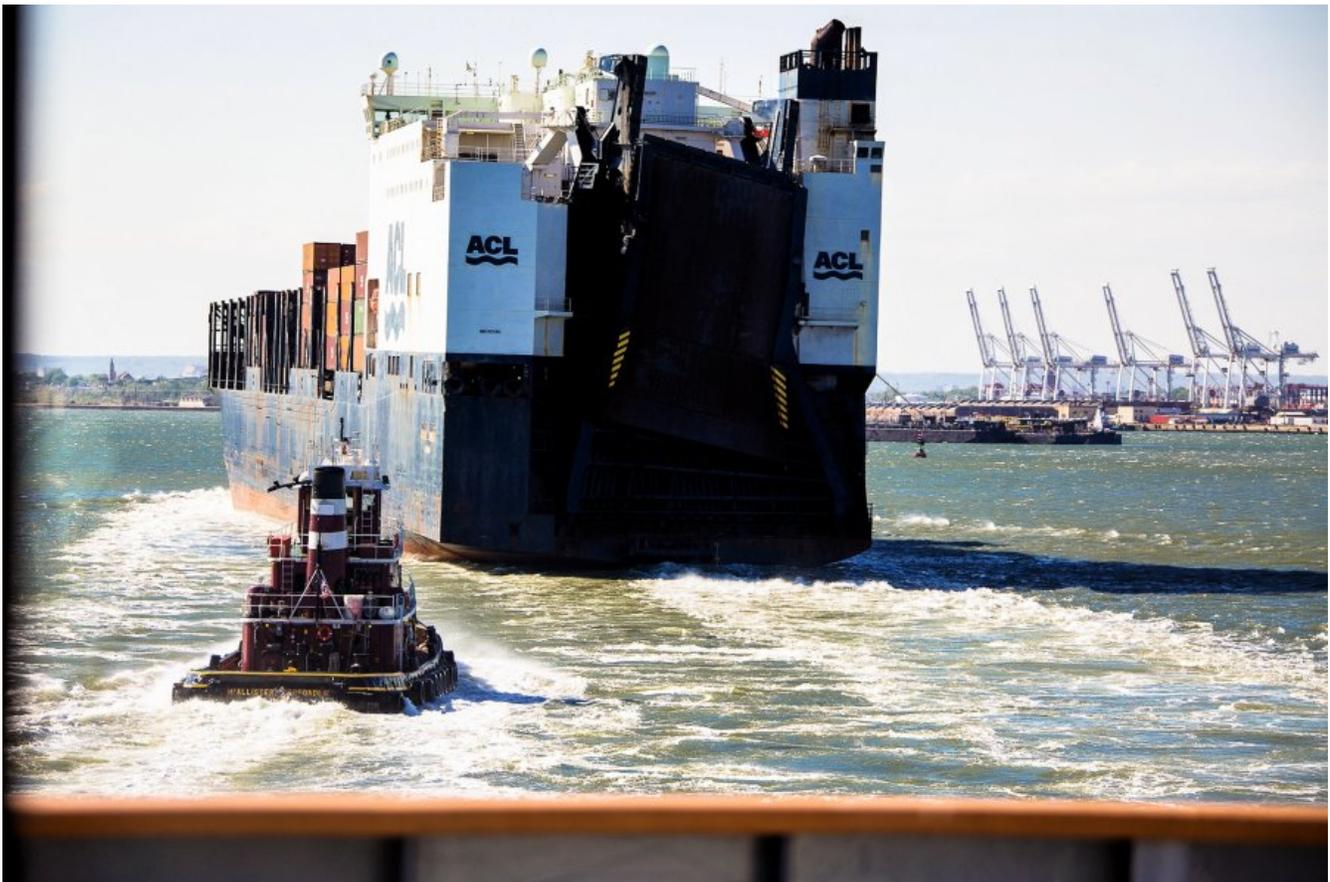
Robert Johnson/Business Insider

And even a dive knife — "Just in case."



Robert Johnson/Business Insider

The mathematically-driven patrol schedule ensures that just because there's a patrol here...



Doesn't mean that a ferry captain has to worry about security and safety of his or her passengers...



Robert Johnson/Business Insider

Or that the captain of one of the fastest trimaran's should worry about pausing here on an around the world trek.



Robert Johnson/Business Insider

The Coast Guard patrols can ensure this security without overlapping one stop ...



Or skipping a key stop ...



Robert Johnson/Business Insider

Or calling on other agencies like the NYPD to help with its mission.



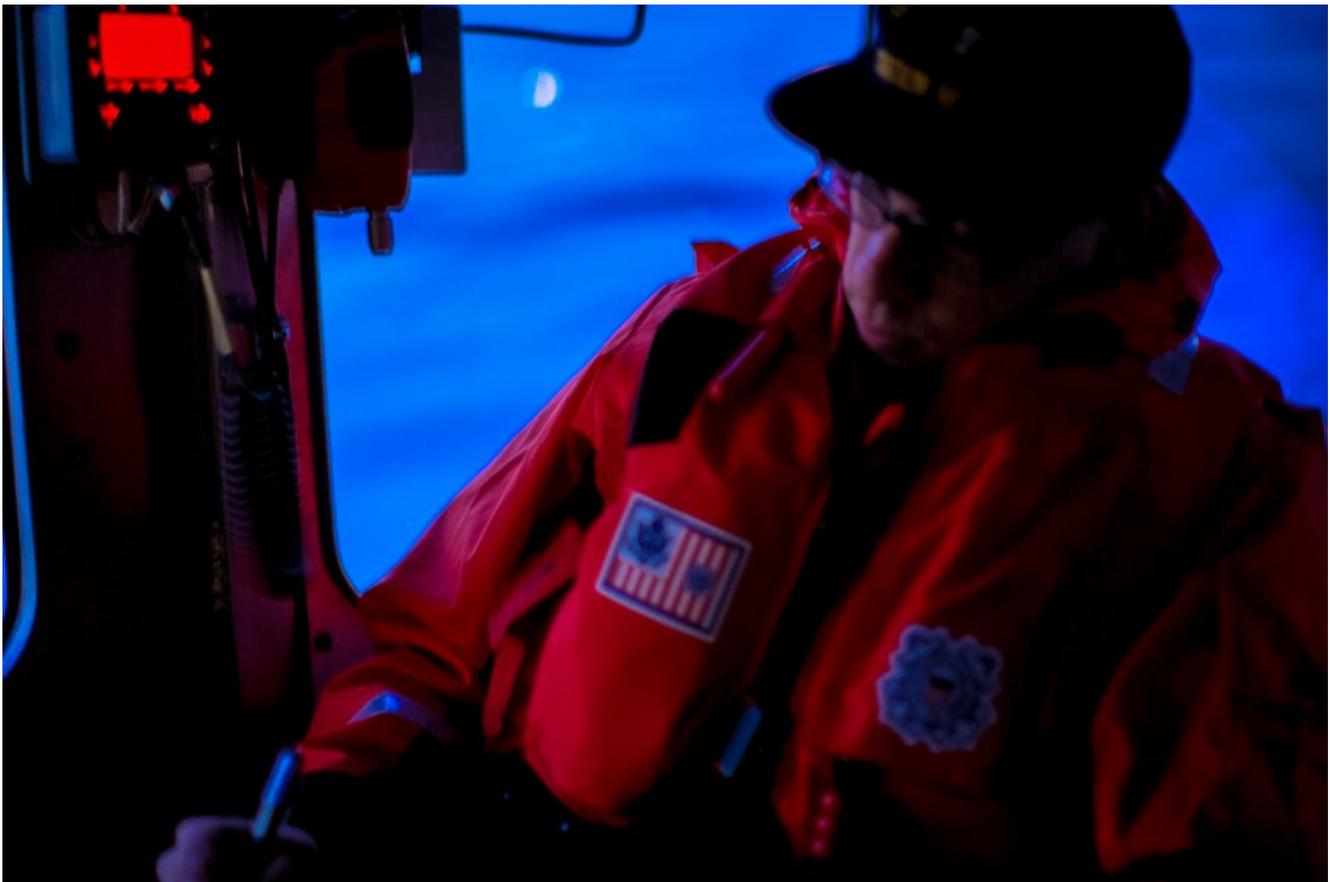
Robert Johnson/Business Insider

So the next time you're pulling into port on a Staten Island Ferry, remember the Coast Guard was right there with you on the whole trip ...

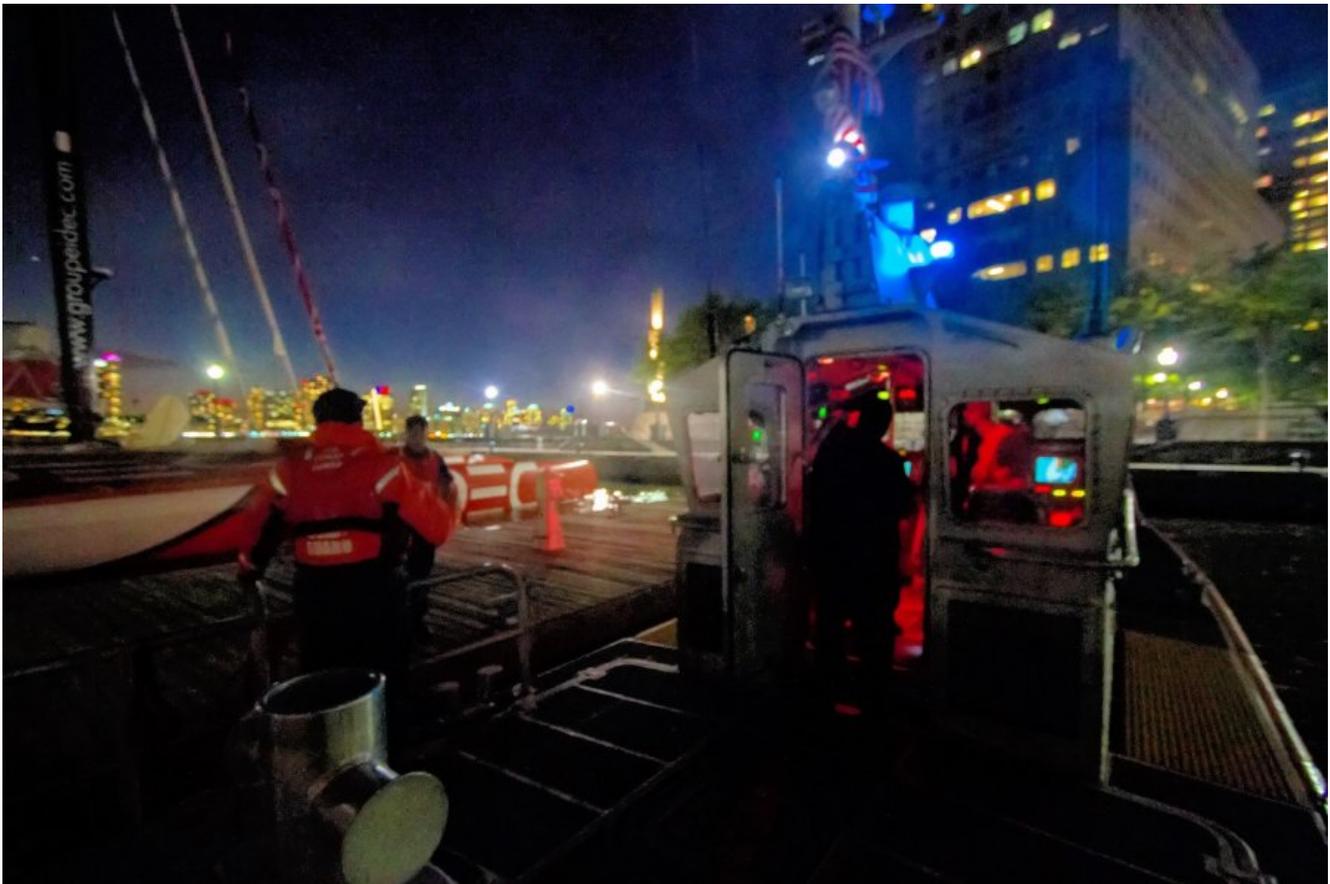


Robert Johnson/Business Insider

One way or the other.



Day and night.



Robert Johnson/Business Insider

So just enjoy the view.



Robert Johnson/Business Insider

That's how the Coast Guard patrols the water around New York

Now see how the USCG stops and inspects vessels 12 miles out at sea >



Robert Johnson/Business Insider

Recommended For You



A Human Mission To Mars Has Cleared A Major Hurdle



The \$605 Million Legal Marijuana Market Is Looking Awesome For



Meet The Residents Of 'Billionaire Lane' In The Hamptons



Cisco's John Chambers Has Found A New \$14 Trillion Market



If You Bought An 'iWatch' From Apple, You'd Check it ~95 Times Per Day (And



We Think We Know What Elon Musk's Hyperloop Is, And How It Can Get You

Tags: [Features](#), [Coast Guard](#), [Game Theory](#), [Navy](#), [New York](#), [New York City](#) | [Get Alerts for these topics »](#)

Share:

Short URL

- [Twitter](#)
- [Facebook](#)
- [Digg](#)
- [StumbleUpon](#)
- [Reddit](#)
- [LinkedIn](#)
- [Google+](#)
- [Email](#)
- [Embed](#)
- [Alerts](#)
- [Newsletter](#)



Robert Johnson

Contact:
e-mail: rjohnson@businessinsider.com
AIM: [RWJohnson55](#)
Subscribe to his [RSS feed](#) | [twitter feed](#)

[Ask Robert a Question](#)

Recent Posts

- [Guantanamo Bay Is A Lonely ...](#)
- [The X-47B Drone Ushers In A...](#)
- [The Muslim Brotherhood Has ...](#)

The Water Cooler

[Insiders](#) 0

[All Comments](#) 7

[Apply To Be An "Insider" »](#)

[Click to read all comments »](#)