



## Hurricane Sandy Impact on Marine Insurance Market and Lessons Learned

A presentation to the Canadian Board of Marine Underwriters

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Sean Dalton, SVP

Head of Marine

Zurich Global Corporate in North America

## Acknowledgements

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- Joseph P. Drucker – Managing Director, Guy Carpenter



## Hurricane Sandy Makes Landfall Monday, October 29, 2012



- Impact on Marine Insurance Market
- Focus on Cargo Loss and Port Accumulation



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## "Superstorm" Sandy



- Extreme storm surge
- Very large wind field
- Unusual path



- Note: There is no meteorological meaning to the term "**Superstorm**" – this was a term created by the media.
- In meteorological terms, Hurricane Sandy was an "extra-tropical cyclone" just before landfall.
- The National Hurricane Center classified Sandy as "Post Tropical."

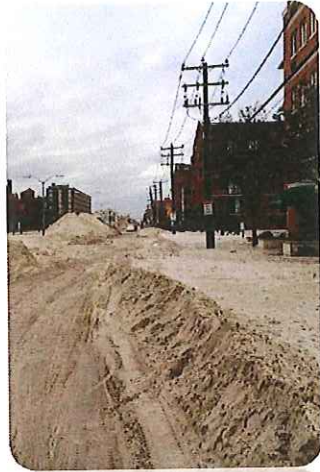
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## Sandy Impacts



- Record storm surges in NY, NJ and CT
- Wind damage across 15 states
- Power outages across region
- Major infrastructure damage in NY and NJ

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## Sandy Impacts



- Record storm surge of 13.8 feet at Battery (Battery Park, New York City at Southernmost end of Manhattan Island).
- High water mark in Port 7 to 8 feet above ground level
- High winds, flooding and widespread power outages
- Salt water ingress and induction



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## United States Coast Guard Insights



### Commander Linda Sturgis

Chief of Prevention  
Coast Guard Sector, New York

- Graduated Old Dominion University in 1992
- Served in USCG Budget Formulation Office and Marine Safety Offices across the US
- Masters Degree in Marine Affairs
- Business Certificate in Global Trade and Transportation from University of Washington



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## Scale of Sandy's Impact



### Port Equipment / Cargo Damage Impact

- 15,000 TEU of loaded containers sustained damage
- 16,000 + autos lost
- 3,000 truck chassis total loss
- Over 100 miles of rail cars and chassis damaged
- Massive loss / damage to empty containers (extreme in private, independently owned facilities not under the jurisdiction of the Port / USCG)



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## Scale of Sandy's Impact



### Port Equipment / Cargo Damage Impact

- Widespread salt water damage to cranes, lists, straddle carriers, pumps, etc. (temporary repairs affected but long term replacements likely needed due to post corrosive damage from salt water)
- Entire fleets of trucks damaged / total loss
- Cargo control systems, electronic inventory systems a total loss



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## Scale of Sandy's Impact



### Commercial vessel losses

- Eight vessels grounded or damaged significantly
- Vessels not capable of getting underway or moving
- John B. Caddell most noteworthy
- Over 600 commercial vessels in Port of NY/NJ



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## Scale of Sandy's Impact



### Staten Island's Iconic Old Orchard Lighthouse



Built 1893



Destroyed Oct. 29, 2012

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## Post-Sandy Recovery (USCG) Interview with Cdr. Sturgis USCG



- Full channel survey
- 20 containers removed from water
- Army Corps of Engineer survey all berths
- Challenges with access to facilities and port / terminal staff ability to get to work
- Inspection and repair of all cranes and equipment
- Fuel shortages and power restoration issues
- Hazmat inspection process
- Debris removal / environmental response

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## Sandy Insights (USCG)



### Early Action is KEY!

- Determination made on Saturday, October 27, 2012
- Huge benefit from notice
- Ports could execute on Plans (stack / pyramid containers, secure equipment)
- Vessels ordered out to sea
- Outstanding response from vessel, port and terminal operators, extremely professional community

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## Post-Sandy Assessment (USCG)



- Early decision to close port and get vessels to sea is vital
- Meetings with each and every Terminal Operator and execution of their respective contingency plans was key (worked exceptionally well)
- Pyramid stacks of containers, don't stack over 3 high
- Proper declaration and labeling / placard for hazmats
- Move truck chassis and rail cars / chassis to safe area (enormous losses sustained as these were not moved)
- If you can't identify contents of a container, treat as if hazmat
- Lower stack heights of empty containers in private facilities

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## Challenge of Finding Reliable Flood Exposure Data



There are no statistical inland flood models available for the United States (coastal surge modeling exists), largely due to the fact that most flood risks in the US are federally insured via the NFIP.

- Historically, there has been low demand by model clients to develop these models.
- Developing an inland flood model would be a huge project, taking modeling companies years to develop.

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## Challenge of Finding Reliable Flood Exposure Data



- As a result, good data capture of privately-insured flood risks in the industry significantly lags data capture for other perils
- Current modeling of flood risks for surge, when known, is also limited by ability of models to handle flood sublimits and accurately determine amount of flood damage that “leaks” into the wind policy claim



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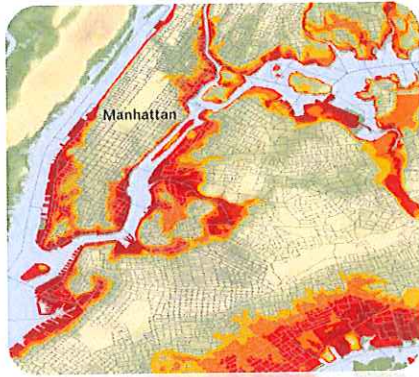
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## Storm Surge Modeling

### Potential flooded areas in New York by hurricane category (SSHS)



- Surge is only partially dependent on storm intensity
- Do the models reflect that large surges can be generated by weaker storms?

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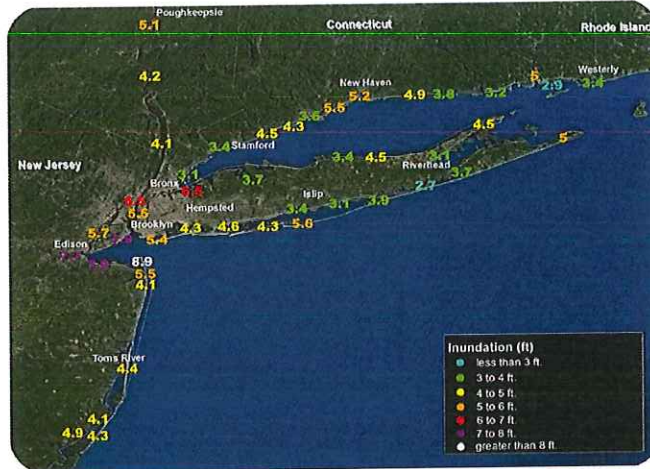
- Category 1
- Category 2
- Category 3
- Category 4

(Source: Munich Re – Severe Weather in North America)

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## Hurricane Sandy Storm Surge

### Height above ground level



(Source: NOAA courtesy of Munich Re)

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## Financial Impact of Sandy



- Estimated economic loss: \$ 65 billion
- Estimated insured loss: \$ 25 to \$ 30 billion
- Largest Marine loss in history: \$ 2.5 to \$ 3.5 billion



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## Sandy Marine Losses



- \$ 2.5 to \$ 3.5 billion
- "Wiped out entire U.S. Marine premium for 2012"



(Source: Insurance Journal March 22, 2013)

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## Sandy Marine Losses



- Cargo loss estimated at \$ 1 billion  
(Source: Cargo Business Newswire, November 5, 2012)
- Cargo automobile \$ 650 million  
(Source: Insurance Insider, December 12, 2012)
- 65,000. Boats / Yachts Damaged (50% insured), estimated insured loss \$ 650 million  
(Source: Boat US)
- Fine Arts \$ 500 million, Peter Max Claim \$ 300 million  
(Source: Property Casualty 360, December 21, 2012)
- Specie / Valuable Papers: Depository Trust and Clearing House (DTCC) Bearer Bonds face value \$ 70 billion, recovery / restoration costs much less  
(Source: NY Post, November 18, 2012)

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## Other Marine Losses



- Marinas (Piers / Wharves / Docks, Contractor's Equipment, Property)
- Boat Dealers (Inventory, Contractor's Equipment, Property)
- Port Installations / Equipment
- Hull & Machinery / Protection & Indemnity
- Marine Liabilities (Contractual Liability)



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## Cargo Losses



- Containerized Cargo
- Automobiles
- Bulk Cargo
- Project Cargo / Large Break Bulk
- Warehouse / Storage / Distribution Centers
- Retail Stock Through-Put

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## Main Causes: Cargo Loss



- Water Damage from Storm Surge / Flooding



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## Port of NY/NJ



- Second-largest port in US, number 25 globally
- Cargo operations include: Container, Bulk, Breakbulk / General Cargo, Auto (vehicle shipping and processing), Distribution and Warehousing, and Foreign Trade Zone 49 (12 Sites)
- 5.53 million in TEUs handled in 2012
- 15,800 loaded TEUs per day move through port of NY/NJ
- Port operations include Port Newark, Port Elizabeth, Howland Hook Marine Terminal, Global Terminal and Container Services, Auto Marine Terminal, Brooklyn Piers, Red Hook Container Terminal, and South Brooklyn Marine Terminal

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## Cargo Container Exposure in Port NY/NJ



Total TEU per month of imports and exports

<u>Month</u>	<u>Loaded</u>	<u>Empties</u>
• August 2012	386,087	127,001
• September 2012	367,926	122,963
• October 2012	314,633	99,447



(Source: Port of NY/NJ)

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## Value of Containerized Cargo in Port of NY/NJ in October 2012



- Three-month average 356,215 TEUs per month throughput
- Assume: 10% at risk any one time (35,621 TEUs) as 3 days in port and average value per TEU of \$ 50,000
- Estimated total amounts exposed: \$ 1.8 billion



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## Loss of Automobiles in Port of NY/NJ



- 16,000 new vehicles lost
- Estimated value \$ 30,000 to \$ 40,000 per vehicle
- \$ 480 to \$ 640 million total



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## Sandy Cargo Loss: Coverage Under Cargo Policies



- Policy Valuations (Selling Price)
- Control of Damage Goods (Fear of Loss)
- Consolidation / Deconsolidation
- Consequential Loss or Damage
- Definition of CAT Perils
- Static Risk: Lack of and/or inadequacy of CAT deductible and CAT sub limits
- Stock Through-Put

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## Sandy Marine Loss and Cargo Loss



- "Outsized" Relative to Property Market
- Much Larger Than Expected / Anticipated
- 1% of P&C Premiums but over 10% of Loss
- Port Accumulation in Spotlight

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## Impact of Sandy on the Marine Insurance Market



- A "Perfect Storm"

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## Pre-Sandy... Marine Underwriters were challenged by:



- Sustained "soft" market since 2003
- Increasing loss costs and losses in attritional / working layer losses
- More large losses (RENA, COSTA CONCORDIA, FLAMINIA, Transocean / BP, ACL / Mel Oliver, etc.)
- CATs (Japan EQ / Tsunami, Thai Floods)
- Rising expense ratios (35% +)
- New entrants / over capacity
- Increase in static risk covered in Cargo Market
- Unprofitability

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## Post-Sandy...

### Issues that will demand increased emphasis:



- Claims service matters (value proposition)
- Capital intensity may increase for Marine Lines (impact of unknowns)
- Great data capture and quality on known exposures
- Modeling of known location exposures (RMS Risk Browser)
- Need to properly price product to sustain offering
- Policy wordings, definitions of CAT perils and limits / sublimits / deductibles and how they apply
- Reinsurance costs and / or retentions increasing

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## Port Accumulation Concern



- Is this something new?

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## Port Accumulation Research



- 2007: IUMI Copenhagen Presentation on Vessel and Port Aggregation, Mitchell Wasserman of Oceanwide
- 2007: Cargo Accumulation Modeling, The Guy Carpenter Approach
- 2009: Cargo Accumulation Introduction and Issues, Anthony Cowie of Swiss Re
- 2009: Modeling Cargo Accumulation, Thomas Clift of Guy Carpenter (Updated 2012)
- 2010: Safe Havens: Measuring Natural Catastrophe Exposure to Cargo Traded Through Ports (Updated 2011)
- 2012: Guy Carpenter Cargo Accumulation Modeling
- 2013: Munich Re Topics Online February 2013 Marine Avoiding Accumulation Risks

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## Challenges in Managing Accumulations



- Follow Property approaches for scheduled locations
- Port accumulation involves managing many unknown factors
- Accumulation of interests for multiple insureds
- Clash exposure among multiple marine lines
- Market share analysis
- Flood maps in US require revision

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## How best to proceed?



- Model known locations / schedules / exposure
- CAT exclusions / sublimits / deductibles for unknown / unnamed location coverage
- Analysis of Cargo Certificate (Special Policy of Insurance) System Data
- Embrace inroads in Port Accumulation Modeling as part of research
- Reinsurance
- Line setting / limits

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## Current Efforts in Port Accumulation Modeling



- Swiss Re  
"Safe Havens Revisited - An Update of Swiss Re's Cargo Accumulation Model"  
[http://media.swissre.com/documents/fact\\_Save\\_havens\\_revisited\\_Factsheet.pdf](http://media.swissre.com/documents/fact_Save_havens_revisited_Factsheet.pdf)

- Munich Re  
"Marine - Avoiding Accumulation Risks"  
<http://www.munichre.com/en/reinsurance/topics-online/2013/02/marine/default.aspx>

- Guy Carpenter  
Helen Bradley BSc, FIA, GC Analytics  
[helen.bradley@guycarp.com](mailto:helen.bradley@guycarp.com)



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## Sandy Lessons Learned



### Containers

- Elevate hazmat containers to eliminate potential leaks/spills, chemical reactions with water and/or environmental damages (second tier or on wheels depending upon expected surge)
- Step empties and/or use twist locks to 'group' them
- Stack no more than two to three high
- Elevate electric / hybrid vehicles to eliminate water reactive explosions
- Elevate other vehicles to eliminate environmental damages and/or total loss of vehicle

(Source: Ian Lennard, President, National Cargo Bureau)

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## Sandy Lessons Learned



### Reefer Containers

- Elevate by stacking on bottom row of empties or leave on chassis
- Use back-up generators to ensure continued power if electric grid fails
- Ensure Hazmat requiring stabilization by refrigeration (i.e. 5.2 temperature controlled etc.) is removed to 'high ground' with power source and back-up generator or stack second tier with back-up generator (same as for any reefer)

(Source: Ian Lennard, President, National Cargo Bureau)

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## Sandy Lessons Learned



### Empty Chassis

- Stack to limit water damage to bottom tier or two

### Terminal/Yard Equipment

- This equipment can be a unique challenge because most is not allowed over the road (top loaders, straddle carriers, etc.) so it should be placed in highest area in terminal

(Source: Ian Lennard, President, National Cargo Bureau)

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## Quote for the Day...



"Tell me what you know. Tell me what you don't know. Tell me what you think. Always distinguish which is which."



Colin Powell, "It Worked for Me: In Life and Leadership"

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