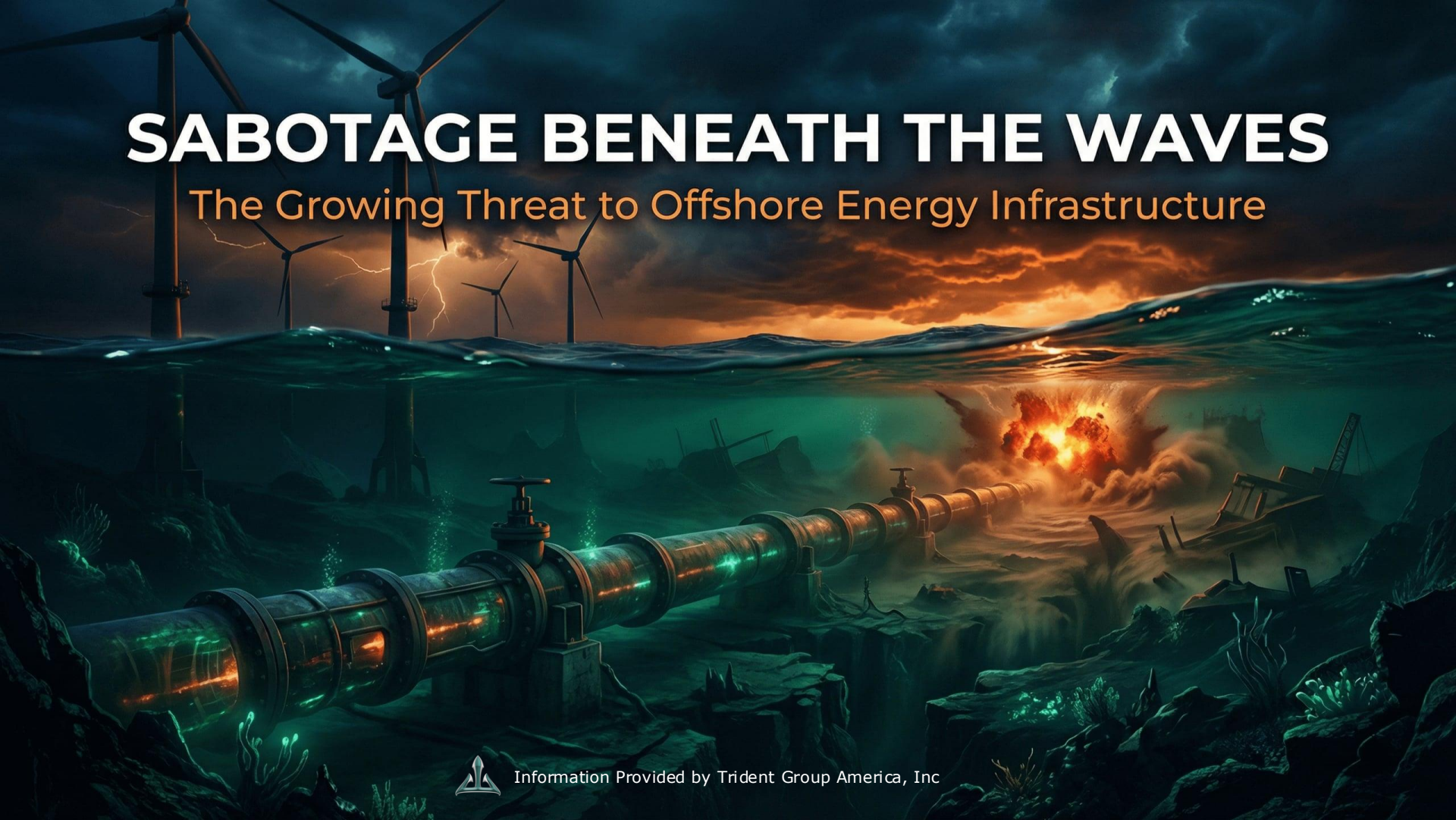
SABOTAGE BENEATH THE WAVES
The Growing Threat to Offshore Energy Infrastructure
Information Provided by Trident Group America, Inc

The Overlooked Dimension of a Familiar Threat

Fibre-Optic Cables Get the Headlines — But Offshore Energy Infrastructure Is More Consequential If Attacked

- ~20,000 miles of subsea pipelines move oil and gas across ocean floors
- Expanding fleets of LNG terminals, FSRUs, and export facilities
- Rapidly growing offshore wind farms and their interconnecting power cables
- Subsea substations and mooring systems tying it all together

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NORD STREAM: THE SINGLE MOST CONSEQUENTIAL ACT OF ENERGY INFRASTRUCTURE SABOTAGE IN MODERN HISTORY

THE SEPTEMBER 2022 NORD STREAM EXPLOSIONS PROVED THAT LARGE-SCALE PERMANENT DESTRUCTION IS ACHIEVABLE

- The single most consequential act of energy infrastructure sabotage in modern history.
- The pipelines remain out of operation more than three years later, permanently reshaping European energy flows.
- The attack demonstrated that subsea energy infrastructure can be destroyed permanently with a single operation.
- Attribution remains contested — a deliberate product of operational design to exploit jurisdictional gaps.

A Sustained Reconnaissance Campaign Is Already Underway

Russia Has Been Mapping North Sea and Baltic Energy Sites for Future Sabotage Since Before the Ukraine War

- **August 2024:** German authorities tracked long-range military-grade surveillance drones over ChemCoast Park in Brunsbüttel, adjacent to Germany's floating LNG facility.
- The same onshore pipeline had already been damaged in a separate sabotage action in 2023.
- **2023:** A joint investigation found Russia operating vessels disguised as fishing trawlers and research ships conducting underwater surveillance and mapping key North Sea sites.
- Adversaries are not merely capable of attacking — they are actively rehearsing operations.

OFFSHORE WIND: EUROPE IS BUILDING A CONTINENT-SCALE POWER SYSTEM WITHOUT SECURING IT

€1 Trillion in North Sea Wind Investment Is Creating a Vast, High-Value, Low-Protection Attack Surface

- Jan 2026: Hamburg Declaration pledges 100 GW of joint offshore wind by 2050, mobilising €1 trillion.
- EUROATLAS warns of a “continent-scale underwater power system without investing in a corresponding underwater security architecture.”
- Security professional James Bore assesses these assets as “attractive for sabotage by highly capable, motivated hostile actors.”

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THE U.S. PAUSED OFFSHORE WIND OVER CLASSIFIED NATIONAL SECURITY RISKS

The Pentagon Identified Classified Threats to U.S. East Coast Wind Farms — Including Chinese Kill Switch Scenarios

- Dec 2025: Trump administration paused leases of five large-scale offshore wind farms along the U.S. East Coast.
- Interior Secretary cited threats of undersea drone attacks and swarm drone strikes exploiting radar distortions.
- Heritage Foundation noted many turbine components are manufactured in China.
- NATO official warned of potential ‘kill switch’ scenarios embedded in Chinese-manufactured components.

THE CHINESE SUPPLY CHAIN IS EMBEDDED IN THE INFRASTRUCTURE BEING PROTECTED

HMN Technologies Controls Cable Manufacturing and Repair — and Supplies Components for Energy Interconnection Systems

- HMN Technologies dominates global submarine cable manufacturing and repair, and supplies components for offshore energy interconnection systems.
- FCC voted unanimously in 2024 to propose rules barring Chinese technology from undersea cables connecting to the U.S.
- FCC Chair stated the agency is guarding submarine cables against foreign adversary ownership and access.
- Control Risks documented that adversaries may not need to physically damage assets if they can compromise software and communications systems remotely.
- The convergence of physical sabotage risk and embedded digital vulnerability creates a layered threat.

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LNG TERMINALS ARE PROVEN MILITARY TARGETS

Iranian Drones Struck Qatar's Ras Laffan Gas Facilities in 2026 — Demonstrating That Energy Terminals Can Be Neutralised With Commercial Weapons

- Europe's pivot from Russian pipeline gas to LNG imports has made its FSRUs and onshore terminals a concentrated high-value target set.
- During the 2026 Iran war, Iranian drones struck Qatar's gas facilities at Ras Laffan Industrial City, forcing QatarEnergy to declare force majeure.
- This demonstrated that offshore energy terminals are legitimate military targets in active conflict and can be neutralised with commercially available weapons systems.
- Cable damage in the Strait of Hormuz represents a "credible threat" that could cause "service blackouts".

ATTRIBUTION IS ENGINEERED TO FAIL

Subsea Attacks Are Deliberately Designed to Be Ambiguous, Deniable, and Legally Inconclusive

- “A minority of incidents have thus far been positively attributed” — disinformation actively muddies waters.
- This is not an intelligence failure — it is deliberate operational design.
- Attacks exploit jurisdictional gaps and forensic limitations.
- Political thresholds for invoking NATO Article 4 remain too high despite sustained campaigns.
- Statements of intent to protect infrastructure do not equal operational capability.

The Repair Gap: Nord Stream Has Been Down for Over Three Years

Subsea Energy Infrastructure Takes Months or Years to Repair — and the Capacity to Do So Is Dangerously Limited

- Average repair time for a subsea cable: ~40 days under normal conditions.
- For subsea pipelines and offshore energy export infrastructure, restoration can take months or years.
- The Nord Stream pipelines remain out of operation more than three years after the 2022 attacks.
- The U.S. licensing process for subsea infrastructure projects averages two years in duration.

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THE 2026 ESCALATION RISK: CRACKING DOWN ON THE SHADOW FLEET COULD TRIGGER ENERGY INFRASTRUCTURE ATTACKS

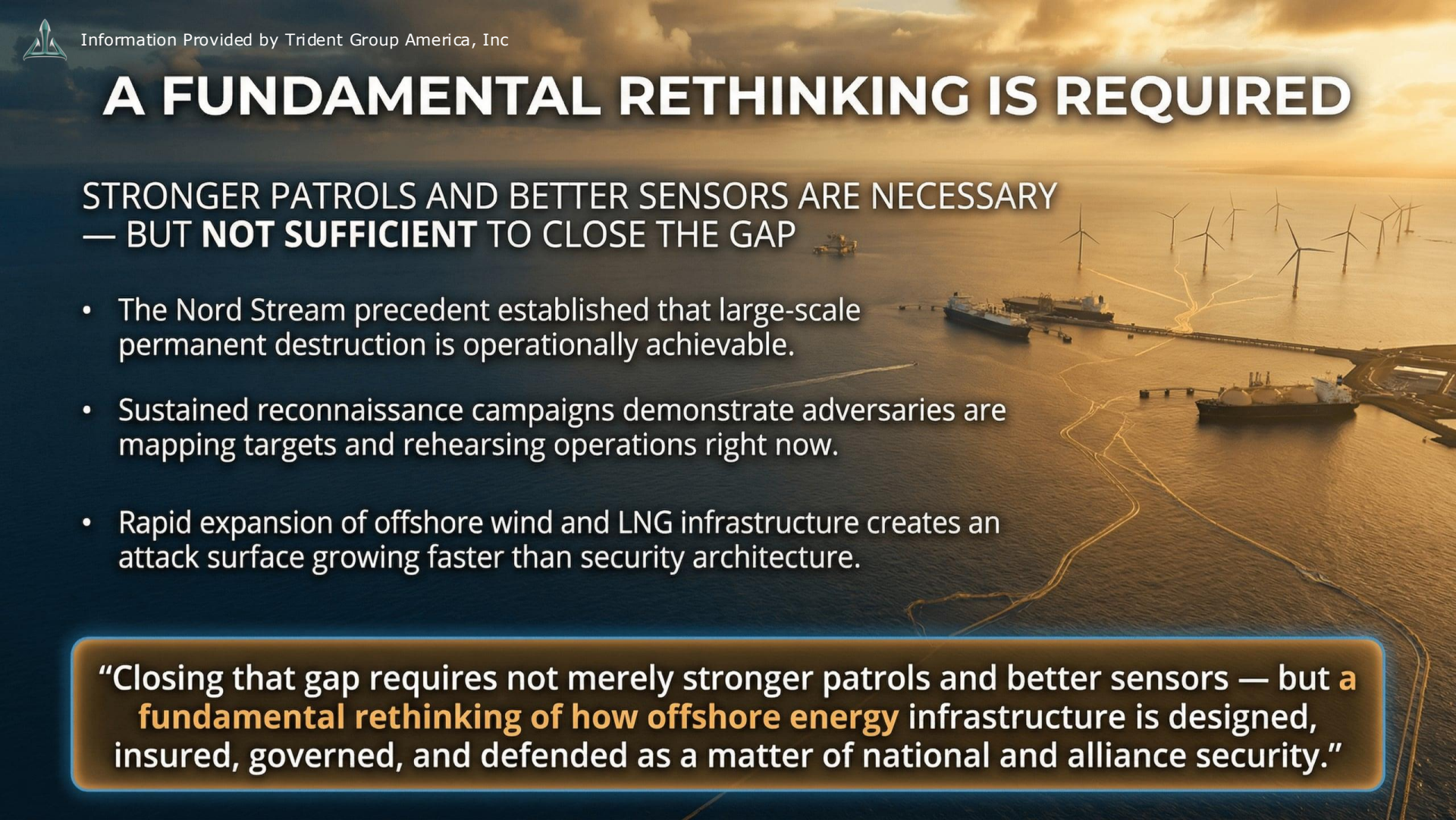
Every Escalation Against Russia's Shadow Fleet Carries a Corresponding Risk of Retaliation Against European Energy Infrastructure

- Herminius senior adviser predicted Russia may respond to European enforcement actions by targeting subsea energy infrastructure.
- Consistent with Russia's broader campaign as a 'shadow war' (skyggekrigen).
- Designed to impose cumulative costs on NATO states below the threshold of armed response.
- Creating political pressure to ease sanctions and reduce support for Ukraine without triggering Article 5.

A FUNDAMENTAL RETHINKING IS REQUIRED

STRONGER PATROLS AND BETTER SENSORS ARE NECESSARY — BUT **NOT SUFFICIENT** TO CLOSE THE GAP

- The Nord Stream precedent established that large-scale permanent destruction is operationally achievable.
- Sustained reconnaissance campaigns demonstrate adversaries are mapping targets and rehearsing operations right now.
- Rapid expansion of offshore wind and LNG infrastructure creates an attack surface growing faster than security architecture.



"Closing that gap requires not merely stronger patrols and better sensors — but **a fundamental rethinking of how offshore energy** infrastructure is designed, insured, governed, and defended as a matter of national and alliance security."