

M/V GENIUS STAR XI

Ship Fire: Lithium-ion battery cargo



Agenda

- Case Summary
- Salvage Operations
- Technical Expert Advisory Group
- Lithium-ion Battery Discussion
- Air Monitoring
- Key Takeaways
- Ongoing Investigation



GENIUS STAR XI – Initial Notification

25 DEC

- Vessel **reported fire**. 220NM SW of Aleutian Islands.
- Alaska Marine Exchange (MXAK) emailed vessel a status request. Reply: **black smoke coming from cargo hold #1**.
- MXAK designates the vessel as a “Vessel of Concern” and actively monitors.

26 DEC

- MXAK notified that **cargo hold #1 has been stabilized**.
- MXAK notified QI of fire onboard vessel in hold #1.

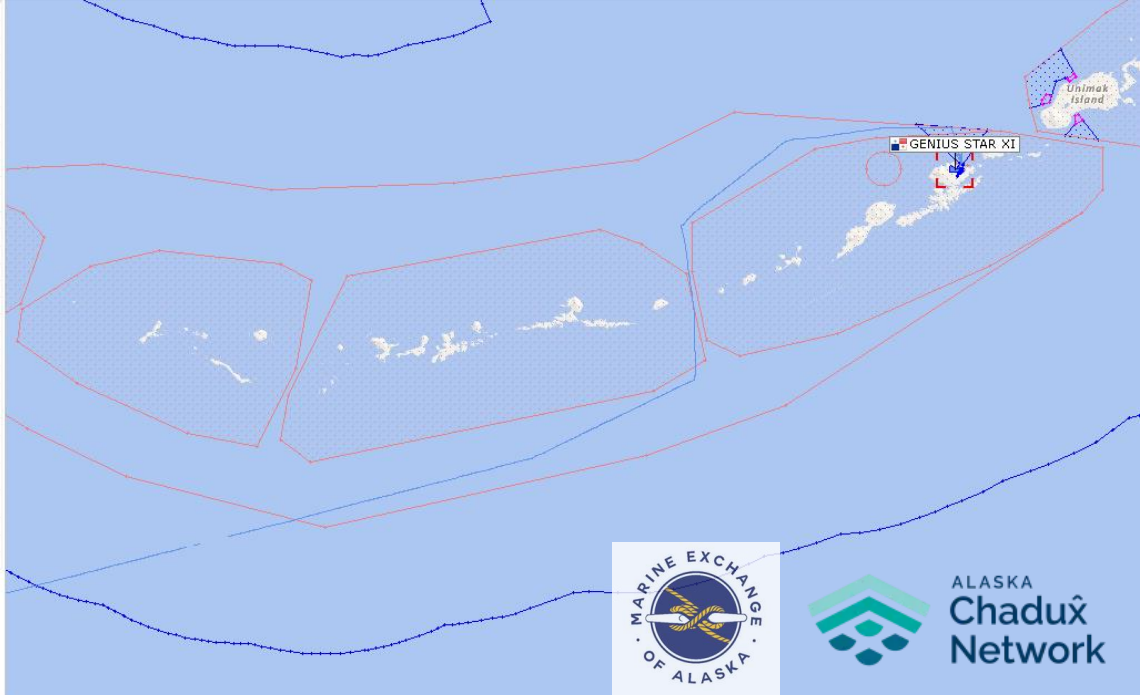
27 DEC

- While actively monitoring the vessel MXAK notices vessel is on course to **deviate into the ATBA** and notifies the vessel. Vessel responds stating **cargo hold #2 is on fire** and they altered course to minimize pitch and roll.

28 DEC

- Vessel **activates the Vessel Response Plan**.

Name	GENIUS STAR XI
MMSI	373928000
IMO	9622710
Country	Panama
Call Sign	3FGS3
Type	Cargo ship:DG,HS,MP(X)
Length x Beam	124m x 22m
Max.Draught	6.1m
Nav. Status	Moored
Last Seen UTC	2024-01-02 23:10
Last Seen Loc	2024-01-02 14:10
Latitude	53°55.256'N
Longitude	166°37.221'W
Speed	0.3knt
Course	286.4°
Heading	100°
Rate of Turn	
Destination	US DUT
ETA	2024-12-29 21:00
AIS UTC Time	2024-01-02 23:10
AIS Latitude	53°55.256'N
AIS Longitude	166°37.221'W
Sat UTC Time	2024-01-02 23:09
Sat Latitude	53°55.200'N
Sat Longitude	166°37.200'W
Dynamic UTC Time	2024-01-02 21:48
Dynamic Latitude	53°55.262'N
Dynamic Longitude	166°37.222'W
Pos. Fix. Dev.	GPS
Source Name	Uniproxy ha2_terrestrial
IP	127.0.0.1:1246c



GENIUS STAR XI

IMO: 9622710

Flag: Panama

GT: 9984

LPOC: Busan, SKR

NPOC: San Diego, CA

Fuel Info: LSFO 2,491 bbls

LSMGO 619 bbls

Lube Oil: 16,782 bbls

Cargo: Project cargo 2420.534 MT

High-power lithium-Ion battery 1837.824 MT



Slide courtesy of Alaska Marine Exchange

Salvage Operations

- Technicians monitored the Cargo Holds and prepared for entry/assessment.
- Responders removed 153 metric CO2 Cylinders from the vessel for pressure testing and refill, all with non-standard fittings.
- An Inert Gas Generator system was deployed via USCG HC-130 to augment the response.



Technical Expert Advisory Group

The Unified Command stood up a Technical Expert Advisory Group (TEAG) to gather feedback from lithium-ion experts. Participants included (*not all inclusive*, as participation varied during response phases):

- Pacific Strike Team (lead)
- Environmental Protection Agency
- Bureau of Alcohol, Tobacco, Firearms, and Explosives
- Pipeline and HAZMAT Safety Administration
- USCG HQ HAZMAT Division (CG-ENG-5)
- NOAA (SSC, NWS, NMFS)
- Salvage Engineering Response Team (SERT)
- Energy segment manufacturer
- Professors and Scientists from Academia
- Fire Chiefs and First Responders from previous Lithium-ion battery incidents

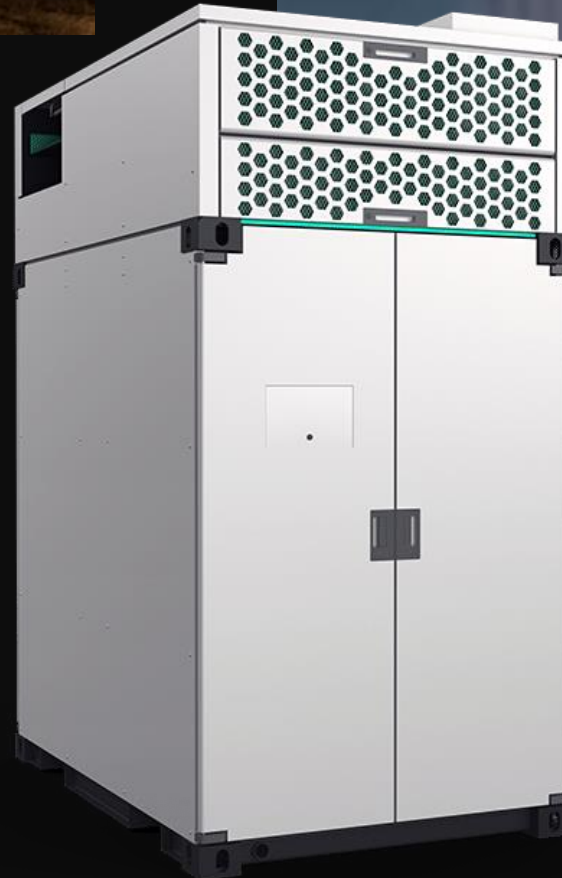
LITHIUM-ION BATTERY DISCUSSION





What are these energy segments?

- Modular product with power grid application.
 - Each cabinet holds 28 modules, 14 on each side.
 - Each module contains multiple cells.
 - Each segment (cabinet) weighs 20,000 lbs.
-





Initial Assessment

- Cargo Hold #1: CO2 Suppression System was fully expended with minimal impact to fire, there was visible charring, and CO2 most likely did not stop the batteries from burning.
- Cargo Hold #2: Batteries shifted inside the space, and firefighting tools were not employed. The space cooled by the time responders accessed it.

Lithium-ion Battery Discussion

Key Takeaway: When dealing with lithium-ion batteries it is recommended to **immediately** contact the manufacturer.

The manufacturer will know exactly what the batteries are comprised of and the exact risks of off-gassing, flammability, charge level, characteristics.

The number of different “Li-ion” battery types far exceeds any CG expertise. Specific battery SMEs should be engaged as soon as possible.

Elements of the TEAG recommended the Responsible Party hire a third-party commercial contractor named Energy Security Agency (ESA) to conduct the battery operations.

- A crane was used to carefully reposition the batteries while contractors “rendered safe” each damaged battery module.
- Air and temperature monitoring continued for the duration of the response.



Notable Issues

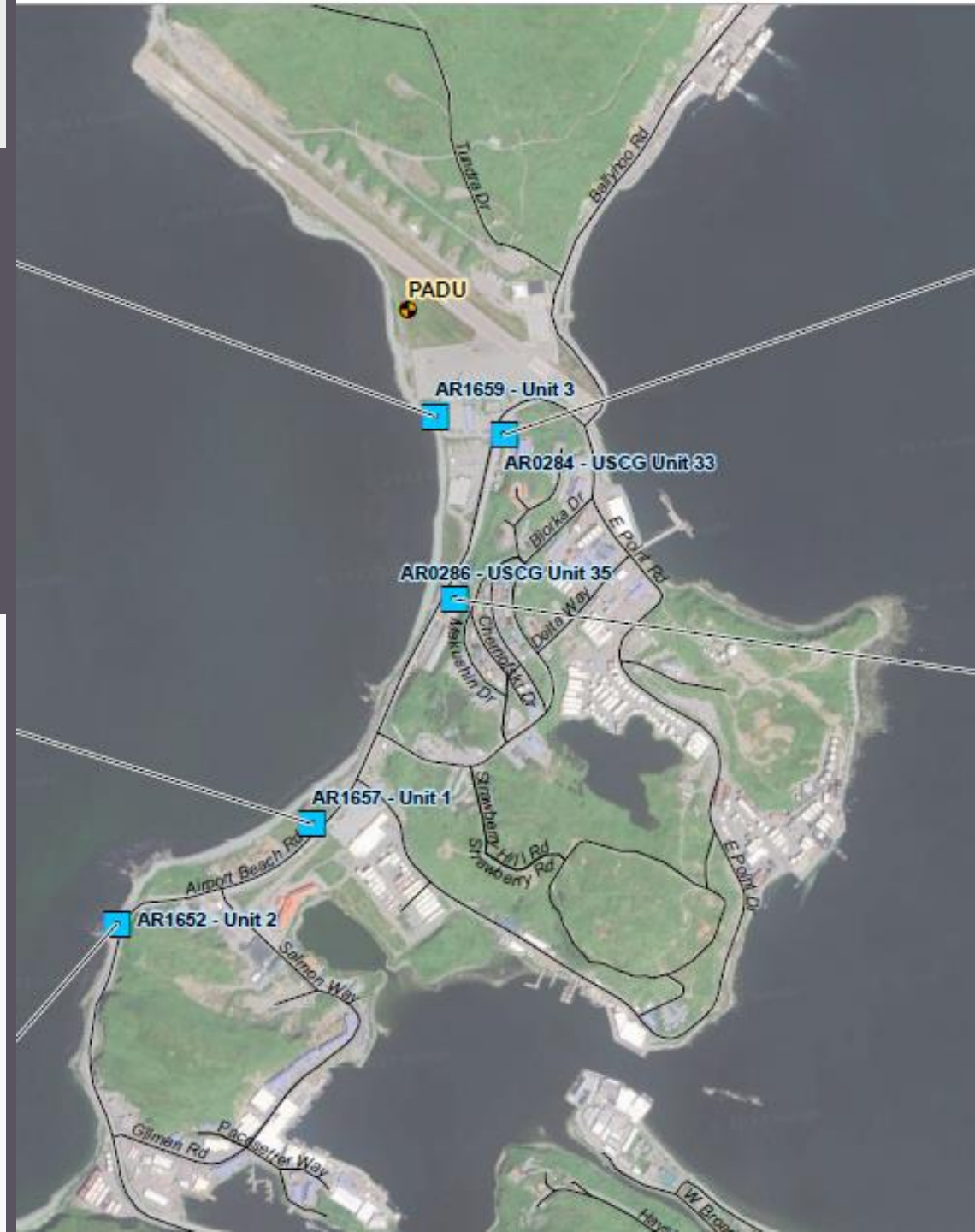
- Lashings: nylon web vs. chain (nylon chosen for no scratches)
- D-rings on deck (poor welding, broken)
- HAZMAT classification UN3536 (Lithium Batteries Installed in Cargo Transport Unit) perhaps misleading
- Lithium-ion battery fires are each unique; one does not specifically inform the other



Community Air Monitoring

To ensure community safety for the duration of the response, the Pacific Strike Team led a community air monitoring campaign supported by RP-hired contractors from GHD.

Five AreaRAE monitors were positioned throughout the community and provided 24/7 atmospheric condition reports.



Limiting Factors

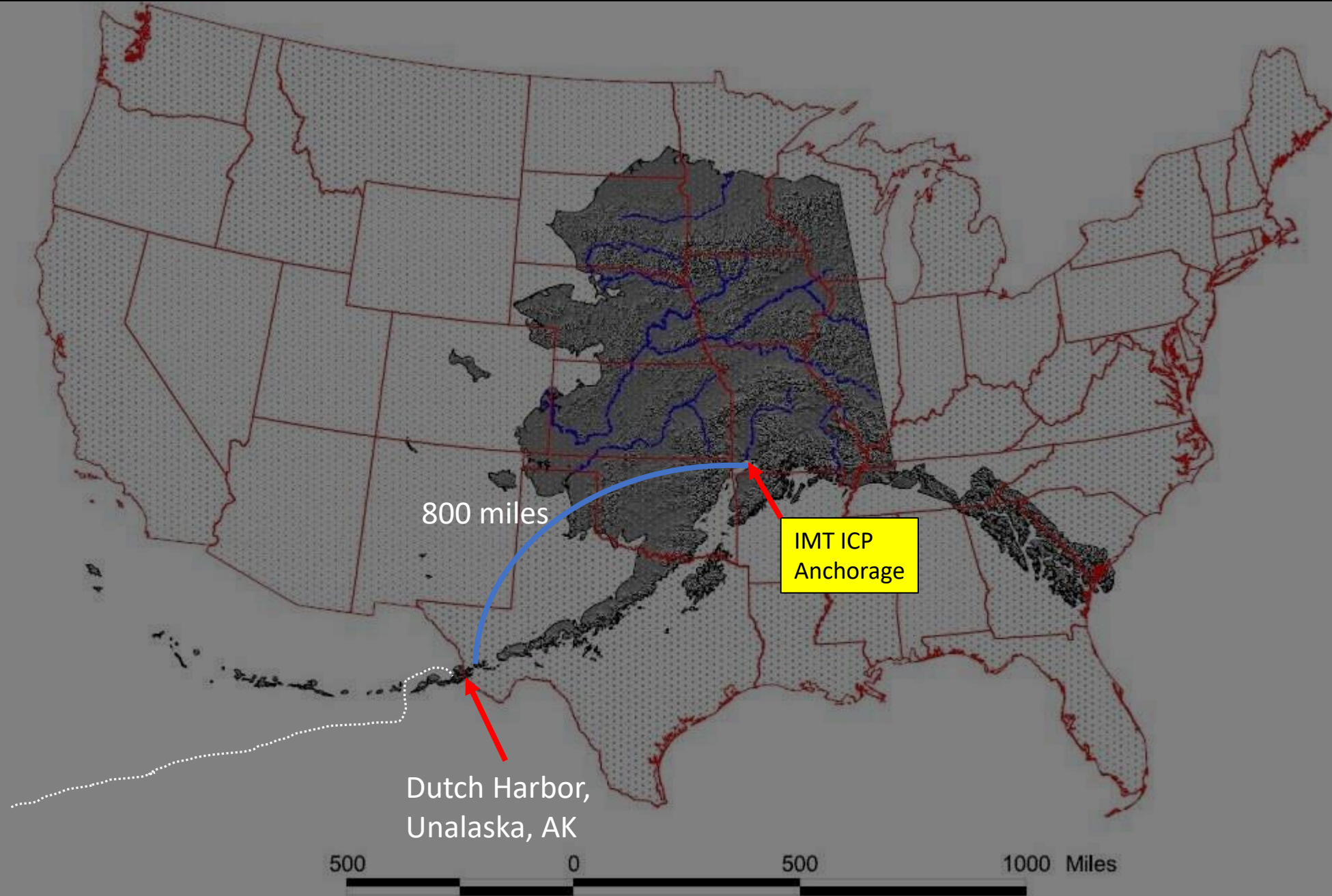
Distance to Dutch Harbor from Anchorage: 800 miles.

Remote Aleutian Islands have minimal infrastructure including lodging.

Logistics supply chain relies exclusively on aircraft & ships.

Weather consists of extreme winds, snow, freezing temps.

Fisheries inundate the island as it's the busiest commercial fishing port in AK. "A"-season opener: PAC cod (pots).





Key Takeaways

- Routine coordination with National Pollution Funds Center and opening fund soonest allowed for rapid strike force deployment.
- Local area officials' lack of ICS structure knowledge initially stymied progress.
- Establishment of Stakeholders Updates and separate Technical Expert Advisory Group (TEAG) meetings helped focus the intellect and experience toward goals.
- Remaining in the 'emergency response' phase during salvage operations ensured readiness for all-hazards response; OSLTF remained open as vessel posed threat.



12 February 2024
49 days after arrival,
GENIUS STAR XI departed
Dutch Harbor with cargo
safer than when it
arrived in US waters.

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Unified Command Press Release



PRESS RELEASE | Feb. 12, 2024

**M/V Genius Star XI departs Dutch Harbor, Alaska,
concluding response operations**

Ongoing Investigation

01

USCG – Has retained the role of "Lead Investigative State" in accordance with the Substantially Interested State (SIS) process.

02

NTSB – Is jointly investigating the "Major Marine Casualty", including both the Marine and Hazardous Materials Branch.

03

ATF – Certified Fire Investigators will be supplying an "Origin and Cause" Report to the Coast Guard and NTSB.

04

NAVSEA – The Navy provided a technical fire protection expert and electrical engineer to support the Coast Guard's investigation.

05

International – The Owners, their legal counsel, and private fire experts are conducting an independent investigation.

UNIFIED COMMAND

Incident Command - Responsible Party (RP)

Mr. Chris Graff
Gallagher Marine

State On-Scene Coordinator (SOSC):

Mr. Bernie Nowicki
Dept. of Environmental Conservation

Federal On-Scene Coordinator (FOSC), Captain of the Port (COTP):

CAPT Christopher Culpepper
Sector Commander

Alternate COTP, FOSC:

CDR Scott Farr
Deputy Sector Commander

