Voyage Recommendation Report

Scope

This report covers the recommended voyage for the four Cargill Capesize vessels completing discharge, three committed Cargill cargoes, given the available market vessel and cargo opportunities.

Objective

The objective is to maximise **portfolio profitability** under operational and feasibility constraints, including laycans and vessel availability, using feasible, real-world assumptions.

1. Recommended Vessel–Cargo Allocation and Rationale

Based on the outputs in the Cargill_Final.ipynb, the following vessel–cargo allocations are recommended for the three committed Cargill cargoes.

Cargo Index	Committed Cargo Route	Recommended Vessel
1	West Africa → China (Bauxite Cargoes)	PACIFIC GLORY
2	Australia → China (Iron Ore Cargoes)	ANN BELL
3	Brazil → China (Iron Ore Cargoes)	IRON CENTURY

Rationale & Analysis

Cargo 1: Cargill vessel PACIFIC GLORY provides the most competitive and feasible cost structure once ballast time, laden time, bunker consumption, and hire exposure are considered. This selection remains robust across the bunker price sensitivity range tested in the scenario analysis, with the top-ranked vessel unchanged.

Cargo 2: Our decision of deploying ANN BELL is driven by strong feasibility against the laycan window and favourable Pacific basin economics. The relatively short-haul nature of the voyage limits bunker exposure, and ANN BELL remains the optimal choice even under higher VLSF price assumptions.

Cargo 3: Market vessel, IRON CENTURY, was deemed the most suitable vessel for this shipment for the following reasons. Under the evaluated market vessel economics, this vessel outperforms allocating a Cargill ship on the same long-haul Atlantic route once voyage duration, bunker burn, and market hire implications are incorporated. This reflects a rational portfolio strategy in which market tonnage is used when it provides a structural advantage over owned or internally cost vessels.

Taken together, Cargill’s committed cargo programme is executed using a hybrid strategy. Two cargoes are lifted by Cargill vessels where internal tonnage has a clear economic advantage, while one cargo is outsourced to the market where external tonnage dominates on long-haul economics.

Recommendations for remaining Cargill Vessels

GOLDEN ASCENT

Australia – China (Iron Ore)	Rio Tinto	Iron Ore	170,000 MT +/- 10% MOLOO	12–18 March 2026	Dampier, Australia	80,000 MT PWWD SHINC+ 12 hr turn time	Qingdao, China	30,000 MT PWWD SHINC+ 24 hr turn time	USD 240K total (load & discharge)	3.75% due to charterer

The base-case recommendation at current bunker prices is to load iron ore from Australia to China. This option ranks highest among available market cargoes at baseline VLSF levels. However, this employment is sensitive to bunker price increases and becomes non-optimal under relatively modest fuel price shocks, as shown in the scenario analysis.

OCEAN HORIZON

Indonesia – India (Coal)	Adaro	Thermal Coal	150,000 MT +/- 10% MOLOO	10–15 April 2026	Taboneo, Indonesia	35,000 MT PWWD SHINC+ 12 hr turn time	Krishnapatnam, India	25,000 MT PWWD SHINC+ 24 hr turn time	USD 90K total	2.50% due to broker

Based on our analysis, the best available market sailing option identified by the model is a coal voyage from Indonesia to India. Nevertheless, the reported economics for this option are weak and negative at baseline in the output tables.

Overall, the base-case market employment of remaining Cargill tonnage is driven by the best opportunities currently available. The key qualitative conclusion is that GOLDEN ASCENT represents a marginal employment decision under bunker price risk, while OCEAN HORIZON appears structurally uneconomic in the present market environment.

Key Assumptions

To ensure the accuracy and professionalism of the project, we have crafted our analysis upon a set of realistic and practical assumptions that mimics actual maritime logistics.

Voyage distances are taken primarily from the Port Distances dataset where direct port pairs are available. Port names are standardised using deterministic aliasing logic to resolve inconsistencies across datasets and ensure consistent distance matching.

For the port pairs where direct distances are unavailable, the model applies a shortest-path proxy over the existing distance network. When neither the direct nor proxy distances are available, a haversine-based great-circle approximation is used as a final backstop. However, we understand that haversine distances simply represents an idealised shortest path and do not capture real-world routing inefficiencies such as traffic separation schemes, canal routing, weather avoidance, or congestion-driven deviations, a conservative uplift is applied to these approximated distances.

As such, haversine-derived distances are penalised by an additional 10% before being used in voyage time and bunker consumption calculations. This adjustment is intended to avoid systematic underestimation of voyage duration and fuel burn in cases where precise routing data is unavailable. By biasing distance estimates conservatively, the model reduces the risk of overstating voyage profitability and ensures that recommendations remain robust when exposed to operational realities.

Voyage feasibility is assessed by comparing vessel availability and estimated ballast time against cargo laycan windows. Any vessel–cargo pairing that fails to meet laycan requirements is hence excluded from the recommendation set.

Bunker costs are computed using VLSFO and MGO prices from the Bunker Forward Curve table, together with vessel-specific consumption rates for ballast, laden, and port operations. Where applicable, bunker top-up and remaining-on-board logic is incorporated to maintain real-life practicality. The scenario of a bunker price increase at all ports is represented by applying a uniform uplift to VLSFO prices across the pricing hubs embedded in the model.

Cargill vessels are evaluated using internal cost or hire assumptions as provided in the input data. Market vessels are assessed using the market vessel economics framework implemented in the notebook, which reflects market hire conditions and voyage costs.

From an optimisation perspective, the decision flow in the notebook is broken down into two stages. The model first selects the best vessel for each committed cargo subject to feasibility constraints, and then allocates any remaining Cargill tonnage to the most attractive market cargo opportunities. Portfolio profit is subsequently aggregated across these two stages. While this differs from a single global assignment optimiser, it is internally coherent, transparent, and suitable for the stated objectives.

Scenario Analysis: Bunker price increase in all ports

A uniform global bunker price stress test was conducted by applying a multiplicative uplift to bunker prices at all ports and recalculating voyage economics across the full feasible option set. The bunker multiplier was swept across a wide range, and at each level the model re-evaluated committed cargo carrier selection, remaining vessel market employment, and total portfolio profitability. The objective was to identify the bunker price levels at which the current optimal decisions are overtaken by alternative options.

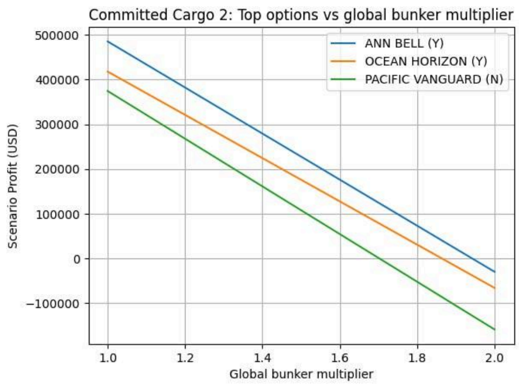

Fig 1

Our results show that the committed cargo programme is highly robust to bunker price increases within the tested range. For all three committed cargoes, the rank-1 carrier selection remains unchanged as bunker prices rise. PACIFIC GLORY continues to be the optimal carrier for the West Africa–China iron ore cargo, ANN BELL remains optimal for the Australia–China iron ore cargo, and IRON CENTURY continues to be the preferred carrier for the Brazil–China iron ore cargo, each aligned with their respective customer commitments. Although higher bunker prices materially compress absolute profits, bunker cost alone is insufficient to alter the optimal committed cargo allocation under the model assumptions.

While the top-ranked committed options are stable, bunker price increases do affect the relative ordering of non-selected alternatives. For two of the committed cargoes, the second- and third-best options cross at higher bunker levels. These shifts do not change the base recommendation but are operationally relevant for contingency planning in the event of vessel delays, operational constraints, or changes in customer execution requirements.

In contrast, the market employment of the remaining Cargill vessels is materially more sensitive to bunker price movements. This observed effect is the greatest for GOLDEN ASCENT. At baseline bunker prices, the optimal market employment for this vessel is an Australia–China iron ore voyage. As bunker prices increase, this option deteriorates more rapidly than shorter-haul alternatives due to its higher fuel intensity.

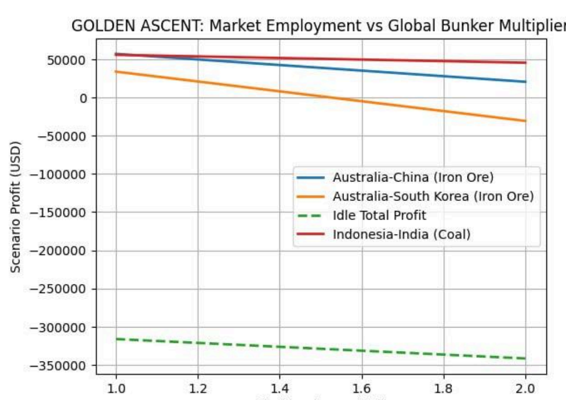

Fig.2

From figure 2, when the bunker price multiplier is approximately 1.05, corresponding to a 5% global increase in bunker prices, the model indicates that the optimal employment for GOLDEN ASCENT switches to a coal voyage from Indonesia to India. This represents the earliest and most commercially meaningful change in recommended action under the bunker price stress scenario.

For OCEAN HORIZON, the Indonesia–India coal voyage remains the best available market employment across the entire bunker price range tested. Although this voyage is loss-making in absolute terms at baseline, it consistently results in a smaller loss than keeping the vessel idle or stationary. From an economic standpoint, sailing therefore dominates idling throughout the scenario range, and the decision is appropriately framed as loss minimisation rather than profit maximisation.

Threshold Insights

The primary actionable threshold identified in the scenario analysis is a global bunker price increase by approximately 5%. Beyond this level, the recommended employment for GOLDEN ASCENT changes from an Australia–China iron ore voyage to an Indonesia–India coal voyage.

As our scenario analysis is defined in the magnitude of percentages, this threshold can be translated into absolute bunker price levels by applying the uplift to the relevant baseline bunker price. For example, if the applicable baseline bunker price is USD 490 per metric tonne, a five percent increase implies an effective price of approximately USD 515 per metric tonne. The precise absolute threshold will then vary by bunker hub, fuel grade, and pricing period.

From a portfolio perspective, the analysis indicates that bunker price risk does not materially threaten the execution of committed customer cargoes within the tested range. Instead, bunker volatility primarily affects the marginal deployment of remaining Cargill tonnage. Our analysis discovered that GOLDEN ASCENT exhibits sensitivity to relatively modest bunker price increases, while OCEAN HORIZON's persistently weak baseline economics highlight a continuing sail-versus-idle decision where the economically optimal choice is to minimise unavoidable losses rather than pursue positive profits.