

Northstar sealed file - cargo-analysis

Sealed file: analysis.sealed.json
Format: northstar.cargo-analysis
Made by: cargo-witness 0.1.0
Sealed: 2026-10-22T13:44:00Z
Signed by (Ed25519): 7b063c386df1d6de983810c916aa07f696cf1e561161ed31f28fd3228cc197bc
SHA-256 of the sealed body: 2469b8eb4224141876f39f4795cca9dbf0d1d08a4c788a7a03f929941e3a34f7
Seal checked when this PDF was made: VALID
Inputs attached: 7 of 7 match the hashes in the sealed file
Attached: analysis.sealed.json, case.json, gauging.csv, shore.csv, summary.csv, tank_tables.csv, transit.csv, vef_log.csv
To check: drop this PDF into the Northstar file checker (northstar-verify), or run
python nsio.py extract THIS.pdf --out DIR and the product's verify_*.py on the files.
These pages are for reading. The attached sealed file is what is verified.

CARGO QUANTITY ANALYSIS - SIM Aframax Spirit (synthetic) (IMO 0712345), voyage V011
CPC Blend (crude, 801.4 kg/m3 at 15 degC), Load Terminal (synthetic) -> Discharge Terminal (synthetic).
Records: gauging 58, summary 4, shore 2, vef_log 23, transit 11, tank_tables 2884
Findings: 0 impossible, 1 contradiction, 0 unexplained, 0 process, 0 check

B/L 106,705.086 m3, outturn 105,728.093 m3 (GSV m3 at 15 degC): shortage 976.993 m3 (+0.916 % of B/L).
VEF load 0.9985, discharge 0.9985.

load-port difference (B/L vs ship, VEF-adjusted)	-55.482 m3	-0.052 %	
in-transit difference (ship loaded vs ship arrival)	73.862 m3	+0.069 %	
cargo remaining on board	53.499 m3	+0.050 %	
discharge-port difference (ship discharged vs outturn)	905.114 m3	+0.848 %	<- beyond tolerance
load vs discharge VEF	0.000 m3	+0.000 %	

Largest component: discharge-port difference (ship discharged vs outturn).

VEF from the voyage log: 0.9985 from 18 qualifying voyages (valid); excluded 4. Report used 0.9985.

[CONTRADICTION] Q12 shore outturn below what the ship's figures show was discharged
Ship discharged (arrival 106,561.214 - ROB 87.957) / VEF 0.9985 = 106,633.207 m3; shore outturn 105,728.093 m3 (0.849% less). Check the shore tanks, line displacement and meter proving.
basis: UK P&I Carefully to Carry (2023) ch. 18 18.2 (shore figures); Britannia, Liquid cargo shortages (Mar 2026) (shore measurement errors)

Signed gauging snapshots checked: 1 (2026-07-24T12:00:00Z .. 2026-07-24T12:00:00Z); chain intact

Rules run: Q01, Q02, Q03, Q04, Q05, Q06, Q07, Q08, Q09, Q10, Q11, Q12, Q13.
cargo-witness 0.1.0. A reconciliation of the voyage's own records, not a finding on liability:
charter-party terms, the applicable law and the surveyors decide that. VCF values are the report's (licensed API/ASTM tables); the tool only checks them for plausibility. Input tables are identified by SHA-256.