YACHT PROVENANCE

INDEPENDENT DOCUMENTARY RESEARCH



PUBLIC EXAMPLE EDITION

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PUBLIC EXAMPLE EDITION

Fredrikstad

RS 77

An Illustrated History and Provenance



Artist's rendering of Fredrikstad
Illustration credit: S81

PUBLIC SAMPLE EDITION

Public website edition — 21 November 2026

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1 A rescue vessel with a continuing life

Fredrikstad entered service in 1968 as RS 77, a steel rescue cruiser built for the Norwegian coast. Her subsequent conversion into a private yacht changed her accommodation and purpose while retaining a recognizable working-vessel envelope. The records connect these different lives more securely than they establish the originality of every present fitting. [S01,S02,S03]



Figure 1.1. Redningsselskapet vessel-page photograph; original rescue-service appearance. Source record: Plate 001. Source image: Plate 001.

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1.1 Vessel identity

Item	Best-supported account / qualification
Name / original number	*Fredrikstad* / RS 77. "*Freddie*" is an informal nickname in the 2007 account. [S01,S02]
Year and construction	1968; steel. Main contract Smedvik Mekaniske Verksted; hull credited to Håkonsens Mekaniske Verksted, Skudeneshavn, by the operator's class table. [S01,S02]
Original design	Leif Gjerver (1919–1981), identified by the operator's class history, designed the original rescue-cruiser type. Ken Freivokh's later role concerned the yacht conversion. [S01; S03]
Yacht conversion	Penzance Dry Dock & Engineering, Cornwall, circa 1997–1998; Ken Freivokh design work with Peter de Savary. [S03, S04, S05, S06]
Length / beam	Original operator: 22.85 m / 6.00 m. Brokers: 22.85–22.86 m / 6.02 m. Approximately 75 ft / 19.7 ft. [S01,S19,S22]

Item	Best-supported account / qualification
Draft	Unresolved: operator webpage 3.60 m; operator's class table 3.20 m; modern Fraser 3.63 m; 1999 article 2.90 m; old charter brochure 2.70 m. Broker value 9.51 m is rejected as an apparent unit error. [S01,S03,S13,S19,S21]
Displacement / tonnage	135 tonnes original displacement; 99–99.4 GT in modern marketing. Gross tonnage measures enclosed volume and is not displacement. US secondary entry gives 110 gross / 88 net; not reconciled. [S01,S17,S19,S23]
Original machinery	Two GM engines, 484 hp combined in operator's record; yacht accounts identify twin Detroit Diesel 8V71 units, commonly 250 hp each. Ratings vary. [S01,S03,S09,S22]
Original tankage	Operator lists 20 tonnes fuel and 6.5 tonnes fresh water. The 1999 yacht article reports 22,000 litres diesel; these are different dates and units. [S01,S03]
Speed	Original record: 10 knots. Yacht marketing: roughly 8–11 knots cruise and 12 knots maximum. Not a verified current trial result. [S01,S19,S21]
Range	Original record: 2,100 nm. Later advertised figures: 3,200–3,600 nm; speed/load/reserve basis not consistently supplied. [S01,S03,S19,S22]
Guests / crew	Three guest cabins; six charter guests historically, up to eight advertised in private use. Modern marketing: three crew; YachtWorld lists two crew cabins. [S07,S13,S19,S21,S22]
Latest reviewed advertisement	Malta flag; La Spezia, Italy; VAT paid according to broker. Ownership identity and tax documentation not obtained. [S21,S22]

Table 1.1. Identity and principal particulars

Fredrikstad is RS 77. The number, 1968 build, steel hull, dimensions and rescue-society records provide stronger identity anchors than spelling alone. *Fredrikstad*, *Frederikstad* and *Frederickstad* occur in later records. The builders are Norwegian; the original builder must not be relocated to the city after which the vessel was named. [S01,S02] Details: [§6.1], [§6.6].

1.2 Identity, ownership and use at a glance

Date / period	Record type	Documented event / authority
1968	Operator record	Completed as RS 77 for Redningsselskapet; Smedvik principal builder, Håkonsens hull fabricator. [S01,S02]
1968–1988	Service history	Norwegian rescue service; station assignments are not a complete voyage log. [S01,S02]
1988; 1993	Ownership table	Borgen in 1988; Olafsen in 1993. Complete transaction instruments not recovered. [S02]

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Date / period	Record type	Documented event / authority
Circa 1997–1998	Conversion / contemporary report	Penzance conversion for the de Savary project; Freivokh design role. A 1998 award and March 1999 article establish a converted yacht before the conflicting October 1999 recollection. [S03, S04, S05, S06]
June 2000	Reported purchase	Unnamed American couple bought the yacht in New York Harbor, according to the 2007 account. [S07]
May; autumn 2006	Yard notice / crew account	Pendennis refit nearing completion in May; named crew documents Norway and the Falmouth–Tenerife–Antigua passage separately. [S08,S09,S73]
October 2008; June 2009	Handover report / federal notice	Reported academy handover; later federal notice describes intended training use, not a complete activity log or title instrument. [S11,S64]
2010–2012	Institutional sales inventories	Academy advertising and later disappearance from the inventory; buyer and closing not established. [S67, S68, S69]
2012; 2021	Broker-reported refits	Spanopoulos and La Spezia yard dates; detailed work records remain unavailable. [S19]
28 July 2023	Sale announcement	Fraser announced a sale without naming the buyer. [S20]
2023–September 2026	Radio / historical tracking	Later Mediterranean identity and AIS-derived visits; not ownership instruments or a current berth confirmation. [S18,S24,S65]

Table 1.2. Chronology at a glance. Record types and limits are identified in each entry.

1.3 Origins, commissioning and Norwegian rescue service

Her original operator identifies Sally and Lars T. Amundsen, Stockholm, as the funders. This is preferred to the brokerage narrative that the town's citizens commissioned and paid for her. The name honors *Fredrikstad*; that does not establish municipal ownership. [S01]

Period	Recorded station assignments
1968	Langesund and Stavern
1969–1972	Myre, Stø and Røst; Lerwick appears in 1970; Honningsvåg in 1971 and Bodø in 1972.
1973–1979	Predominantly Myre, with Stø, Straumsjøen, Bø, Andenes and Ålesund among assignments.
1980–1988	Predominantly Andenes.

Table 1.3. Rescue-service station assignments [S02]

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Assignments are summarized from the operator's historical tables and do not constitute a complete voyage log. [S02, printed pp. 402–403] The often-repeated totals of 11 lives saved and more than 600 rescues appear in later editorial and broker accounts; the current operator webpage shows zero-valued counters and should not be used to corroborate those totals. [S01,S07,S21]

1.4 Design development

Leif Gjerver's 75-foot steel rescue-cruiser design provided the origin. The thirteen-vessel series evolved between 1963 and 1972 and was built at several yards; *Fredrikstad* belongs to the 1968 GM-powered group. Series membership supplies context, not a license to transfer a sister's later refits or machinery. No project design-development file or original lines set is recovered. [S02] Details: [§2.1], §4.1.

1.5 Construction, delivery and original service equipment

The vessel was completed in 1968 with Smedvik Mekaniske Verksted as principal builder and Håkonsens Mekaniske Verksted at Skudeneshavn credited separately for the hull. The 22.85 m by 6 m steel working vessel entered rescue service as RS 77. Exact keel-laying, launch, trials, acceptance and delivery dates are not established by the recovered particulars. [S01,S02] Details: Chapter 3.

The operator records a five-person crew, five cabins for rescue accommodation, hydraulic steering and deck machinery, fixed fire/salvage pumps rated 62 tonnes/hour and portable pumps at 1.5 tonnes/hour. Original navigation included radar, echo sounder, autopilot, direction finding, electric log and Decca; communications included radiotelephony and VHF. These are historical particulars, not a present inventory. Section §4.1 refines the original propulsion and builder context. [S01,S02]

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2 Designers, builders and the people behind the yacht

2.1 Original naval architect and design practice

2.1.1 Two distinct design roles

Fredrikstad's design history has two principal stages. Leif Gjerver designed the original rescue-cruiser type; Ken Freivokh worked with Peter de Savary on the later yacht conversion's accommodation, appearance and detailing. Neither credit should erase the other, and a styling credit does not automatically establish responsibility for hull lines, stability, shafts or structural approvals. The original operator and the contemporary conversion account are the anchors for those distinctions. [S01, S02, S03]

2.1.2 Leif Gjerver, 1919–1981: naval engineer and working-vessel designer

The operator's historical volume provides a substantial biography, rather than merely the initial L. in *Fredrikstad*'s vessel entry. Gjerver was born in Porsgrunn; his grandfather was the boatbuilder Thor Jensen of Porsgrund Baatbyggeri. He trained at Skiensfjordens technical school and a technical institute in Gothenburg, and attended specialist courses at NTH. Before the Second World War he worked in the drawing office of Porsgrunn Mekaniske Verksted. He reached Britain during the war and served in the coastal artillery. These details come from the operator's biography, not an independently reconstructed service file. [S02, printed p. 88]



Figure 2.1. Leif Gjerver (1919–1981), portrait reproduced from the operator's historical volume, printed p. 88. Photographer not identified in the recovered page. [S02] Source record: C01. Source image: C01.

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In 1948 he joined Stord Verft as an engineer. His work there included early Norwegian stern trawlers and the large rescue-cruiser programme. In 1962 he moved to the Aker group's Oslo office and worked on naval contracts, including frigates and the patrol vessels *Farm* and *Garm*. In 1963 he and two colleagues established Normaritim A/S in Horten; the practice grew and for a time had an Ålesund branch. The biography describes fishing-vessel, special-ship and ferry work extending into the 2,000–3,000-ton range. Around 1973 he sold his interest and resumed independent work, initially in Horten and from 1978 in Porsgrunn. His death in 1981 places the original rescue design well before the yacht-conversion era. [S02]

This was a designer experienced in structural and operational demands, not principally a leisure-yacht stylist. The rescue designs had to combine endurance, towing, pumping, survivability and accommodation for a working crew. That background helps explain *Fredrikstad*'s generous machinery volume, fuel capacity and retained side-deck circulation. Those relationships are an interpretation of the documented design brief and arrangement, rather than a claim to have recovered Gjerver's original calculation book. [S01, S02, S03]

Programme / example	Documented significance
87-foot rescue cruisers	*Haakon VII* and *Ambassador Bay*, 1958, followed by *Skomvær II*, 1960: larger, long-endurance rescue ships preceding the 75-foot series. These are separate designs, not interchangeable specification sources for *Fredrikstad*. [S02]
75-foot steel series, 1963–1972	Thirteen vessels, including *Fredrikstad*: a less costly, smaller alternative while retaining substantial rescue/towing capability. The full class comparison follows in §4.1. [S02]
Other work	The biography records stern trawlers, ferries, specialist ships and an unbuilt fast patrol proposal using variable ballast. It distinguishes that proposal from completed vessels. [S02]

Table 2.1. Gjerver's wider working-vessel designs [S02]

No reliably identified Gjerver personal drawing archive or *Fredrikstad* original design-file number was recovered. A modern firm with a similar name would not, without documentary continuity, prove custody of Normaritim's 1960s drawings. The specific archive targets are set out in Chapter 10. [S59]

Gjerver's work on demanding service vessels provides context for this commission. A documented vessel-specific selection discussion, full design contract and identified personal drawing archive have not been recovered; those gaps are retained rather than filled by a presumed reason for selection. [S02]

2.2 Exterior and interior designers

2.2.1 Ken Freivokh: architecture, industrial design and yacht conversion

Born in Los Angeles, Freivokh studied architecture in Peru and industrial design/engineering at London's Royal College of Art. His Abeking & Rasmussen interview records a Duke of Edinburgh scholarship and Master of Design (Engineering); Design Week dates graduation to 1972. His practice is at Eastlands Boatyard, Swanwick, on the River Hamble. [S34; S35; S36; S37]

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Modifications to his own cruiser/racer led to commissions from Hunter Boats; Fairline and Sunseeker work followed. His multidisciplinary practice spans custom and production yachts, interiors, architecture and industrial products. For *Fredrikstad*, that breadth served the conversion of a working hull into a comfortable yacht, rather than the design of a new rescue vessel. [S34; S35; S36; S37]

The interviews emphasize analysing the owner's brief, circulation, use of space and the relationship between components. Design Week explicitly distinguishes the studio's work on an Azimut project from the separately engineered hull. The same professional distinction is useful here: the recovered 1999 report supports Freivokh's conversion/interior role with de Savary, but not an unsupported claim that he designed *Fredrikstad*'s 1968 underwater form. [S03,S36]

Representative work	Why it is a useful comparison
Maltese Falcon, 88 m	Freivokh discusses a broad inside-and-out design brief for the DynaRig sailing yacht. It illustrates the later scale and integration of the practice's work, not a technical connection to *Fredrikstad*'s propulsion. [S35]
Sycara IV, Burger, 2009	The builder's announcement assigns hull lines to Bruce King and period styling/layout work to Freivokh and the Burger team. It provides a particularly clear example of his traditional-yacht detailing and the separation of design roles. [S60]
Production yachts and other interiors	Professional biographies document Sunseeker work, the Azimut Magellano range and aircraft/residential commissions. The ISS profile also records a house for Peter de Savary, indicating a design relationship beyond the yacht, without dating that commission here. [S34,S36]

Table 2.2. Freivokh's representative work and division of design roles

The designer's portfolio mixes built vessels with concepts. This dossier does not turn a rendering or project listing into a delivered yacht. For *Fredrikstad* herself, his own award list records the 1998 Newport concours d'elegance result and the 2001 Antigua classic-motoryacht award, useful independent chronological anchors. [S05,S37]

Freivokh's role concerns the yacht conversion, layout/interior and design treatment. It does not replace Gjerver's original naval-architecture attribution. The blurred book name is not the sole basis for attribution: the contemporary account and award record independently support his involvement. [S03,S05,B01]

2.3 Specialist engineers and consultants

No separately identified structural, stability, mechanical, electrical or other specialist consultant for *Fredrikstad* has been established beyond the documented designer/yard roles. The absence of a named consultant is not evidence that no specialist work occurred. Contracts, approvals and construction/refit drawing title blocks remain the best acquisition targets.

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2.4 Principal builder, hull fabricator and outfitters

2.4.1 Smedvik: origins in engine installation and coastal engineering

Location. Smedvik Mekaniske Verksted was at Tjørvåg in Herøy, on Sunnmøre in western Norway. This is distinct from the city of *Fredrikstad* and its own shipbuilding businesses. The principal-builder credit should not be read as "*Fredrikstad*-built" merely because the boat carries the town's name. [S01,S02,S41]

People and beginnings. Reidar Klungsøyr's published recollection identifies his father, Rikard Klungsøyr, as a Wichmann-trained engineer who returned to Tjørvåg in 1918 and joined in establishing the repair workshop that became Smedvik. The Wichmann agency brought engine sales, installations and repair work, particularly for fishing vessels. The memoir records Rikard's retirement on his seventieth birthday in September 1961 and a fiftieth-anniversary celebration in June 1968. The 1918 origin is therefore supported by a participant's account and anniversary chronology, rather than inferred from a modern business directory. [S38]

Reidar emerges in the 1971 trade reports as director and owner of the expanding Smedvik business; Edvard Gjerde is named as operations manager. Their work involved coordinating hull construction, machinery, deck equipment and final outfitting. A contemporary report calls the 1971 delivery *Hjelm Waage* the yard's tenth rescue-vessel delivery to Redningsselskapet, showing that rescue construction was an established line of business. It does not mean that all ten boats were identical or that *Fredrikstad* was a one-off yacht build. [S39,S44]

Range and capability. Smedvik progressed from machinery and repair into complete ships. The operator's class table credits it with eleven of the thirteen 75-foot rescue cruisers, using several hull subcontractors. Its commercial range extended to ferries and, later, offshore support vessels. *Skudenes*, delivered in 1970, is a documented ferry example. The 64.55 m *Wilma Mermaid* of 1975 used an Eid-built hull and Smedvik completion, illustrating a larger hull/outfitting division within the group. Those examples establish industrial breadth, not dimensions or machinery specifications transferable to *Fredrikstad*. [S02,S42,S43]

A 1971 report describes expansion into Eid Verft at Løkjaneset, Nordfjord: a 150 × 20 m hall, about 25 m to the ridge, intended for ships up to 330 feet/6,000 tons. A planned 93 m cargo ship would be outfitted at Tjørvåg. These later Eid facilities are not evidence of *Fredrikstad*'s 1968 hull-building location or Tjørvåg's covered capacity. [S39]

What became of it. The histories place bankruptcy and transfer in the 1979–1980 period, with dates differing according to the company/site being discussed. Ulstein's acquisition led to production of ship equipment, including anchor-handling machinery. Ulstein Historielag records 48 employees in 1987 against roughly 160 at the Tjørvåg site's peak, followed by transfer to Herøy Industrier in May 1988. The municipal heritage plan now records the Smedvik site as a local industrial asset. None of this establishes that the 1968 builder continues unchanged as a present yacht yard. [S39, S40, S41]

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2.4.2 Håkonsens: the separate hull builder at Skudeneshavn

The operator's class table gives Haakonsens Mekaniske Verksted, Skudeneshavn, as hull builder for RS 76 *Unger Vetlesen* and carries the same entry down to RS 77 *Fredrikstad*. Skudeneshavn is on the southern end of Karmøy, Rogaland, a different location from Tjørvåg. The combination of hull subcontractor and principal outfitting yard is therefore explicit documentary evidence, not an attempt to reconcile two contradictory broker names. [S02, printed p. 93]

Åkrehamn Kystmuseum's workshop history independently places a Håkonsen engineering business in interwar Skudeneshavn, connected with skilled mechanics and local marine-engine production. It describes a 1927 purchase involving Olav Bergfjord, Håkon Håkonsen and the Stensland brothers, under the name *Skudenes* Mekaniske Verksted og Slip. This is useful evidence of the area's engineering tradition, but the recovered material does not prove the complete legal succession from that workshop to the hull-building company of 1968. Nor should the separately named *Skudenes* Notbarkeri & Slip, responsible for completing the first two class vessels, automatically be treated as the same legal business. [S02,S45]

For the 1968 firm, hull fabrication is certain from the operator's record; a reliable full founding date, ownership sequence, facility dimensions and present successor were not established. *Fredrikstad*'s construction contract, hull-builder invoice or original survey file would be stronger evidence than a namesake match. The published class table is currently the clearest link. [S01,S02]

2.5 Conversion and subsequent-refit designers

The principal established later design contribution is Ken Freivokh's collaboration with de Savary during the Penzance conversion. His wider training and practice are described in [§2.2]. No separate designer has been securely attributed to the 2006, 2012 or 2021 refits. Reasons for selecting individual contributors are not documented beyond the contemporary project narrative. [S03, S04, S05, S06,S19,S73]

2.6 Conversion, repair and refit yards

2.6.1 Penzance: the original conversion yard

Location and physical yard. Penzance Dry Dock lies at the harbour on Wharf Road, Penzance, near Cornwall's southwestern tip. The harbour authority describes entry through Abbey Basin after passing Ross Bridge. The operator traces a dry-dock tradition to 1834; Historic England dates the surviving granite dry-dock structure to about 1900 and lists it Grade II. These refer to different layers of the site's history and do not establish an 1834 incorporation date for the company that converted *Fredrikstad*. [S04,S46,S62]

The conversion period. Contemporary reporting identifies Penzance Dry Dock & Engineering as the yard that received *Fredrikstad* in 1997. The later captain's recollection associates de Savary's purchase of yard and vessel with the same period. The publicly recovered records establish the yard's role, while the exact legal purchase date remains less secure than the actual conversion account. The work combined hull preparation and coatings, replacement of accommodation and services, retained main engines/steering and a

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new yacht interior. This was a working ship-repair yard undertaking a substantial conversion, rather than simply an interior decorator supplying furnishings. [S03,S04,S06]

Other documented work. Cornwall Harbours lists *Scillonian III*, the Isles of Scilly passenger ferry, freight vessel *Gry Maritha* and the yachts *Big Eagle* and *Lady Vista* among projects. The mix illustrates competence in commercial docking and yacht work. These examples come from the harbour authority's account, not from attributing all work in the wider port to a single operator. [S04]

Later ownership and present direction. The operating company was run by the Isles of Scilly Steamship Group from 2009. Its July 2021 announcement records sale of the entire shareholding in Penzance Dry Dock (2009) Ltd to Linked Solutions SW Ltd. The current business is associated with former Royal Navy marine engineer Jamie Murphy and an emphasis on engineering, fabrication, apprenticeships and repair/conversion work. This is a later operating-company history, not evidence that the 1990s staff, ownership or company structure survived unchanged. [S47,S49]

The operator advertises a 75 m dry dock, up to 12 m beam and 4 m draft, with fabrication and machine shops and facilities for conversion through commissioning. The harbour authority gives a more conservative 70 m maximum ship length and 12 m beam. The discrepancy is retained: physical dock length and accepted vessel limits may differ, but a current booking would require confirmation rather than choosing the larger number. [S04,S48]

Cornwall Council's December 2024 report records £2 million of Good Growth support toward a £4 million refurbishment, including pumping, cranes, machinery facilities and training. This is evidence of later investment plans and work, not verified completion of every upgrade or *Fredrikstad*'s 1997 conversion facilities. [S49]

2.6.2 Pendennis: Falmouth superyacht construction and restoration

Pendennis is a separate Cornish business, based at Falmouth Docks. Its own history dates its establishment there to 1988, following Peter de Savary's acquisition of a local yachtbuilding company. A management buyout took place in May 1993; David Bentley, Peter Wood, Henk Wiekens and Mike Carr are identified in the founding/management history. Thus de Savary's name legitimately appears in both yard stories, but it does not make Pendennis and Penzance the same yard or show that he still owned Pendennis when *Fredrikstad*'s conversion began. [S50]

The yard combines custom builds, refits, classic restoration and technical support. Its early projects included the 125-foot ketch *Taramber* and a major *Adix* refit, both completed in 1991, followed by the restoration of *Adela*. Later examples include the new-build catamaran *Hemisphere* and major classic rebuilds such as *Haida 1929* and *Marala*. These projects demonstrate a range extending from traditional craftsmanship to large modern yacht engineering; each retains its own project history. [S50]

Its facilities developed over time: two 75 m dry docks in the 2004 refit complex; a 400-tonne travel hoist installed in October 2006; subsequent larger hoists, construction halls and a non-tidal basin. The present heritage record also describes Mediterranean expansion through Vilanova and investment in joinery and apprenticeships. For *Fredrikstad*, the yard's own 12 May 2006 news item now independently confirms the refit was nearing completion, with departure planned by early June. It does not give an individual work list or signed

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completion certificate. Later facility improvements do not prove what equipment was used for that visit. [S19,S50,S73]

2.6.3 Spanopoulos: family marine engineering, towage and shipyards

The group traces its modern business to Captain Christos Spanopoulos and the launch *Vosporos*, purchased in 1962. Its brochure describes expansion by sons Ignatios and Michalis into floating cranes, harbour construction and, later, ocean towage, salvage and shipbuilding. The family-owned business is therefore broader than a yacht-refit brand: heavy marine operations and its own vessel fleet are important parts of the background. [S51,S52]

The 2019 group brochure identifies Salamis's commercial yard, established in 2006 at Kato Pounta, Ampelakia, and the yacht yard at 34 Dimokratias Avenue, Perama. It advertises machinery, electrical, carpentry, plate and pipe shops, a 5,000-ton floating dock and an 820-ton boat hauler. These dated promotional capacities do not establish equipment used on *Fredrikstad*. [S52]

Project examples in the brochure include Christos-series tugs, Ignatios crane barges and auxiliary boats for the Hellenic Navy. Yacht services include steel repairs, coatings, machinery, systems and shaft/propeller work. A December 2025 trade report identifies a refit of the 53.4 m Benetti *Sojo* at Spanopoulos, but its full article body was not recovered and no detailed scope is adopted here. [S52,S61]

Important date limit. *Fredrikstad*'s brokers give a 2012 Spanopoulos refit. The group's indexed history dates the dedicated Perama yacht-yard development to 2013, while its 2019 brochure timeline gives 2014. Either is later than 2012. Salamis existed by then, but that alone does not prove the yacht was worked on there. The entry therefore remains "Spanopoulos, Greece, 2012; precise facility unconfirmed," pending a work order, invoice or dated yard photograph. [S19,S51,S52]

2.6.4 Cantieri Navali di La Spezia: the Agnese family and classic-yacht work

Cantieri Navali di La Spezia is at Viale San Bartolomeo 422. Its website dates its Beconcini-yard origins to 1963, an ownership change to 1996 and enlargement to 2016. Paolo Maccione's March 2024 account instead gives a 1966 formal foundation, naming 1996 purchaser Antonia Papacena, her son Marco Agnese as leader from 2020 and Moreno Cantinotti as operations director. The origin/foundation discrepancy remains unresolved. [S53; S54; S55]

The advertised 23,000 m² site includes about 16,000 m² of yard and a 1,400 m² painting shed. The official page lists 140- and 440-ton travel lifts; the 2024 article calls the larger lift 450 tons. Work spans hull materials, machinery, systems, interiors and rigging. Those capabilities do not establish *Fredrikstad*'s 2021 job scope. [S53; S54; S55]

The portfolio spans modern performance yachts and historic craft: *Abu Dhabi*, a VOR70 built by Persico; *Almagores II* and *Cape Arrow*, Southern Wind yachts; and classic naval-training yachts including *Tarantella* and *Artica II*. The 2024 report describes teak-deck reconstruction on *Artica II* and work on several Italian Navy classics. It also documents experience with large traditional vessels such as *Croce del Sud* and *Deva*. These are refit/maintenance examples; their original builders must not be relabelled as Cantieri Navali di La Spezia. [S55,S56]

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For *Fredrikstad*, the broker's 2021 refit date and subsequent La Spezia marketing are the direct links. The recovered personnel history places that date within Marco Agnese's reported management period, but no project-specific confirmation or personal responsibility is inferred. Planned expansions in the 2024 article are treated as plans, not present certified facilities. [S19,S22,S55]

2.7 Relationships and responsibility matrix

2.7.1 The work was spread across several distinct businesses

Party / location	Role in *Fredrikstad*'s record
Smedvik, Tjørvåg, Norway	1968 principal builder and outfitter. [S01,S02]
Håkonsens, Skudeneshavn, Norway	Steel hull subcontractor, identified by the operator's class table. [S02]
Penzance Dry Dock & Engineering, Cornwall	Original yacht conversion, circa 1997–1998. [S03,S04]
Pendennis, Falmouth, Cornwall	2006 refit independently identified in yard's 12 May news item; a separate yard from Penzance. [S73]
Spanopoulos, Greece	Reported 2012 refit; precise facility not established. [S19]
Cantieri Navali di La Spezia, Italy	Reported 2021 refit. [S19]

Table 2.3. Builders, conversion and refit responsibilities

These dated business histories distinguish original hull fabrication, principal completion, conversion and later refits. Current capacities or prestigious projects cannot establish a decades-earlier work scope; boat-specific contracts and completion records remain missing.

De Savary connects the club and yard histories, but a shared business figure does not prove that the club company held yacht title. Drawing-custody leads are in Appendix C. [S02; S03; S77]

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3 Construction and the original working vessel

3.1 Contracts, yard numbers and records

Original build contract, builder's number, hull fabrication contract, correspondence and a complete yard file have not been recovered. The operator's record supports the builder roles and 1968 date. These are not substitutes for original construction documentation. [S01,S02]

3.2 Materials, fabrication and structure

3.2.1 Propulsion, services and scantlings

The first five class vessels had two Rolls-Royce diesels of 256 hp each; the subsequent eight, including *Fredrikstad*, had two GM diesels of 242 hp each. The operator describes the earlier machinery being replaced later in service, which is one reason not to transfer a sister's modern horsepower to *Fredrikstad*. [S02]

Original propeller type. The class account assigns controllable-pitch propellers to the final three vessels, RS 81–83, and fixed-pitch propellers with reversing machinery to the others. *Fredrikstad*, RS 77, therefore belongs to the original twin fixed-pitch group. The class record supplies no diameter, blade count, pitch, shaft drawing or evidence that nothing was subsequently changed. [S02, printed pp. 88–89]



Figure 3.1. Smedvik yard: *G. Unger Vetlesen* ready for delivery; the source caption identifies the vessel being fitted out at the bottom as "probably *Fredrikstad*." That identification remains tentative. Printed p. 93. [S02] The original Norwegian qualifier is "trolig" — probably. The tentative identification is preserved throughout this dossier. Source record: C07. Source image: C07.

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The history describes early class services driven from the main engines, initially without separate auxiliaries, and a 24 V DC electrical arrangement before 220 V AC became standard on later builds. A contemporary 1971 report already lists separate Marna auxiliaries on *Hjelm Waage*. These accounts should therefore be read as an evolving class, not a universal "all boats had no generators" rule. *Fredrikstad*'s exact as-delivered auxiliary arrangement has not been verified from her own build sheet. [S02,S44]

For the 75-foot series, the history specifies minimum 8 mm shell plating, 400 mm frame spacing and additional ice frames forward between the ordinary frames, extending from the bottom structure to the main deck. These are original requirements, not current measured thicknesses. Nearby passages describing 87-foot vessels must not be used to assign their different scantlings or superstructure material to the 75-foot class. [S02]

The historical class requirements are context for this rescue type; the 1999 article supplies a vessel-specific description of plating and framing. Neither establishes current plate thickness after decades of service and alteration. [S02,S03]

The article attributes at least 8 mm hull plating and 400 mm frame spacing to the original Veritas construction requirements, and describes high thresholds, substantial closures and 10 mm toughened window glass. These are historical reported particulars, not a present steel-thickness survey or certification. The same article says that relocation of bulkheads meant the earlier ice classification no longer applied. Its language about an icebreaker must not be read as evidence of a separate icebreaking notation. [S03]

3.3 Machinery, systems and outfitting

3.3.1 Original service equipment

The original operator lists twin GM machinery, hydraulic steering/deck equipment and service pumps. Later 8V71 identification and generator inventories must not be retroactively inserted into an original equipment list without installation evidence. [S01,S03,S63]

3.4 Interior construction and craftsmanship

The operator's material records rescue accommodation and includes interior photographs, but their capture/configuration dates must be established before treating them as delivery evidence. An original interior specification, joinery schedule and delivery general arrangement have not been recovered. The mahogany yacht interior belongs to the later conversion, not the 1968 delivery. [S01, S02, S03,S27]

3.5 Changes during construction

Changes made during the original build are not established. Series-wide evolution is documented, but is not a *Fredrikstad* build-change ledger. [S02]

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3.6 Trials, inspection and acceptance evidence

The rescue society's published history explicitly names Det norske Veritas for the original 75-foot class, printed pp. 88–89. It is therefore inappropriate to expand the word Veritas into Bureau Veritas without a vessel-specific source. DNV is the first historical-class archive lead. Original class notation does not prove present classification. [S02]

The recorded public DNV search found no match for the three name spellings. This limited negative result does not establish that historical class records or drawings do not survive, or that the vessel was never classed. No historical class file or class-certified shaft drawing was recovered. [S66]

The operator's 1A1-N-ICE C notation and class-history references establish historical classification context. No original trial report, signed acceptance protocol, current class certificate or approved present stability booklet has been recovered. The limited negative public-register search does not prove an absence of historical records. [S01,S02,S66]

3.7 As-built configuration and delivery documentation

The original operator particulars, station history and service photographs offer a partial delivery-era reconstruction: steel 75-foot rescue vessel, twin GM machinery, five crew and rescue accommodation. Precise as-built arrangement, approved structure and shafting remain unavailable. Original figures should be kept separate from post-conversion advertisements. [S01,S02,S27]

3.8 Surviving original fabric

The steel working hull and major working-vessel proportions survived the conversion. Contemporary reporting describes retained main diesels and steering alongside extensive new interior, wiring and piping work. No material-by-material original-fabric survey has been recovered; later repair and replacement limits are unestablished. [S03] Details: [§7.9].

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4 Sister ships and the Norwegian rescue-cruiser family

Fredrikstad belongs to a thirteen-vessel family of 75-foot steel rescue cruisers. The published class table dates RS 68 and RS 69 to 1963 and RS 82 and RS 83 to 1972; it does not establish an exact launch or completion order within those pairs. RS 77 belongs to the 1968 GM-powered group. The twelve individual accounts are retained here because this small series demonstrates distinct preservation, research, passenger and yacht adaptations of the same rescue design, with unusually substantial vessel-specific records. Each account is a comparison with *Fredrikstad*, not a specification source for her present machinery or fabric. The historical evidence cut-off is 10 November 2026. [S02]

4.1 The class, its variants and its evidence

4.1.1 What class was *Fredrikstad*?

The operator's history describes thirteen 75-foot steel rescue cruisers built from 1963 to 1972, designed by Leif Gjerver. It is most precise to call this the 75-foot series rather than invent a later yacht model name. The smaller cruisers answered a need for a less costly alternative to the 87-foot ships, while remaining larger and more capable than the 55-foot boats. The first pair cost roughly half as much as the earlier 87-foot ships in the operator's comparison. [S02, printed pp. 88–93]

The class was built at more than one yard and evolved in machinery and exterior details. *Fredrikstad* belongs to the 1968 GM-powered group with a narrow funnel on the wheelhouse roof. Shared class membership does not make a sister's current propellers, accommodation, stability or conversion history interchangeable with hers. It does, however, provide a defensible way to interpret original design intent and select relevant archival comparisons. [S02]

RS / vessel	Built	Principal yard / hull builder
68 *Bergen Kreds*	1963	*Skudenes* Notbarkeri & Slip / Leirvik Sveis
69 *Hjalmar Bjørge*	1963	Same principal/hull combination as RS 68
70 *Speideren*	1966	Smedvik / Hasund Smie & Sveiseverksted
71 *Halten*	1966	Same principal/hull combination as RS 70
72 *Jørgen Amundsen*	1966	Same principal/hull combination as RS 70
76 *Unger Vetlesen*	1968	Smedvik / Haakonsens Mekaniske Verksted, Skudeneshavn
77 *Fredrikstad*	1968	Smedvik / same hull builder as RS 76
78 *Hagbart Waage*	1968	Smedvik / Hasund Mekaniske Verksted
79 *Paul Johansen*	1970	Smedvik / Hjørungavåg Verksted
80 *America*	1971	Same principal/hull combination as RS 79
81 *Hjelm Waage*	1971	Smedvik / Volda Mekaniske Verksted

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RS / vessel	Built	Principal yard / hull builder
82 *Øivind Lorentzen*	1972	Same principal/hull combination as RS 81
83 *Lars Christensen*	1972	Same principal/hull combination as RS 81

Table 4.1. Class builders and hull fabricators [S02]

English transcription of the operator's class table, printed p. 93. All thirteen are listed at 22.85 m length and 6.00 m beam; the first pair have 2.95 m draft and the later rows, including *Fredrikstad*, 3.20 m. The *Fredrikstad* row gives a construction cost of NOK 1,500,000. The class-table 3.20 m figure conflicts with the operator webpage's 3.60 m and other yacht figures; actual present draft remains unresolved. [S01,S02]

4.1.2 Propulsion, services and scantlings

The series evolved from Rolls-Royce to GM propulsion: the first five vessels had twin 256 hp engines and the later eight, including *Fredrikstad*, twin 242 hp engines. Later replacements are vessel-specific; the original machinery and structural particulars are discussed in §3.2. [S02]

The last three vessels, RS 81–83, differed from *Fredrikstad*'s original fixed-pitch group by having controllable-pitch propellers. Later upgrades, notably *America*'s, show why original class specifications cannot establish a sister's present installation. [S02, printed pp. 88–89]

Electrical and auxiliary arrangements also developed during the series. The early engine-driven services and 24 V DC system were not universal for all delivery dates; the 1971 *Hjelm Waage* report already describes separate auxiliaries. *Fredrikstad*'s own as-delivered auxiliary arrangement remains unresolved. [S02,S44]

The shared rescue brief included ice strengthening, closely spaced frames and substantial shell plating. The requirements summarized in §3.2 are historical design context, not measured current thicknesses for any surviving sister. [S02]

The class account gives about 10 knots and 2,100 nm as the original performance context. Five crew was the early complement, with a class-level reduction to four from 1982 in the published table. These working-boat figures explain the design's emphasis on endurance and rescue functions, but are not present yacht operating limits or an independently checked manning certificate. [S02]

4.1.3 What has been recovered, and what has not

Recovered material includes five published class profiles, Gjerver's portrait, the builder/specification table, service photographs and the tentatively identified Smedvik outfitting view. Four extracted profiles have severely limited surviving detail and are not reproduced here; the legible final variant below helps explain the later funnel arrangement. No profile is a scale engineering drawing. [S02,S57]

Not recovered: a builder's lines plan, body plan, offsets, original general arrangement, approved shaft layout, rudder drawing or propeller specification for *Fredrikstad*. The published profiles are illustrative silhouettes and do not supply submerged hull sections. They must not be scaled to manufacture missing engineering dimensions.

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C10 remains tentative class context, apparently associated with *Hjalmar Bjørge*. Its paired cages/angled plates and five-bladed propellers are not authenticated *Fredrikstad* underwater evidence. The following original caption preserves that limitation.

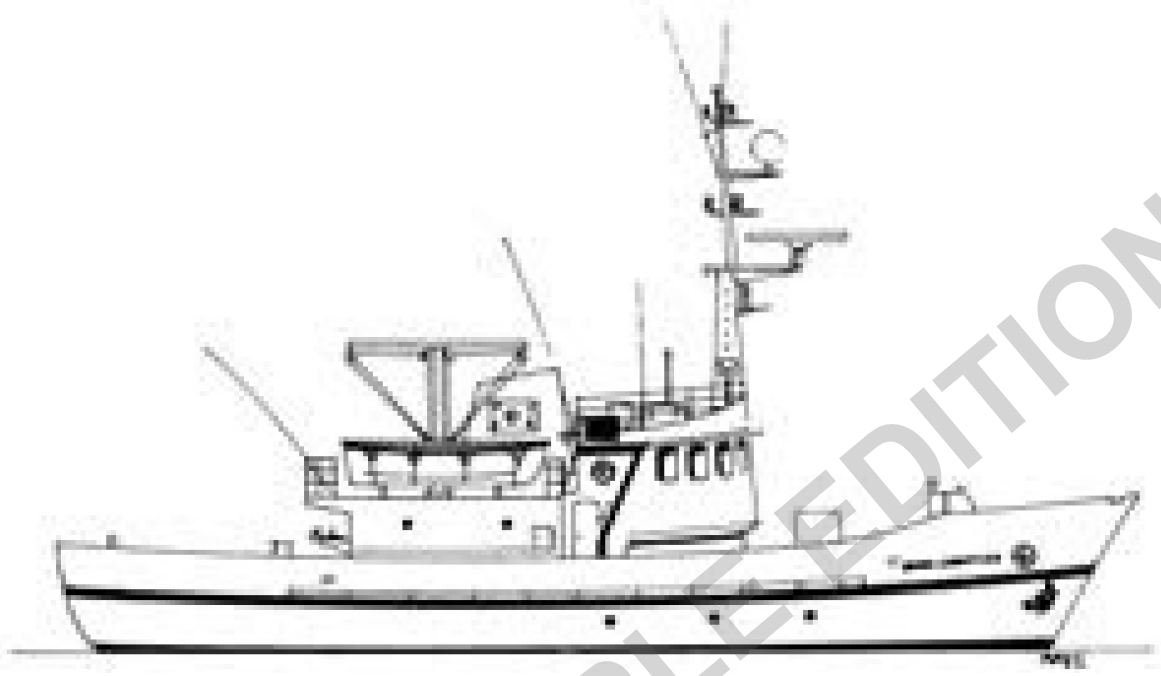


Figure 4.1. Variant 5: *Øivind Lorentzen* and *Lars Christensen*, 1972; larger funnel aft of the wheelhouse. Published illustrative profile, printed p. 92; directly extracted from the public PDF. The first four image masks have a dark background and limited surviving detail. Not a scale engineering drawing. [S02] Source record: C06. Source image: C06.

4.1.4 Fleet and latest documented status

Rescue identity	Later name	Last supported role/locality
RS 68 • *Bergen Kreds* (II) 1963	*Elizabeth-G* / *Elizabeth G*	Operating with Hebrides Cruises, western Scotland; current operator advertises future voyages. Exact position not established.
RS 69 • *Hjalmar Bjørge* 1963	*Sunrise*; subsequently restored to *Hjalmar Bjorge* / Bjørge	Operating with Hebridean Adventures, Scotland; 2025/26 accommodation refit confirmed by operator.
RS 70 • *Speideren* 1966	*Speideren* retained	Marketed by St Hilda Sea Adventures for Scottish small-ship cruises; fleet introduction reported for spring 2024.
RS 71 • *Halten* (II) 1966	*Halten* retained	Last well-supported reporting: Manitowoc Marina, Wisconsin, October–November 2024; a January 2025 stock-photo caption provides a later sighting lead.
RS 72 • *Jørgen Amundsen* 1966	*Svendborgsund*; restored to *Jorgen Amundsen*	Current project website states Shetland Islands; rebuilt as a small survey/research vessel after a 2020 purchase.

PUBLIC EXAMPLE EDITION

Rescue identity	Later name	Last supported role/locality
RS 76 • *G. Unger Vetlesen* 1968	*Sjøkraft*; original name restored in 1997	Heritage listing gives Lillesand, Agder; DNVF records purchase by Risøy Eiendom AS in January 2018. Exact present berth unverified.
RS 78 • *Hagbart Waage* 1968	*Hagbart Waage* retained	Arctic Whale Tours markets her for Vesterålen whale watching, including Stø in August 2026; insurer lists Båt og Motorservice AS.
RS 79 • *Paul Johansen* 1970	*Paul Johansen* retained	Dave and Amanda Abrams; August 2026 Soundings report places the yacht in San Diego over the preceding year, preparing to cruise north.
RS 80 • *America* 1971	No later name securely established	Historical private ownership in Kristiansund; offered-for-sale lead in August 2009. Present owner, name and location unresolved.
RS 81 • *Hjelm Waage* 1971	*J.C. Guard* / *JC Guard*; restored to *Hjelm Waage*	Karmsund vocational-school training vessel, Haugesund; local port/AIS evidence continues into 2026.
RS 82 • *Øivind Lorentzen* 1972	*Norte II*	OceanPact lists *Norte II* as a boom-handling vessel in its 2026 corporate fleet material; Brazilian/Rio identity supported, exact current berth unknown.
RS 83 • *Lars Christensen* 1972	*Servus 2* / *Servus II*; subsequently *Servus*	*Servus* is listed at Hythe in the Solent Maritime Society's March 2025 report. Current owner and November 2026 position unverified.

Table 4.2. Latest documented sistership roles and localities

4.2 RS 68 — *Bergen Kreds* (II)

4.2.1 *Elizabeth-G* / *Elizabeth G*

Built: 1963 • Rescue service: 1963–1995 • Lives saved: 36

Builder: Skudesnes Notbarkeri & Slip, Skudeneshavn; hull by Leirvik Sveis

Original construction cost reported in the operator's class history: NOK 950,000

Latest documented status: Operating with Hebrides Cruises, western Scotland; current operator advertises future voyages. Exact position not established. [HA24] [HA02] [HA76]

4.2.2 Origins and identity

One of the first pair of Leif Gjerver's 75-foot steel rescue cruisers, alongside RS 69. The original class table gives 22.85 m length, 6.00 m beam, 2.95 m draft and twin 256 hp Rolls-Royce diesels. Both cost NOK 950,000 in that table. The name commemorated the Bergen district of the rescue society and its fundraising. She must be distinguished from the 1912 sailing rescue boat of the same name and the much later RS 114. [HA24] [HA02]

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4.2.3 Service coast and people

Foss records a Scottish voyage in 1963, then Egersund and Måløy. She worked repeatedly from Måløy and Lerwick through the 1960s, mainly Måløy in 1971–75, Fedje from 1976 and Bakkasund particularly in 1987–93. In 1983 she was hired for fishermen's safety training. Her final recorded stations in 1995 were Storebø and Brattholmen, with withdrawal in June. Early masters included Nils M. Liseth and Tor Stenseth; later service included John Laksberg, Magne Sætren and Ingvald Viksøy. The operator's fleet index credits 36 lives saved. [HA24] [HA02] [HA76]

4.2.4 Rescues and machinery changes

The rescue-history tables identify *Lamann* near Skjærbåen/Florø on 25 October 1969, *Morild* off Stad on 29 October 1975, and *Stralsund* with trawl gear in her propeller off Utvær on 30–31 March 1977. The last is recorded under master Ingvald Viksøy with four persons involved. These are selected recorded operations, not a complete rescue list. Foss's summary dates replacement of the original engines by two 365 hp engines to 1980. [HA24]

4.2.5 Disposal and conversion

Foss records a 1995 sale to Jan Doeksen, identified with St. Maarten, followed by Bob Spanswick of Lerwick in 1997 and the name *Elizabeth-G*. Northern Light's archived account says Robert Spanswick named her after his wife and sold her to Robert Barlow in March 2004. A buyer's Caribbean address is not evidence that this vessel crossed to the Caribbean. Barlow initially operated her with the original superstructure and ten guests. A major winter 2005/06 rebuild followed the *Hjalmar Bjørge* conversion approach; the account describes twelve berths in six twin cabins at that stage. [HA24] [HA16]

4.2.6 Cruising career and latest evidence

Northern Light administered Barlow's diving charters and cruises for several seasons. Its account specifically records Norwegian dive charters based from Bergen in summer 2007, as well as Hebridean operation. A dated Ship Photos record places *Elizabeth G* leaving Tobermory on 24 April 2011. The Hebridean Whale & Dolphin Trust identified Rob Barlow as owner/skipper of Hebrides Cruises in 2018. Today's operator page presents *Elizabeth G* as an expedition vessel for eight guests in four double/twin en-suite cabins, or ten on a private charter. It offers Scottish island and St Kilda voyages. This establishes continuing commercial presentation, not a live position or an uninterrupted daily operating history. [HA16] [HA27] [HA28] [HA29]

4.2.7 Assessment and remaining gaps

The rescue identity and transition to *Elizabeth G* are well established. The current accommodation supersedes the twelve-guest configuration described in the older archive. No certified chain of title from Doeksen through Spanswick to the present company was obtained; operator and beneficial owner should not automatically be treated as the same legal entity. Current registry tonnage, coding certificate and precise berth require separate confirmation. [HA24] [HA28]

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Figure 4.2. *Bergen Kreds* at Bergen in autumn 1991 during the rescue society centenary, as identified in Foss, printed page 90. This is RS 68, not the later RS 114. Source record: HS01. Duplicate photographic records consolidated here: C08. [S02] Source image: HS01.



Figure 4.3. *Elizabeth G* in her later cruise configuration, from the current Hebrides Cruises vessel page. Capture date unverified; publication does not establish a live position. Source record: HS02. [HA28] Source image: HS02.

PUBLIC EXAMPLE EDITION

4.3 RS 69 — *Hjalmar Bjørge*

4.3.1 *Sunrise*; subsequently restored to *Hjalmar Bjorge* / Bjørge

Built: 1963 • Rescue service: 1963–1996 • Lives saved: 75

Builder: Skudesnes Notbarkeri & Slip, Skudeneshavn; hull by Leirvik Sveis

Original construction cost reported in the operator's class history: NOK 950,000

Latest documented status: Operating with Hebridean Adventures, Scotland; 2025/26 accommodation refit confirmed by operator. [HA24] [HA03] [HA76]

4.3.2 Origins and identity

RS 69 was the second of the first pair. Foss's construction table gives the same basic dimensions and Rolls-Royce machinery as *Bergen Kreds*. The funding came from the *Hjalmar Bjørge* shipping concern in Oslo. The sponsor's name has acquired several anglicised spellings; the Norwegian rescue number provides the firm identity link. [HA24] [HA03]

4.3.3 Rescue service and stations

The station record starts at Skudeneshavn in 1963 and includes Fosnavåg and Lerwick in 1964–65, and Shetland and Vardø in 1967. Vardø dominated 1968–73. After southern and western assignments she was based chiefly at Måløy from 1977 to 1994; the smaller response boat *Stadt* appears in conjunction with her from 1988. Her final period included Stavern, with lay-up from June 1996. Masters included Tor Stenseth, Gudmund Fredriksen, Hilmar Mostervik, Magne Sætren and Leif Førde. The rescue society credits 75 lives saved. [HA24] [HA03] [HA76]

4.3.4 Selected operations

Foss records assistance to *Leonard III* north of Ervika on 15 December 1977 under Hilmar Mostervik. Another account follows a difficult September 1984 tow: after a thirteen-hour outward passage to a 499-ton vessel with trawl gear in its propeller, the rescue ship towed at roughly 5½ knots to sheltered Fedjefjorden, where a diver spent five hours removing the gear. In March 1990 *Stadt* recovered three people from *Charlotte* and transferred the tow to *Hjalmar Bjørge*. These incidents illustrate the combination of offshore towing, diving and small-boat rescue. [HA24]

4.3.5 *Sunrise* and return to her name

Foss lists sale to the United States in 1996. The present operator's history explains that an American owner renamed her *Sunrise*, painted her blue and kept her in Ireland, adding stabilizers and a bow thruster. It says Mark Henrys bought her in February 2002 for Northern Light. The original wheelhouse lettering was recovered and the Norwegian name restored. The American purchaser's identity and certified title documents have not been recovered. [HA24] [HA44]

PUBLIC EXAMPLE EDITION

4.3.6 Scottish expedition service and refits

Northern Light developed her as a small expedition and wildlife-cruise vessel. Hebridean Adventures says it purchased her from Mark in 2022. Its technical page lists two Baudouin 6M26 engines of 350 hp each installed in 2016, 1997 Wesmar stabilizers and bow thruster, five-bladed skew propellers, a 2016 Atlas crane and an advertised 3,000 nm fuel range. That endurance must be distinguished from the same page's MCA Category 2 operating limit of 60 miles from a safe haven. The specification is the operator's account, not a current surveyed certificate. [HA44] [HA43]

4.3.7 Latest accommodation and whereabouts

The operator's accommodation page explicitly says the winter 2025/26 refit was completed. It now describes five guest cabins: two en-suite, one with a private WC and two with shared facilities. This supersedes the older six-twin-cabin text still present on its general specification page. Current and future Scottish cruise programmes confirm her continuing role, but no contemporaneous position fix is asserted here. St Kilda, the Hebrides and offshore wildlife routes belong to her advertised cruise geography; a scheduled future cruise is not counted as a completed voyage. [HA42] [HA44] [HA43]

4.3.8 Assessment and remaining gaps

The 1996 disposal, American *Sunrise* period, 2002 Henrys purchase and 2022 operator acquisition make a relatively strong narrative chain. Registry extracts, the American owner's name and detailed Irish refit invoices remain missing. C10's filename suggests this vessel, but without an explicit identifying caption the underwater photograph is still only tentatively attributed to her. [HA24] [HA44] [HA01]



Figure 4.4. *Hjalmar Bjørge* after rescue service, with a dark hull. Redningsselskapet archive; capture date and place unverified. Source record: HS03. [HA31] Source image: HS03.

PUBLIC EXAMPLE EDITION



Figure 4.5. *Hjalmar Bjørge* in rescue-service colours, with the smaller response boat *Stadt*. Redningsselskapet archive; capture date unverified. Source record: HS04. [HA31] Source image: HS04.

4.4 RS 70 — *Speideren*

4.4.1 *Speideren* retained

Built: 1966 • Rescue service: 1966–1998 • Lives saved: 23

Builder: Smedvik Mekaniske Verksted; hull by Hasund Smie & Sveiseverksted

Original construction cost reported in the operator’s class history: NOK 1,225,000

Latest documented status: Marketed by St Hilda Sea Adventures for Scottish small-ship cruises; fleet introduction reported for spring 2024. [HA24] [HA04] [HA76]

4.4.2 Funding and construction

Speideren means Scout. Her funding combined the Norwegian scouts’ 1964 fundraising effort with bequests from Oscar Hoffmann, Hugo Hermansen and Julie Maag Larsen. The original construction and service records give 1966, Smedvik completion and a Hasund hull, with twin 256 hp Rolls-Royce engines. The Swedish broker gives yard number 7, 22.85 m length and 6.03 m beam. [HA24] [HA04] [HA82]

PUBLIC EXAMPLE EDITION

4.4.3 Stations and rescue service

The service chronology begins at Vevang, Honningsvåg and Gryllefjord in 1966; Andenes, Gryllefjord and Lerwick appear in 1968. Andenes and Finnmark stations follow. Sørvær became the principal base in the 1980s and early 1990s, with occasional assignments to Akkarfjord, Havøysund, Vardø and Båtsfjord. Foss's station table ends with Vardø in 1997; the current rescue-society index gives service through 1998. Masters included Hegge Winje, Amund J. Winje, Magnar Nicolaisen, Inge Støvik and Svein B. Sivertsen. The society credits 23 lives saved. [HA24] [HA04] [HA76]

4.4.4 Service photographs and their limits

The operator's archive includes a dramatic heavy-weather view, her christening and a clear service profile. These establish her original working appearance; they do not by themselves date each rescue. The heavy-weather photograph is also reused as a generic illustration elsewhere. It should not be assigned a named casualty, place or date unless the original caption provides one. [HA30]

4.4.5 Ownership after the rescue society

Foss records a 1998 sale to Jan Doeksen, St. Martin, and subsequently Pål Krüger in Sweden. Shipsforsale says it sold the vessel several times, including to Holland for conversion to a yacht and later to Malta. Northern Light reports private Swedish ownership from 2003, a Stockholm sighting in February 2004 and registration as a twelve-passenger dive boat. Its 2016 archive account says that after Malta service she returned under British ownership. The sequence is informative, but the undated brokerage statements do not establish exact transfer dates or identify every buyer. [HA24] [HA82] [HA23]

4.4.6 Scottish cruise conversion

Reporting on St Hilda Sea Adventures describes her addition to the fleet for spring 2024. The present operator offers eight guest berths in three double cabins and one twin, with en-suite or private adjoining facilities, a saloon, viewing deck, sheltered outdoor seating and a landing tender. A skipper, chef and additional crew member are described. Scottish island itineraries extend to St Kilda. These pages show a continuing cruise role rather than a confirmed location on the research date. [HA81] [HA80]

4.4.7 Important contradictory dates

St Hilda's page and some repeating travel sites say built in 1969 and converted in 1994 following decommissioning. Those dates conflict with the original operator's 1966 build and rescue service through 1998, and with the recorded 1998 sale. The 1966 identification is supported independently by the builder table and broker. The 1969/1994 narrative is retained here as an identified source error, not adopted as history. The broker's 2.95 m draft also differs from original class-table 3.20 m and rescue-site 3.60 m figures. [HA24] [HA04] [HA82] [HA80]

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4.4.8 Outstanding provenance

The identities of the Dutch, Maltese and early British owners, dates of each sale and the principal conversion yard remain unresolved. A current registration extract and passenger-vessel coding record would be needed to certify ownership, flag and operating limits. [HA82] [HA23] [HA80]



Figure 4.6. Christening of *Speideren*. Redningsselskapet archive; associated with her 1966 introduction, but the exact ceremony date is not established here. Source record: HS06. [HA30] Source image: HS06.



Figure 4.7. *Speideren* in her later cruise configuration: the changed guest superstructure illustrates the Scottish conversion discussed above. Operator photograph; capture date unknown. [HA80] Source record: HS08. Source image: HS08.

PUBLIC EXAMPLE EDITION

4.5 RS 71 — *Halten* (II)

4.5.1 *Halten* retained

Built: 1966 • Rescue service: 1966–1997 • Lives saved: 46

Builder: Smedvik completion; hull by Hasund Smie & Sveiseverksted, Ulsteinvik

Original construction cost reported in the operator's class history: NOK 1,225,000

Latest documented status: Last well-supported reporting: Manitowoc Marina, Wisconsin, October–November 2024; a January 2025 stock-photo caption provides a later sighting lead. [HA24] [HA05] [HA76]

4.5.2 Origins and identification

Funding combined the *Halten* fund from Trøndelag and Trondheim, a legacy from Johs. Jøssing of Strinda and the building fund. She is the 1966 steel RS 71, not the older sailing lifeboat RS 19 *Halten*. The class table gives 22.85 × 6.00 m, 3.20 m draft and twin 256 hp Rolls-Royce engines. A rescue-society explanation published by the Wisconsin Marine Historical Society says her engines were replaced in 1985 by two 365 hp units. [HA24] [HA05] [HA41]

4.5.3 Service geography and rescue

She began at Lauvsnes in 1966 and served Sør-Gjæslingan and Sætervik for much of the following period, with Lerwick assignments in 1967 and 1973. In the early 1980s she also served as a reserve and fishermen's safety-training vessel. The society credits 46 lives saved. A published society account describes master Børge Landsnes bringing a disabled 25-foot sailing boat to safety near Hellvik/Egersund: engine and rudder had failed and the boat was close to rocks in strong wind and sleet. The account does not supply a date. [HA24] [HA05] [HA76] [HA41]

4.5.4 Sale and unresolved intermediary

Foss's disposal table gives a 1997 sale to Jan Doeksen, followed by Will Van Gal in the United States. In contrast, Lars M. Enger's rescue-society account, reproduced by WMHS in November 2024, names Will Van Gal directly as the 1997 buyer. These may describe an intermediary and final purchaser, but no bill of sale was recovered to prove that explanation. The distinction is kept explicit. [HA24] [HA41]

4.5.5 Atlantic and Great Lakes passage

Northern Light preserved owner correspondence saying *Halten* reached Manitowoc via the US east coast, Nova Scotia, the St Lawrence Seaway and every Great Lake except Superior. Marina manager Jack Culley gave arrival as spring 2002. George and Sue reported her there in July 2003, and Bob Leberak supplied a confirming photograph in August 2007. These are useful attributed accounts of a real voyage; they do not establish the precise Atlantic crossing track or departure date. [HA18]

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4.5.6 Later private ownership and latest reporting

James Heinz photographed her at Manitowoc in 2024. Her stern carried the old embossed OSLO, with HALTEN and TAMPA FL in later paint. A caretaker told him an owner in the steel business had bought her in Florida, used her on the lakes and later died; his widow retained the boat. A follow-up witness remembered the owner as Craig and said an airline pilot had delivered her across the Atlantic. These are recollections, not a verified identity or title chain. They should not be expanded into a guessed surname. WMHS's October and November 2024 pieces are the strongest recent local reporting located. A Shutterstock caption dates a stern view to 4 January 2025, but the stock image was not independently licensed or inspected at original resolution. [HA40] [HA41] [HA39]

4.5.7 Present status and remaining gaps

Manitowoc is the latest documented locality, not a guaranteed November 2026 berth. No disposal, scrapping or departure record was found. The owner's full identity, estate/title position, US documentation number and condition after the long lay-up remain unverified. The boat's apparent long survival should not be confused with evidence of current seaworthiness. [HA40] [HA41]



Figure 4.8. *Halten* underway in rescue-service colours. Redningsselskapet archive; capture date/place unverified. Source record: HS10. [HA05] Source image: HS10.

PUBLIC EXAMPLE EDITION

4.6 RS 72 — *Jørgen Amundsen*

4.6.1 *Svendborgsund*; restored to *Jorgen Amundsen*

Built: 1966 • Rescue service: 1966–1997 • Lives saved: 70

Builder: Smedvik completion; hull by Hasund Smie & Sveiseverksted

Original construction cost reported in the operator's class history: NOK 1,225,000

Latest documented status: Current project website states Shetland Islands; rebuilt as a small survey/research vessel after a 2020 purchase. [HA24] [HA06] [HA76]

4.6.2 Donors and original identity

Sally and Lars T. Amundsen of Stockholm funded the vessel, named for *Jørgen Amundsen*, the donor's father. She is a Leif Gjerver 75-foot steel cruiser, delivered in 1966 with twin 256 hp Rolls-Royce engines. This boat's identity should not be mixed with unrelated ships named for polar explorer Roald Amundsen. The current operator gives IMO 8354902, call sign HO6652 and MMSI 370347000. These are operator-published identifiers, not a certified current registry extract. [HA24] [HA06] [HA56]

4.6.3 Rescue stations and people

The station table begins with Vevang in 1966–68, then Båtsfjord around 1969–72. Straumsjøen, Værøy, Jennskaret and Myre feature through the 1970s and 1980s; Napp and Værøy were important in the 1990s up to withdrawal. Masters included Einar Gjelberg, Sigmund Johansen, Harry Solsem, Thor Tobiassen and Tor Karlsen. The operator credits 70 lives saved. A contemporary operator photograph places her along the Lofoten Wall in March 1992. [HA24] [HA06] [HA57] [HA76]

4.6.4 Selected operations

The rescue-history tables identify *Bente* with engine failure off Straumsjøen on 3 October 1978, under Harry Solsem, with five persons involved. Other illustrations show *Jørgen Amundsen* securing the *Straumsfoss* casualty site after that vessel sank and her crew had been rescued by a fishing boat. The distinction matters: presence at an incident does not prove that the attending cutter recovered the people. [HA24]

4.6.5 Post-service sale and Danish working period

Foss records sale in 1997 to Global Adventure Ltd, described as Netherlands based. Northern Light subsequently reports the renamed *Svendborgsund* offered for sale in Denmark. The present project history says a Danish company bought the boat after 1997 and operated her until 2015. The Dutch entry and later Danish operation are not necessarily contradictory, but the intermediate transfers and names of the companies are not yet documented. [HA24] [HA19] [HA57]

PUBLIC EXAMPLE EDITION

4.6.6 2020 purchase and research conversion

The current project states it bought her at Svendborg in 2020 and restored the Norwegian name. A January 2025 history describes conversion for small scientific expeditions. The vessel-data page advertises about 3,000 nm range on 24,000 litres, five cabins and accommodation for ten in total, including crew. It lists twin Detroit 12V71 engines, auxiliary generating capacity, a crane, small A-frame/winch and modular equipment for ROVs, AUVs and survey sensors. These are present operator claims; the engines differ from her original Rolls-Royce installation. Range and an advertised unlimited sea area do not certify current class or permissions. [HA57] [HA56]

4.6.7 Latest location and voyages

The home page says she is currently in the Shetland Islands. A separate project history describes an arrival at Lerwick in 2023 en route toward the Arctic. The research aims include blue carbon and making survey platforms available to small scientific teams. An intended Arctic mission is not treated here as a completed Arctic expedition: no independently dated expedition log proving a completed voyage was recovered. The project's legal owner and team identities are not sufficiently established from the pages examined to name them as certified proprietors. [HA58] [HA59] [HA55]

4.6.8 Unresolved particulars

The original 3.20 m class-table draft and later 3.60 m operator figures represent different published particulars and possibly loading conventions. The current page also phrases capacity both as ranges of crew/guests and a ten-person total; the latter is used conservatively here. Danish commercial records, the 2020 sale document and current flag/class certificates would complete the provenance. [HA24] [HA56]



Figure 4.9. *Jørgen Amundsen* along the Lofoten Wall in March 1992, as identified by the project history. Credit: Redningsselskapet. Source record: HS11. [HA57] Source image: HS11.

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Figure 4.10. The former *Jørgen Amundsen* as *Svendborgsund* during her Danish working period. Project-history photograph; exact capture date unverified. Source record: HS12. [HA57] Source image: HS12.



Figure 4.11. *Jorgen Amundsen* after restoration of her original name, illustrated on the research-vessel project history. Exact capture date/place unverified. Source record: HS13. [HA57] Source image: HS13.

EXAMPLE PUBLICATION

4.7 RS 76 — *G. Unger Vetlesen*

4.7.1 *Sjøkraft*; original name restored in 1997

Built: 1968 • Rescue service: 1968–1988 • Lives saved: 77

Builder: Smedvik; hull attribution conflicts: Foss table Haakonsens, current rescue/heritage pages Hasund

Original construction cost reported in the operator's class history: NOK 1,500,000

Latest documented status: Heritage listing gives Lillesand, Agder; DNVF records purchase by Risøy Eiendom AS in January 2018. Exact present berth unverified. [HA24] [HA07] [HA76]

4.7.2 Identity, donor and construction

Named for Georg *Unger Vetlesen* through the US foundation bearing his name, RS 76 was built in 1968. Foss's class table places her with *Fredrikstad* and gives twin 242 hp GM engines. The table identifies Haakonsens as hull builder, whereas the present rescue-society and heritage entries identify Hasund. That is a genuine documentary discrepancy; it should not be silently resolved by copying either claim into all three 1968 boats. Her published call sign is JXQR. [HA24] [HA07] [HA38]

4.7.3 Rescue coast and totals

Her first station was Havøysund in 1968, followed by Haugesund and Vevang. Vevang/Egersund, Napp, Mehamn, Sætervik and Sør-Gjæslingan appear in later periods, followed by Rørvik, Fosnavåg and Ålesund toward the end of service. The rescue society credits 77 lives saved. The heritage account adds 501 vessels assisted and sixteen saved from total loss, and says the cutter twice received recognition for the year's best rescue. These categories should not be combined into a single count. [HA24] [HA07] [HA38] [HA76]

4.7.4 Sale and *Sjøkraft* period

Foss lists sale in 1988 to C.V. Maritim of Håkonshella renamed *Sjøkraft*, then Sjøteknikk AS of Florvåg in 1994 and Svein Rune Børslid of Mathopen in 1996. Northern Light preserved Børslid's account that he bought her from a company in Flekkefjord and used her as a Home Guard training vessel. The heritage organisation says the original name was restored in 1997. These accounts provide a sequence, but not every intermediate company or date is certified. [HA24] [HA17] [HA38]

4.7.5 Berge and Nilsen ownership

Northern Light says Børslid sold her to Reidar Berge in June 2007 for varied maritime work, including offshore/oil-industry tasks, tourism and private charters. It then identifies a 2011 sale to Captain Stig B. Nilsen and a Bodø base. A 2013 Brunsvika report independently describes her as sold north after Berge's ownership and lying in Bodø. Photographs of Reidar aboard are historical context, not evidence that he is still the owner. [HA17] [HA36] [HA31]

PUBLIC EXAMPLE EDITION

4.7.6 Preservation and more recent ownership

Norsk fartøyvern dates formal heritage recognition to 2016 and describes unusually intact original accommodation and operating Detroit machinery, with much original bridge equipment. DNVF states that Risøy Eiendom AS bought her in January 2018, intending lighter ROV/diving inspection work and coastal-cultural participation. The heritage directory gives Lillesand, Agder as home port. This is the latest well-supported ownership/locality combination recovered, rather than a live berth report. [HA38] [HA37]

4.7.7 What preservation does and does not establish

The heritage entry calls her the only surviving example in original configuration. That is a claim about originality, not the only surviving hull of the thirteen. It uses Speiderklasse as a class label. The entry's 135-ton figure is labelled gross tonnage, while other original records use 135 tons as full-load weight; the number should not be treated as verified registry GT without the measurement certificate. The preservation designation does not itself certify operational condition, passenger authority or current class. [HA38] [HA07]

4.7.8 Remaining gaps

A current registry extract, confirmation of Risøy Eiendom's present ownership, dated photographs from Lillesand and the original hull-building certificate would resolve the most important open points. Specific award-winning rescue narratives need to be matched to the original yearbooks before being assigned casualty names or dates. [HA37] [HA38] [HA24]



Figure 4.12. *G. Unger Vetlesen* after her rescue-service career. Redningsselskapet archive; exact capture date unverified. Source record: HS14. [HA31] Source image: HS14.

PUBLIC EXAMPLE EDITION

4.8 RS 78 — *Hagbart Waage*

4.8.1 *Hagbart Waage* retained

Built: 1968 • Rescue service: 1968–1988 • Lives saved: 11

Builder: Smedvik completion; hull by Hasund Mekaniske Verksted

Original construction cost reported in the operator's class history: NOK 1,500,000

Latest documented status: Arctic Whale Tours markets her for Vesterålen whale watching, including Stø in August 2026; insurer lists Båt og Motorservice AS. [HA24] [HA08] [HA76]

4.8.2 Origins and family memorial

The 1968 cutter was funded by shipowner *Hagbart Waage*. Foss explains that the name honoured the donor's father, the shipping-company founder *Hagbart Waage* (1858–1909), rather than simply identifying the donor himself. She belongs to the same broad 1968 superstructure group as *Fredrikstad* and *G. Unger Vetlesen*. The class table gives Smedvik completion, Hasund hull and two 242 hp GM engines. [HA24] [HA08]

4.8.3 Rescue stations and working life

Her station record includes Skudeneshavn, Bakkasund, Røst, Egersund and Vevang, followed by Fedje and other western stations. The later service period included fishermen's safety training in 1985–87. Original operator records credit eleven lives saved. No fully verified narrative of a named individual rescue was recovered in this pass, so the accompanying rough-weather photographs are not assigned invented casualty descriptions. [HA24] [HA08] [HA76] [HA32]

4.8.4 Disposal and later Norwegian owners

Foss records a 1988 sale to Simon Møgsters Rederi in Stavanger, then Hans Norland of Jørpeland in 1989, and Hans Weiseth of Kristiansund in 1998. Later local reporting identifies her with Kristiansund and the Grip passenger route. The precise ownership sequence between Weiseth and the later Tønder period needs title records; involvement in a route does not identify the legal vessel owner. [HA24] [HA53]

4.8.5 2020 departure and 2024 transactions

An 8 April 2024 Brunsvika report says she had left Kristiansund in 2020 and that Ole Bjøntegaard Tønder had now bought her back, with charter work envisaged after classing and seasonal preparation. DNVF then provides a more specific later change: as of 1 June 2024 she was sold by Ole B. Tønder to Båt og Motorservice AS and became a whale-safari vessel. These are successive events, not alternative accounts to be averaged together. [HA53] [HA51]

PUBLIC EXAMPLE EDITION

4.8.6 Current operator and 2026 use

Gard's vessel record identifies Båt og Motorservice AS as P&I owner, with a passenger-liability certificate period running 20 February 2026 to 20 February 2027. Arctic Whale Tours' own page specifically schedules RS 78 *Hagbart Waage* for Stø departures from 1–31 August 2026 in place of *Blasius II*. Other tourism descriptions associate her with Andenes. Those accounts need not conflict: seasonal deployment can vary between the two ports. No assertion is made about her exact winter berth. [HA52] [HA83]

4.8.7 Cruise geography and evidence quality

The Stø programme describes whale, bird and seal watching off Vesterålen, including waters around Anda Nature Reserve and the offshore feeding grounds. This is an advertised service area, not a reconstructed track for every sailing. The same page's sixty-person limit is presented for the programme; it has not been independently checked against this vessel's passenger certificate. The insurer independently supports continuing commercial use but does not prove the entire charter programme operated as advertised. [HA83] [HA52]

4.8.8 Remaining gaps

Earlier refit-yard records, machinery changes, the 2020 buyer and a full registry ownership chain remain unverified. Her largely recognisable rescue silhouette should not be used to infer that all machinery, safety limits or internal accommodation remain original. [HA24] [HA53] [HA51]



Figure 4.13. *Hagbart Waage* underway in rescue-service configuration. Redningsselskapet archive; capture date/place unverified. Source record: HS19. [HA32] Source image: HS19.

PUBLIC EXAMPLE EDITION



Figure 4.14. *Hagbart Waage* meeting a breaking sea. Redningsselskapet archive; no named rescue or exact date established. Source record: HS20. [HA32] Source image: HS20.

4.9 RS 79 — *Paul Johansen*

4.9.1 *Paul Johansen* retained

Built: 1970 • Rescue service: 1970–1990 • Lives saved: 94

Builder: Smedvik completion; hull by Hjørungavaag Verksted

Original construction cost reported in the operator’s class history: NOK 1,600,000

Latest documented status: Dave and Amanda Abrams; August 2026 Soundings report places the yacht in San Diego over the preceding year, preparing to cruise north. [HA24] [HA09] [HA76]

4.9.2 Funding and original service

Ørdis Johansen financed the cutter on her own and her deceased brother Paul’s behalf, requesting his name for the vessel. Foss links the donation to proceeds from property sold in connection with development of Tromsø university. The 1970 boat was completed by Smedvik on a Hjørungavaag hull, with twin 242 hp GM engines. Her rescue stations were chiefly Gryllefjord and Senjahopen, with some Honningsvåg, Røst and Rørvik assignments. Masters included Hegge Winje, John Rønneberg and Bjørn Jensen. The society credits 94 lives saved. [HA24] [HA09] [HA76]

PUBLIC EXAMINATION

4.9.3 Sale and American ownership

Foss lists sale in 1990 to Simon Møgsters Rederi and Robert B. Grant in the United States by 1998. Northern Light later identifies Robert and Joan Grant and records a July 2003 sighting at Deer Harbor, Washington, with Port Madison on the stern. A publicly available pre-purchase survey from 2012 names Farley Blackman as the commissioning client. Its US official-number field gives 1033607. A Caribbean or US location from another sister must not be substituted into this chain. [HA24] [HA22] [HA72]

4.9.4 Conversion and technical evidence

The survey says builder's plans were available and indicated 10 mm steel shell and 7 mm aluminium for pilothouse/upper decking; it also records limitations on ultrasonic readings. Yeoman's later sold listing describes the 1990s yacht conversion and upgrades from 2012, an extended saloon, guest cabins and modern redundant systems. It lists two Detroit 8V71N diesels rated 304 hp each at 2,100 rpm, KeyPower stabilizers, fuel capacity of 6,626 US gallons and extensive electrical/navigation equipment. This is stronger technical evidence than generic class descriptions, but it is dated survey/broker information, not certification of present condition. The report is dated 10 July 2012 after inspection on 9 July. Its coating/thickness calculations contain inconsistencies, so no present plating thickness or percentage wastage is derived from them here. [HA72] [HA71]

4.9.5 Blackman's expedition project and transport

Northern Light reported Farley Blackman's proposed Northwest Passage exploration. Expedition Charters preserves the rescue heritage, but a plan is not a completed passage. A commercial bill-of-lading index records a 140,000 kg yacht identified as MV *Paul Johansen*, shipped from Victoria, British Columbia, to Port Everglades aboard *BBC Bergen*, arriving 22 April 2016. That secondary record is a useful transport lead; the original manifest was not obtained. A 2020/21 CYCA annual report lists Farley Blackman with the expedition motor vessel. Neither source proves the yacht itself cruised to Australia. [HA22] [HA70] [HA73] [HA69]

4.9.6 Abrams ownership and completed Pacific relocation

Captain Dave Abrams' June 2025 article calls *Paul Johansen* his newly acquired boat and plans a roughly 5,200-mile Virginia–Panama–San Diego passage. Joe Lovejoy's August 2026 Soundings feature then identifies Dave and Amanda Abrams, describes three years of East Coast cruising and upgrading, discusses the Fort Lauderdale–Colón leg, and says they had spent the previous year in San Diego preparing to head north. This later reporting supports completion of the Pacific relocation; no exact canal-transit or arrival date is asserted. The article also recounts an anchoring incident off Staniel Cay, Bahamas. The narrative is owner-attributed reporting. [HA74] [HA68]

PUBLIC EXAMPLE EDITION

4.9.7 Important qualifications

Soundings calls the Abramses the third private owners. That is consistent with its simplified Grant–Blackman–Abrams yacht narrative, but omits the earlier Møgster disposal entry; it should not be read as a complete legal-title count. The feature's statement that Class C permits twenty inches of ice without structural effect is not adopted: original ice strengthening does not establish unrestricted icebreaking capability, and the broker expressly says the yacht was no longer classified as originally built. Published range estimates of 3,500–4,000 nm are attributed estimates with unspecified operating assumptions. [HA24] [HA71] [HA72] [HA68]

4.9.8 Remaining gaps

Certified American title transfers, the precise Abrams purchase date, transport-manifest originals, completed Northwest Passage evidence and a dated post-August-2026 position remain open. This is nevertheless one of the best documented second careers in the group. [HA68] [HA72]



Figure 4.15. *Paul Johansen* in rescue service, viewed alongside another vessel. Redningsselskapet archive; date unverified. Source record: HS21. [HA09] Source image: HS21.



Figure 4.16. *Paul Johansen* in her later yacht configuration. Photograph by Joe Lovejoy, published with the August 2026 Soundings account of Dave and Amanda Abrams. Exact capture date is not established. Source record: HS23. [HA68] Source image: HS23.

PUBLIC EXAMPLE EDITION

4.10 RS 80 — *America*

4.10.1 No later name securely established

Built: 1971 • Rescue service: 1971–2004 • Lives saved: 37

Builder: Smedvik completion; hull by Hjørungavaag Verksted

Original construction cost reported in the operator's class history: NOK 1,700,000

Latest documented status: Historical private ownership in Kristiansund; offered-for-sale lead in August 2009. Present owner, name and location unresolved. [HA24] [HA10] [HA76]

4.10.2 Name and construction

America was jointly financed from several sources including Olaf Chr. Hagemann's American fund, Bergen district funds, Anders Jensen and Sally/Lars T. Amundsen. Foss says the name was a condition attached to the Hagemann fund. She was delivered in 1971 with two 242 hp GM engines. The Hjørungavaag yard list gives a hull delivery in December 1970; that can precede Smedvik completion and rescue-service entry in 1971 without contradiction. [HA24] [HA10] [HA45]

4.10.3 Service geography

The station table begins with Fedje, Blomvåg and Egersund in 1971. She later served Tromvik, Skjervøy, Havøysund and Kristoffervalen, then predominantly Fosnavåg/Ålesund in 1989–97, Kristiansund in 1998–99 and Tananger in 2000. The 2001 record includes Fosnavåg, Stavern, Napp and lay-up. Northern Light's account and dated operator photographs place later service at Egersund. The rescue society gives 37 lives saved and service ending in 2004. [HA24] [HA10] [HA76] [HA15] [HA33]

4.10.4 Upgrade and underwater particulars

Foss dates the major refit to 1994: two Nogva Scania engines of 532 hp each, a bow thruster, improved navigation and electronic engine monitoring. The current historic operator page gives Scania DSI 14 engines, Mekanor 337 HS gears and two Helseth 3H120 controllable-pitch propellers. *America* is important technically because she was not one of the last three originally delivered with CPP, yet later records explicitly show CPP after upgrading. Original class-wide fixed-pitch statements therefore cannot be projected through all later refits. [HA24] [HA10]

4.10.5 Selected work and rescue documentation

The photo archive shows towing, crew at the wheelhouse and rescue-net training. A 1983 caption identifies deckhand Bjørn Dypvik, engineer Geir Jensen, mate Kjell B. Johansen and skipper Yngvar Austvik. Another account records assistance with Aukra's damaged water main on 27–29 December 2002. An aircraft-accident caption says the boat recovered victims and wreckage in autumn 2002; it is a recovery operation, not evidence of lives saved. The archive also describes the search after *Kongstind*'s loss on Hustadvika, but the photograph's upload date is not the casualty date. [HA33]

PUBLIC EXAMPLE EDITION

4.10.6 Post-service owner and sale lead

A recovered Northern Light page says the vessel was privately owned by a Norwegian identified only as Mr H. Storvik and located in Kristiansund, with plans for a luxury-yacht refit and extensive time aboard. It also preserves an August 2009 report from Rienk Bruinsma that *America* appeared among upcoming vessels for sale on Arne Timmerling's Djurgårdsvarvet brokerage website. This is evidence of an offer/report, not proof of a completed sale or completed conversion. The first paragraph survives in a 2016 capture and again in a 2019 capture; repeating an old paragraph does not update its underlying event date. [HA15] [HA14]

4.10.7 Latest status and unresolved provenance

America's present ownership, name, flag, condition and location remain unresolved. The historical Mr H. Storvik account and the 2009 offering lead do not establish a later conversion or current identity; the common name makes hull-specific registry evidence particularly important. [HA10; HA15]



Figure 4.17. *America* towing; the source caption describes a two-vessel tow. Redningsselskapet archive; date unverified. Source record: HS26. [HA33] Source image: HS26.



Figure 4.18. Rescue-net exercise aboard *America*. Training, not an identified live rescue. Redningsselskapet archive; date unverified. Source record: HS28. [HA33] Source image: HS28.

PUBLIC E LE EDITION

4.11 RS 81 — *Hjelm Waage*

4.11.1 *J.C. Guard* / *JC Guard*; restored to *Hjelm Waage*

Built: 1971 • Rescue service: 1971–2004 • Lives saved: 18

Builder: Smedvik contract/completion, yard no. 33; Volda Mekaniske Verksted hull

Original construction cost reported in the operator's class history: NOK 1,765,000

Latest documented status: Karmsund vocational-school training vessel, Haugesund; local port/AIS evidence continues into 2026. [HA24] [HA11] [HA76]

4.11.2 Gift, launch ceremony and builder

Hagbart and Randi Waage financed the vessel to commemorate his uncle *Hjelm Waage*. Skipsrevyen's reproduction of its 1971 report describes christening and handover at Loen in late June, godmother *Hjelm Waage* Basberg, Smedvik director Reidar Klungsøyr and operations manager Edvard Gjerde. The cutter was Smedvik yard no. 33, with a Volda hull. The contemporary account gives twin GM engines of about 240 hp each and Marna auxiliaries. [HA24] [HA11] [HA46]

4.11.3 Early North Atlantic work

The original report says she began at Lerwick and describes a July 1971 tow of *Moflag Junior* from Stornoway to Ålesund after machinery failure, taking around 72 hours in heavy seas. This is unusually good evidence of a named voyage and casualty early in a sister's career. Later stations included Havøysund, Båtsfjord, Skjernøysund, Myre, Napp, Andenes, Gryllefjord and Senjahopen. Foss's tables list numerous changes as demands shifted along the coast. The rescue society credits eighteen lives saved. [HA46] [HA24] [HA11] [HA76]

4.11.4 1994 upgrade and later rescue appearance

Foss records a 1994 upgrade with two 532 hp Nogva Scania engines, bow thruster and modernised navigation. The later heritage application describes her as one of four upgraded CPP boats, with twin rudders. Its statement that the Scania machinery dates from 1971 conflicts with both the original GM installation and the 1994 replacement record; the replacement date is not silently moved back to construction. Rough-weather photographs taken from *Siv-Janne* show her working form in the later service period. [HA24] [HA49] [HA34]

4.11.5 Britain, Denmark and return to Norway

The heritage application says she went to England in 2004 and was converted for unattended machinery-space operation as a pleasure vessel. In 2007 she went to Denmark as *J.C. Guard* for pilotage, towage and wind-farm work in Denmark and Germany. After lay-up in 2015–17 she returned to Norway in summer 2017. DNVF identifies Svein Rune Børslid as the person bringing her back, followed by sale to Reidar Berge in 2018. Restoration aimed to recover her circa-1994 rescue appearance, and heritage status is dated to 2020. [HA49] [HA48] [HA26]

PUBLIC EXAMPLE EDITION

4.11.6 Training-vessel career from 2024

A dated 15 October 2024 Maritimt Forum report records delivery from Kristiansund to Karmsund upper-secondary school in Haugesund. The school intended to use her for deck and engine-room vocational teaching and arrange a berth at its Karmsundet facility. A follow-up describes the educational role. These reports supersede older web pages still identifying Berge as current owner. They establish school use, but a procurement or registry document would be needed to certify the precise legal title holder. [HA54] [HA50]

4.11.7 Latest locality evidence

Karmsund Havn's public port-call page includes *Hjelm Waage* at Hovlandshagen on 11 March 2026. A public AIS-derived page reports her moored in Haugesund on 6 November 2026 under MMSI 257031710, call sign LFBX. These are recent locality evidence, not a vessel survey or proof that every older historic identifier remains current. The port source and school reporting are preferred to an undated heritage listing for the broad present-day location. [HA60] [HA47]

4.11.8 Remaining gaps

The 2004 English buyer, Danish legal owner, dates and contracts of wind-farm jobs, Norwegian return purchase documents and school acquisition terms remain to be recovered. Her extensive second career is much better established than the legal title chain. [HA49] [HA54]



Figure 4.19. *Hjelm Waage* photographed from fishing vessel *Siv-Janne*, according to the archive caption. Capture date not independently established. Source record: HS31. [HA34] Source image: HS31.

PUBLIC EXAMPLE EDITION



Figure 4.20. *Hjelm Waage* received for school use at Haugesund, documenting the training-vessel transition described above. Maritimt Forum, 15 October 2024. Text/photo: Sverre Meling. Source record: HS32. [HA54] Source image: HS32.

4.12 RS 82 — *Øivind Lorentzen*

4.12.1 *Norte II*

Built: 1972 • Rescue service: 1972–2007 • Lives saved: 60

Builder: Smedvik completion; Volda Mekaniske Verksted hull

Original construction cost reported in the operator's class history: NOK 2,017,000

Latest documented status: OceanPact lists *Norte II* as a boom-handling vessel in its 2026 corporate fleet material; Brazilian/Rio identity supported, exact current berth unknown. [HA24] [HA12] [HA76]

4.12.2 Donor, build and rescue role

The *Øivind Lorentzen* shipping company financed the 1972 cutter. She was completed at Smedvik on a Volda hull, originally with twin 242 hp GM engines. Foss places the last pair's funnel farther aft than in earlier variants. Her service included Havøysund and later western/Nordland assignments; Northern Light describes service from Bergen near disposal. The rescue society credits sixty lives saved. A 1995 refit installed twin 532 hp Nogva Scania machinery, bow thruster and modern navigation. [HA24] [HA12] [HA76] [HA21]

PUBLIC EXAM EDITION

4.12.3 The *Storhavn* operation, 10 February 1976

Foss gives a detailed captioned account of assistance to dredger *Storhavn* and tugs *Austhav* and *Kongshavn* off Finnmark. In severe weather the tow was drifting toward shore. *Øivind Lorentzen*'s upperworks struck the dredger's projecting gear during an attempt to pass a tow; mast, radar and lifeboat equipment were damaged, but engines and towing gear survived. The boats eventually made progress as the weather eased and reached Kvalsund; the cutter then went to Kristiansund for repairs. This account is directly associated with her name and damage photograph, rather than borrowed from another cutter. [HA24]

4.12.4 2007 sale to Erling Lorentzen

Northern Light preserves an NSSR update giving delivery to Erling Lorentzen on 17 September 2007. It identifies him as the original donor's son, mainly resident in Brazil, and says he renamed the vessel *Norte II* and took her to Rio de Janeiro, initially intending a yacht conversion sympathetic to her original character. The original operator's Flickr album independently identifies the sale and name change. [HA21] [HA61]

4.12.5 An error in the operator's own album description

The Flickr description associates the 2007 purchase with a father's ninetieth-birthday celebration. That wording does not fit the stated family dates and should not be used as a verified explanation for the transaction. The better-supported facts are the buyer's name, 2007 transfer, *Norte II* name and Brazilian destination. A source can be authoritative about vessel identity while still containing an erroneous commemorative detail. [HA61] [HA21]

4.12.6 OceanPact and environmental-service career

The 2016 Northern Light capture already includes a later report that *Norte II* was operated in Rio by OceanPact. This independently bridges the name change to the Brazilian company. MarineLink's directory matches the 1972 build, approximately 22.89 × 6.03 m dimensions, Volda association and Brazilian registration/call sign PQ4234, and lists OceanPact and KPA International Holding Cayman among associated entities. It does not clearly distinguish all owner/manager roles, so those associations are not promoted into a certified title chain. [HA21] [HA63]

4.12.7 Latest evidence and location limits

OceanPact's own 2024 and January 2026 corporate fleet material lists *Norte II* under the environmental fleet as a boom handler. This is substantially newer evidence than old descriptions of a private yacht in Rio. The operating role appears to have changed, but the acquisition date and exact refit are still missing. Corporate fleet inclusion supports continued company association, not a live position or proof that she was on charter on the research date. The 2021 results document described *Norte II* among small moored vessels; the 2022 release also separated her from the actively contracted fleet. Those older states should not be assumed to continue unchanged. [HA67] [HA66] [HA64] [HA65]

PUBLIC EXAMPLE EDITION

4.12.8 Identity traps and outstanding records

Some aggregated Wikimedia data wrongly assigns the identifiers LFXF and 257472500 to RS 82; the rescue society assigns those to RS 83. This account does not use that erroneous pair to track *Norte II*. Brazilian registry/port records, OceanPact acquisition documents and a current vessel-specific specification would clarify ownership, machinery and berth. [HA12] [HA13] [HA62] [HA63]



Figure 4.21. RS 82 at the handover to Erling Lorentzen; the source identifies her new name as *Norte II*. The sale is independently dated 17 September 2007. Source record: HS34. [HA61] Source image: HS34.

4.13 RS 83 — *Lars Christensen*

4.13.1 *Servus 2* / *Servus II*; subsequently *Servus*

Built: 1972 • Rescue service: 1972–2007 • Lives saved: 49

Builder: Smedvik completion; Volda Mekaniske Verksted hull

Original construction cost reported in the operator’s class history: NOK 2,100,000

Latest documented status: *Servus* is listed at Hythe in the Solent Maritime Society’s March 2025 report. Current owner and November 2026 position unverified. [HA24] [HA13] [HA76]

PUBLIC FREE MEDICATION

4.13.2 Gift and construction

A/S Thor Dahl of Sandefjord funded the 1972 cutter, named for *Lars Christensen*. She was the last of the thirteen in Foss's class table, cost NOK 2.1 million and was built with twin 242 hp GM engines. Her later rescue identifiers were LFXF and MMSI 257472500. These identify RS 83 and must not be confused with RS 82, despite erroneous aggregated metadata elsewhere. [HA24] [HA13] [HA76]

4.13.3 Stations and rescue operations

Her early station was Båtsfjord, followed by Honningsvåg and particularly Vardø through much of 1975–88. Andenes dominated 1989–97, followed by Sørvær and other Finnmark assignments. Masters included Ingjald Elverhaug, Gudmund Fredriksen, Steinar Valle, Frank Eines and Karl Rørnes. Foss's rescue table identifies the 4 January 1988 *Sundaberg* grounding at Loftskitan near Vardø under Frank Eines, with 22 persons involved. The rescue society's lifetime total is 49 lives saved; the individual incident figure is not added again to that total. [HA24] [HA13] [HA76]

4.13.4 Upgrade and later service

A 1995 refit installed two 532 hp Nogva Scania engines, bow thruster and improved navigation. The historic operator page lists Mekanor gears and Helseth 3H120 CP controllable-pitch propellers. A July 2005 operator-photo caption describes a relocation from Sørvær to Kristoffervalen while covering for other rescue boats. Later official service dates extend to 2007; descriptions that she had been laid up for years at Vardø may refer to a particular later period rather than negate all intervening assignments. [HA24] [HA13] [HA35] [HA78]

4.13.5 October 2007 sale and Danish pilot work

Northern Light's NSSR correspondence gives handover on 15 October 2007, naming Danish Maritime Service AS and private pilot work from Fredericia. Contemporary Sjöfartstidningen reporting on 18 October identifies Danish Pilot Service A/S, refurbishment in Fredericia, intended Danish flag and the new name *Servus 2*, for pilot boat and office use at Skagen. Those two company names should not be assumed legally identical without records. The Danish pilot-history publication supplies further background and a photograph captioned *Servus II*. [HA20] [HA78] [HA25]

4.13.6 Later name and British evidence

The Solent Maritime Society's March 2025 Scanner (no. 668), and earlier reports, identify *Servus* as the 1972/63-ton vessel previously *Servus II* until 2018 and *Lars Christensen* RS 83 until 2007, and list her at Hythe under the Ambrey/Fairline yard locality. This provides a later British trace and a concrete alias chain. A Flickr image uploaded in March 2026 shows *Servus II* at Rønne and mentions later Red Sea security work, but its upload date does not establish when the photograph was taken and the security claim lacks an independently recovered contract or voyage record. It is treated as a lead, not a verified current Danish location. [HA79] [HA77]

PUBLIC EXAMPLE EDITION

4.13.7 Present whereabouts and remaining gaps

The latest dated locality documents recovered are the Solent reports; they support Hythe as a later known location, not a present live berth. No November 2026 position or current owner is asserted. The 2018 transfer/name-change papers, precise UK flag record and the asserted Red Sea deployment remain unresolved. The Danish MMSI 219011196 appearing with the Rønne photo should be treated as historical until matched to a current registry or radio-station record. [HA79] [HA77]



Figure 4.22. *Lars Christensen* photographed during a Kristiansund–Sortland voyage with *Jørgen Amundsen* in 1972, according to the source caption. Source record: HS40. [HA35] Source image: HS40.

4.14 Underbody comparison: the sister photograph and garment profile

The Northern Light photograph C10 has filename header-hbjprops.jpg, suggesting *Hjalmar Bjørge*, but no explicit identifying caption was recovered. It is not verified *Fredrikstad* evidence. Two five-bladed propellers have compact hubs and apparently continuous blade roots, favoring fixed pitch at moderate visual confidence; the oblique, small photograph cannot settle construction, dimensions, handedness or shaft geometry. [S57; HA01]

Open frameworks flank the central rudder/sternpost area. Protection or stand-off is plausible, but their purpose and whether they move with the rudder are unknown. They cannot conclusively be called propeller guards, rudder stops, boarding ladders or structural supports.

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Angled plates project below and outboard of the propellers, consistent with bilge keels or protective fins. Their full length, attachments and relation to shaft bearings are not visible; a side view would help distinguish those possibilities.

Fredrikstad's garment profile in Figure 8.2 separately shows a broken line below the waterline and above the main keel, consistent with a bilge keel. This strengthens that interpretation but neither decorative artwork nor a tentatively identified sister photograph establishes *Fredrikstad*'s original or present underwater fittings. [HA01; HA75]



Figure 4.23. Tentatively attributed *Hjalmar Bjørge* stern photograph, Northern Light header-hbjprops.jpg. Two five-bladed propellers, paired open frameworks and angled plates support the qualified visual comparison above. No identifying caption or capture date recovered. Not authenticated *Fredrikstad* evidence or an engineering arrangement. [S57,HA01] Source record: C10. Source image: C10.

PUBLIC EXAMPLE EDITION

5 Owners, voyages and changing purpose

5.1 Successive periods of ownership and use

5.1.1 1968–1988 / Norwegian rescue service

The station assignments above place her chiefly along Norway's coast, with Lerwick also recorded. These assignments do not constitute a complete log or substantiate an exact rescue count. The operator records service through 1988. [S01,S02]

5.1.2 1988–circa 1997 / Private Norwegian years

Borgen's purchase in 1988 and Olafsen's ownership in 1993 are the firm anchors. The archival title "Med båten som bolig" ("Living aboard the boat") is a promising lead for Borgen's use of the vessel, but the underlying article has not been read. General claims of exploration do not justify assigning specific Arctic or foreign voyages. [S02,S28]

5.1.3 Circa 1997–1998 / Penzance conversion and the de Savary association

5.1.4 The 1999 Norwegian account: conversion and character

In her March 1999 Båtmagasinet report, Anne Marit Klokk encounters *Fredrikstad* among the yachts for sale at the Fort Lauderdale show. Her account is a contemporary visit aboard, with photographs credited to her, and is therefore particularly useful for what the conversion looked like before later refits. The report does not establish a completed transaction, nor does its publication date establish the exact date of the show visit. [S03]

Klokk presents Peter de Savary's project as both a personal restoration and a commercial demonstration of what Penzance Dry Dock & Engineering could achieve. The yard received the vessel in 1997. According to her report, the old accommodation was removed and the piping and electrical wiring renewed; outside, the hull was taken back, epoxy-primed and finished with polyurethane paint. Crucially, this was not a claim that every component was new: the two main diesels and steering were retained. The later brokerage description of stripping the yacht back to the frames should be read alongside this more specific account of what was removed and what remained. [S03,S19]

The styling was a collaboration between de Savary and Ken Freivokh's design team. Klokk describes an early-twentieth-century interior rather than the contemporary white-and-glass look common in the surrounding show fleet. Mahogany, leather upholstery, patterned fabrics, carpeting, polished metal fittings and light wall finishes gave the small ship a domestic and formal atmosphere. The historical photographs show a lighter interior palette than the darker red and blue upholstery in later galleries; the images document different appearances, not a verified schedule of redecoration. [S03,S23,S27]

PUBLIC EXAMPLE EDITION

5.1.5 Arrangement after conversion

Klokk explains that the original vessel imposed real limits on the accommodation. A large machinery space, substantial fuel capacity and side decks consumed space that a purpose-built leisure yacht might devote to cabins and saloons. The conversion nevertheless provided three guest cabins forward and a main saloon in the area formerly used as the crew mess. The galley and pantry retained their general arrangement but were equipped to support the new hospitality role. This is a useful explanation of the compromises explained by the later accommodation accounts: the yacht's working-ship proportions were retained rather than replaced with a wholly different superstructure. [S03]

The dining area was described as seating eight around a six-sided table, with dark leather and mahogany furnishings. Outside, an oval mahogany tabletop concealed a built-in jacuzzi on the foredeck. Showers near the steps to the upper deck provided a way to rinse off before entering the accommodation. These are descriptions of the 1999 arrangement; photographs support the continued presence of the oval foredeck fitting, but do not establish that the original jacuzzi or showers remain operational. [S03,S23,S27]

5.1.6 Bridge, machinery and construction as reported in 1999

The wheelhouse combined a full-width working bridge with the same traditional decorative treatment: mahogany joinery, dark-blue leather seating, a large wood-and-brass wheel and a prominently placed compass. Klokk's equipment account lists two radars, two GPS receivers, two VHF radios, satellite and mobile telephone facilities, weatherfax and electronic charts. This is a historical inventory, not the present electronics specification. [S03]

Her machinery-space description emphasizes backup arrangements and the ability to sustain comfortable life aboard away from port. She reports watermaking, firefighting, electrical-generation and heat-exchange equipment and alternative systems able to take over when an item failed. She gives the original diesels as two 250 hp units and reports 22,000 litres of fuel, with about 3,600 nautical miles at 10–11 knots. No test protocol, reserve allowance or load condition accompanies that range claim. [S03]

The same visit documents the converted yacht's high thresholds, substantial closures and 10 mm toughened window glass. Klokk reports that altered bulkheads meant the earlier ice classification no longer applied. The original plating and framing particulars are discussed in §3.2; her language about an icebreaker is not evidence of a separate icebreaking notation. [S03]

Source assessment. The report firmly places a finished yacht in the public eye by March 1999 and identifies the principal conversion participants and systems. Its restoration-year entry of 1979 is incompatible with the narrative and is treated as a typographical error. Descriptions of the intended market for remote-water cruising are sales context, not evidence that *Fredrikstad* actually visited every kind of destination discussed. [S03]

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5.1.7 Penzance, Freivokh and the completion date

Cornwall Harbours independently identifies *Fredrikstad* as a Penzance conversion. Ken Freivokh's award list records a 1998 Newport concours d'elegance win and a 2001 Antigua Classic Week best-classic-motoryacht award. The Newport award establishes that the converted yacht existed by 1998. Schofield's later October 1999 completion date cannot be reconciled with this or the March 1999 article; it is not adopted here. [S03, S04, S05, S06]

The yard presentation-book page describes a 16-month rebuild; its identification as a relaunch gift is supplied by the Principal. Its inscription and corporate associations are examined in [§7.2] and Appendix D.1. They do not establish a complete legal title chain. [B01,S77]



Figure 5.1. Historical brochure: saloon/dining interior with a circular inset showing a decorative metal fitting. Source record: Plate 003. Source image: Plate 003.

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5.1.8 Early yacht years / Hospitality and European–American cruising

In Sarah Forge's 2019 interview for The Islander, captain Andrew Schofield recalls joining the project with Kate, who served as stewardess. They worked as a couple for de Savary and spent about a year with the vessel in the yard. His account supplies a human perspective absent from the ownership tables: the conversion was followed by a period of travelling and hosting aboard, rather than simply a transfer straight from the yard to a subsequent buyer. [S06]

Schofield's remembered route begins with a winter at St Katharine Haven beside Tower Bridge, followed by spring cruising through Dutch canals and then a passage to Newport, Rhode Island. He describes cruising between Rhode Island, Fort Lauderdale and the Bahamas. During that period de Savary was developing Carnegie Abbey in Rhode Island and Cherokee Plantation in South Carolina, and used *Fredrikstad* to entertain property agents, prospective members and investors. The yacht therefore had a business-hospitality function alongside private cruising. The reference to Cherokee Plantation is evidence of the owner's business context, not by itself proof of a specific yacht call there. [S06]

Chronology conflict. Schofield gives October 1999 as completion and recalls three years of cruising before sale. Those dates do not fit the 1998 design award, the March 1999 visit aboard, or the June 2000 purchase reported in 2007. The route and hospitality recollections are retained as attributed testimony, but their exact years are left open. No attempt is made to invent intervening voyages to reconcile the discrepancy. [S03,S05, S06, S07]

5.1.9 June 2000 onward / American owners and private cruising

Mike Smith's October 2007 Power & Motoryacht article reports that an American couple, new to boat ownership, bought *Fredrikstad* in New York Harbor in June 2000 after a visit aboard lasting roughly three-quarters of an hour. Their names are not given. Smith describes the ensuing six years as private cruising on the Eastern Seaboard with family and friends, and says the decision to offer crewed charters came late in 2006. The account supports that transition, but is not a complete passenger list or a record of each season's itinerary. [S07]

Smith interviewed captain Andrew Naylor aboard and understood him to have been with the yacht since the 2000 ownership change. Naylor's familiarity with the vessel and its rescue heritage is central to the article. The owners and crew called her *Freddie*. Naylor explained his preference for referring to the yacht in masculine terms through the connection between the town's name and a king; this is a personal naming anecdote, not evidence of another registered name. [S07]

The visit described a workmanlike exterior concealing a richly furnished interior, with dark-red fabrics, woodwork and brass. Smith considered the guest experience suited to small groups interested in the yacht's character and comfortable cruising. He drew a practical distinction between eight available sleeping places and the six guests accepted for charter: the galley's production capacity and the dining arrangements favored the smaller group. That operational explanation helps reconcile the different guest totals in later sales and charter pages without assuming that cabins had necessarily been added or removed. [S07]

Naylor's partner, the Swedish chef Isabella ("Belle" or "B") Rothfjell, was described as self-taught and interested in varied cooking, including Asian dishes, seafood and familiar European food. The service was presented as personal and informal. Smith found outdoor dining and seating for watching the coast, but comparatively little space devoted to large sunbathing areas or high-powered water toys. These observations describe the yacht's 2007 charter offering; they do not invalidate the jacuzzi described in 1999 or establish a permanent absence of particular equipment. [S07]

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5.1.10 Rescue traditions continued in private use

Smith reports a historic fundraising collection plate displayed in the wheelhouse and an original rescue-service radio that Naylor said remained functional. The plate is evidence of the yacht's presentation of its institutional history; it does not establish how this particular hull was financed. For the original funding, the operator's named donors remain the stronger source. The crew's clothing also referred to continuing assistance to life and property. [S01,S07]

Naylor recounted three episodes of practical assistance during the yacht's private life. On New York's Hudson River, he said *Fredrikstad* used pumping equipment to help contain a fire aboard an approximately 50-foot sportfishing vessel until further responders arrived. In Bermuda, he described using the yacht's towing capability to assist a small powerboat that was sinking at a marina. In the Virgin Islands, he recalled helping a bareboat-charter crew get clear of a shallow reef. The article supplies no exact dates or incident reports. These are therefore captain-reported events before publication in October 2007, not independently documented rescues or precisely dated port calls. They nevertheless add the Hudson, Bermuda and Virgin Islands to the reported operating history. [S07]

The published charter offer accommodated six guests and three crew. A press-time note says a new crew was about to join, helping explain why a 2007 interview centered on Naylor and Rothfjell precedes different crew names in the 2008 brochure. The offer is not evidence of completed bookings. [S07,S13]

Source assessment. Smith's feature is particularly useful for the June 2000 purchase, the private-to-charter transition, life aboard and Naylor's recollections. Its opening calls the yacht 60 feet, which conflicts with the operator's 22.85 m and the consistent 75-foot listings. That length is rejected as an editorial error; it does not outweigh the vessel-specific identity evidence. [S01,S07,S13]

The American buyers are not named in the recovered account. Naylor's role and familiarity are evidence of operation and personal recollection, not a title record. [S07] Details: [§6.3]–[§6.5].

5.1.11 2005–2006 / Dated European presence, refit and Atlantic passage

A dated Geograph photograph places the yacht at St Katharine Docks on 10 October 2005. Pendennis's own May 2006 notice then independently confirms a refit nearing completion, with Norway and the Baltic planned. These are distinct from Schofield's earlier undated London recollection. [S26,S73]

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Figure 5.2. St Katharine Docks, London, 10 October 2005. John Winfield / Geograph, CC BY-SA 2.0. Source record: Plate 026. The public screen copy is proportionally resized without cropping; the photograph itself is otherwise unchanged. License: CC BY-SA 2.0. [S26] Source image: Plate 026.

Pendennis's archived 2006 news page contains an item dated 12 May 2006 reporting that its inner dry dock had been reflooded after four months while three refit projects, including *Fredrikstad*, neared completion. The yard anticipated departure by early June and named Norway and the Baltic as her planned cruising area. This independently corroborates the 2006 Pendennis refit; the northern-Norway photograph and crew account supply separate evidence of actual Norwegian cruising. The Baltic destination remains a stated plan. [S73,S08]

The item does not give *Fredrikstad*'s individual arrival date, an itemised work scope or a signed completion certificate. It does not justify assigning the separate work lists for other vessels on the page to her, or assuming that her own refit lasted exactly four months. Recovered 2005 news and the period general brochure supplied no further named *Fredrikstad* work details. [S73]

Verwoerd's sea-service entry places him aboard *Fredrikstad* as chief mate, including machinery duties, from October to November 2006, for a passage of about 4,000 nautical miles. The stated route is Falmouth in Cornwall to Antigua by way of Tenerife. His photograph caption identifies a two-day stay in Santa Cruz de Tenerife; another records the Atlantic leg between Tenerife and Antigua. These are named firsthand accounts rather than generic charter destinations. They establish an actual crossing, but do not supply departure times, daily positions, weather logs or a fuel-consumption record. [S08,S09]

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His photographs also give texture to the voyage: careful varnish work by a crew member called Mike, and the yacht's stay at Catamaran Marina in Falmouth Harbour, Antigua. A separate photograph credited to Andrew Naylor places *Fredrikstad* in northern Norway in summer 2006, providing a different seasonal setting before the autumn crossing. The exact fjord and the intermediate ports between Norway and Cornwall remain unidentified. [S08]



Figure 5.3. *Fredrikstad* in northern Norway, summer 2006. The RS 77 badge is clearly visible on the forward face of the exhaust stack. © 2006 Andrew Naylor, via Willy Verwoerd. Exact fjord not established. Source record: Plate 031. Source image: Plate 031.



Figure 5.4. *Fredrikstad* at Santa Cruz de Tenerife, autumn 2006. The RS 77 badge is visible on the forward face of the exhaust stack. Verwoerd reports a two-day stop during Falmouth–Antigua passage. © Willy Verwoerd. Source record: Plate 027. Source image: Plate 027.

5.1.12 2006–2008 / Charter operation and people aboard

Fredrikstad-specific sources advertise Canada/New England and discuss southeastern Canadian chartering. They support an intended operating region, but do not supply a verified Canadian port-by-port itinerary. The 2007 magazine account is largely an interview and description of the yacht, rather than a dated cruise log. [S07,S12]

5.1.13 The 2007 charter crew: Naylor, Rothfjell and Olly

The archived 2007 crew profile says Andy and B had run *Freddie* for seven years and had taken her through the Caribbean, northeastern United States and northern Europe as far as 70°N. This broad statement is a useful additional indication of northern cruising, but it does not supply a latitude track, season-by-season dates or named Norwegian ports. The profile says Naylor had worked in yachting since the late 1980s and held an MCA Class 4 qualification from 2003. It also identifies motorcycles and model boats as personal interests. These qualifications and dates are brochure statements, not independently checked certificates. [S14]

Rothfjell's profile describes four years of work as chef and a preference for lighter food and seafood. It lists Swedish, Norwegian, Danish, French and English, with some Italian, and notes training as a beautician with a CIDESCO diploma as well as STCW95 training. Her language and hospitality background adds detail to the service described in the magazine. The third crew member, identified only as Olly, was a young man from Devon on his first yacht job, with Day Skipper and STCW95 qualifications; the profile mentions swimming, guitar playing and sociability. No surname has been established. [S14]

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5.1.14 The 2008 crew: Andrew Christodolo, Gillian Lawrence and Gerben Draijer

The recovered NYM crew page names captain Andrew Christodolo and his partner Gillian Lawrence, who combined chef, hostess and mate duties. It describes both as qualified captains with long recreational sailing backgrounds, followed by a move to full-time professional work a few years before the profile. Christodolo's earlier work included photography and magazine journalism, and the profile says he spoke fluent French after years in France. These biographical details help distinguish him as a person in the vessel's history; the page does not give the level or issuing authority of the captain qualifications. [S33]

Lawrence's background is given as restaurant work and UK retail management, with training at the Gables cookery school. The service description emphasizes food cooked aboard from locally purchased ingredients, fresh breakfast baking, adaptation to guests' dietary requirements and a particular interest in gluten-free cooking. It also identifies her as a PADI rescue diver interested in helping guests find snorkeling and diving locations. The brochure's guest testimonial is promotional evidence of how the service was presented, rather than a dated cruise record. [S33]

The third member was Gerben Draijer, nicknamed Yabby, serving as deckhand and steward. His profile records restaurant experience as a waiter and kitchen assistant, travel and work abroad, a recently obtained captain's licence without further specification, PADI diving qualification, and Dutch and German language skills. It was described as his first professional yacht job. The combination of deck, food-service and guest-facing duties is consistent with a three-person crew serving a small charter party. [S33]

The sample menu reinforces the breadth of the advertised service: cooked breakfasts and homemade muffins; light lunches with seafood, salads or pasta; vegetable dishes and curries; fish and meat main courses; and homemade desserts. Examples include Thai fish cakes, sushi rolls, roast pork, grilled fish and citrus or chocolate desserts. This is a sample of what the crew offered to prepare, not a record of meals served on a particular voyage. The general ability to adapt the menu is more significant than assuming each dish was routinely available. [S33]

5.1.15 2008–2012 / Academy handover, training and disposal advertisements

The October 2008 handover account identifies captain Andy and chef Gill as the people who delivered *Fredrikstad* to Massachusetts Maritime Academy. Their names are consistent with the contemporary charter profiles. The surviving report says they expected a training role, but is not a deed of gift or a verified account of the academy's later use. [S11,S13,S33]

The reported handover's physical location is not established.

5.1.16 2009: the training purpose in a federal record

A Federal Register notice published on 1 June 2009, volume 74, p. 26268, identifies FREDRIKSTAD in docket MARAD-2009-0050. It describes intended cadet instruction in yacht management, maintenance, boat handling and engineering. The proposed operating area includes named Atlantic, Gulf and Great Lakes states. This is stronger contemporary evidence for the training purpose than a later recollection, but it is a description of intended service, not proof that every activity or voyage occurred. [S64]

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The separate MARAD released list already identifies this waiver among grants. The notice itself is the request/comment stage. The application and grant letter remain unrecovered, and neither the donor nor a subsequent buyer is named in the notice. Its printed signature line says 18 May 2010 despite the June 2009 issue date; that internal anomaly is recorded as a source error rather than treated as a second event. The adjacent notice on the same page must not be used for this vessel's geographic scope. [S16,S64]

5.1.17 2010–2012: the academy's own sales inventory

The archived Massachusetts Maritime Academy boat inventory lists a 75-foot SMEDVIK MEK and links its photograph as FREDRIKSTAD Profile.jpg. The linked filename, build year, builder and length establish the match. Its 2010 year field is truncated as 1968-199; later captures show 1968-98. That field is transcribed rather than silently repaired. The advertising chronology is supported by the academy's own pages. [S67, S68, S69]

Archive capture	Listing evidence	What it establishes
12 September 2010	75-foot SMEDVIK MEK	Academy inventory advertisement. The 15 September capture repeats the listing. [S67]
9 November 2011	Matching inventory entry present	Continued advertising presence. [S68]
17 November 2011; 18 December 2011; 21 January 2012	Matching inventory entry present	Continued advertising presence; no transfer instrument recovered. [S68]
11 March 2012	Matching entry absent	The listing disappeared between the inspected January and March captures. This does not by itself prove a sale, closing date, buyer or physical departure. [S69]

Table 5.1. Academy advertising chronology [S67, S68, S69]

The academy's archived donation FAQ distinguishes boats intended for resale from those accepted for significant related use. It says the latter category was kept and used for three years and required a current survey at donation. This makes an appraisal/survey file a concrete future record lead. It does not establish which category governed *Fredrikstad*, that every requirement was met, or a compulsory disposal date for this particular vessel. No enquiry or request for that file has been sent. [S70]

A July 2010 blog photograph supplies an independent Fairhaven/New Bedford sighting. Academy inventory changes narrow the advertising interval without identifying the buyer or closing. [S15,S67, S68, S69]

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Figure 5.5. Fairhaven/New Bedford, Massachusetts, July 2010. Source record: Plate 032. Source image: Plate 032.



Figure 5.6. *Fredrikstad* afloat, from the Massachusetts Maritime Academy website. Archived 15 July 2010; that is not the photograph capture date. Location and photographer unestablished. The filename matches the profile-photo link used in the academy's later sales inventory. Recovered as historical institutional evidence; the source image itself is soft. Source record: Plate 099. Source image: Plate 099.

5.1.18 2012–2023 / European refit, registration and sale trail

5.1.19 Mediterranean and registration trail, 2012 onward

Date	Location / event	Evidence / qualification
2012	Spanopoulos refit, Greece	Broker-reported yard visit; exact facility and dates not recovered. [S19]
By 2013	Swiss radio identity	ITU list, not a physical location. [S18]
2021	Cantieri Navali di La Spezia, Italy	Broker-reported refit; continuous Italian residence not established. [S19]
13 July 2023	Burriana, Spain	Dated Shipspotting photograph; full image not recovered here. [S25]

Table 5.2. European refit and registration trail

Date	Location / event	Evidence / qualification
28 July 2023	Sale announced	Fraser; location of closing and buyer not stated. [S20]
26 September 2023	Real Club Náutico de Palma, Mallorca	Historical AIS visit. [S24]
28 September 2023	La Lonja Marina Charter, Palma	Historical AIS visit. [S24]
2 October 2023	Marina Port de Mallorca, Palma	Historical AIS visit. [S24]
3 October 2023	Coves Blanques, Sant Antoni area, Ibiza	Historical AIS visit. [S24]

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Date	Location / event	Evidence / qualification
6 October 2023	Unnamed position off southern Ibiza	Historical AIS position: approximately 38.88136 N, 1.410745 E. [S24]
7 October 2023	Es Jondal, Ibiza	Historical AIS visit. [S24]
28 October 2023	Marina Hramina, Murter, Croatia	Historical AIS visit; no independent photograph or log recovered. [S24]
Latest reviewed marketing	La Spezia, Italy; Malta flag	Advertised location and flag, not a real-time position fix. [S21,S22]

Table 5.3. Reported 2023 movements [S24]

The 2023 AIS entries use established historical MMSI 269104430 and matching approximate dimensions. They are retained as reported tracking evidence, with lower confidence than a dated photograph. They do not reveal the owner or establish the flag on each date. The passage between Ibiza and Croatia has not been reconstructed. [S24]

5.1.20 Later brokerage descriptions and the refit trail

The later brokers emphasize the history, seakeeping, generous outdoor areas and three-cabin guest arrangement. They repeat the 1996 de Savary purchase and name refits at Pendennis in 2006, Spanopoulos in 2012 and Cantieri Navali di La Spezia in 2021. The Pendennis date is now independently corroborated by its own May 2006 notice. For the other dates, several syndicated pages use substantially the same description and should not be counted as independent corroboration. [S73] The material recovered does not allocate every listed item to one of those refits. [S19,S21,S23,S31]

Northrop & Johnson's refit section reports light-blue painting of the main/upper-deck superstructure and renewed varnish. It lists hull-valve fittings inspected in 2021 and an antifouling entry marked new in 2022. It also claims annual inspection of safety equipment and six-monthly attention to firefighting equipment. These are statements in a sales inventory, not inspection certificates or proof that the schedule has continued. It is not established whether the antifouling entry means an application of paint or a separate system. [S31]

The later sales account lists 22,000 litres of fuel, 6,500 litres of fresh water, 135 tonnes displacement and an 8-knot cruising speed with 3,200 nm range. These particulars help connect the inventory with the earlier conversion account, but their repeated appearance does not supply a measured trial. The inventory says owner's belongings and artwork are excluded from sale, so the presence of decorative objects in photographs does not guarantee their inclusion. [S31]

The Swiss radio identity is not an ownership extract; the later Malta identity and La Spezia marketing do not fill the intervening title chain. Fraser's 28 July 2023 announcement supports a sale but does not name the buyer. [S18, S19, S20, S21, S22] Details: [§6.6], [§7.1], Chapter 9.

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5.2 Latest documented period

5.2.1 2024–2026: the later radio identity supplies a new route trail

Harbourmaps' AIS history matches MMSI 256003697, the name and approximately 23 × 6 m dimensions. Dates are separate reported observations, not continuous stays, voyages or current positions. Source labels remain unchanged: Split Airport does not establish an airport call on land. Unnamed positions are omitted. [S65]

Reported date(s)	Reported location / source label [S65]
2024-01-18	Trogir Marina
2024-06-26	Marina Zadar Tankerkomerc
2024-07-05	Marinkovac
2024-07-07	Uvale Kasjuni
2024-07-08	Split Airport
2024-07-09	ACI Marina Palmizana
2024-07-20	Trogir Marina
2024-08-24	Corfu O. Garitsas
2024-09-02	Porto Pignataro
2024-09-15	Porto Mirabello 1
2025-05-30	Portovenere
2025-06-12	Porto Lotti
2025-06-20	Port of Portovenere
2025-06-24; 2025-07-04	Porto Lotti
2025-07-09	Port of Portovenere
2025-07-14	Porto Lotti
2025-09-15	Iles de Lerins Plateau du milieu
2025-09-18	Port Cap d'Ail
2025-09-27	Porto Lotti
2026-05-22	Port of Portovenere
2026-05-24	Porto Lotti
2026-05-31	Port of Portovenere
2026-06-01	Porto Lotti
2026-06-04	Port de Villefranche-Darse
2026-06-08	Portosole
2026-09-24	Porto Lotti

Table 5.4. Reported visits under the later radio identity [S65]

The reports place visits in Croatia, Greece and Italy in 2024, then Italy and France in 2025–2026, ending at Porto Lotti on September 24. They establish neither owner, passengers, charter status, flag-transfer date, connecting voyages nor a present berth. [S65]

Latest-state assessment: §9.4.

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6 Ownership, names and documentary provenance

6.1 Identity continuity and rejected matches

The account is anchored to RS 77, 1968, Norwegian rescue service, original dimensions and builder attribution, and follows matching later physical and radio records. Spelling variants alone are insufficient. No material from *Torsk* or another vessel is included as *Fredrikstad* history. Comparative material in Chapter 4 is expressly separated. [S01,S02,S18,S29]

6.2 Consolidated owner chronology

Date / period	Owner or identity	Evidence and limitation
1968–1988	Redningsselskapet, Norway	Original rescue operator; call sign JXRR; Oslo in original particulars. [S01,S02]
1988	Thom Borgen, Oslo	Operator's disposal table identifies the succession. Catalogue describes Borgen as a lawyer and references a living-aboard article. [S02,S28]
1993	Jan Erik Olafsen, *Fredrikstad*	Subsequent owner in the operator's history. No dependable voyage account recovered. [S02]
Circa 1996–1998	Peter de Savary / Carnegie Club period	Broker purchase date 1996; captain recalls 1997; operator's table names The Carnegie Club, England, in 1998. Legal entity and exact transfer dates unresolved. [S02,S03,S06,S19]
June 2000	Unnamed American couple	Contemporary 2007 article reports purchase in New York Harbor and subsequent private cruising. Names not recovered. [S07]
October 2008	Massachusetts Maritime Academy, reported donation	Northern Light reports handover by captain Andy and chef Gill. Deed of gift, donor identity and academy vessel file not obtained. [S11]
2009 / US period	FREDRIKSTAD, MARAD 2009-0050	Federal notice describes intended cadet training; released list records a grant. Application and grant letter not obtained. Secondary documentation number: 1216738. [S16,S17,S64]
September 2010–January 2012	Academy sale advertisements	Primary academy inventories identify the 75-foot Smedvik and named photograph in 2010–2012. These are advertisements, not deeds. [S67,S68]
11 March 2012 capture	Absent from inspected academy inventory	Entry absent after the January capture. No actual sale date or buyer inferred. [S69]
By 2013	Swiss ship-radio registration	ITU: FREDERIKSTAD, HBY4601, MMSI 269104430, SUI. This establishes a Swiss radio identity, not a named owner. [S18]

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Date / period	Owner or identity	Evidence and limitation
2013–July 2023	Owner(s) unidentified	Refit and marketing trail exists, but ownership chain remains open. UK flag appears in historical brokerage/photograph metadata. [S19,S25,S31]
28 July 2023	New owner, not named	Fraser sale announcement credits Marco Fodale; buyer and seller undisclosed. [S20]
Latest reviewed identity	Malta	Listing flag Malta; tracking identity MMSI 256003697 / call sign 9HB9795. Registry extract and date of flag transfer not obtained. [S21,S29]

Table 6.1. Ownership succession and evidence limits

A radio record, a flag label, a home port and an ownership record are different kinds of evidence. This dossier does not infer the owner's nationality from flag, or treat a historic AIS flag label as a dated registry certificate. Basel is the Swiss registry port, not evidence that an owner lived there. [S18,S24,S30]

6.3 Legal title and transfers

The operator ownership table and contemporary reporting support the broad succession, but no complete registry abstract and supporting bills of sale have been recovered. The June 2000 purchase, academy transfer and July 2023 sale announcement therefore retain their specific evidential limits. Disappearance from inventory and an AIS flag cannot establish a completed transfer. [S02,S07,S11,S20,S67, S68, S69]

6.4 Attributed ownership and beneficial interests

Ownership association. Redningsselskapet's historical table lists RS 77 *Fredrikstad* with "1998: The Carnegie Club, England." This is a vessel-specific entry, rather than an inference from the book. The table's "England" is preserved as source wording; Skibo Castle is in Scotland. The entry does not identify the precise legal yacht-owning company or independently fix the purchase/completion dates. The March 1999 Båtmagasinet report separately identifies Peter de Savary as her owner and connects him to the Carnegie Club. [S02, printed pp. 360–361; S03]

Common business figure. Companies House records show Peter John de Savary as a director of Carnegie Clubs (International) Limited from 8 September 1992 to 29 May 2003, and appointed a director of Penzance Dry-Dock & Engineering Co. Limited on 26 January 1996. Those roles overlap the yacht-conversion period. They establish a direct personal and corporate connection; they do not, by themselves, establish that the club company owned the yard or held registered title to *Fredrikstad*. [S77]

For the unnamed later purchasers, neither beneficial ownership nor nationality is inferred from a captain, flag or yard visit. The documentary gaps in the legal succession are set out in §6.8.

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6.5 Operators, managers, captains and custody

Operational people are better documented than some owners: Andrew Schofield and Kate in the conversion/early yacht period; Andrew Naylor and Isabella Rothfjell, followed by Andrew Christodolo, Gillian Lawrence and Gerben Draijer in later charter accounts; Willy Verwoerd as chief mate on the 2006 Atlantic passage; and the academy as reported recipient and later advertiser. These roles belong in the life story but do not independently establish title. [S06, S07, S08, S09, S10, S11,S14,S33]

6.6 Names, flags, registrations and radio identities

Period	Identity	Meaning / limitation
Original service	RS 77 *Fredrikstad*; JXRR; Oslo. [S01]	Original operator identity.
2013 compilation	FREDERIKSTAD; HBY4601; MMSI 269104430; SUI. [S18]	Swiss radio record, not an ownership extract.
Later reviewed record	*Fredrikstad*; 9HB9795; MMSI 256003697. [S29]	Maltese radio identity; cached position is not a live location.
Sales-era advertisements	UK flag in historical Fraser; Malta in later advertising. [S19,S21]	Different dates and documentary purposes; registration transcripts are absent.

Table 6.2. Names and radio identities

6.7 Sales, donations and transfer evidence

Reported transactions include the 1988 private disposal, later Norwegian succession, June 2000 American purchase, reported academy handover, academy offerings and Fraser's July 2023 sale announcement. Advertisements and sale announcements retain their distinct evidential limits; they do not replace the missing transfer instruments. [S02,S07,S11,S20, S21, S22,S67, S68, S69]

6.8 Disputed or unresolved succession

6.8.1 Ownership documents still needed

The most consequential missing links are the precise de Savary/Carnegie Club transfer dates; names of the June 2000 buyers; the academy deed of gift and disposal record; acquisition and deletion dates under Switzerland; intervening owners; and the buyer and seller in July 2023. No owner is inferred from a captain's name, flag or a yard visit.

Target	What it could resolve
Norwegian historical ship-register file, JXRR / RS 77	Registered owners, transfer instruments and export/deletion dates.
Borgen archive item: Med båten som bolig	Early liveaboard use, alterations, photographs and possible voyages.

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Target	What it could resolve
Penzance conversion / Freivokh archive	Contract dates, original and revised arrangements, stability and class implications.
Massachusetts Maritime Academy vessel/donation file	Donor, acceptance date, training use, maintenance and disposal purchaser.
USCG Abstract of Title / historical documentation, reported no. 1216738	Primary US legal chain, subject to first confirming the identifier against the hull.
MARAD waiver application 2009-0050	Applicant and vessel particulars; Federal Register notice and grant-list entry recovered, but application and grant letter remain missing. [S16,S64]
Swiss Maritime Navigation Office, HBY4601 / 269104430	Yacht-registration history, registered owner(s) and deletion certificate. Individual file not obtained.
Spanopoulos 2012 and La Spezia 2021 yard files	Owner/captain identity, dates and verified work scopes.
Fraser sale file, 28 July 2023; Malta registry extract	Latest chain of title, flag transfer and present registered owner.
Original-class drawings: Redningsselskapet, DNV and builder files	Ask for 1968 RS 77/Fredrikstad/JXRR hull lines, general arrangement, shaft/rudder plans and as-built specification, naming Smedvik and Haakonsens in Skudeneshavn. Published side profiles are not substitutes.
National Archives: Skipsmålingen, 1845–1971	Catalogue confirms a separate series of submitted ship drawings; *Fredrikstad* falls within the date range, but no specific file has been identified. [S59]
Original Smedvik yard photograph / Gjerver illustration originals	Operator's history, printed pp. 88–93: locate photo credit, negative and better-quality profile originals; confirm the vessel tentatively identified as *Fredrikstad*.
Current survey and technical drawing package	Measured draft, steel thickness, stability, tank capacity, engine/gear data and underwater arrangement.

Table 6.3. Missing records and their evidential value

The 1998 evidence and March 1999 article conflict with Schofield's later October 1999 completion chronology. That date conflict is not resolved by silently moving the sale or expanding the ownership period. Legal transfers remain separate from the more securely established existence of a completed yacht. [S03,S05,S06]

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7 Conversion, refits and physical evolution

7.1 Consolidated alteration chronology

Period / phase	What is supported	Scope / documentary limitation
Circa 1997–1998 / Penzance	Conversion for de Savary; Freivokh collaboration; accommodation, services and hull preparation. [S03, S04, S05, S06,B01]	16-month rebuild stated in gift book; itemized contract, approved drawings and complete costs absent.
May 2006 / Pendennis	Yard news identifies *Fredrikstad* among refits nearing completion. [S73]	Inner dock reflooded after four months; this is not the yacht's individual duration. Itemized scope absent.
2012 / Spanopoulos	Refit reported in brokerage history. [S19]	Exact facility, arrival/departure dates and scope unresolved.
2021 / La Spezia	Refit association in broker history; hull-valve inspection and paint/varnish work in later inventory. [S19,S31]	No job file or certificates recovered; do not assign every undated inventory item to this work.
2022 / antifouling entry	Inventory marks antifouling new in 2022. [S31]	Application/system meaning and actual work record unresolved.

Table 7.1. Supported alteration chronology

7.2 Major conversions and changes of purpose

The Penzance conversion is the major change of purpose. Contemporary reporting describes de Savary's restoration and commercial demonstration, Freivokh's traditional treatment, new domestic services and the accommodation compromise imposed by the original vessel. The complete chronological account is in [§5.1]. [S03, S04, S05, S06]

What the club was. The Carnegie Club is a private residential and sporting club at Skibo Castle, near Dornoch in the Scottish Highlands, on the former estate of industrialist Andrew Carnegie. Peter de Savary developed the club, which dates its founding to 1995. Golf, accommodation, dining and country pursuits formed its hospitality offering. The club continues to operate. Its corporate antecedents predate its opening: a company appointment in 1992 is therefore not a conflicting public-opening date. [S76, S77, S78]

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7.2.1 Links to *Fredrikstad*, her owner and the yard

Hospitality use. Captain Andrew Schofield's retrospective, discussed in §5.1.8, recalls *Fredrikstad* entertaining property agents, prospective members and investors while de Savary developed Carnegie Abbey in Rhode Island and Cherokee Plantation in South Carolina. This supports a business-hospitality role. It does not establish a formal Skibo member-cruise programme or an itinerary for every club property. The captain's account has a separately flagged completion-date conflict. [S06]

7.2.2 How the book fits the record

The yard-gift identification is supplied by the principal researcher. No author, external publisher, exact production date or imprint is visible. The 16-month rebuild wording is attributed to the page; it does not independently fix the rebuild's start and finish dates. [B01,S03]

Ken Freivokh's interior-design role is independently supported and profiled in Chapter 2. He is treated as an independent designer working on the conversion; no Penzance employment has been established. The yard's "since 1834" wording concerns its historical tradition, not a demonstrated incorporation date for the conversion company; see Chapter 2. The book's luxury-brand comparisons do not establish those firms as suppliers. [S03,S34, S35, S36, S37,S46,S62]

The uncertain "founding member" phrase does not identify an additional owner. The stack decoration's Carnegie osprey association is discussed with the relevant photographs in §7.8. The supplied page concerns relaunch after conversion, not the vessel's original launch in 1968. [B01; S01]

The privately retained screenshot supplies a reported 16-month rebuild, not verified start and finish dates. Appendix D.1 gives a concise factual account and its limits; the screenshot is not reproduced in this public edition. [B01]

7.3 Structural and underwater work

Klokk reports extensive hull preparation and changes affecting the former ice classification. No itemized later structural/underwater job file has been recovered. Broker references to hull valves and antifouling do not establish a new keel, replacement rudders, bilge-keel installation or stabilizers. [S03,S31]

7.3.1 Keel, propellers, shafts, rudders and stabilizers

No verified out-of-water side or stern photograph of this vessel has been recovered. Published class side profiles have now been recovered, but no shaft-arrangement drawing, propeller specification sheet, rudder plan or stabilizer installation drawing has been obtained. The separate class chapter contains a tentatively attributed sister-vessel propeller photograph, explicitly not evidence of *Fredrikstad*'s underbody. Afloat bow and stern photographs cannot resolve the underwater geometry.

The original rescue hull is a steel displacement form. The operator's class history identifies the original arrangement for *Fredrikstad*'s group as twin fixed-pitch propellers with reversing machinery. That is new historical configuration evidence, not proof of the present installation. The recovered material still does not establish *Fredrikstad*'s current propeller diameter, pitch, blade count, handedness, shaft diameter, gear reduction, shaft

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exits/supports, keel-to-propeller clearance or rudder dimensions. [S02, printed pp. 88–89] The functional schematic in §8.4 is not an underwater or engineering drawing.

7.3.2 Ice classification

The original operator records 1A1-N-ICE C. The 1999 article reports that bulkhead changes meant the former ice classification was no longer retained. Original scantlings and a rescue-service pedigree do not establish current class, ice capability or unrestricted expedition suitability. Current classification status is unresolved. [S01,S03]

7.4 Propulsion, steering and auxiliary changes

The 1999 account describes retained main diesels and steering. Later 8V71/8V71N identification is consistent with the main-engine family, but serial continuity, rebuild dates and injector/rating history remain unverified. Generator, fuel-treatment, thruster and domestic-system inventories do not establish their installation dates. No approved shaft arrangement, current propeller specification or gearbox ratio is recovered. [S03,S22,S31,S63]

7.5 Rig and sail-plan changes

Not applicable to the established powered-vessel history. No sailing rig or sail-plan alteration is documented.

7.6 Accommodation and interiors

The principal documented accommodation transformation occurred at Penzance. Later descriptions retain three guest cabins and traditional saloon/wheelhouse treatment, but a dated change-by-change interior ledger is unavailable. Changes in guest totals may reflect counting/marketing conventions rather than a physical refit; compare berths, cabin arrangement and charter capacity before inferring alteration. [S03,S07,S13,S19,S31]

7.7 Navigation, communications and safety changes

The later broker inventory lists contemporary Simrad equipment beside retained Furuno and other systems, and claims regular safety-equipment inspections. No dated installation and service file establishes which refit installed each item or verifies current certificates. [S31]

7.8 Exterior finishes, decoration and identifying features

7.8.1 Exterior decorative emblems

Figure 7.3 shows decoration on the forward face of the exhaust stack: a castle, a fish-carrying osprey and paired stylized sea creatures. The Carnegie Club identifies its emblem as an osprey in its 2018 magazine (page 56 HTML), while Skibo Limited trademark application 98319740 describes an osprey in flight with a fish in its talons. These support a Carnegie Club association; they do not identify the yacht mural artist or prove the identity of every decorative element. The individual Redningsselskapet photograph is described as 2005. The bow medallion visible in Figure 7.4 is a separate design: a red cross within a circular border and gold wreath. Its maker and installation date remain unknown.

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Carnegie Club: osprey emblem | Skibo Limited: trademark description | Figure 7.3: individual source photograph

7.8.2 Stack-decoration chronology and limits

Figure 7.1 and Figure 7.3 show the castle, fish-carrying osprey and paired stylized sea-creature ornaments on the forward face of the exhaust stack. Both individual Redningsselskapet source descriptions say 2005; their 2012 upload dates are not capture dates. Figure 5.3 shows the RS 77 badge on the same stack face in northern Norway in summer 2006, credited to Andrew Naylor; Figure 5.4 shows it at Tenerife in autumn 2006. The supported changeover interval is after the photographs captioned 2005 and by summer 2006, subject to the accuracy of those captions. Figure 7.2 and later brokerage imagery also show the badge, but their capture dates are unknown. The September 2024 YATCO archive date establishes publication by then, not photography in 2024.



Figure 7.1. *Fredrikstad* alongside other rescue vessels; the source identifies Odd Fellow II on the outside and dates the photograph 2005. The castle-and-osprey decoration is visible on the forward face of the exhaust stack, above and behind the wheelhouse roof. Redningsselskapet archive; uploaded in 2012. Source record: Plate 023. Source image: Plate 023.



Figure 7.2. Wheelhouse and stack viewed from the foredeck. The RS 77 badge occupies the forward face of the exhaust stack; the earlier castle-and-osprey decoration is not visible. Photograph capture date unknown. Fraser brochure p. 12; PDF metadata March 2022. Source record: Plate 060. Source image: Plate 060.

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Figure 7.3. Decoration on the forward face of the exhaust stack: a castle within a circular border, an osprey holding a fish, and paired stylized sea-creature ornaments. Strongly consistent with the yacht's Carnegie Club/Skibo Castle association: the club identifies its emblem as an osprey and Skibo Limited describes its trademark as an osprey carrying a fish. Artist, commission date and meaning of the side ornaments remain unverified. Redningsselskapet's individual photo description says 2005; uploaded in 2012. Source record: Plate 025. Source image: Plate 025.



Figure 7.4. Historical brochure: bow-quarter view of *Fredrikstad*, with the red cross emblem repeated beside her name and inside a gold wreath on the bow. Date and maker of the bow decoration have not been established. Source record: Plate 002. Source image: Plate 002.

7.9 Before-and-after evidence and original fabric

Rescue-service and yacht photographs demonstrate a major domestic and exterior transformation within the retained working hull. The 1999 account distinguishes retained main machinery and steering from renewed interior/services. Later finishes and equipment changes are reported, but a full original-fabric survey and complete refit files are missing. Relevant photographs are placed within the narrative; class comparisons are developed separately in Chapter 4. [S03,S27,S31,S63]

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8 A working ship adapted for life aboard

This chapter introduces the yacht in the latest recovered sales-era configuration, principally the March 2022 Fraser brochure and later reviewed broker inventories. It is not an inspection or confirmation that every advertised item remains fitted. Original rescue-service equipment is identified separately. The historical evidence cut-off is 10 November 2026; the calculation study is dated 11 November 2026.

8.1 Illustrated orientation



Figure 8.1. Port-side underway profile. Photograph capture date/location unverified. Fraser brochure p. 2; PDF metadata March 2022. Source record: Plate 033. Duplicate photographic records consolidated here: Plate 078. Source image: Plate 033. Plate 078 source.

The modern profile and earlier service photograph show changing appearance. The sheltered wheelhouse, machinery volume, accommodation and side-deck circulation explain the retained working character. The independently authored functional schematic in §8.4 summarizes reported uses without reproducing the sales brochure's deck plan or implying surveyed geometry. [S01; S03; S31; S63]

8.2 Hull, construction and underbody

8.2.1 Ice classification

The original ice notation belongs to the rescue-service configuration. As discussed in §7.3.2, the conversion account reports its loss after bulkhead alterations. It does not certify the yacht's present ice capability or classification. [S01,S03]

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8.2.2 Underbody illustrations: additional visual evidence

Figure 8.12 contains a five-bladed propeller inset; the compact boss suggests fixed pitch, without proving the current installation or propeller dimensions. Figure 8.2 is a printed profile illustration showing a conventional bow entry, a long keel, one visible rudder and a shaft/propeller-support outline. Its broken line below the waterline is consistent with a bilge keel. These are documentary illustrations, not a verified current underwater survey or a shaft-arrangement drawing. A side elevation cannot establish the total number of rudders or shafts.

The paired steel cages and angled plates in C10 belong to a separately attributed class-context photograph, apparently associated with *Hjalmar Bjørge*. Protective structures around the stern gear and bilge-keel-like projections are plausible visual readings; they are not proof of *Fredrikstad*'s installation. Published profiles are illustrations, not approved shaft or rudder drawings. Original class evidence assigns fixed-pitch propellers to *Fredrikstad*'s group, while the final three class vessels received controllable pitch. [S02,S57] Details: [§3.2], [§7.3], §4.1.



Figure 8.2. Printed garment bearing a *Fredrikstad* side-profile illustration and the words Norwegian Rescue Ship / Still Saving Lives and Property. The profile depicts a conventional bow entry, a long keel, one visible rudder and a shaft/propeller support. It is an illustration, not an engineering shaft-arrangement drawing; a side view cannot establish the total rudder or shaft count. A broken line below the waterline and above the main keel is consistent with a bilge keel shown in profile; this interpretation is not an engineering confirmation. Source record: Plate 014. Source image: Plate 014.

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8.3 Decks and exterior arrangements

The yacht retains working side decks around the superstructure and sheltered and open hospitality spaces. Klokk describes an oval mahogany tabletop fitted over the towing winch, illustrating how the conversion adapted working equipment to domestic use rather than creating the envelope of a purpose-built leisure yacht. The later inventory reports hydraulic anchoring machinery, an upper-deck crane and tender arrangements. [S03,S31]



Figure 8.3. Side-deck stairs. Photograph capture date/location unverified. Fraser brochure p. 11; PDF metadata March 2022. Source record: Plate 057. Source image: Plate 057.



Figure 8.4. Foredeck from above. Photograph capture date/location unverified. Fraser brochure p. 13; PDF metadata March 2022. Source record: Plate 062. Source image: Plate 062.

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8.3.1 Deck equipment, tender and safety: reported inventory

The broker lists a hydraulic Bratta anchor windlass with cable/warping facilities and an upper-deck crane of 750 kg stated capacity. The tender is described as a 2013 Avon Seasport Jet 430 with a 100 hp inboard waterjet engine, accompanied by two Ocean kayaks. The older charter brochure instead lists an 80 hp inflatable tender, a small sailing dinghy, fishing and snorkeling equipment, waterskis, a kneeboard and a towing ring, with diving arranged separately. This is evidence of different advertised equipment at different times, not a guarantee that all of it is still carried. [S13,S31]



Figure 8.5. Upper-deck seating and circular fitting. Archived brokerage photograph; capture date/location unverified. Fraser gallery photograph. Source record: Plate 036. Duplicate photographic records consolidated here: Plate 072, Plate 094. Source image: Plate 036. Plate 094 source.

Exterior decoration and the RS 77 badge have changed over the photographed record; their sequence is treated in [§7.8].

8.4 Accommodation and domestic arrangements

8.4.1 Accommodation: the guest layout and its practical limits

The older charter brochure describes a master cabin with a queen-size bed and private facilities including a bath and shower, a second double cabin and a twin cabin, also with private bathrooms. It states that air conditioning served the accommodation and that crew had separate washing and toilet facilities. This is consistent with three guest cabins, while the historical charter capacity was six. [S13]

The later Northrop & Johnson sales inventory gives a more specific explanation of eight sleeping places: two double guest cabins and a third cabin with two lower single berths and

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two upper Pullman berths. It describes a captain's cabin with a double bed, a separate single-berth crew cabin and a shared crew bathroom. Its structured "crew cabins" field gives three, whereas the narrative describes two crew cabins and three crew berths. That field is unresolved; three crew should not automatically be interpreted as three separate crew cabins. [S31]



Figure 8.6. Twin/bunk guest cabin. Photograph capture date/location unverified. Fraser brochure p. 8; PDF metadata March 2022. Source record: Plate 050. Source image: Plate 050.



Figure 8.7. Double guest cabin. Archived brokerage photograph; capture date/location unverified. Fraser gallery photograph. Source record: Plate 044. Duplicate photographic records consolidated here: Plate 076, Plate 082, Plate 091. Source image: Plate 044. Plate 082 source. Plate 091 source.

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Figure 8.8. Saloon looking toward dining area. Archived brokerage photograph; capture date/location unverified. Fraser gallery photograph. Source record: Plate 039. Also catalogued as Plate 073 (same photographic item; S19). Source image: Plate 039.

The photographic material shows a combined saloon and dining area, traditional wheelhouse, compact galley, covered and open deck circulation, upholstered exterior seating and outdoor tables. Read together with the 1999 and 2007 visits aboard, the arrangement is best understood as a small working vessel adapted for comfortable, personal hospitality. The large machinery space and retained side decks remain important constraints. Photographs establish appearance at the time they were taken, not current operability of every fitting. [S03,S07,S23,S27]



Figure 8.9. Galley. Photograph capture date/location unverified. Fraser brochure p. 9; PDF metadata March 2022. Source record: Plate 054. Source image: Plate 054.

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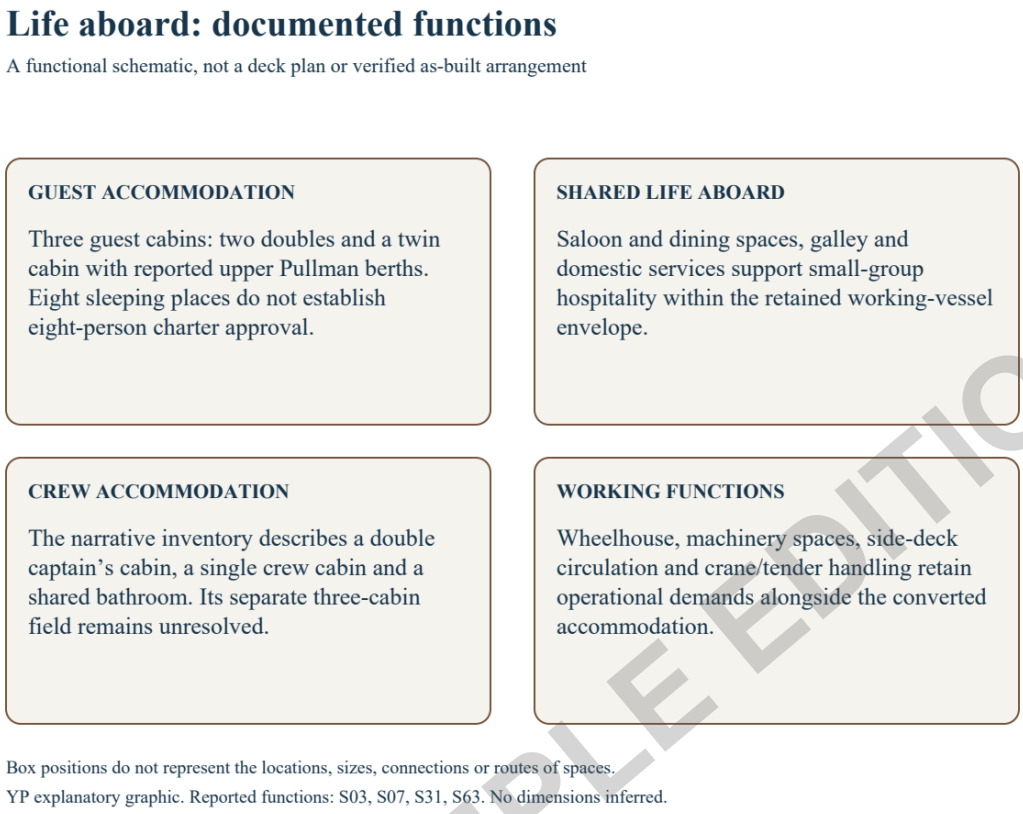


Figure 8.10. YP functional schematic of reported accommodation and working functions. Independently authored from the factual accounts in S03, S07, S31 and S63, without tracing the brochure plan. Box positions do not represent actual locations, sizes, connections or routes. Not a recovered deck plan, measured drawing or verified as-built arrangement. Source record: YP-F01; S82.

Berths, guest charter capacity and crew complement are different particulars: extra sleeping places do not establish an eight-person charter approval. The conversion and later accommodation changes are discussed in §7.2 and §7.6. [S03,S07,S13,S31]

8.5 Propulsion and steering

8.5.1 Main engines and auxiliaries

The consistent configuration is two main engines, identified in yacht sources as Detroit Diesel 8V71/8V71N units, driving a twin-screw installation. Power figures differ: 484 hp combined in the original operator record; 2 × 250 hp in the 1999 account and current listing; 2 × 225 hp in Verwoerd's service record. These may reflect ratings or source errors; engine plates and gearbox records are needed. Fraser's "4 × Detroit Diesel" entry is not accepted as proof of four mains. [S01,S03,S09,S19,S22]

The uploaded 17-page Fraser brochure, whose file metadata dates to March 2022, explicitly lists 2 × Detroit Diesel 8V71, unlike the four-engine field on the webpage. Its cover also gives the more consistent conversions 6.02 m / 19 ft 9 in beam and 3.63 m / 11 ft 11 in draft, UK flag, 99.40 GT and crew 2+1. These are historical broker particulars, not current registration or survey certificates. [S63]

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Figure 8.11. Engine room. Photograph capture date/location unverified. Fraser brochure p. 10; PDF metadata March 2022. Source record: Plate 055. Duplicate photographic records consolidated here: M01. Source image: Plate 055.

Fraser lists a Kohler 20 kW and a Northern Lights 20 kW generator. The reviewed YachtWorld equipment checklist includes thrusters and a Seakeeper, but the checklist does not establish model, installation date, condition or even a confirmed installed system. Treat these as broker claims pending an equipment inventory. [S19,S22]

The 8V71 engine family

The vessel-specific evidence supports two GM/Detroit Diesel main engines and two propellers. Later accounts identify the engines as 8V71 or 8V71N. No legible model/serial plate, factory rating sheet for either installed engine, gearbox plate or current dynamometer report has been recovered. The family specifications below explain the machinery; they do not certify the present installation. [S01,S03,S09,S22; P01, P02, P03]

The 8V71 designation identifies a V-eight two-stroke engine family of approximately 9.3 litres. Its mechanically driven scavenging blower does not make the naturally aspirated engine a turbocharged TI variant. Reported output of 225–250 hp per engine and unverified governed rpm require caution in calculating torque. Manufacturer drawings and fuller engine discussion are in Appendix B.2. [P01, P02, P03, P04, P05]

8.5.2 Propellers, shafts and the limits of the illustrations

The brochure inset in Figure 8.12 shows a five-bladed bronze-coloured propeller. Its compact hub is consistent with a fixed-pitch propeller, but the photograph supplies neither a specification nor proof of the current installation. Figure 8.2 is a decorative profile illustration: its dotted line may depict a bilge keel, but it is not a class-approved arrangement. The C10 stern photograph has tentative sister-ship attribution and must not be used as an authenticated photograph of *Fredrikstad*'s underbody.

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Figure 8.12. Historical brochure crediting cooperation between The Carnegie Club and Penzance Dry Dock & Engineering. Stern lettering reads FREDRIKSTAD / PENZANCE / R.C.Y.C. The circular inset shows a five-bladed metallic propeller; its compact hub suggests fixed pitch, but dimensions and installation date are unverified. Source record: Plate 013. The stern lettering, yard/club credit and propeller inset are the documentary details discussed here; no propeller dimensions or installation date follow from the image. Source image: Plate 013.

Thrusters appear in the YachtWorld checklist. Their make, thrust, power and verified bow/stern installation are not established from that entry. Steering is reported hydraulic and was retained through the conversion, but no current steering or emergency-steering drawing has been recovered. [S01,S03,S22] Details: [§7.4], [§C.1].

8.6 Sailing configuration

No sailing rig, sail inventory or sailing use is established. Sailing-only performance indices and planing-power formulas are therefore not applied to this powered displacement vessel. The technical study addresses the quantities relevant to her documented configuration.

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8.7 Auxiliary machinery and services

8.7.1 Fuel, water, sanitation and domestic systems: reported inventory

The Northrop & Johnson inventory describes fuel filtration by two Racor units, an Alfa Laval separator and several fuel-transfer pumps, indicating a more elaborate fuel-handling arrangement than simply a tank and a main-engine supply. It names a Sea Fresh reverse-osmosis watermaker at about 3,780 litres per day, ultraviolet treatment, a custom hot-water boiler and a pressure system reported at 0.9–2.5 bar. The brochure's "Reserve osmosis" wording is interpreted as reverse osmosis; output, pressure and condition are unverified. [S31]

Waste-handling equipment is listed as Gianneschi pumps, a Tecnicomar Ecomar 45S treatment unit and five Tecma electric toilets. A Fiac air compressor, bilge/firefighting pumping and a television-only UPS are also reported. These details are useful survey leads: they identify what should be present and checked, but do not establish capacity, serviceability or regulatory compliance. [S31]

System	Specific names / models reported by the broker
Fuel filtration and separation	2 × Racor 751000nFHX; Alfa Laval MIB 303 S-13. Model spelling follows source and requires plate verification.
Transfer pumps	Feit TSL; Electro Adda CZI; Allweiler DMA2 80G2, as transcribed in the inventory.
Fresh water	Sea Fresh watermaker, about 3,780 L/day; ultraviolet unit; custom boiler; 0.9–2.5 bar stated pressure.
Waste water / air	2 × Gianneschi pumps; Tecnicomar Ecomar 45S; 5 × Tecma toilets; Fiac compressor.
Generation	Fraser separately lists Kohler 20 kW and Northern Lights 20 kW generators; manual start is stated in the later machinery inventory. [S19,S31]

Table 8.1. Reported domestic and auxiliary systems [S19,S31]

The domestic inventory includes a Bosch combination microwave/oven/grill (spelled Bosh in the source), Miele hob and extractor, an InSinkErator disposal, a freezer and two stainless-steel refrigerators described as new without a clear installation date. An aft-cockpit ice maker, Miele W833 washer and Miele TS60C dryer are also listed. These details show the intended capacity for longer periods aboard, while the older magazine assessment remains a useful reminder that the galley was compact. [S07,S31]

Fraser reports separate Kohler and Northern Lights generators, each 20 kW. Their nameplate sum is 40 kW; verified parallel operation and actual available hotel-load margin are not established. Model and inventory names are evidence of an advertised installation, not a performance test. [S63; F54]

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8.7.2 Quantified system capacities / Appendix B F54, F55, F56, F57, F58

Reported item	Useful conversion	Limitation
Two 20 kW generators	40 kW nameplate sum; 20 kW for one unit.	No verified parallel operation or available hotel-load margin.
3,780 L/day watermaker	157.5 L/h; ideal 6,500-L tank refill in 41.3 h.	No simultaneous use, losses or derating in this arithmetic.
0.9–2.5 bar fresh-water system	9.18–25.49 m equivalent fresh-water pressure head.	Not a pump-flow or fixture-pressure measurement; pressure basis unspecified.
Original pumping rating 62 t/h	17.22 kg/s, or about 16.80 L/s in reference seawater.	Historical rating, not a current head/flow test or flooding-survival assessment.
750 kg crane rating	7.35 kN lifted weight; 0.56% of reference vessel mass.	Not a load chart, heel calculation or current certificate.

Table 8.2. System-capacity conversions and limitations [F54, F55, F56, F57, F58]

8.8 Navigation and communications

8.8.1 Navigation, communications and entertainment: reported inventory

The later electronics list combines a Simrad multifunction display and radar with retained Furuno equipment, together with gyro, autopilot, GPS and wind instrumentation. That mixture should be treated as a reported configuration at the listing date. It is not enough to date every component to the 2021 refit or to demonstrate that all the components were interfaced correctly. [S31]

Function	Items in the recovered inventory [S31]
Display / radar	Simrad EVO3S 19-inch display and OP50 keyboard; Halo 3 Pulse 3-foot radar; Furuno FR1505, stated 48-mile range.
Heading / steering	Simrad fluxgate; GC80 gyro; AP70 MK2 controller and AC80S computer; RF45X rudder-angle system.
Position / depth / wind	Simrad GS25 and Furuno 80 GPS; SonarHub; WS310 wind instrument; DST800 and BV744L transducers, as named by source.
Voice / safety communications	Simrad HS100 and Sailor RT144B VHF entries; NERA SATCOM; Amplidan intercom; JRC NCR-300A Navtex.
Satellite television	KVH TracVision TV6 with auto-skew is listed under the broker's VSAT heading. This is a television-system description, not proof of a satellite broadband terminal.
Entertainment	Bose sound; Yamaha RX1080 amplifier; Grundig television/video equipment; Denon audio and Sony disc/radio equipment. Older and newer technology appears in the same list; current installation is unverified.

Table 8.3. Reported navigation and communications [S31]

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The mixed generations of electronics should not be read as an installation chronology. An itemized invoice or dated onboard inventory would be needed to attribute each device to a specific refit. Source account: S31; physical evolution: [§7.7].



Figure 8.13. Wheelhouse and helm. Photograph capture date/location unverified. Fraser brochure p. 9; PDF metadata March 2022. Source record: Plate 053. Source image: Plate 053.

8.9 Safety and emergency arrangements

The safety description includes four collision bulkheads, a dedicated fire main with three hydrants, a Chubb carbon-dioxide engine-room system, fire detection and alarms, cameras, an INMARSAT distress alarm and first-aid/oxygen equipment. It lists four eight-person life rafts and two Kanad float-free beacons, while another part of the same inventory names an Ocean Signal EPIRB1 Pro. Those beacon entries may reflect changes or overlapping lists; the present number and approvals are not settled. The unusual “collision bulkhead” wording and quoted raft capacities must be checked against a general arrangement and current safety certificates. [S31]

Inventory assessment. These model and capacity entries are retained as specific historical equipment claims. They are explicitly attributed to the archived sales inventory. No service logs, commissioning records, crane certificates, raft inspections, radio licence or current safety survey was obtained to verify them. Source labels that confuse television with data communications, or fire detection with gas detection, have not been silently promoted into separate installed systems. [S31]

Original hydraulic steering and pumping equipment reflect the rescue role. Later fire-main, CO_2 and lifesaving inventory entries remain dated sales claims; certificates, service dates and current functionality were not independently checked. The historical ice-related classification is not a current certificate, and the 1999 account says bulkhead changes affected that status. [S01, S02, S03,S31] Details: [§3.6], [§9.3].

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8.10 Parameters and performance

8.10.1 Calculated proportions and speed regime / Appendix B

The parameter study separates reported inputs, direct arithmetic, modeled estimates and advertisement-derived figures. It does not convert the 135-tonne source figure into a measured present displacement. The principal-particulars table remains a record of sourced specifications, not a destination for estimated waterline dimensions. Appendix B contains the complete numbered calculation register; each technical comparison below links to its supporting record.

Parameter	Value / status	Meaning for *Fredrikstad*
Displaced seawater volume / F02	About 131.7 m³ at the 135 t reference mass. C	An arithmetic consequence of mass and assumed 1,025 kg/m³ water density, not new hydrostatic measurement.
Overall length/beam / F05	3.81 using 22.85 / 6.00 m. C	Describes the overall envelope; underwater proportions remain separate.
D/L / F09	406 centrally; 315–614 over the modeled length bracket. M	Strong cubic sensitivity to the missing LWL. Sailing-yacht performance categories are not applied.
Froude number / F14	0.287 at 8 kn; 0.358 at 10 kn; 0.430 at 12 kn, for modeled 21 m LWL. M	Useful speed-regime indicators; no measured resistance or attained speed is implied.
Classical speed reference / F15, F16	11.12 kn centrally; classical bracket 10.38–11.60 kn. M	A reference rather than a hard speed limit. Gerr's D/L adjustment includes a minimum S/L factor of 1.34; Appendix B applies it explicitly.

Table 8.4. Calculated proportions and speed references

8.10.2 Estimated inputs / kept outside the vessel specification

Quantity	Central model	Sensitivity / evidence limit
LWL	21.0 m	18.3–22.85 m; analyst-selected 80–100% envelope of LOA, not measured or a guaranteed bound.
BWL	5.4 m	4.8–6.0 m; analyst-selected envelope of the roughly 6 m beam reference.
Waterplane shape	Ellipse; Cwp = 0.785	Parabolic, elliptical and fuller-quartic models give Cwp 0.667–0.800. Exact model geometry, not a recovered hull coefficient.
Reference mass / density	135 t / 1,025 kg/m³	Mass loading condition is unknown; the density is a declared convention.

Table 8.5. Explicit geometry assumptions and sensitivity cases

The dimensional evidence and tapered hull envelope make the models plausible sensitivity cases, but do not prove their endpoints contain the actual waterline. Appendix B shows the

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shapes, mathematical integrals and all 27 cases. Its range endpoints are model extrema, not statistical confidence limits. [F24, F25, F26, F27, F28, F29, F30, F31; R01,R03,R06]

8.10.3 Loading, mean immersion and trim

Derived quantity	Central / modeled range	Interpretation and limit
Immersion capacity / F26	0.913 t/cm; 0.600–1.124 t/cm. M	About 1.10 cm mean sinkage per added tonne centrally, or 0.89–1.67 cm across models. A local small-load relation.
Freshwater change / F28	37 mm mean increase; 30–56 mm. M	Unchanged 135 t mass, seawater-to-freshwater convention and approximately constant local area.
Fuel plus fresh water / F45, F46, F47	About 25.2 t centrally; 24.54–25.86 t with supplier fuel-density range. C/M	About 18–19% of reference displacement. The reported mass may already include these liquids; do not add them as though 135 t were verified lightship.
Full/empty immersion scale / F47	27.6 cm central linear extrapolation; 21.8–43.1 cm. M	The load difference is too large to trust constant area. This is scale arithmetic, not a prediction of current or fully laden draft.
Trim sensitivity / F32, F33	100 kg shifted 10 m: 0.83 cm total trim centrally, model contribution only. M	Excludes unknown KG–KB/free-surface effects. It is a bow-to-stern draft difference, not an equal change at each end.
Transverse BM / F31	1.23 m centrally; 0.59–2.05 m. M	A metacentric radius, not GM. KG, KB and free-surface effects are unverified; no actual stability margin follows.

Table 8.6. Loading and hydrostatic sensitivities

These loading calculations sharpen the questions for a survey: measured current drafts and loading, a hydrostatic table, tank positions/free surfaces and verified stability documentation. They do not settle the conflicting published draft figures or justify route-clearance and polar-capability claims. [F06,F24, F25, F26, F27, F28, F29, F30, F31, F32, F33, F34; R01,R06]

8.10.4 Calculated machinery comparisons / actual operation remains unverified

Parameter	Result	Use and limitation
Installed power / reference mass / F35, F36	450–500 mechanical hp total = 335.6–372.8 kW, or 2.49–2.76 kW/t.	Retains the competing ratings rather than averaging them. Original Norwegian hk may be metric PS; the separate unit conversion is preserved.
Torque / F38	For one engine, 225–250 mechanical hp at the assumed 1,800–2,100 rpm gives approximately 763–989 N·m. Q	Conditional values, not an acquired torque curve. F38 and §B.2.8 give the power/speed pairs and derivation; neither actual rated rpm nor the shaft ratio is established.

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Parameter	Result	Use and limitation
Two-stroke BMEP / F39	5.15–6.68 bar for the stated 225/250 hp and 1,800/2,100 rpm pairs. Q	An illustrative brake-output measure using nominal 9.308 L swept volume, not measured cylinder pressure.
Mean piston speed / F40	7.62 m/s at 1,800 rpm; 8.89 m/s at 2,100 rpm. Q	Uses the V71 family's 5-inch stroke. It is not a wear or overhaul-life prediction.
Speed-model comparison / F42, F43	At modeled 21 m LWL / 135 t: Gerr powered screen 10.48 kn; Wyman 8.70 kn; Keith 11.15–12.86 kn. Q	Different published formulas and power/coefficients. The large disagreement is evidence of model dependence, not a new expected-speed interval.
Installed-power transport index / F44	About 14.9 at 8 kn with 135 t and 500 hp. C	Gerr's reporting convention uses installed power. It is not a propulsive-efficiency percentage or a measured loaded trial.

Table 8.7. Conditional machinery comparisons

The speed screens deliberately test stated assumptions: 500 delivered SHP in the shaft-power models versus 500 BHP in Keith's version, with uncalibrated published coefficients. The source ratings do not prove that 500 SHP reaches the propellers. Actual gearbox/propeller records, fuel flow and a speed trial would carry more evidential weight than agreement with one selected formula. [F35, F36, F37, F38, F39, F40, F41, F42, F43, F44; R05, R06, R07,R12,R14]

8.10.5 Range: three different kinds of number

Source / context	Reported range	Interpretation
Original rescue record	2,100 nm	Historical service configuration; operator separately gives 10 knots. [S01]
1999 converted yacht	About 3,600 nm at 10–11 knots	Reported with 22,000 L fuel; not a measured consumption curve. [S03]
Later marketing	3,200 nm cruise range / 3,600 nm range	Fraser gives both and an 8-knot cruise entry; YachtWorld listing reviewed converts approximately 3,600 nm into statute miles. Basis unclear. [S19,S22]

Table 8.8. Three different range claims

Source-paired premise	Implied total fuel use / endurance	With an illustrative 20% withheld
22,000 L / 3,200 nm at 8 kn	6.875 L/nm; 55.0 L/h; 400 h (16.7 d). I	17,600 L / 2,560 nm, holding that same implied economy. Q
22,000 L / 3,600 nm at 10 kn	6.111 L/nm; 61.1 L/h; 360 h (15.0 d). I	17,600 L / 2,880 nm. Q
22,000 L / 3,600 nm at 11 kn	6.111 L/nm; 67.2 L/h; 327 h (13.6 d). I	17,600 L / 2,880 nm. Q

Table 8.9. Range-claim inversion and illustrative reserve sensitivity

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F48, F49, F50, F51, F52 give a consistent set of calculations from these claims. Each advertisement is inverted under the explicit premise that all 22,000 L is consumed and all fuel users are included. They are not an independently measured consumption curve, present operating range or three corroborating trials. Generator demand, unusable volume, loading and conditions remain unresolved. [R02,R04]

The 20% example is sensitivity, not a reserve recommendation. If the quoted range already allowed a reserve, applying it again would double-count that allowance. A 10% increase in total burn reduces fixed-fuel range by about 9.1%; at the 8-kn example, each additional 1 L/h reduces the 17,600-L range from 2,560 to about 2,514 nm. That unit sensitivity is not an estimated generator burn. [F51, F52]

Appendix B preserves the 58 calculation records, assumptions, source register and manufacturer context in §B.2. Computable arithmetic does not turn an unknown loading state or waterline dimension into a measured specification. Quantities needing missing hydrostatics, KG, actual propeller geometry, shaft power or fuel trials remain unassigned.

8.11 Purpose and suitability analysis

Fredrikstad was designed for rescue and assistance at sea: steel construction, twin machinery, sheltered watchkeeping, pumping, towing and rescue accommodation explain the original brief. Her yacht conversion retained that working envelope while providing traditional small-group hospitality. Named accounts document later Eastern Seaboard, Caribbean and Atlantic use. Those voyages establish experience, not present seaworthiness or an unrestricted operating approval. [S01, S02, S03,S07, S08, S09]

Neither specialized sport fishing nor racing is established as a design purpose. Capability analysis is tied to the stated features and records, rather than inferred from explorer-yacht marketing. The chronological account is developed in Chapters 1, 3 and 5; principal limitations are consolidated in Chapter 10.

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9 The latest documented yacht

9.1 Assessment date and evidence basis

Historical evidence cut-off: 10 November 2026; parameter study: 11 November 2026. The March 2022 Fraser brochure and later records describe separately dated states. This issue date is not a fresh ownership, position or condition check.

9.2 Latest documented configuration

The sales-era yacht retains the converted rescue-vessel envelope, three guest cabins and traditional accommodation described in Chapter 8. The March 2022 brochure identifies twin Detroit Diesel 8V71 engines, UK flag and 99.40 GT. The photographs and factual arrangement accounts explain configuration and appearance, not hidden condition or underwater geometry; metadata does not date each image. [S19; S31; S63]

Fraser's historical webpage reports eight guests, three crew, 8-knot cruising, 12-knot maximum and competing 3,200/3,600-nautical-mile ranges. Its inconsistent dimension conversions, four-engine field and Smedvik designer credit are reconciled in Chapter 8 using stronger vessel records. Refits and later inventories do not establish a complete alteration ledger or a currently inspected installation. [S01; S19; S31; S63]

9.3 Condition and material unknowns

No current independent condition survey, thickness schedule, engine trial, verified stability booklet or class certificate was recovered. Present loading, draft, machinery identities, shaft/propeller geometry, fuel use and safety certification remain unresolved. Photographs cannot certify structure or serviceability. Record priorities are in §6.8 and §C.1.

9.4 Latest location and use

Sales material gives La Spezia; AIS-derived records report Mediterranean visits through September 2026. Neither establishes a November 2026 berth. [S21; S22; S65]

9.5 Market status, custody and disposition

Fraser announced a sale on 28 July 2023 without naming the buyer. Later advertising gives Malta flag and VAT-paid status; current availability, tax evidence and legal title remain unverified. [S20; S21; S22]

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10 Significance, evidence and remaining questions

10.1 Principal historical findings

The strongest anchors are Norwegian rescue identity and 1968 service origin; Gjerver's design and the separate principal/hull-builder roles; a completed de Savary/Freivokh/Penzance yacht by the 1998 award/March 1999 account; named American/charter-era accounts; the 2006 passage and yard notice; the 2009 training-purpose notice and academy advertisements; and a later European sale/radio trail. The account is materially stronger for episodes and associations than for an uninterrupted title chain. [S01, S02, S03, S04, S05, S06, S07, S08, S09, S10, S11,S20,S64,S67, S68, S69, S70, S71, S72, S73]

10.2 Significance and substantiated achievements

Fredrikstad's interest lies in the survival and adaptation of a working Norwegian rescue vessel as a traditionally furnished cruising/hospitality yacht. The 1998 Newport award is a documented design recognition. Named cruising and assistance accounts add substance to her private life; they do not establish a world record, a verified rescue total or present unrestricted expedition capability. [S03,S05,S07, S08, S09]

10.3 Comparable vessels and class context

The 75-foot family's origins, variants and individual histories are developed in Chapter 4. Its thirteen vessels form a documented design series, not an interchangeable source of present yacht specifications. [S02]

The family comparison distinguishes shared original dimensions and machinery variants from later conversions, owners and uses. The table's 1963 and 1972 build years bound the series; RS numbers distinguish identities but do not independently prove the order of launches within a year. RS 77 sits within the 1968 GM-powered group. [S02]

No feature of a sister's later machinery, stability, accommodation or refit is assigned to *Fredrikstad* without vessel-specific support.

10.4 Contradictions and their treatment

Issue	Treatment in this dossier
Original-class draft versus vessel webpage	Class table lists *Fredrikstad* at 3.20 m; operator webpage gives 3.60 m. Neither resolves current measured draft. [S01,S02]
Smedvik yard photograph identification	Caption says the vessel being fitted out is probably *Fredrikstad*. The photo is retained with that uncertainty, not as a confirmed launch identification. [S02]
Spanopoulos 2012 location	Perama yacht-yard development is dated 2013/2014 in company sources. Do not backdate *Fredrikstad*'s reported 2012 work to that facility. [S19,S51,S52]
Penzance capacity claims	Harbour authority gives maximum vessel length 70 m; operator gives dry-dock length 75 m. Limits need confirmation. [S04,S48]

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Issue	Treatment in this dossier
La Spezia dates and lift capacity	Website: 1963 origin and 440-ton lift; 2024 report: 1966 formal foundation and 450-ton lift. Differences retained. [S53, S54, S55]
2007 length described as 60 feet	Rejected as an editorial error; original operator and consistent yacht records give approximately 75 feet. [S01,S07]
Eight berths versus six charter guests	2007 account attributes the charter limit to galley/dining practicality. Later inventory describes two additional Pullman berths. [S07,S31]
Crew cabins: two or three	Narrative inventory describes a double captain cabin plus a single crew cabin; its structured field gives three cabins. Three crew berths is not proof of three cabins. [S31]
Imperial and metric dimensions	Some broker imperial equivalents do not match their metric figures; use the original metric record and obtain measured draft. [S01,S19,S31]
Electronics and safety inventory	Mixed-age items and inconsistent labels are preserved as attributed claims; VSAT heading does not prove broadband, and duplicated beacon entries do not settle the current count. [S31]
Builder shown as Pendennis	Rejected as original-build attribution. Smedvik is the 1968 principal builder; Penzance converted her; Pendennis is a later refit connection.
1999 completion / 1979 restoration	Not adopted: conflicting retrospective completion date and apparent article-table typo. Converted yacht documented by 1998.
Citizens funded / city decommissioned	Operator names Sally and Lars T. Amundsen as funders and Redningsselskapet as operator. Municipal ownership is not established.
Draft 9.51 m	Rejected as apparent unit error, plausibly 9.51 ft ≈ 2.90 m. This does not settle actual draft.
HBJ4601 call sign	Corrected to HBY4601 in the 2013 ITU record.
Swiss AIS flag in 2023	Not treated as definitive flag evidence on each visit. Radio identities and cached labels may outlast registry changes.
US database machinery field	Gas/outboard entry rejected as inconsistent with the well-established diesel yacht. Other database fields require primary corroboration.

Table 10.1. Contradictions and their treatment

Additional calculation controls: waterline sensitivity cases are chosen models rather than measured geometry; BM is not GM; envelope occupancy is not a valid recovered block coefficient; advertisement inversion is not a fuel curve. Appendix B preserves these distinctions and the calculation premises.

10.5 Material unanswered questions

The most consequential unanswered questions concern title succession; exact conversion/transfer dates; original and current underwater arrangements; current machinery identity and duty points; stability/loading information; and current condition/use. The source videos are identified but not preserved or viewed in this research record.

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11 The vessel that continues

The clearest continuity is the identity of RS 77: the Norwegian operator's record, the 1968 steel vessel and the later yacht accounts describe a connected history rather than an interchangeable rescue-ship name. That history includes both demanding public service and a conversion shaped around private life and hospitality. [S01,S02,S03,S06,S07]

Gjerver's original design, the separate responsibilities of principal builder and hull fabricator, and the later work of Freivokh, de Savary and Penzance belong to different stages of that story. The yacht's machinery volume, fuel capacity and working decks continued to influence how accommodation could be arranged. Later refit dates are not, by themselves, a complete account of what changed or who approved it. [S01, S02, S03, S04, S05, S06,S19,S73]

Named crew accounts and dated records establish significant movements and uses, including the 2006 Atlantic passage. The academy's inventories and later sale and tracking records add further documentary points without completing every transfer or voyage between them. The historical cut-off remains 10 November 2026; an old listing or last AIS visit is not a fresh statement of present location, ownership or condition. [S07, S08, S09,S20,S64, S65, S66, S67, S68, S69]

Continuity of identity is therefore a more secure finding than originality of every plate, fitting or machine. Original, retained, replaced and unverified fabric must be distinguished component by component. The dossier preserves both the yacht's changing purposes and the limits of the evidence, allowing her to be understood as a particular vessel whose history remains open to further documented discovery. [S02,S03,S19]

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Sources were assembled and designer/yard/class sources investigated on 10 November 2026. Access limitations are identified individually. Webpages can change. Wayback dates are capture dates. The descriptions identify exactly what each source supports; access to a page does not imply access to a registry-certified document.

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www.itu.int/net/ITU-R/terrestrial/docs/mars/1_ListV_compilation_2013.pdf

S19 / Fraser: *Fredrikstad* vessel page

Cited on pages 15 [a, b], 16 [a, b, c, d, e, f], 17, 23, 24, 25, 26 [a, b, c, d], 63, 72 [a, b, c], 73 [a, b], 75 [a, b], 76, 77 [a, b], 79 [a, b, c], 81, 89, 90, 91, 93 [a, b], 98 [a, b], 100 [a, b], 101 [a, b], 102, 103 [a, b], 118, 131, 136 [a, b], 154, 155, 156.

Historical brokerage description, refits and specification conflicts. Page now says yacht no longer available.
www.fraseryachts.com/en/yacht/fredrikstad/

S20 / Fraser: sale announcement, 28 July 2023

Cited on pages 16, 17, 72 [a, b], 73, 75, 76 [a, b], 77, 100, 101, 103, 118.

Confirms sale; credits Marco Fodale; does not disclose buyer or seller.
www.fraseryachts.com/en/news-detail/m-y-fredrikstad-finds-a-new-owner/

S21 / Yachtzoo: current vessel listing

Cited on pages 15, 16 [a, b, c, d], 18, 72, 73 [a, b, c], 75, 76, 77 [a, b, c], 100 [a, b], 118.

Advertised VAT-paid status, Malta flag and guest capacity; contains builder/draft errors.
www.yacht-zoo.com/yachts/fredrikstad/

S22 / YachtWorld: listing 9980640 supplied by user

Cited on pages 15 [a, b], 16 [a, b, c, d], 26, 72, 73 [a, b], 77, 81, 90, 91 [a, b], 92, 98 [a, b], 100 [a, b], 118, 131, 136 [a, b], 154, 155.

Current advertised La Spezia location, machinery and range. Listing can change.
www.yachtworld.com/yacht/1968-smedvik-mek-frederickstad-9980640/

S23 / YATCO: archived listing, 20 September 2024 capture

Cited on pages 15, 16, 63, 64, 73, 89, 118.

Recovered 38-image brokerage gallery. Capture/upload date is not photograph date.
web.archive.org/web/20240920175303/www.yatco.com/yachts/fredrikstad-smedvik-mek-verksted-1968-276232/

S24 / Harbourmaps: historical journey for MMSI 269104430

Cited on pages 16, 17, 72 [a, b, c, d, e], 73 [a, b, c, d], 76.

Seven 2023 visit entries. AIS-derived positions require corroboration; historical flag label may be stale.
www.harbourmaps.com/ship/journey/q?mmsi=269104430

S25 / Shipspotting: Burriana photograph, 13 July 2023

Cited on pages 72 [a, b], 75, 76.

PUBLIC EXAMPLE EDITION

Manuel Hernández Lafuente; dated sighting. Full-resolution photograph not recovered; page intermittently blocks access.

www.shipspotting.com/photos/3595810

S26 / John Winfield / Geograph: St Katharine Docks, 10 October 2005

Cited on pages 67, 68, 134 [a, b], 161.

Dated photograph, CC BY-SA 2.0. London presence independent of Schofield's earlier recollection.

commons.wikimedia.org/wiki/File:St._Katharine_Docks,_London_-_geograph.org.uk_-_63867.jpg

License for the John Winfield photograph only: CC BY-SA 2.0 — https://creativecommons.org/licenses/by-sa/2.0/ . Public screen derivative proportionally resized without cropping. This does not license the dossier or other illustrations under Creative Commons.

S27 / Redningsselskapet Flickr album: RS 77 *Fredrikstad*

Cited on pages 28, 29, 63, 64, 83, 89.

Recovered album images, including historical interiors and people aboard. Upload dates do not establish capture dates.

www.flickr.com/photos/redningsselskapet/albums/72157630494001504/

S28 / Maritime archive catalogue: Thom Borgen entry

Cited on pages 63, 75 [a, b].

Lists Borgen, lawyer, and "Med båten som bolig" (RS/77 *Fredrikstad*). Underlying article not obtained.

dms-cf-01.dimu.org/file/032yjV9K2Biw

S29 / VesselFinder: current Maltese radio identity

Cited on pages 75 [a, b], 76, 77 [a, b].

MMSI 256003697 / call sign 9HB9795. Cached position timestamps are not accepted as live location.

www.vesselfinder.com/vessels/details/256003697

S30 / Swiss Maritime Navigation Office: yachts

Cited on pages 76.

Correct authority for yacht-registration enquiries; individual historical file not obtained.

www.schweizerischesseeschifffahrtsamt.eda.admin.ch/en/leisure-sport-yachts

S31 / Northrop & Johnson: historical syndicated sales page

Cited on pages 73 [a, b, c], 75, 76, 79 [a, b, c], 80, 81 [a, b, c], 83, 84, 86, 87 [a, b], 90 [a, b], 93 [a, b, c, d, e], 94 [a, b], 95 [a, b, c, d], 100 [a, b], 101, 102 [a, b, c, d], 118, 130, 156.

Spain/UK-flag historical marketing context; not proof of ownership or continuous residence.

PUBLIC EXAMPLE EDITION

www.northropandjohnson.com/yachts-for-sale/fredrikstad-75-smedvik-mek-verksted

S32 / Navysite: Scott Redlhammer self-reported service entry

Mentions academy vessel *Fredrikstad*. Personal recollection, not a formal academy ownership record.

www.navysite.de/crewlist/commandlist.php?commandid=429&startyear=1989

S33 / NYM: *Fredrikstad* crew and sample menu, February 2008 capture

Cited on pages 70 [a, b, c, d, e], 77, 117.

Crew profiles of Andrew Christodolo, Gillian Lawrence and Gerben Draijer; sample menu and service description.

web.archive.org/web/20080213205017/www.nymyachts.com:80/nym_fleet/FredrikstadCrew.htm

S34 / International Superyacht Society: Ken Freivokh biography

Cited on pages 20, 21 [a, b, c], 80.

Professional biography, training, River Hamble practice and range of work. Broad project lists are not treated as proof that every concept was completed.

www.superyachtsociety.org/voting_judges/ken-freivokh-2/

S35 / Abeking & Rasmussen: interview with Ken Freivokh

Cited on pages 20, 21 [a, b, c], 80.

First-person account of architecture/industrial-design training, early production-boat commissions and *Maltese Falcon*.

www.abeking.com/en/ken-freivokh/

S36 / Design Week: interview with Ken Freivokh, 5 March 2009

Cited on pages 20, 21 [a, b, c, d], 80.

1972 graduation, production-yacht work and distinction between styling/layout work and hull engineering.

www.designweek.co.uk/an-interview-with-yacht-designer-ken-freivokh/

S37 / Ken Freivokh Design: contact and studio portfolio

Cited on pages 20, 21 [a, b], 80.

Eastlands Boatyard address. Also consulted /team/ and /projects/ for practice scope; portfolio concepts distinguished from delivered vessels.

www.freivokh.co.uk/contact/

S38 / Reidar Klungsøyr: Wichmann/Smedvik recollections, hosted by Skipshistorie

Cited on pages 22.

First-person account of Rikard Klungsøyr’s 1918 workshop, engine agency, retirement in 1961 and 1968 anniversary. Memoir, not a corporate register.

PUBLIC EXAMPLE EDITION

skipshistorie.net/skipsmaskineri/aac610wichmann/aac61000000000000historie

S39 / Skipsrevyen: Nytt verft i Nordfjord, reprinted 1971 report

Cited on pages 22 [a, b, c].

Eid Verft expansion, Reidar Klungsøyr, covered construction capacity and 1979–80 corporate transition context.

www.skipsrevyen.no/nytt-verft-i-nordfjord/391047

S40 / Ulstein Historielag: Skipsindustrien

Cited on pages 22.

Smedvik acquisition after bankruptcy, equipment manufacture, workforce and 1988 transfer to Herøy Industrier.

ulsteinhistorielag.no/kultur/liv-og-lagnad/ulstein-veks-fram/1980-talet-andre-del/skipsindustrien-2/

S41 / Herøy municipality: Kulturmiljøplan 2026–2030

Cited on pages 22 [a, b].

Smedvik site recorded as a local industrial heritage asset; separate from present operating-company identity.

www.heroy.kommune.no/_f/p36/ib879f78b-976d-4423-8f96-e794388975b5/kulturmiljoplan-heroy-310126.pdf

S42 / HMI Skipsarkiv Rogaland: *Skudenes*, 1970

Cited on pages 22.

Documented Smedvik commercial-ferry example; builder and delivery history.

www.skipsarkiv-rogaland.net/fartoey%20-%20bilferger%20-%20Skudenes%201970.htm

S43 / Skipshistorie: *Wilma Mermaid*, 1975

Cited on pages 22.

Eid hull / Smedvik completion of a 64.55 m offshore supply vessel; demonstrates group's later commercial range.

skipshistorie.net/oslo/414awilco/tekster/osl41419750100000wilmamermaid

S44 / Skipsrevyen: Ny redningskrysser — gave fra *Hagbart Waage*, reprinted 1971 report

Cited on pages 22, 28, 31.

Hjelm Waage delivery, named Smedvik managers, hull subcontracting and a contemporary equipment comparison. It is not *Fredrikstad*'s build sheet.

www.skipsrevyen.no/ny-redningskrysser-gave-fra-hagbart-waage/309958

PUBLIC EXAMPLE EDITION

S45 / Åkrehamn Kystmuseum: Vestante, December 2017, pp. 9–10

Cited on pages 23.

Early Håkonsen/Skudenes engineering-workshop history. Does not establish the full legal continuity of the hull builder active in 1968.

akrehamnkystmuseum.no/wp-content/uploads/2019/05/2017-VESTANTE-som-publisert.pdf

S46 / Penzance Dry Dock: Our history

Cited on pages 23, 80.

Operator's historical account, Holman period and 1834 operational-origin claim.

www.penzancedrydock.com/post/our-history

S47 / Penzance Dry Dock: sale announcement, 13 July 2021

Cited on pages 24.

Purchase of operating company by Linked Solutions SW Ltd from Isles of Scilly Steamship Group.

www.penzancedrydock.com/post/new-owner-announced-for-penzance-dry-dock

S48 / Penzance Dry Dock: Dry Docking

Cited on pages 24, 101 [a, b].

Current advertised dry-dock dimensions and repair/conversion facilities; compared with harbour authority limits in S04.

www.penzancedrydock.com/services/dry-docking-

S49 / Cornwall Council: Good Growth investment at Penzance Dry Dock, updated 6 December 2024

Cited on pages 24 [a, b].

Jamie Murphy, £2m contribution toward £4m refurbishment, apprenticeships and planned equipment upgrades. Plans are not certified as completed by this dossier.

www.cornwall.gov.uk/council-news/council-budgets-and-economy/good-growth-investment-helping-to-transform-penzance- dry-dock-into-engineering-powerhouse/

S50 / Pendennis: Heritage

Cited on pages 24 [a, b, c].

Foundation in 1988; 1993 management buyout; major builds/refits; dated facilities expansion.

www.pendennis.com/who-we-are/heritage

S51 / Spanopoulos Group: History

Cited on pages 25 [a, b], 101 [a, b].

Company history indexed by search: Salamis and Perama development. Full live page could not be retrieved reliably; Perama date conflicts with the 2019 brochure.

PUBLIC EXAMPLE EDITION

www.spanopoulos-group.com/group/history

S52 / Spanopoulos Group: company brochure, 2019 hosted edition

Cited on pages 25 [a, b, c, d], 101 [a, b].

Recovered full text, especially pp. 8–9 and 40–50: family history, yards, dated capacity claims, workboats and yacht repair services.

pubhtml5.com/hhat/mfbb/basic/

S53 / Cantieri Navali di La Spezia: About us

Cited on pages 25 [a, b], 101, 102.

Company's 1963 origin date, 1996 ownership change, 2016 enlargement and facilities.

www.cnlaspezia.com/en/about-us/

S54 / Cantieri Navali di La Spezia: Services

Cited on pages 25 [a, b], 101, 102.

Official capabilities, 140/440 t travel-lift claims and 1,400 m² paint shed; infrastructure claims are not *Fredrikstad* work records.

www.cnlaspezia.com/en/services/

S55 / Barche: Cantieri Navali di La Spezia, March 2024

Cited on pages 25 [a, b, c], 26, 101, 102.

Paolo Maccione's reporting on Antonia Papacena, Marco Agnese, Moreno Cantinotti, classic-yacht projects and expansion plans. Differs from yard website on 1963/1966 foundation and 440/450 t lift.

www.barchemagazine.com/cantieri-navali-di-la-spezia-dal-restauro-depoca-alla-nautica-tradizionale/

S56 / Cantieri Navali di La Spezia: Portfolio

Cited on pages 25.

Project examples including *Abu Dhabi*, *Almagores II*, Aleph and *Cape Arrow*; listed builders are original builders, not claims of CNSP construction.

www.cnlaspezia.com/en/portfolio/

S57 / Northern Light: archived header-hbjprops image, 18 August 2019 capture

Cited on pages 31, 61, 62, 85.

Recovered twin-propeller image. Filename suggests *Hjalmar Bjørge*; no identifying caption recovered. Tentative class-context attribution, never identified as *Fredrikstad*.

web.archive.org/web/20190818180226id_/www.northernlight-uk.com/wp-content/uploads/2012/11/header-hbjprops.jpg

S58 / Redningsselskapet: RS 69 *Hjalmar Bjørge*

Official identity and service-appearance photograph of the 1963 class sister.

PUBLIC EXAMPLE EDITION

rs.no/om-oss/redningsskoytene/rs-69-hjalmar-bjorge/

S59 / National Archives of Norway: Skipsmålingen collection catalogue, via Nuohtti

Cited on pages 20, 77, 78, 158 [a, b, c, d].

Collection covering 1845–1971 includes a separate series of submitted ship drawings. A specific *Fredrikstad* file has not been located.

www.nuohtti.com/Collection/arkivverket.no-a1450-01000000006587/CollectionList?lng =en-gb

S60 / Burger Boat Company: *Sycara IV* delivery announcement, 2009, reprinted by WisBusiness

Cited on pages 21 [a, b].

Clear division of Bruce King hull design, Freivokh styling/layout contribution and Burger construction.

www.wisbusiness.com/2009/burger-boat-company-delivers-sycara-iv/

S61 / SuperYacht Times: *Sojo* refit, 3 December 2025

Cited on pages 25.

Indexed trade report identifies a 53.4 m Benetti refit at Spanopoulos in 2025. Full article body not recovered; no detailed work scope adopted.

www.superyachttimes.com/yacht-news/benetti-superyacht-sojo-refit

S62 / Historic England: Dry Dock at Penzance Shipyard, list entry 1096157

Cited on pages 23, 80.

Grade II listing dates surviving granite dry-dock structure to circa 1900, distinguishing built fabric from the operator’s longer institutional history.

historicengland.org.uk/listing/the-list/list-entry/1096157

S63 / Fraser: *Fredrikstad* sales brochure supplied by user, 17 pages

Cited on pages 28, 81, 83, 84, 90 [a, b], 93, 100 [a, b], 118 [a, b], 130, 157, 158 [a, b].

PDF created 2 March 2022 and modified 4 March 2022, according to file metadata. Native image extraction supplies 38 photographs and a 1272 × 1506 plan. Cover visually confirms two Detroit Diesel 8V71 main engines; metadata dates are not photograph capture dates.

fraserfilestorage.blob.core.windows.net/external/Yachts/FREDRIKSTAD_Y1399_MC/ Docs/220302_FREDRIKSTAD_Sales%20Br ochure_FY.pdf

S64 / Federal Register: *Fredrikstad* waiver request, 1 June 2009, p. 26268

Cited on pages 16, 17, 70, 71, 75 [a, b], 77, 78, 101, 103, 107, 117.

Primary notice, MARAD-2009-0050: intended cadet training and proposed operating area. Request stage, not the later grant letter; signature-date anomaly noted in text.

www.govinfo.gov/content/pkg/FR-2009-06-01/pdf/E9-12611.pdf

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S65 / Harbourmaps: *Fredrikstad* journey under Maltese MMSI 256003697

Cited on pages 16, 17, 74 [a, b, c], 100, 103.

Reported visits 2024–2026; AIS-derived, not a verified logbook or present-position fix.
www.harbourmaps.com/ship/journey/q?mmsi=256003697

S66 / DNV public vessel register: current name searches

Cited on pages 29 [a, b], 103, 159.

Fredrikstad, *Frederikstad* and *Frederickstad* returned no matches. TORVANGER positive control returned DNV 29554. No historical class file recovered.
vesselregister.dnv.com/vesselregister/

S67 / Massachusetts Maritime Academy: boat inventory, 12 September 2010 capture

Cited on pages 16, 17, 71 [a, b, c, d], 75 [a, b], 76, 77, 101, 103, 117.

SMEDVIK MEK, 75 ft, linked FREDRIKSTAD Profile.jpg. Year field truncated 1968-199. The inventory is advertising evidence, not a transfer instrument.
web.archive.org/web/20100912170549/www.maritime.edu:80/apps/boats/

S68 / Massachusetts Maritime Academy: boat inventory, 21 January 2012 capture

Cited on pages 16, 17, 71 [a, b, c, d, e], 75 [a, b], 76, 77, 101, 103, 117.

Recovered academy inventory captures dated 9 November, 17 November and 18 December 2011. These establish the advertised listing's continued presence, not a completed transfer.
web.archive.org/web/20120121134901/www.maritime.edu:80/apps/boats/

S69 / Massachusetts Maritime Academy: boat inventory, 11 March 2012 capture

Cited on pages 16, 17, 71 [a, b, c, d], 75 [a, b], 76, 77, 101, 103, 117.

Matching entry absent; narrows the public-advertising trail after January, not proof of a closing date or buyer.
web.archive.org/web/20120311235532/www.maritime.edu/apps/boats/

S70 / Massachusetts Maritime Academy: donation and boat-sale FAQ, 12 March 2012 capture

Cited on pages 71, 101, 117.

Explains resale versus significant-related-use donations, the stated three-year use period and requirement for a survey. General programme guidance, not *Fredrikstad*'s deed or survey.
web.archive.org/web/20120312000126/www.maritime.edu/uploads/files/bdfaq.pdf

S71 / Massachusetts Maritime Academy: Enterprise Fall 2009, archived PDF

Cited on pages 101, 117, 159.

Also recovered Fall 2008 and Spring 2010 issues from the same uploads directory. No vessel-specific donor or transaction established; names in donor lists are not assigned to the yacht.

PUBLIC EXAMPLE EDITION

web.archive.org/web/20100714221746/www.maritime.edu/uploads/files/enterpriseF09.pdf

S72 / Massachusetts Maritime Academy Foundation: FY2009 audited financial statements, archived PDF

Cited on pages 101, 117, 159.

27 scanned pages processed by OCR. Foundation 2008 report also recovered/OCR checked. No named *Fredrikstad* donation or transaction established.

web.archive.org/web/20100714212313/www.maritime.edu/uploads/files/MMAF%20Audited%20Financial%20Statements%2 0for%20FY09.pdf

S73 / Pendennis: news dated 12 May 2006, archived 26 October 2006

Cited on pages 16, 17, 23, 24, 26 [a, b], 67, 68 [a, b], 73, 79 [a, b], 101, 103, 134 [a, b].

Independent yard notice identifies *Fredrikstad* among refits nearing completion; planned early-June departure for Norway and Baltic. No individual detailed work scope.

web.archive.org/web/20061026123118/www.pendennis.com/news/index.php?year=2006

S74 / Massachusetts Maritime Academy: *Fredrikstad* profile photograph, 15 July 2010 capture

Recovered 640 × 425 image, Plate 099. Academy-hosted photograph; location, capture date and photographer not established.

web.archive.org/web/20100715061727id_/www.maritime.edu/uploads/images/original/FREDRIKSTAD%20Profile.jpg

S75 / Yacht Buoy: From Lifeboat to Luxury — *Fredrikstad*, indexed video metadata

Search-index metadata identifies title, channel and 9 March 2023 publication. Video not viewed or downloaded; relationship to the 10 March full tour unverified.

www.youtube.com/watch?v=2mR1oJ_WVY0

S76 / The Carnegie Club: 25 Years of The Carnegie Club, 17 January 2020

Cited on pages 79.

Club’s own account explicitly dates founding to 1995.

www.carnegieclub.co.uk/blog/2020/01/25-years-of-the-carnegie-club/

S77 / Companies House: Peter John de Savary appointments

Cited on pages 26, 65, 76, 79, 117.

Filed directorship dates at Carnegie Clubs (International), Penzance Dry-Dock & Engineering, and Skibo; appointments do not alone establish vessel title or ownership between companies.

find-and-update.company-information.service.gov.uk/officers/frTAG8kpsFxajUPrvTN8sJPX7qE/appointments

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S78 / The Carnegie Club: current Skibo Castle website

Cited on pages 79.

Location, Andrew Carnegie estate association, golf, residential hospitality and continuing operation.

www.carnegieclub.co.uk/

B01 / Yard presentation book: user-supplied screen capture and provenance, 10 November 2026

Cited on pages 21, 65, 79 [a, b], 80 [a, b, c], 105, 118, 160, 161 [a, b, c].

Principal researcher identifies a yard gift at relaunch after the 16-month refit. Original screenshot supplied by the Principal on 11 November 2026; no author/imprint visible and final wording uncertain. Retained privately, not reproduced in this public edition; only the limited factual account is used.

Primary and institutional records

The rescue society's original/operator histories, government training notice, MARAD released list, Companies House appointments and institutional academy records provide the principal primary/institutional anchors. Their specific scope is stated: a waiver-request notice is not the grant letter, a radio compilation is not title, and a general donation policy is not a yacht's deed. [S01,S02,S16,S18,S64,S67, S68, S69, S70, S71, S72,S77]

Contemporary and firsthand accounts

Klokk's 1999 account and Smith's 2007 report provide substantive contemporary narratives. Schofield, Verwoerd and crew profiles add firsthand or attributed recollection. Their chronology, roles, observation and marketing context are differentiated in Chapter 1. [S03,S06, S07, S08, S09, S10, S11, S12, S13, S14,S33]

Designer, yard and manufacturer sources

Machinery sources and recoverable originals

P01 / Detroit Diesel — V71 Series operator's manual

Cited on pages 91 [a, b], 131, 153, 154, 156, 158 [a, b].

Original manufacturer manual, public viewer. Selected operating-principle facts and printed p. 9 drawing used. It covers a family of engines, not this yacht's serial numbers.

P02 / Detroit Diesel — 8V71 / 8V71T fan-to-flywheel brochure

Cited on pages 91 [a, b], 131, 153, 155 [a, b].

Manufacturer industrial specification sheet hosted by Powerline Components. Ratings and photograph retained as a qualified comparison only; not a marine rating certificate.

P03 / Detroit Diesel — model / serial identification charts

Cited on pages 91 [a, b], 131, 156.

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Manufacturer identification material hosted by Marine Diesel Basics. V71 chart explains application, design variation, rotation conventions and serial-location examples.

P04 / Murray Yacht Sales: Detroit Diesel 8V71, The Classic Marine Workhorse. Secondary overview supplied by the user;

Cited on pages 91, 157 [a, b].

reviewed with the qualifications above.

Open Murray article

P05 / mtu: Keeping a good thing going, 28 November 2014. Manufacturer account of Detroit two-cycle history and

Cited on pages 91, 157 [a, b].

support as described at that date.

Open manufacturer history

Original designer/yard histories and manufacturer documents supply different kinds of evidence. Industrial engine-family sheets and drawings explain the V71; they do not establish *Fredrikstad*'s installed injectors, duty rating or serials. Yard capability is not an itemized yacht job file.

Brokerage and other published sources

Brokerage records include Fraser, Yachtzoo, YachtWorld, YATCO and Northrop & Johnson, plus archived charter sources. They supply detailed arrangement, inventory and useful imagery but contain copied descriptions, conversion errors and mixed dates. Availability labels are not transfer or condition evidence. [S12, S13, S14,S19, S20, S21, S22, S23,S31,S63]

Client and private contributions

The Principal supplied the Fraser brochure and presentation-book screenshot and identified the latter as a yard relaunch gift. Its source image is preserved unchanged; the transcription retains uncertainty. No author, imprint or exact production date is visible. Client knowledge is attributed separately from independent documentary corroboration. [S63,B01]

Calculation methods and technical references

F01, F02, F03, F04, F05, F06, F07, F08, F09, F10, F11, F12, F13, F14, F15, F16, F17, F18, F19, F20, F21, F22, F23, F24, F25, F26, F27, F28, F29, F30, F31, F32, F33, F34, F35, F36, F37, F38, F39, F40, F41, F42, F43, F44, F45, F46, F47, F48, F49, F50, F51, F52, F53, F54, F55, F56, F57, F58 identify parameter records, not additional primary sources. R01, R02, R03, R04, R05, R06, R07, R08, R09, R10, R11, R12, R13, R14 identify the study's source register. The crosswalk below joins repeated references to the established S/P records; R06, R07, R08, R09, R10 add the calculation-method, water-property and fuel-density references. These identifiers remain unchanged in Appendix B.

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Dependencies and preservation status

Repeated broker wording and overlapping R/S references are not independent corroborations. Source images and extracts are preserved privately. Three film identifiers were recovered, but their films were not downloaded or viewed; Appendix D records that limitation. A live web address does not establish preservation or continuing accessibility.

Sister-ship sources: separate HA identifier series

Source register and further research

The source register links the records used above. Individual photograph links appear directly beneath the photographs. Some direct website downloads were blocked; publicly indexed reader content was used where available. Individual sister-ship histories were recovered through Wayback captures. One *Hagbart Waage* archive target remained rate-limited and was not used to fill gaps. No owners, yards or institutions were contacted.

HA01 / Northern Light archived underwater header: tentative *Hjalmar Bjørge* attribution

Cited on pages 37, 61, 62 [a, b].

https://web.archive.org/web/20190818180226/https://www.northernlight-uk.com/wp-content/uploads/2012/11/header-hbjprops.jpg

Public source examined; some pages via web search reader rather than direct download.

HA02 / Redningsselskapet historic vessel record: RS 68

Cited on pages 33 [a, b], 34.

https://rs.no/om-oss/redningsskoytene/rs-68-bergen-kreds/

Page retrieved during research

HA03 / Redningsselskapet historic vessel record: RS 69

Cited on pages 36 [a, b, c].

https://rs.no/om-oss/redningsskoytene/rs-69-hjalmar-bjorge/

Page retrieved during research

HA04 / Redningsselskapet historic vessel record: RS 70

Cited on pages 38 [a, b], 39 [a, b].

https://rs.no/om-oss/redningsskoytene/rs-70-speideren/

Page retrieved during research

HA05 / Redningsselskapet historic vessel record: RS 71

Cited on pages 41 [a, b, c], 42.

https://rs.no/om-oss/redningsskoytene/rs-71-halten/

Page retrieved during research

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HA06 / Redningsselskapet historic vessel record: RS 72

Cited on pages 43 [a, b, c].

https://rs.no/om-oss/redningsskoytene/rs-72-jorgen-amundsen/
Page retrieved during research

HA07 / Redningsselskapet historic vessel record: RS 76

Cited on pages 46 [a, b, c], 47.

https://rs.no/om-oss/redningsskoytene/rs-76-g-unger-vetlesen/
Page retrieved during research

HA08 / Redningsselskapet historic vessel record: RS 78

Cited on pages 48 [a, b, c].

https://rs.no/om-oss/redningsskoytene/rs-78-hagbart-waage/
Page retrieved during research

HA09 / Redningsselskapet historic vessel record: RS 79

Cited on pages 50 [a, b], 52.

https://rs.no/om-oss/redningsskoytene/rs-79-paul-johansen/
Page retrieved during research

HA10 / Redningsselskapet historic vessel record: RS 80

Cited on pages 53 [a, b, c, d], 54.

https://rs.no/om-oss/redningsskoytene/rs-80-america/
Page retrieved during research

HA11 / Redningsselskapet historic vessel record: RS 81

Cited on pages 55 [a, b, c].

https://rs.no/om-oss/redningsskoytene/rs-81-hjelm-waage/
Page retrieved during research

HA12 / Redningsselskapet historic vessel record: RS 82

Cited on pages 57 [a, b], 59.

https://rs.no/om-oss/redningsskoytene/rs-82-oivind-lorentzen/
Page retrieved during research

HA13 / Redningsselskapet historic vessel record: RS 83

Cited on pages 59 [a, b], 60 [a, b, c].

https://rs.no/om-oss/redningsskoytene/rs-83-lars-christensen/
Page retrieved during research

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HA14 / Northern Light: *America*, Wayback capture 18 August 2019

Cited on pages 54.

https://web.archive.org/web/20190818180354/https://www.northernlight-uk.com/our-boats/norwegian-rescue-ships/america/

Public source examined; some pages via web search reader rather than direct download.

HA15 / Northern Light sister-ship history: america (Wayback capture 19 March 2016)

Cited on pages 53, 54 [a, b].

https://web.archive.org/web/20160319080928id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/america/

Page retrieved during research

HA16 / Northern Light sister-ship history: bergen kreds (Wayback capture 19 March 2016)

Cited on pages 34 [a, b].

https://web.archive.org/web/20160319080815id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/bergen-kreds/

Page retrieved during research

HA17 / Northern Light sister-ship history: g unger veltesen (Wayback capture 19 March 2016)

Cited on pages 46 [a, b].

https://web.archive.org/web/20160319080824id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/g-unger-veltesen/

Page retrieved during research

HA18 / Northern Light sister-ship history: halten (Wayback capture 19 March 2016)

Cited on pages 41.

https://web.archive.org/web/20160319080834id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/halten/

Page retrieved during research

HA19 / Northern Light sister-ship history: jorgen amundsen (Wayback capture 19 March 2016)

Cited on pages 43.

https://web.archive.org/web/20160319080840id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/jorgen-amundsen/

Page retrieved during research

HA20 / Northern Light sister-ship history: lars christensen (Wayback capture 19 March 2016)

Cited on pages 60.

PUBLIC EXAMPLE EDITION

https://web.archive.org/web/20160319080845id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/lars-christensen/
Page retrieved during research

HA21 / Northern Light sister-ship history: olvind lorentzen (Wayback capture 19 March 2016)

Cited on pages 57, 58 [a, b, c].

https://web.archive.org/web/20160319080933id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/olvind-lorentzen/
Page retrieved during research

HA22 / Northern Light sister-ship history: paul johansen (Wayback capture 19 March 2016)

Cited on pages 51 [a, b].

https://web.archive.org/web/20160319080849id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/paul-johansen/
Page retrieved during research

HA23 / Northern Light sister-ship history: speideren (Wayback capture 19 March 2016)

Cited on pages 39, 40.

https://web.archive.org/web/20160319080855id_/http://www.northernlight-uk.com:80/our-boats/norwegian-rescue-ships/speideren/
Page retrieved during research

HA24 / Bjørn Foss, Fra seil til vannjet (2002): class pp. 90–97; disposal pp. 358–361; statistics pp. 364–365; station histories pp. 398–407

Cited on pages 33 [a, b], 34 [a, b, c, d], 36 [a, b, c, d, e], 37, 38 [a, b], 39 [a, b, c], 41 [a, b, c, d], 43 [a, b, c, d, e], 44, 46 [a, b, c, d], 47, 48 [a, b, c, d], 49, 50 [a, b], 51, 52, 53 [a, b, c, d], 55 [a, b, c, d], 57 [a, b], 58, 59, 60 [a, b, c].

https://rs.no/content/uploads/2024/10/FSTV-1.pdf
Public source examined; some pages via web search reader rather than direct download.

HA25 / Danish pilot-history archive: Danish Pilot Service

Cited on pages 60.

https://danmarkslodshistorie.dk/wp-content/uploads/2021/05/Danish-Pilot-Service.pdf
Public source examined; some pages via web search reader rather than direct download.

HA26 / DNVF news: return of *Hjelm Waage*, 13 March 2018

Cited on pages 55.

https://www.dnvf.no/14/1/forside/
Public source examined; some pages via web search reader rather than direct download.

PUBLIC EXAMPLE EDITION

HA27 / Hebridean Whale & Dolphin Trust: Hebrides Cruises partnership, 2018

Cited on pages 34.

https://www.hwdt.org/news/2018/10/1/hebrides-cruises-announced-as-hwdts-latest-corporate-partner

Page retrieved during research

HA28 / Hebrides Cruises: current *Elizabeth G* vessel and cruise page

Cited on pages 34 [a, b], 35.

https://www.hebridescruises.co.uk/vessels/elizabeth-g/

Page retrieved during research

HA29 / Ship Photos: *Elizabeth G* at Tobermory, 24 April 2011

Cited on pages 34.

https://www.shipphotos.co.uk/ship/?ship=elizabethg2

Public source examined; some pages via web search reader rather than direct download.

HA30 / Redningsselskapet individual photo captions; selected RS 70 images

Cited on pages 39, 40.

https://www.flickr.com/photos/redningsselskapet/

Individual photo links are provided below each image. Search results visually screened; unrelated boats excluded.

HA31 / Redningsselskapet individual photo captions; selected RS 76 images

Cited on pages 37, 38, 46, 47.

https://www.flickr.com/photos/redningsselskapet/

Individual photo links are provided below each image. Search results visually screened; unrelated boats excluded.

HA32 / Redningsselskapet individual photo captions; selected RS 78 images

Cited on pages 48, 49, 50.

https://www.flickr.com/photos/redningsselskapet/

Individual photo links are provided below each image. Search results visually screened; unrelated boats excluded.

HA33 / Redningsselskapet individual photo captions; selected RS 80 images

Cited on pages 53 [a, b], 54 [a, b].

https://www.flickr.com/photos/redningsselskapet/

Individual photo links are provided below each image. Search results visually screened; unrelated boats excluded.

HA34 / Redningsselskapet individual photo captions; selected RS 81 images

Cited on pages 55, 56.

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https://www.flickr.com/photos/redningsselskapet/
Individual photo links are provided below each image. Search results visually screened; unrelated boats excluded.

HA35 / Redningsselskapet individual photo captions; selected RS 83 images

Cited on pages 60, 61.

https://www.flickr.com/photos/redningsselskapet/
Individual photo links are provided below each image. Search results visually screened; unrelated boats excluded.

HA36 / Brunsvika: *G. Unger Vetlesen* in Bodø, 2013

Cited on pages 46.

https://brunsvika.net/nyhetsarkiv-alle-artikler/14136-skipsnytt
Page retrieved during research

HA37 / DNVF: Risøy Eiendom January 2018 purchase

Cited on pages 47 [a, b].

https://www.dnvf.no/17/68/rs-76-g-unger-vetlesen/
Page retrieved during research

HA38 / Norsk fartøyvern: *G. Unger Vetlesen* preservation record

Cited on pages 46 [a, b, c], 47 [a, b, c].

https://norsk-fartoyvern.no/fartoy/g-unger-vetlesen/
Page retrieved during research

HA39 / Shutterstock search listing: captioned *Halten* stern, 4 January 2025; lead only

Cited on pages 42.

https://www.shutterstock.com/search/manitowoc-county
Public source examined; some pages via web search reader rather than direct download.

HA40 / James Heinz, WMHS: Manitowoc report, 20 October 2024

Cited on pages 42 [a, b].

https://wmhs.org/the-mystery-ship-of-the-manitowoc-marina/
Public source examined; some pages via web search reader rather than direct download.

HA41 / James Heinz, WMHS: follow-up, 23 November 2024

Cited on pages 41 [a, b, c], 42 [a, b].

https://wmhs.org/more-on-the-mystery-ship-of-manitowocs-marina/
Public source examined; some pages via web search reader rather than direct download.

HA42 / Hebridean Adventures: completed winter 2025/26 accommodation changes

Cited on pages 37.

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https://www.hebrideanadventures.co.uk/vessel/accommodation/
Public source examined; some pages via web search reader rather than direct download.

HA43 / Hebridean Adventures: planned 2026 cabin refit and 2022 purchase

Cited on pages 37 [a, b].

https://www.hebrideanadventures.co.uk/news/cabin-upgrades/
Public source examined; some pages via web search reader rather than direct download.

HA44 / Hebridean Adventures: *Hjalmar Bjorge* history and specification

Cited on pages 36, 37 [a, b, c].

https://www.hebrideanadventures.co.uk/vessel/hjalmar-bjorge/
Public source examined; some pages via web search reader rather than direct download.

HA45 / Skipet: Hjørungavaag yard list, Paul Johansen/America hulls

Cited on pages 53.

https://www.skipet.no/skipsbygging/stalskipsverft/hjorungavaag-verksted-as-hjorungavag
Public source examined; some pages via web search reader rather than direct download.

HA46 / Skipsrevyen: reprinted 1971 christening and *Moflag Junior* tow

Cited on pages 55 [a, b].

https://www.skipsrevyen.no/ny-redningskrysser-gave-fra-hagbart-waage/309958
Page retrieved during research

HA47 / Shiptrail: *Hjelm Waage*, reported 6 November 2026; AIS-derived

Cited on pages 56.

https://shiptrail.io/vessel/257031710-hjelm-waage
Public source examined; some pages via web search reader rather than direct download.

HA48 / DNVF: *Hjelm Waage* restoration/older ownership

Cited on pages 55.

https://www.dnvf.no/17/72/rs-81-hjelm-waage/
Page retrieved during research

HA49 / Norsk fartøyvern: *Hjelm Waage* membership history, 2021, p. 26

Cited on pages 55 [a, b], 56.

https://norsk-fartoyvern.no/wp-content/uploads/Arsmotepapirer-2021-4.pdf
Public source examined; some pages via web search reader rather than direct download.

HA50 / Maritimt Forum: training-vessel role at Karmsund school

Cited on pages 56.

https://www.maritimt-forum.no/aktuelt/en-ny-vr-for-maritim-utdanning

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Page retrieved during research

HA51 / DNVF: *Hagbart Waage* sale effective 1 June 2024

Cited on pages 48, 49.

https://www.dnvf.no/3/57/rs-78-hagbart-waage/
Page retrieved during research

HA52 / Gard P&I: *Hagbart Waage* owner and 2026/27 certificate period

Cited on pages 49 [a, b].

https://gard.no/vessels/53684/
Page retrieved during research

HA53 / Brunsvika: *Hagbart Waage* bought back, 8 April 2024

Cited on pages 48 [a, b], 49.

https://www.brunsvika.net/nyhetsarkiv-alle-artikler/31267-hagbart-waage-hjem-igjen
Page retrieved during research

HA54 / Maritimt Forum: *Hjelm Waage* school delivery, 15 October 2024

Cited on pages 56 [a, b], 57.

https://www.maritimt-forum.no/aktuelt/vingsbt-mottatt-med-flagg
Page retrieved during research

HA55 / *Jorgen Amundsen* project: research mission

Cited on pages 44.

https://jorgenamundsen.com/about/
Page retrieved during research

HA56 / *Jorgen Amundsen* project: vessel data, 5 October 2024

Cited on pages 43, 44 [a, b].

https://jorgenamundsen.com/vessel-data/
Page retrieved during research

HA57 / *Jorgen Amundsen* project: history and 2020 purchase, 13 January 2025

Cited on pages 43 [a, b], 44 [a, b], 45 [a, b].

https://jorgenamundsen.com/vessel-history/
Page retrieved during research

HA58 / *Jorgen Amundsen* project: current Shetland location statement

Cited on pages 44.

https://jorgenamundsen.com/
Page retrieved during research

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HA59 / *Jorgen Amundsen* project: namesake and Lerwick 2023 account

Cited on pages 44.

https://jorgenamundsen.com/captain-jorgen-amundsen/
Public source examined; some pages via web search reader rather than direct download.

HA60 / Karmsund Havn public vessel/port-call list

Cited on pages 56.

https://karmsundhavn.no/maritimt/anlop/
Page retrieved during research

HA61 / Redningsselskapet: RS 82 historical and handover album

Cited on pages 58 [a, b], 59.

https://www.flickr.com/photos/redningsselskapet/albums/72157630327296840/
Public source examined; some pages via web search reader rather than direct download.

HA62 / Wikimedia Commons RS 82 category; identifier conflict flagged

Cited on pages 59.

https://commons.wikimedia.org/wiki/Category:RS_82_%C3%98ivind_Lorentzen_(ship,_1972)
Public source examined; some pages via web search reader rather than direct download.

HA63 / norte directory

Cited on pages 58, 59.

https://directory.marinelink.com/ships/companies-oceanpact_servicos_maritimos_ltda~2e/gt-1-8999/type-rescue_vessel
Page retrieved during research

HA64 / OceanPact results 2017–19, released 2021: small moored vessels

Cited on pages 58.

https://oceanpact.com/wp-content/uploads/2021/01/2021RJ002782_Ocean-trienio.pdf
Public source examined; some pages via web search reader rather than direct download.

HA65 / OceanPact 1Q2022 results: *Norte II* without contract

Cited on pages 58.

https://api.mziq.com/mzfilemanager/v2/d/d3d19aad-2471-4309-a7e5-a5dbc02c0a1c/4065466d-3f5f-d067-a0ec-a9116dbb31ea?origin=1
Public source examined; some pages via web search reader rather than direct download.

HA66 / OceanPact English corporate fleet booklet, October 2024

Cited on pages 58.

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https://oceanpact.com/wp-content/uploads/2024/10/241001-OCElivretoInstitucional_Final_Web_EN_1ch.pdf
Public source examined; some pages via web search reader rather than direct download.

HA67 / OceanPact corporate fleet booklet, January 2026

Cited on pages 58.

https://oceanpact.com/wp-content/uploads/2026/01/260119-OCElivretoInstitucional_Final_Web_1mm.pdf
Public source examined; some pages via web search reader rather than direct download.

HA68 / Joe Lovejoy, Soundings, August 2026: Dave and Amanda Abrams / San Diego

Cited on pages 51, 52 [a, b, c].

https://soundingsonline.com/boats/classic-boats/buying-a-norwegian-rescue-ship/
Page retrieved during research

HA69 / Cruising Yacht Club of Australia: annual report 2020/21 vessel list

Cited on pages 51.

https://cyca.com.au/wp-content/uploads/2021/06/CYCA-Annual-Report-2020-2021.pdf
Public source examined; some pages via web search reader rather than direct download.

HA70 / Expedition Charters: *Paul Johansen* heritage

Cited on pages 51.

https://expeditioncharters.com/heritage/
Page retrieved during research

HA71 / Yeoman Yachts: *Paul Johansen* sold listing and equipment inventory

Cited on pages 51, 52.

https://www.yeomanyachts.com/sold-nautor-swan/smedvik-mek-75
Page retrieved during research

HA72 / CWS Maritime Services: 2012 pre-purchase survey/audio-gauging report

Cited on pages 51 [a, b], 52 [a, b].

https://surveyorsforhire.com/assets/docs/CWS-2012-13revAforwebsiteb.315141026.pdf
Public source examined; some pages via web search reader rather than direct download.

HA73 / Seair commercial bill-of-lading index: *Paul Johansen*, April 2016; secondary lead

Cited on pages 51.

https://www.seair.co.in/us-importers/farley-blackman.aspx
Public source examined; some pages via web search reader rather than direct download.

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HA74 / Dave Abrams, 23 June 2025: planning Virginia–Panama–San Diego

Cited on pages 51.

https://latsatts.com/planning-a-5200-mile-voyage/
Page retrieved during research

HA75 / Redningsselskapet: printed *Fredrikstad* profile, Plate 14 source

Cited on pages 62.

https://www.flickr.com/photos/redningsselskapet/7555307198/
Public source examined; some pages via web search reader rather than direct download.

HA76 / Redningsselskapet fleet index: service dates and lives-saved totals

Cited on pages 33, 34, 36 [a, b], 38, 39, 41 [a, b], 43 [a, b], 46 [a, b], 48 [a, b], 50 [a, b], 53 [a, b], 55 [a, b], 57 [a, b], 59, 60 [a, b].

https://rs.no/om-oss/redningsskoytene/
Page retrieved during research

HA77 / *Servus II* at Rønne, photo uploaded 15 March 2026; capture date not established

Cited on pages 60, 61.

https://www.flickr.com/photos/125118205%40N08/55149652224/
Public source examined; some pages via web search reader rather than direct download.

HA78 / servus sale

Cited on pages 60 [a, b].

https://www.sjofartstidningen.se/oevrigt/privat-lotsbolag-startar-verksamhet-i-skagen/181608
Page retrieved during research

HA79 / Solent Maritime Society: Scanner 668, March 2025, Hythe listing and alias chain

Cited on pages 60, 61.

https://www.mastermariners.uk/public/Solent_Maritime_Society_-Scanner_668.pdf
Public source examined; some pages via web search reader rather than direct download.

HA80 / St Hilda Sea Adventures: current *Speideren* page (date conflicts flagged)

Cited on pages 39 [a, b], 40 [a, b].

https://www.sthildaseaadventures.co.uk/our-vessels/speideren-an-ex-norwegian-rescue-ship
Page retrieved during research

HA81 / QuirkyCruise: *Speideren* fleet introduction planned for spring 2024

Cited on pages 39.

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https://quirkycruise.com/st-hilda-sea-adventures-new-ship/
Public source examined; some pages via web search reader rather than direct download.

HA82 / Shipsforsale: *Speideren* sold-vessel history

Cited on pages 38, 39 [a, b], 40.

https://shipsforsale.com/en/ships-en/shipid/123/pleasure-craft_6_speideren
Page retrieved during research

HA83 / Arctic Whale Tours: Stø August 2026 vessel update

Cited on pages 49 [a, b].

https://www.arcticwhaletours.com/whale-safari
Page retrieved during research

S81 / Title-page illustration credit

Cited on pages 3, 160.

Fredrikstad title-page illustration: AI-generated for Yacht Provenance using ImageGen; selected by the Principal. Decorative artist's rendering, not a historical photograph or a verified configuration on a particular date. Artwork supplied as *Fredrikstad*-dossier-portrait.jpg. Unused outer white canvas was trimmed for page fitting; the complete intended artwork is preserved and scaled proportionally. The supplied original remains unchanged.

S82 / Yacht Provenance: functional accommodation schematic

Cited on pages 90, 161.

Independently authored by Yacht Provenance on 21 November 2026 from the documented factual accounts S03, S07, S31 and S63. No brochure outline, deck geometry or drawing was traced. Box positions express categories of reported functions, not actual locations, dimensions, connections or routes. Explanatory illustration YP-F01, not a recovered, measured or verified as-built plan.

Calculation authorities and conventions

R01 / Redningsselskapet: RS 77 *Fredrikstad*

Cited on pages 96, 97, 118, 135, 136 [a, b, c], 138 [a, b, c, d], 139 [a, b, c, d], 140 [a, b], 145 [a, b, c], 147, 149, 150.

Primary operator particulars: 22.85 m, 6.00 m, 135 tonnes, 10 kn, 2,100 nm, 484 hk, 20 t fuel, 6.5 t fresh water and 6 t towing force. Vessel webpage re-read for this calculation report. Loading condition and rating conventions are not resolved.
https://rs.no/om-oss/redningsskoytene/rs-77-fredrikstad/

R02 / Båtmagasinet: Anne Marit Klokk, Isdronningen fra Sunnmøre, 20 March 1999

Cited on pages 99, 118, 135, 136 [a, b, c, d, e], 138, 139, 140, 142, 145, 148 [a, b, c], 149 [a, b].

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Contemporary converted-yacht description: twin 250 hp, 22,000 L fuel and approximately 3,600 nm at 10–11 kn. Published claims, not a consumption trial.

https://www.batmagasinet.no/allerbm-bm-bladarkiv-finnes/isdronningen-fra-sunnmore/681963

R03 / Fraser: *Fredrikstad* sales brochure, supplied PDF, March 2022 metadata

Cited on pages 96, 118, 135, 136 [a, b], 139, 140 [a, b], 142.

Native brochure and the dossier's complete page review. Two 8V71 engines, principal dimensions, draft, generator and accommodation particulars. Metadata is not the equipment-test date.

https://fraserfilestorage.blob.core.windows.net/external/Yachts/FREDRIKSTAD_Y1399_MC/Docs/220302_FREDRIKSTAD_Sales %20Brochure_FY.pdf

R04 / Northrop & Johnson: *Fredrikstad* sales inventory

Cited on pages 99, 118, 135, 136 [a, b, c, d], 138, 140 [a, b], 142, 148 [a, b, c, d], 149 [a, b], 150 [a, b, c], 151.

Reported 135 t, 22,000 L fuel, 6,500 L water, 8 kn / 3,200 nm; watermaker, pressure and crane data. Conflicting power/draft figures remain documented in dossier source records S01, S02, S09, S19 and S22.

https://www.northropandjohnson.com/yachts-for-sale/fredrikstad-75-smedvik-mek-verksted

R05 / Detroit Diesel: V71 operator material and original industrial 8V71 specification sheet

Cited on pages 98, 118, 135, 136 [a, b], 146 [a, b, c, d].

Family displacement and 5-inch stroke; two-stroke operation. Printed industrial ratings do not certify the yacht's installed injectors, rpm or duty rating. See dossier P01, P02, P03.

https://www.powerlinecomponents.com/literature/detroit_diesel/brochures/8v71na-t_ind.pdf

R06 / Eric W. Sponberg: The Design Ratios

Cited on pages 96, 97, 98, 118, 135, 139, 141, 147 [a, b].

Waterplane and hull coefficients; D/L; printed pp. 42–45 displacement power/speed methods and pp. 51–53 Keith/Wyman methods. Full 55-page PDF consulted. No sailing-only calculations are imported.

https://ericwsponberg.com/wp-content/uploads/2021/09/THE-DESIGN-RATIOS.pdf

R07 / Dave Gerr: The Efficient Powerboat, Part 1, 2011

Cited on pages 98, 118, 135, 141 [a, b], 147.

Page 3: installed-power transport-index convention. Page 5: 8.26 / D/L^0.311 hull-speed factor with minimum 1.34. Original six-page PDF and formula image checked.

https://www.gerrmarine.com/Articles/EfficientPowerboat01.pdf

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R08 / ITTC: Resistance Test, 7.5-02-02-01, 2011 revision 03

Cited on pages 118, 135, 140, 141, 142 [a, b].

Page 2 defines Fn, depth Fn, Re and the ITTC-1957 correlation line. Model-test guidance supplies definitions here; normalized friction is not a full-scale total-resistance prediction.
https://ittc.info/media/1217/75-02-02-01.pdf

R09 / ITTC: Fresh Water and Seawater Properties, 2024 revision 03

Cited on pages 118, 135, 136 [a, b], 141.

Page 37 table gives approximately 1.1892 × 10^-6 m²/s kinematic viscosity at 15 °C for its standard seawater case. Rounded to 1.19 × 10^-6; bulk density is separately the conventional assumed 1,025 kg/m³.
https://www.ittc.info/media/11764/75-02-01-03.pdf

R10 / Geos Group: UK Marine Gas Oil Specification, 2019

Cited on pages 118, 135, 148 [a, b].

One-page supplier specification, density row: 0.8200–0.8800 kg/L at 15 °C. This supports a product-density sensitivity bracket, not identification of fuel actually aboard.
https://geosgroup.com/wp-content/uploads/PRODUCT_SPECIFICATION_GEOS_GROUP.pdf

R11 / Bjørn Foss: Fra seil til vannjet — operator class history

Cited on pages 118, 135, 139.

Class-table draft and original hull/propulsion context as examined in the documentary dossier; not a current hydrostatic table.
https://rs.no/content/uploads/2024/10/FSTV-1.pdf

R12 / Willy Verwoerd: *Fredrikstad* sea-service record

Cited on pages 98, 118, 135, 145.

Crew service record underlying the competing twin-225-hp report. An attributed installed-power statement, not an engine plate or dynamometer certificate.
https://www.wv.no/skipper/sailexp.htm

R13 / Fraser: historical *Fredrikstad* webpage specification

Cited on pages 118, 135, 150.

Historical specification: 8 kn / 3,200 nm, alternative range and two 20 kW auxiliaries; inaccurate four-main field rejected. Not a newly verified available listing.
https://www.fraseryachts.com/en/yacht/fredrikstad/

R14 / YachtWorld: *Fredrikstad* brokerage particulars

Cited on pages 98, 118, 135, 145.

Reviewed twin-250-hp and maximum-speed claims; equipment checklist entries do not certify fitted thrusters or stabilizers.

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https://www.yachtworld.com/yacht/1968-smedvik-mek-frederickstad-9980640/

The R records identify the underlying calculation authorities and overlapping S/P sources; overlap is not independent corroboration. The 58 F records use only the explicitly stated *Fredrikstad* inputs and declared assumptions. Their links lead to the individual calculation, while global pagination governs this book.

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Appendix A Selected voyage chronology

A.1 Voyage and chronology records

These selected dated voyage records supplement the narrative in Chapter 5. Approximate dates, reported movements and sightings retain their evidence qualifications.

Date	Place / activity	Basis
June 2000	New York Harbor; sale to American couple	Contemporary 2007 retrospective. [S07]
2000–circa 2006	Eastern Seaboard private cruising	Reported family-and-friends use; individual ports largely unspecified. [S07]
August 2004	Liberty Landing Marina, Morris Basin, Jersey City	Named sighting in Northern Light history. [S10]
Summer 2005	Loch Linnhe, Scotland, heading toward western Caledonian Canal entrance	Secondary sighting account; does not alone prove a completed canal transit. [S10]
10 October 2005	St Katharine Docks, London	Dated John Winfield photograph. [S26]
12 May 2006	Pendennis, Falmouth	Yard reports refit nearing completion; early-June departure planned for Norway and Baltic. Planned route is not proof of every destination. [S73]
Summer 2006	Northern Norway	Photograph caption credited to captain Andrew Naylor; exact fjord not established. [S08]

Table A.1. Selected dated voyages and sightings

Date	Place / activity	Basis
October–November 2006	Falmouth, UK → Santa Cruz de Tenerife → Antigua	Verwoerd, chief mate; approximately 4,000 nm, two days in Tenerife. [S08,S09]
Autumn 2006	Catamaran Marina, Falmouth Harbour, Antigua	Verwoerd's caption; do not confuse Antigua's Falmouth Harbour with Falmouth in Cornwall. [S08]
Before October 2007; exact dates unknown	Hudson River, Bermuda and Virgin Islands assistance episodes	Naylor's recollections in the 2007 feature; no separate incident records recovered. [S07]
Late 2006–2007	Transition into crewed charter	Canada/New England summers and Caribbean winters advertised. Evidence establishes offered area, not every port call. [S07,S12, S13, S14]
October 2008	Reported academy handover	Location not established by the handover report. [S11]
July 2010	Fairhaven/New Bedford, Massachusetts	Dated blog photograph; a sighting rather than a transfer instrument. [S15]

Table A.2. Passage, charter and academy-period chronology

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Appendix B Technical parameters and calculation records

B.1 Calculation study: evidence, assumptions and results

F01, F02, F03, F04, F05, F06, F07, F08, F09, F10, F11, F12, F13, F14, F15, F16, F17, F18, F19, F20, F21, F22, F23, F24, F25, F26, F27, F28, F29, F30, F31, F32, F33, F34, F35, F36, F37, F38, F39, F40, F41, F42, F43, F44, F45, F46, F47, F48, F49, F50, F51, F52, F53, F54, F55, F56, F57, F58 give individual calculations, with formulas, inputs, interpretations and uncertainties. R01, R02, R03, R04, R05, R06, R07, R08, R09, R10, R11, R12, R13, R14 identify their authorities in the bibliography. Model/scenario results retain their limitations. All references use this book's continuous pagination.

Calculation study dated 11 November 2026. Documented particulars and explicit calculation premises support the records below; they are not a current survey, stability approval or measured performance trial. Relevant interpretations appear in §8.10.

58 parameter records. Many are related calculations or reported quantities, not independent measurements. No sail-area, sailing-handicap, sailing-polar, sailing-rig, sailboat capsize-screening or Brewer comfort calculation is applied to this motor yacht. Shared naval-architecture concepts such as D/L, Fn and hydrostatics remain applicable.

B.1.1 What the calculations say at a glance

Quantity	Result / evidence state
Reference displacement volume	About 132 m³ in seawater at the reported 135 t mass.
Classical speed reference	About 11.1 kn at the assumed 21 m LWL; waterline length is not measured.
Mean immersion per tonne	About 1.10 cm centrally; 0.89–1.67 cm across explicit waterplane models.
Salt-to-freshwater change	About 37 mm centrally; modeled 30–56 mm.
Reported installed power / mass	About 2.49–2.76 kW/t across competing 450–500 mechanical-hp totals.
Advertised-range inversion	About 55–67 L/h for the source-paired speed/range claims; not a measured burn curve.
Stability and actual shafting	No numerical GM, AVS, GZ curve, propeller efficiency or installed shaft-torque claim is possible from the recovered evidence.

Table B.1. Calculation results at a glance

B.1.2 Evidence labels used with every record

R = reported specification. C = arithmetic from reported inputs and declared constants. M = model-dependent estimate. I = arithmetic implied by an advertisement. Q = an explicitly chosen condition or sensitivity test, not an estimate of the actual operating point. A C result may be mathematically sound while its source input remains unverified.

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B.1.3 Inputs and estimation evidence

Input	Adopted value / status	Basis
Reference mass	135 t; no known loading condition	R01; repeated yacht records R02/R04
LOA / maximum-beam reference	22.85 m / 6.00 m; 6.02 m broker alternative	R01/R03
Overall draft	Conflicting published values 2.70–3.63 m; 3.20 m class-table reference	Sources S01, S02, S03, S13 and S19; different dates and measurement bases.
Main engines and power	Two 8V71-family units; 225–250 mechanical hp each in competing accounts	R02/R05; dossier sources S01/S09/S22
Fuel / fresh water	22,000 L / 6,500 L, advertised	R02/R04
Rated vs delivered output	No actual rpm, gearbox ratio or measured SHP	Dossier machinery evidence
Reported speeds/ranges	8 kn / 3,200 nm; 10–11 kn / 3,600 nm	R02/R04, kept as source-paired claims
A01: constants	ρ sea 1,025; fresh 1,000 kg/m³; g 9.80665; 1 kn = 1,852 m/h	Declared reference conventions; not sampled water
A02: waterline geometry	LWL 21.0 m; sensitivity 18.3–22.85 m. BWL 5.4 m; sensitivity 4.8–6.0 m	Broad models; not measured dimensions
A03: planform models	Parabolic, elliptical and fuller quartic outlines	Exact geometric integrals; explanation follows
A04: viscosity	1.19 × 10^-6 m²/s reference	R09: rounded seawater value near 15 °C
A05: environmental example	6 s, small-amplitude deep-water waves; no current	Explicit example, not an observed sea state
A06: reserve example	20% of nominal fuel withheld	Sensitivity only; not a recommended reserve

Table B.2. Inputs, assumptions and conventions

The data come from different dates and configurations. Repetition by brokers does not establish an independent weighing or trial. The 135 t reference may already contain fuel and water. This report does not silently combine empty tanks with a fully loaded displacement, use gross tonnage as mass, or promote the industrial engine sheet to a marine installation certificate.

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B.1.4 How reasonable are the geometry estimates?

No authenticated LWL, BWL or hydrostatic table was located in the available vessel records or targeted name/identifier searches. The privately examined accommodation plan and published afloat photographs document a tapered conventional hull envelope, but neither supplies the underwater offsets. Decorative garment art and another vessel's haul-out photograph are unsuitable measurement sources.

The central LWL is 92% of LOA and central BWL 90% of the 6 m beam reference. Testing roughly 80–100% of each is intentionally broad and includes substantially shorter or narrower waterlines. That choice is qualitatively consistent with the photographed rescue-cutter proportions and rounded deck-plan ends. The exact percentages are analyst-selected sensitivity limits; the available evidence cannot establish that the actual waterline must lie inside them.

For the area coefficient, the report does not invent an empirical *Fredrikstad* value. It integrates three explicitly defined, reproducible mathematical outlines whose coefficients are 0.667, 0.785 and 0.800. These span tapered parabolic ends, an ellipse and a fuller quartic plane. They are plausible shape comparators for the observed tapered envelope, not a reconstruction of the underwater hull. A line plan or measured immersion test would supersede them.

B.1.5 The geometric model and its limits

Let x run from −L/2 to +L/2 and let b(x) be the total waterplane width. Each model is fore-and-aft symmetric for calculation convenience; symmetry and a mid-length LCF are not asserted for *Fredrikstad*.

Model	Width b(x)	Area coefficient / exact moments
Parabolic	$B \times [1 - (2x/L)^2]$	$A_w = 2LB/3$; $I_L = BL^3/30$; $I_T = 4LB^3/105$
Ellipse	$B \times \sqrt{[1 - (2x/L)^2]}$	$A_w = \pi LB/4$; $I_L = \pi BL^3/64$; $I_T = \pi LB^3/64$
Fuller quartic	$B \times [1 - (2x/L)^4]$	$A_w = 4LB/5$; $I_L = BL^3/21$; $I_T = LB^3 \times [1-3/5+3/9-1/13]/12$

Table B.3. Mathematical waterplane definitions and exact geometric moments; analyst-defined models A02–A03

The mathematical definitions hold the bounding dimensions constant to isolate planform fullness. These are idealized calculation models, not yacht drawings or reconstructed underwater measurements.

All 27 combinations of three lengths, three beams and three shapes are computed. The central case is the 21.0 × 5.4 m ellipse. The extrema for each output are selected independently: the area maximum and longitudinal second-moment maximum occur in different shapes. This prevents the inconsistent propagation of one assumed upper coefficient into unrelated quantities.

As a simple plausibility check, displaced volume divided by modeled waterplane area gives an equivalent immersed depth of 1.48 m centrally and 1.20–2.25 m across the models, below the reported overall drafts. A rounded body with keel can satisfy that check. It is only a necessary geometric consistency check; it does not validate a waterline, section shape or true canoe-body draft.

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No statistical confidence is assigned. A 10% error in mass moves volume and D/L by 10%; a 10% length error changes D/L by roughly 25–37% because length is cubed. Waterplane-derived results carry the full model dependence. Mean draft, trim and stability are separate quantities.

B.1.6 Mass and principal proportions

F01 / Reference displacement and unit conversion

135 tonnes = 135,000 kg = 132.87 long tons.
Status: C / reported mass

Calculation: Long tons = kg / 1,016.0469088.

Evidence / premises: R01, R02 and R04 repeat approximately 135 tonnes; no current weighed loading condition is available.

Interpretation for *Fredrikstad*: Use this as a reference calculation mass, not a certified current departure displacement. Gross tonnage is a separate volume-based index.

F02 / Displaced volume in seawater

131.71 m³, approximately 132 m³.
Status: C

Calculation: Volume = mass / density = 135,000 / 1,025.

Evidence / premises: R01 reference mass; A01 conventional seawater density.

Interpretation for *Fredrikstad*: That volume must be immersed to support the reference mass. If actual mass differs by 10%, required volume differs by 10%; 135 tonnes is not re-established by this calculation.

F03 / Displaced volume in fresh water

135.00 m³; 3.29 m³ more than in the seawater reference.
Status: C

Calculation: Volume = 135,000 / 1,000; difference = 135.00 − 131.7073.

Evidence / premises: R01; A01 density conventions.

Interpretation for *Fredrikstad*: The same vessel and mass require more immersed volume in fresh water. Draft change also requires a waterplane-area assumption; see F28.

F04 / Weight and equilibrium buoyancy

1,323.9 kN = 1.324 MN.
Status: C

Calculation: Weight force = mass × g; static buoyancy has equal magnitude.

Evidence / premises: R01 and A01, g = 9.80665 m/s².

Interpretation for *Fredrikstad*: This is a force, not 135 kN. It scales righting moments, while giving no information about the centre of gravity or stability margin.

F05 / Overall length / maximum beam

3.81 using 22.85 / 6.00; 3.80 with 6.02 m broker beam.
Status: C

Calculation: LOA / Bmax.

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Evidence / premises: R01: 22.85 m length and 6.00 m deck beam; R03 gives 6.02 m.

Interpretation for *Fredrikstad*: The overall envelope is relatively broad compared with its length. This is not the underwater length/beam ratio and does not by itself predict resistance or comfort.

F06 / Overall draft / maximum beam

0.45–0.61 across reported 2.70–3.63 m draft and 6.00–6.02 m beam; 0.53 at 3.20 / 6.00.
Status: C / conflicting draft inputs

Calculation: Overall draft / maximum beam.

Evidence / premises: R02, R11 and the dossier preserve conflicting historical/broker drafts; 3.20 m is the operator class-table entry.

Interpretation for *Fredrikstad*: The spread is an unresolved source difference, not a measured operational draft range. It cannot establish berth clearance. Overall keel draft is not canoe-body depth.

F07 / Waterline length / maximum beam

3.50 central; 3.05–3.81 across the model length bracket.
Status: M

Calculation: LWL / 6.00.

Evidence / premises: A02: model LWL 21.0 m, bracket 18.3–22.85 m; R01 beam.

Interpretation for *Fredrikstad*: This describes the assumed underwater length relative to the known maximum width. It is more relevant to speed than LOA/beam, but the missing LWL remains consequential.

F08 / Waterline fraction and combined overhang

Central LWL/LOA 91.9%; bracket 80.1–100%. Combined difference 1.85 m central, 0–4.55 m bracket.
Status: M

Calculation: LWL/LOA; LOA − LWL.

Evidence / premises: A02 and R01. The visible conventional bow and rounded stern support using a substantial fraction of LOA, not an exact measured waterline.

Interpretation for *Fredrikstad*: These are model bookkeeping quantities. They do not locate individual bow/stern overhangs or prove that the true waterline lies within the bracket.

F09 / Displacement / length ratio, D/L

406 central; 315–614 over the length bracket.
Status: M

Calculation: D/L = displacement in long tons / (0.01 × LWL in feet)^3.

Evidence / premises: R01 mass; A02 LWL. R06 defines the conventional ratio.

Interpretation for *Fredrikstad*: The length uncertainty has a cubic effect: the same 135-tonne vessel gives very different D/L values. Sailing-yacht racing/cruising category thresholds are not applied.

F10 / Length / displaced-volume cube root

4.13 central; 3.60–4.49.

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Status: M

Calculation: LWL / volume^(1/3), with metres throughout.

Evidence / premises: R01 mass; A01 density; A02 LWL.

Interpretation for *Fredrikstad*: A dimensionless compactness comparison: length is only about four characteristic displacement lengths in the central model. It is not a hull-form coefficient or efficiency measurement.

F11 / Overall-draft box occupancy

0.363 at LWL 21 m, BWL 5.4 m and overall draft 3.2 m; approximately 0.265–0.555 over model dimensions and reported drafts.

Status: M / explicitly nonstandard fullness proxy

Calculation: Volume / (LWL × BWL × overall draft).

Evidence / premises: R01 volume; A02 dimensions; reported draft 2.70–3.63 m.

Interpretation for *Fredrikstad*: This is a stated bounding-box ratio, not an established canoe-body block coefficient. A deep keel places empty space in that box; a low result must not be interpreted as a fine, low-drag hull. Canoe-body draft is unavailable.

F12 / Gross tonnage kept separate

Approximately 99–99.4 GT in later marketing; no mass conversion is made.

Status: R

Calculation: No direct GT-to-tonnes-of-displacement conversion exists.

Evidence / premises: R03/R04; the reported 135 tonnes is the mass input used above.

Interpretation for *Fredrikstad*: GT describes enclosed volume under a measurement convention. Substituting 99.4 for 135 in the hydrostatic or power calculations would be a category error.

B.1.7 Speed, water flow and waves

F13 / Speed / length ratio

At 8 / 10 / 11 / 12 kn: 0.964 / 1.205 / 1.325 / 1.446.

Status: M

Calculation: S/L = speed in knots / sqrt(LWL in feet).

Evidence / premises: A02 central LWL 21.0 m; the selected speeds span the advertised cruise and maximum figures in R02, R03, R04.

Interpretation for *Fredrikstad*: At 11 kn the central ratio is near the traditional 1.34 reference; at 12 kn it exceeds it. Neither comparison verifies the advertised speed or identifies the delivered power.

F14 / Length-based Froude number

At 8 / 10 / 11 / 12 kn: 0.287 / 0.358 / 0.394 / 0.430. At 12 kn the length bracket gives 0.412–0.461.

Status: M

Calculation: Fn = V / sqrt(g × LWL), with V in m/s.

Evidence / premises: A02 length; A01 gravity; R08 method definition.

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Interpretation for *Fredrikstad*: The upper speed is in a region where wave-making and running attitude matter strongly for a displacement vessel. Fn is a regime indicator, not a proof of planing or a resistance curve.

F15 / Traditional hull-speed reference

11.12 kn central; 10.38–11.60 kn bracket.
Status: M

Calculation: 1.34 × sqrt(LWL in feet).

Evidence / premises: R06/R07 conventional reference; A02 length.

Interpretation for *Fredrikstad*: This is a wave-related comparison, not a guaranteed maximum. The published 12 kn would be about 8% above the central reference, but hull shape, power and trial conditions determine actual performance.

F16 / Gerr D/L-adjusted hull-speed reference

11.12 kn central; 10.38–11.95 kn bracket.
Status: M

Calculation: sqrt(LWL_ft) × max[1.34, 8.26 / (D/L)^0.311].

Evidence / premises: R07, p. 5. The author explicitly applies a minimum S/L of 1.34.

Interpretation for *Fredrikstad*: The floor is active at the central and short-length cases. Using the bare power-law without that floor would wrongly lower this particular published reference. It still is not a trial prediction.

F17 / Depth Froude number

At 8 kn: 0.588 / 0.416 / 0.294 for depths 5 / 10 / 20 m. At 12 kn: 0.882 / 0.623 / 0.441.
Status: Q / stated water depths

Calculation: Fn_depth = V / sqrt(g × water depth).

Evidence / premises: R08 definition; depth scenarios are not claimed cruising observations.

Interpretation for *Fredrikstad*: The same speed is more hydrodynamically constrained in shallow water. A value approaching one can signal strong shallow-water effects. Channel width, squat and wave clearance remain unknown; these are not safe-speed instructions.

F18 / Reynolds number

At 8 / 10 / 11 / 12 kn: 72.6 / 90.8 / 99.9 / 108.9 million.
Status: M / water-property condition

Calculation: Re = V × L / kinematic viscosity; L = 21.0 m proxy.

Evidence / premises: A02; A04 ν = 1.19 × 10^-6 m²/s, representative of seawater near 15 °C, supported by R09.

Interpretation for *Fredrikstad*: These large values support using a turbulent correlation for a smooth-surface comparison. Actual submerged length, temperature, roughness and fouling are not measured.

F19 / ITTC-1957 friction coefficient

At 8 / 10 / 11 / 12 kn: 0.002183 / 0.002113 / 0.002084 / 0.002058.
Status: M / smooth correlation

Calculation: $Cf = 0.075 / [\log10(Re) - 2]^2$.

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Evidence / premises: R08; Re as calculated above.

Interpretation for *Fredrikstad*: A dimensionless smooth-reference coefficient. It is not total drag: form effects, wave-making, appendages, roughness and propeller interactions are not captured by this single coefficient.

F20 / Friction force and effective power per 100 m²

At 8 kn: 1.90 kN and 7.80 kW. At 10 kn: 2.87 kN and 14.74 kW. At 12 kn: 4.02 kN and 24.81 kW, per 100 m².

Status: M / normalized area

Calculation: $Rf = 0.5\ \rho\ V^2\ Cf\ S$; $Pf = Rf \times V$; set $S = 100$ m².

Evidence / premises: R08 correlation; A01/A04; no actual wetted surface has been assigned.

Interpretation for *Fredrikstad*: The normalization makes the scale useful without inventing hull area. Multiply by actual S/100 only for this reference component. These values must not be described as *Fredrikstad*'s total resistance or required engine power.

F21 / Ideal distance made in 24 hours

192 / 240 / 264 / 288 nautical miles at 8 / 10 / 11 / 12 kn.

Status: C / constant speed

Calculation: Daily distance = speed × 24.

Evidence / premises: Speeds from R02, R03, R04; uninterrupted constant speed is an explicit premise.

Interpretation for *Fredrikstad*: These are arithmetic runs through the chosen speed reference. Current, weather, stops, manoeuvring and actual sustainable speed determine a real day's distance; maximum advertised speed is not an endurance setting.

F22 / Six-second deep-water wave reference

Wavelength 56.2 m, crest speed 18.2 kn, group speed 9.10 kn; wavelength/LOA = 2.46.

Status: Q

Calculation: $\lambda = gT^2/(2\pi)$; $c = \lambda/T$; group speed = $c/2$.

Evidence / premises: A05: a six-second linear deep-water wave, not a measured sea state.

Interpretation for *Fredrikstad*: The crests and energy travel at different speeds, neither of which is yacht speed. This gives a scale against the 22.85 m vessel; wave height and direction would still be needed to discuss response.

F23 / Wave-encounter period

For that six-second wave: at 8 kn, 4.17 s head seas / 10.70 s following seas; at 10 kn, 3.87 s / 13.31 s.

Status: Q

Calculation: $1/T_{enc} = |1/T - V \cos(\mu)/\lambda|$; $\mu = 0°$ following, 180° head.

Evidence / premises: A05 deep-water example, no current, collinear heading and small-amplitude wave theory.

Interpretation for *Fredrikstad*: The encountered rhythm can differ markedly from the stationary wave period. No resonance or comfort conclusion follows because *Fredrikstad*'s natural roll/pitch response and damping remain unknown.

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B.1.8 Estimated hydrostatic response

F24 / Waterline beam and waterplane coefficient

Central BWL 5.4 m and Cwp = π/4 = 0.785; tested BWL 4.8–6.0 m and Cwp 0.667–0.800.
Status: M

Calculation: Cwp = actual/model waterplane area / (LWL × BWL).

Evidence / premises: A02/A03: deliberately broad dimensional bracket and three explicit tapered geometric models.

Interpretation for *Fredrikstad*: The 6.00 m reported deck beam is an upper geometric reference, not a measured BWL. These are model inputs whose reasonableness and limitations are shown before the results, not hidden coefficients fitted to a desired answer.

F25 / Waterplane area

89.1 m² central; 58.6–109.7 m² across 27 model combinations.
Status: M

Calculation: Aw = Cwp × LWL × BWL.

Evidence / premises: A02/A03; full model grid is in the reproducibility record.

Interpretation for *Fredrikstad*: The central result is about 65% of the LOA × maximum-beam envelope, which is geometrically plausible for a tapered waterline. The broad interval is a sensitivity envelope, not a confidence interval for the real vessel.

F26 / Tonnes per centimetre and pounds per inch immersion

0.913 t/cm and 5,112 lb/in central; 0.600–1.124 t/cm and 3,361–6,295 lb/in bracket.
Status: M

Calculation: TPC = ρ Aw × 0.01 / 1,000; PPI = ρ Aw × 0.0254 / 0.45359237.

Evidence / premises: A01 densities; estimated Aw, not a measured hydrostatic table.

Interpretation for *Fredrikstad*: Near that assumed flotation, about 0.91 tonne gives one centimetre of mean sinkage. The two unit systems express the same property and are cross-checked for consistency.

F27 / Mean sinkage per added tonne

1.10 cm/t central; 0.89–1.67 cm/t bracket. A 100 kg addition gives roughly 0.9–1.7 mm mean sinkage.
Status: M

Calculation: Mean sinkage in cm = added tonnes / TPC.

Evidence / premises: Local small-load approximation based on F25 model area.

Interpretation for *Fredrikstad*: An added person or small store load has a small mean effect; trim from its location may matter more. This is not an estimate of bow or stern draft, which requires LCF and longitudinal loading.

F28 / Salt-to-freshwater mean draft increase

37 mm central; 30–56 mm bracket at unchanged 135-tonne mass.
Status: M

Calculation: Δdraft ≈ [mass/ρ_fresh − mass/ρ_sea] / Aw.

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Evidence / premises: A01 seawater 1,025 and fresh water 1,000 kg/m³; constant local waterplane approximation.

Interpretation for *Fredrikstad*: Changing water density alone adds several centimetres of mean immersion, not decimetres. Actual local salinity and the unresolved measured draft remain more important for clearance decisions.

F29 / Waterplane longitudinal second moment

2,455 m⁴ central; 981–3,514 m⁴ bracket.
Status: M

Calculation: I_L = integral x² dAw about the model's transverse centroidal axis.

Evidence / premises: A03 exact integrals for each model. The largest I_L occurs with the elliptical, not the largest-area quartic, shape.

Interpretation for *Fredrikstad*: Area distributed toward bow and stern increases resistance to trim. Model extrema are calculated independently for each output; one high-area case is not assumed to maximize every property.

F30 / Waterplane transverse second moment

162.3 m⁴ central; 77.1–270.0 m⁴ bracket.
Status: M

Calculation: I_T = integral y² dAw about the model's fore-and-aft centroidal axis.

Evidence / premises: A03 model integrals; no inclining test or hull-line integration.

Interpretation for *Fredrikstad*: Breadth has a strong cubic effect. This geometry helps explain initial stability, but the centre of gravity is still required before estimating actual stiffness or roll response.

F31 / Transverse and longitudinal metacentric radii

BM_transverse 1.23 m central (0.59–2.05 m); BM_longitudinal 18.64 m (7.44–26.68 m).
Status: M

Calculation: BM = corresponding waterplane second moment / displaced volume.

Evidence / premises: A01–A03 and Archimedean volume.

Interpretation for *Fredrikstad*: These are metacentric radii, not metacentric heights GM. GM = KB + BM − KG, with free-surface correction where applicable. Neither KB, KG nor the tank free-surface correction is verified.

F32 / Waterplane contribution to trim stiffness

1.20 tf·m/cm central; 0.55–1.58 tf·m/cm bracket.
Status: M / incomplete MCT

Calculation: MCT_geometry = ρ_t × I_L / (100 × L); actual MCT = Δ_t × GML / (100 × L).

Evidence / premises: A03 model; excludes the KB−KG contribution and tank corrections.

Interpretation for *Fredrikstad*: At L = 21 m and Δ = 135 t, each metre of KG−KB reduces this geometric contribution by 0.0643 tf·m/cm. Thus this is not a fully estimated actual MCT; the omitted correction is quantified rather than concealed.

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F33 / Trim response to shifting a small load

100 kg moved 10 m: 0.83 cm total trim central, 0.63–1.82 cm bracket. One tonne moved 10 m gives ten times those values.
Status: M / geometric contribution only

Calculation: Trimming moment = shifted tonnes × distance; total trim ≈ moment / MCT_geometry.

Evidence / premises: F32 model stiffness. No actual LCF or longitudinal GM is available.

Interpretation for *Fredrikstad*: The result is a bow-to-stern draft difference, not the change at each end. A correction to MCT or an off-centre LCF changes the answer. Compare with F26: moving existing weight changes trim but not total mass.

F34 / Righting moment per righting lever

Each 0.10 m of actual GZ would give 132.4 kN·m; 0.50 m would give 661.9 kN·m.
Status: Q / exact conversion at reference mass

Calculation: RM = mass × g × GZ.

Evidence / premises: R01 reference mass; GZ values here are conversion examples, not estimates of *Fredrikstad*'s stability curve.

Interpretation for *Fredrikstad*: This supplies a useful scale while avoiding a fabricated GZ, GM or AVS. No conclusion about capsize recovery, heel at a given load or seakeeping can be drawn from the conversion alone.

B.1.9 Machinery, power and propulsion

F35 / Competing propulsion-power ratings

450 mechanical hp total = 335.6 kW; 500 hp = 372.8 kW. If 484 Norwegian hk means metric PS, it equals 356.0 kW, about 477.4 mechanical hp.
Status: C / reported alternatives

Calculation: Mechanical hp × 0.745699872 = kW; metric PS × 0.73549875 = kW.

Evidence / premises: R01/R02/R12/R14; 225 hp each is the crew record, 250 hp each a repeated yacht account.

Interpretation for *Fredrikstad*: These source differences are retained, not averaged. Unit conversion alone does not reconcile 225 versus 250 hp. Fraser's four-main field is rejected in favour of the supported twin installation.

F36 / Installed power / reference displacement

2.49–2.76 kW per tonne; 3.33–3.70 mechanical hp per tonne, using 450–500 hp and 135 t.
Status: C

Calculation: Total rated propulsion power / reference mass.

Evidence / premises: F35 and R01 mass.

Interpretation for *Fredrikstad*: This is installed capacity per unit mass, not power needed at cruise. A measured loaded displacement, duty rating, transmission losses and speed trial are still required for a performance diagnosis.

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F37 / Nominal engine swept volume and power density

568 cu in = 9.308 L per 8V71; 18.616 L for two. At 450–500 hp total: 18.0–20.0 kW/L of nominal swept volume.
Status: C / model-family basis

Calculation: 8 × 71 cu in; 1 cu in = 0.016387064 L; total power / total swept volume.

Evidence / premises: R05 manufacturer family designation; installed serial/injector details unverified.

Interpretation for *Fredrikstad*: This describes a relatively large-displacement engine family at the cited ratings. It does not establish present engine health, allowable overload or the rating of a turbocharged variant.

F38 / Crankshaft torque at stated assumed duty points

225 hp: 890 N·m at 1,800 rpm or 763 N·m at 2,100. 250 hp: 989 or 848 N·m respectively; per engine.
Status: Q / power-rpm pairs

Calculation: Torque = power_W / (2π rpm/60).

Evidence / premises: R05 gives relevant family example speeds; neither rpm is authenticated as *Fredrikstad*'s rated speed.

Interpretation for *Fredrikstad*: These are alternative conditional operating points, not a torque curve or constant-power assertion. The two engines drive separate paths; adding the numbers does not give torque in either shaft.

F39 / Two-stroke brake mean effective pressure

About 5.15–6.68 bar over the four power/rpm pairs; 6.68 bar at 250 hp and 1,800 rpm.
Status: Q / same assumed duty points

Calculation: For a two-stroke engine: BMEP = 2π × torque / swept volume.

Evidence / premises: R05 two-stroke family and nominal 9.308 L swept volume.

Interpretation for *Fredrikstad*: This is a calculated brake-output intensity, not measured combustion pressure or a limit. The four-stroke 4π factor would be wrong for the V71 cycle.

F40 / Mean piston speed

7.62 m/s at 1,800 rpm; 8.89 m/s at 2,100 rpm.
Status: Q / family dimensions and assumed rpm

Calculation: Mean piston speed = 2 × stroke × rpm / 60; stroke = 0.127 m.

Evidence / premises: R05 industrial family sheet supplies the 5-inch stroke.

Interpretation for *Fredrikstad*: A useful mechanical comparison at specified speed, independent of cylinder count. It does not predict wear or overhaul life without the actual installation and service record.

F41 / Historical towing-force conversion

6 tonnes-force corresponds to 58.8 kN, about 4.44% of the reference weight force.
Status: C / reported service figure

Calculation: Force = 6,000 kg × g; force ratio = 6 / 135.

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Evidence / premises: R01 operator entry Slepekraft: 6 ton, interpreted in the conventional towing-force sense.

Interpretation for *Fredrikstad*: A historical reported towing capability, not a current certified bollard-pull test. It cannot establish towline safe working load or be assumed constant as the yacht gains speed.

F42 / Gerr shaft-power speed model

10.48 kn at 21 m LWL and 500 SHP; 9.78–10.93 kn over the length bracket.

Status: Q / exploratory empirical screen

Calculation: V_kn = sqrt(LWL_ft) × [2.3 − (displacement_lb / SHP)^(1/3) / 8.11].

Evidence / premises: R06, printed p. 44, version B; 500 SHP is an ideal-input test, not verified delivered output.

Interpretation for *Fredrikstad*: The published 500 brake-hp total has deliberately not been silently equated to measured SHP. This test assumes the whole 500 reaches the shafts and remains uncalibrated for this hull. It is a comparator, not a new yacht speed claim.

F43 / Keith and Wyman speed-model cross-checks

At the same 21 m / 135 t scale: Keith 11.15–12.86 kn for C = 1.3–1.5 and 500 BHP; Wyman 8.70 kn with 500 SHP.

Status: Q / uncalibrated comparators

Calculation: Keith uses mph = sqrt(L_ft) C (1,000 BHP / lb)^(1/3), then converts to knots. Wyman uses knots = Cw sqrt(L_ft) [SHP/(lb/1,000)]^(1/3), with Cw = 0.7 + (1.8/10.4) × S/L, solved consistently.

Evidence / premises: R06, printed pp. 51–53; default coefficients are not fitted to *Fredrikstad*.

Interpretation for *Fredrikstad*: The wide disagreement exposes model and coefficient uncertainty. It does not create a confidence band, validate 12 kn or justify selecting the most favourable answer. The mph/knots and brake/shaft-power distinctions are essential.

F44 / Gerr installed-power transport index

At 8 kn: about 14.9 with 500 hp or 16.6 with 450 hp; at 10 kn and 500 hp: about 18.6.

Status: C / reported-speed comparison

Calculation: ET = 5.144 × speed_kn × loaded tonnes / installed kW, in Gerr's reporting convention.

Evidence / premises: R07, p. 3; substitute the 135 t reference, not a verified fully loaded trial mass.

Interpretation for *Fredrikstad*: An installed-capacity comparison, not a thermodynamic or propulsive efficiency percentage. Lower installed power increases the index at a fixed assumed speed, but that does not prove the vessel can sustain that speed on less power.

B.1.10 Fuel, endurance and loading

F45 / Fuel mass at advertised tank volume

22,000 L corresponds to 18.04–19.36 tonnes; 18.70 t at 0.850 kg/L.

Status: M / supplier density bracket

Calculation: Fuel mass = fuel volume × density.

PUBLIC EXAMPLE EDITION

Evidence / premises: R02/R04 volume; R10 supplier MGO specification gives 0.820–0.880 kg/L at 15 °C.

Interpretation for *Fredrikstad*: A commercially documented density bracket is stronger than guessing a single universal diesel density. *Fredrikstad*'s delivered fuel batch and temperature remain unknown; this does not certify usable tank capacity.

F46 / Fresh-water and combined liquid load

6,500 L fresh water ≈ 6.50 t. Fuel plus fresh water: 24.54–25.86 t, central 25.20 t.
Status: C / fuel-density estimate

Calculation: Combined mass = fuel mass + fresh-water mass.

Evidence / premises: R04 tank volumes; A01 fresh water convention and R10 fuel bracket.

Interpretation for *Fredrikstad*: These liquids represent about 18.2–19.2% of 135 t. The published displacement may already include them; do not add them to 135 t as though it were proven lightship mass.

F47 / First-order empty-to-full immersion difference

Central constant-area arithmetic: 27.6 cm; combined model/density extremes about 21.8–43.1 cm.
Status: M / large-extrapolation warning

Calculation: Linearized mean immersion = liquid mass / TPC.

Evidence / premises: F26 and F46; assumes both stated tanks change from empty to full with all else unchanged.

Interpretation for *Fredrikstad*: A roughly 25 t load change is too large to trust a constant-waterplane approximation. These numbers show scale only; actual full/empty drafts need hydrostatics, longitudinal tank positions and a known loading condition. They are not current-draft predictions.

F48 / Implied fuel mileage from advertisements

3,200 nm / 22,000 L: 6.875 L/nm or 0.145 nm/L. 3,600 nm: 6.111 L/nm or 0.164 nm/L.
Status: I

Calculation: Fuel per distance = assumed consumed tank volume / quoted range.

Evidence / premises: R02/R04; assumes all 22,000 L is consumed and all fuel users are included.

Interpretation for *Fredrikstad*: These invert advertised figures. They are not independent evidence of actual economy, and do not establish whether the original advertisement allowed a reserve.

F49 / Implied hourly fuel consumption

55.0 L/h for 3,200 nm at 8 kn; 61.1–67.2 L/h for 3,600 nm at 10–11 kn.
Status: I

Calculation: Litres/hour = litres/nautical mile × knots.

Evidence / premises: Only source-paired speed/range combinations are used: R04 8 kn / 3,200 nm and R02 10–11 kn / 3,600 nm.

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Interpretation for *Fredrikstad*: Total implied consumption, not a measured per-engine curve. Dividing it by two would assume identical engine loading and no generator or other fuel demand.

F50 / Implied endurance at those advertised points

400 h / 16.7 d at 8 kn; 360 h / 15.0 d at 10 kn; 327 h / 13.6 d at 11 kn.
Status: I

Calculation: Endurance = quoted range / speed.

Evidence / premises: R02/R04 with the same full-volume/no-reserve premise.

Interpretation for *Fredrikstad*: These are another expression of the same advertised claims. They must not be counted as separate corroboration of tank capacity, fuel burn or endurance.

F51 / Twenty-percent reserve sensitivity

17,600 L remaining for the example: 2,560 nm at the 3,200-nm baseline, or 2,880 nm at the 3,600-nm baseline.
Status: Q / not a reserve recommendation

Calculation: Adjusted range = 0.8 × baseline range, holding its implied consumption fixed.

Evidence / premises: A06: explicitly chosen 20% withheld volume; underlying economy remains unverified.

Interpretation for *Fredrikstad*: This shows the arithmetic effect, not a recommended passage reserve. If the original quoted range already includes a reserve, this would double-count it. Unusable volume, sea state and loading also remain unknown.

F52 / Additional fuel demand and economy sensitivity

At the 8-kn / 55-L/h example with 17,600 L, one extra L/h reduces calculated range from 2,560 to 2,514 nm. A 10% increase in burn reduces any fixed-fuel range by 9.1%.
Status: Q

Calculation: Range = usable litres × speed / total litres per hour.

Evidence / premises: The extra 1 L/h is a unit sensitivity, not an estimated generator burn.

Interpretation for *Fredrikstad*: Hotel loads and other fuel users must be included once, not ignored or double-counted. Actual generator consumption requires its model, load and measured curve.

F53 / Original fuel mass versus later volume

Original 20-tonne fuel entry equates to about 22,700–24,400 L over the supplier-density bracket; about 23,500 L at 0.850 kg/L.
Status: C / separate historical records

Calculation: Litres = 20,000 kg / density_kg_per_L.

Evidence / premises: R01 historical 20 t capacity; R02/R04 later 22,000 L figure.

Interpretation for *Fredrikstad*: The records are not identical after conversion. That may reflect capacity basis, usable volume, changes or reporting error; it does not justify adding extra unverified passage fuel.

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B.1.11 Numerical systems capacities

F54 / Generator nameplate power

Two units of 20 kW are reported. Their nameplate sum is 40 kW; one operating unit is nominally 20 kW.
Status: R / arithmetic only

Calculation: Sum of reported ratings, not a verified bus-capacity calculation.

Evidence / premises: R13/R04 identify Kohler and Northern Lights units.

Interpretation for *Fredrikstad*: A 40 kW combined supply requires suitable paralleling and installation. The records do not prove that capability, present operability or spare capacity after hotel demand.

F55 / Watermaker output and ideal tank refill

3,780 L/day = 157.5 L/h. A 6,500 L tank would take 41.3 h (1.72 d) at that output with no use or losses.
Status: C / advertised equipment

Calculation: Hourly output = daily output / 24; refill time = tank capacity / output.

Evidence / premises: R04 advertised Sea Fresh output and water capacity.

Interpretation for *Fredrikstad*: A practical scale for replenishment, not a measured production rate. Water temperature, salinity, membrane condition, operating hours and concurrent consumption change the result.

F56 / Fresh-water service pressure as head

0.9–2.5 bar corresponds to approximately 9.18–25.49 m of fresh-water pressure head.
Status: C / advertised pressure

Calculation: Head = pressure / (fresh-water density × g); 1 bar = 100,000 Pa.

Evidence / premises: R04 inventory range; gauge versus absolute basis not specified.

Interpretation for *Fredrikstad*: This is the equivalent static head of the stated pressure, not pump flow or pressure available at each fixture. Installation losses and the source's pressure reference remain unresolved.

F57 / Historical pumping capacity conversion

62 t/h = 17.22 kg/s, about 17.22 L/s in fresh water or 16.80 L/s at the adopted seawater density.
Status: C / historical mass-flow rating

Calculation: Mass-flow conversion; volume flow = mass flow / density.

Evidence / premises: R01 original fire/salvage pumping equipment, not a current pump test.

Interpretation for *Fredrikstad*: Actual delivery depends on head, suction and condition. A nominal flow cannot establish flooding survivability or compliance with a current safety requirement.

F58 / Reported crane capacity as force and mass fraction

750 kg lifted weight corresponds to 7.35 kN and 0.56% of the 135 t reference mass.
Status: C / advertised equipment

Calculation: Lifted weight force = 750 × g; mass fraction = 750 / 135,000.

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Evidence / premises: R04 reported upper-deck crane capacity.

Interpretation for *Fredrikstad*: Not a certified load chart or heel calculation. Outreach, boom position, vessel GM, loading and crane condition are missing. A tender already aboard is a weight transfer, not necessarily a new 750 kg load.

B.1.12 What cannot yet be assigned a vessel value

The following shared—not sailing-only—parameters remain important. Estimates would require inputs that the existing evidence does not constrain sufficiently. Numerical substitutions elsewhere in this report must not be mistaken for measurements of these quantities.

Parameter	Missing evidence / why no actual value is assigned
GM, GZ/RM curve, AVS and ballast ratio	Verified loading, KB/KG, hull hydrostatics, tank free surfaces and stability documentation. A modeled BM is not GM; a GZ-to-moment conversion is not a GZ estimate.
Natural roll period and acceleration	Mass distribution/radius of gyration, actual GM, damping and excitation. A sailboat comfort index cannot supply these.
Actual LCB and LCF	Underwater volume distribution and the real waterplane. Symmetric illustrative models place their centroids at mid-length by construction, not by vessel evidence.
Canoe-body Cp, Cb, Cm and entrance angle	Consistently defined body draft, maximum section and offsets/waterline geometry. Overall keel draft or accommodation-plan outlines cannot replace them.
Actual wetted surface and total resistance	Vessel lines/appendages, loading and validated resistance method or trial. The per-100-m² friction calculation deliberately avoids an invented area.
Actual shaft torque, gearbox ratio, rpm, propeller diameter/pitch and efficiency	Engine/gear plates, shaft/propeller records, installed rating and operating data. No unverified ratio is chosen merely to multiply engine torque.
Present operational endurance and consumption curve	Usable fuel, reserve policy, verified tankage, total fuel-flow/speed trial and generator loads. Advertisements supply only the explicitly inverted examples.
Thruster performance and stabilizer effectiveness	Verified installation, model and ratings. Broker checklist flags are insufficient.
Shallow-water squat or required under-keel clearance	Measured loaded draft, channel geometry, speed, wave conditions and a suitable validated method. Depth Fn alone does not yield squat.

Table B.4. Quantities for which no vessel value is assigned

Crouch’s planing formula and its coefficient are not applied to this displacement rescue-cutter form. Sail-area ratios, rig/foil sailing loads, sailing VMG/polars, multihull sailing indices, handicaps, sailboat screening formulas and the historical sailboat comfort index are outside this report.

B.1.13 Numerical audit tables

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B.1.14 Speed and flow: central assumed LWL 21 m

kn	S/L	Fn	Re × 10⁶	Cf	Friction kN / 100 m²
8	0.964	0.287	72.6	0.002183	1.90
10	1.205	0.358	90.8	0.002113	2.87
11	1.325	0.394	99.9	0.002084	3.42
12	1.446	0.430	108.9	0.002058	4.02

Table B.5. Conditional speed and normalized friction calculations

B.1.15 Alternative engine operating-point arithmetic / per engine

Mechanical hp	Assumed rpm	Torque N·m	BMEP bar	Mean piston m/s
225	1800	890	6.01	7.62
225	2100	763	5.15	8.89
250	1800	989	6.68	7.62
250	2100	848	5.72	8.89

Table B.6. Alternative per-engine operating-point arithmetic

Checks performed: displaced mass equals density × volume; TPC × cm-per-tonne equals one; PPI and TPC agree after unit conversion; each fuel-flow × endurance equals its stated consumed volume; torque × angular speed equals its power input; and all model output ranges are derived from the same grid. Rounding in the reading tables does not change the stored calculation precision.

B.1.16 All 27 waterplane cases / mass fixed at the 135 t reference

L m	B m	Shape	Aw m²	TPC t/cm	BMt m	MCT geometry tf·m/cm
18.3	4.8	parabolic	58.56	0.600	0.59	0.549
18.3	4.8	ellipse	68.99	0.707	0.75	0.809
18.3	4.8	quartic	70.27	0.720	0.84	0.785
18.3	5.4	parabolic	65.88	0.675	0.83	0.618
18.3	5.4	ellipse	77.61	0.796	1.07	0.910
18.3	5.4	quartic	79.06	0.810	1.20	0.883
18.3	6.0	parabolic	73.20	0.750	1.14	0.687
18.3	6.0	ellipse	86.24	0.884	1.47	1.011
18.3	6.0	quartic	87.84	0.900	1.64	0.981
21.0	4.8	parabolic	67.20	0.689	0.67	0.723
21.0	4.8	ellipse	79.17	0.811	0.87	1.065
21.0	4.8	quartic	80.64	0.827	0.96	1.033
21.0	5.4	parabolic	75.60	0.775	0.96	0.814
21.0	5.4	ellipse	89.06	0.913	1.23	1.198
21.0	5.4	quartic	90.72	0.930	1.37	1.162

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L m	B m	Shape	Aw m²	TPC t/cm	BMt m	MCT geometry tf·m/cm
21.0	6.0	parabolic	84.00	0.861	1.31	0.904
21.0	6.0	ellipse	98.96	1.014	1.69	1.331
21.0	6.0	quartic	100.80	1.033	1.88	1.291
22.85	4.8	parabolic	73.12	0.749	0.73	0.856
22.85	4.8	ellipse	86.14	0.883	0.94	1.261
22.85	4.8	quartic	87.74	0.899	1.05	1.223
22.85	5.4	parabolic	82.26	0.843	1.04	0.963
22.85	5.4	ellipse	96.91	0.993	1.34	1.419
22.85	5.4	quartic	98.71	1.012	1.49	1.376
22.85	6.0	parabolic	91.40	0.937	1.43	1.070
22.85	6.0	ellipse	107.68	1.104	1.84	1.576
22.85	6.0	quartic	109.68	1.124	2.05	1.529

Table B.7. The 27 modeled waterplanes: mass fixed at 135 t

B.2 Propulsion machinery: manufacturer context and original evidence

This technical annex preserves the engine discussion and recoverable manufacturer illustrations. It explains the engine family and conditional calculations; *Fredrikstad*-specific installation facts are distinguished from industrial/turbocharged examples. §8.5 introduces the installation and §8.10 explains the principal computed implications.

B.2.1 What 8V71 means

Eight cylinders arranged in a V, with nominal displacement of 71 cubic inches per cylinder: 568 cu in, approximately 9.3 litres in total. The manufacturer’s industrial sheet gives a 4.25-inch bore and 5-inch stroke (108 × 127 mm), and 18.7:1 compression for its naturally aspirated example. Its turbocharged example has a different compression ratio. The industrial engine is not the yacht’s marinized installation. [P02]

The V71 uses a two-stroke cycle. Air from a mechanically driven blower enters through cylinder-liner ports; spent gas leaves through cylinder-head exhaust valves. Fuel is delivered by mechanically actuated unit injectors. Each cylinder has a power stroke every crankshaft revolution. A scavenging blower is therefore compatible with the description naturally aspirated: that wording distinguishes the non-turbo version, rather than an engine with no blower. [P01]

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B.2.2 Factory drawing: inside the V71

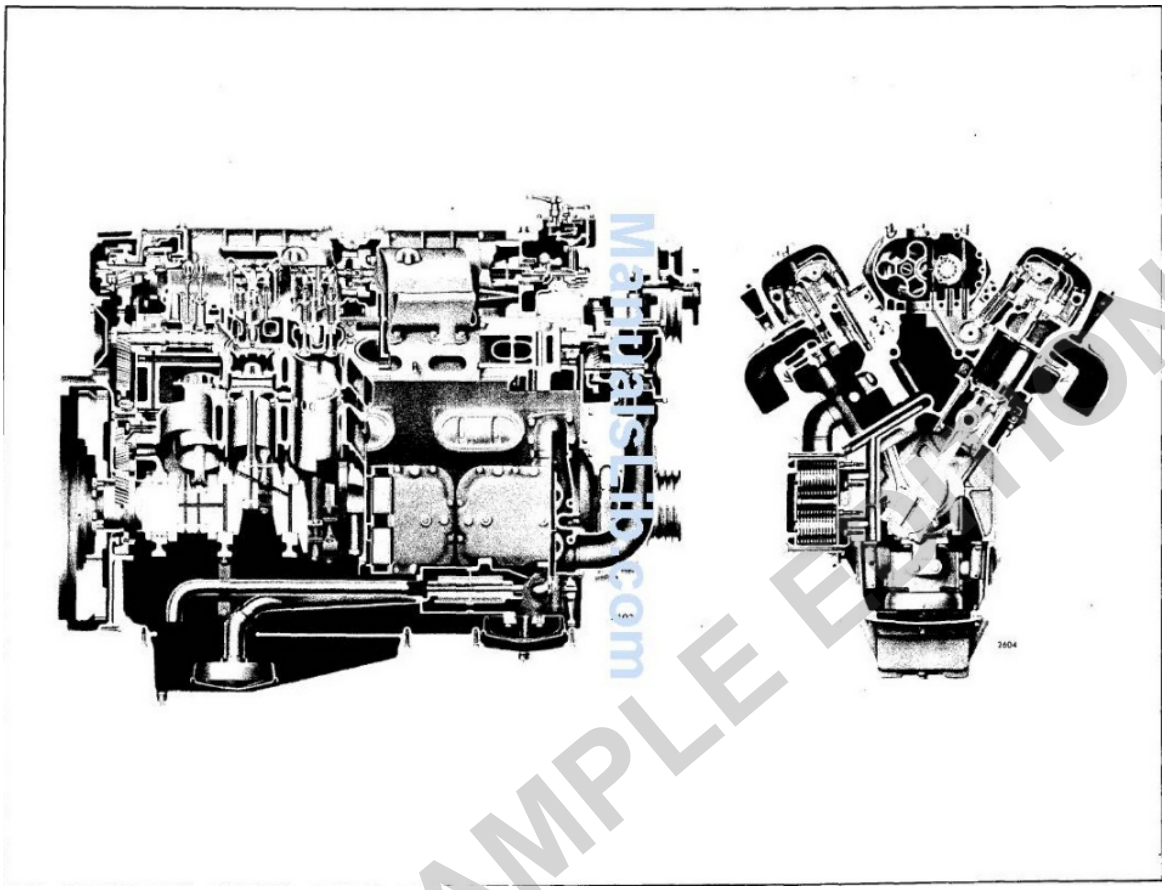


Figure B.1. M02 — Manufacturer's cross-sectional views of a typical V71. Rotated for reading, with source watermark retained. The drawing explains the engine family and is not a *Fredrikstad* installation or shaft-arrangement drawing. Detroit Diesel V71 operator's manual, printed p. 9 / viewer p. 10. [P01] Source record: M02. Source image: M02.

The drawing helps distinguish the compact V engine from the long inline 6-71 and the larger 12V71 found in other vessels. Similar paint and pipework alone cannot establish a particular rating or prove that engines are original to the hull.

B.2.3 Horsepower: retain the competing vessel claims

Record	Power per engine / combined	Assessment
Original operator [S01]	242 hk / 484 hk total	Historical operator figure; webpage does not resolve the current rating, rpm or rating standard.
1999 conversion account [S03]	250 hp / 500 hp total	Contemporary converted-yacht description; no accompanying engine test.
Crew record [S09]	225 hp / 450 hp total	Specific service-era account, conflicting with the 250 hp reports.

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Record	Power per engine / combined	Assessment
YachtWorld listing reviewed [S22]	250 hp / 500 hp total	Later advertised figure, not a recovered factory certificate.
Fraser [S19]	4 × 250 hp displayed	Conflicts with twin-main evidence. Do not infer four propulsion engines.

Table B.8. Competing main-engine ratings

If the Norwegian hk is metric horsepower, 242 hk equals approximately 178.0 kW or 238.7 mechanical hp per engine. That unit conversion is defensible; assuming a particular injector, governed speed or continuous marine rating from it is not. The 225 and 250 hp figures cannot be reconciled by unit conversion alone.

B.2.4 What an original factory sheet demonstrates

Detroit's recovered fan-to-flywheel sheet identifies an industrial 8V71 with N65 injectors, model 7083-7000. It specifies 304 gross BHP at 2,100 rpm under its SAE conditions, 233 continuous gross BHP at 1,800 rpm, and 800 lb-ft (1,085 N·m) at 1,600 rpm. A separate 318 BHP figure uses different atmospheric conditions. These are examples of why a model name alone does not settle a rating. None is adopted as *Fredrikstad*'s rated output. [P02]

Gross engine output is not identical to power delivered at the propeller shaft. Accessories and transmission losses matter; injector specification, duty rating and test conditions also matter. The recovered sheet cannot supply a marine fuel-consumption curve for the yacht.

B.2.5 A period family photograph, clearly distinguished

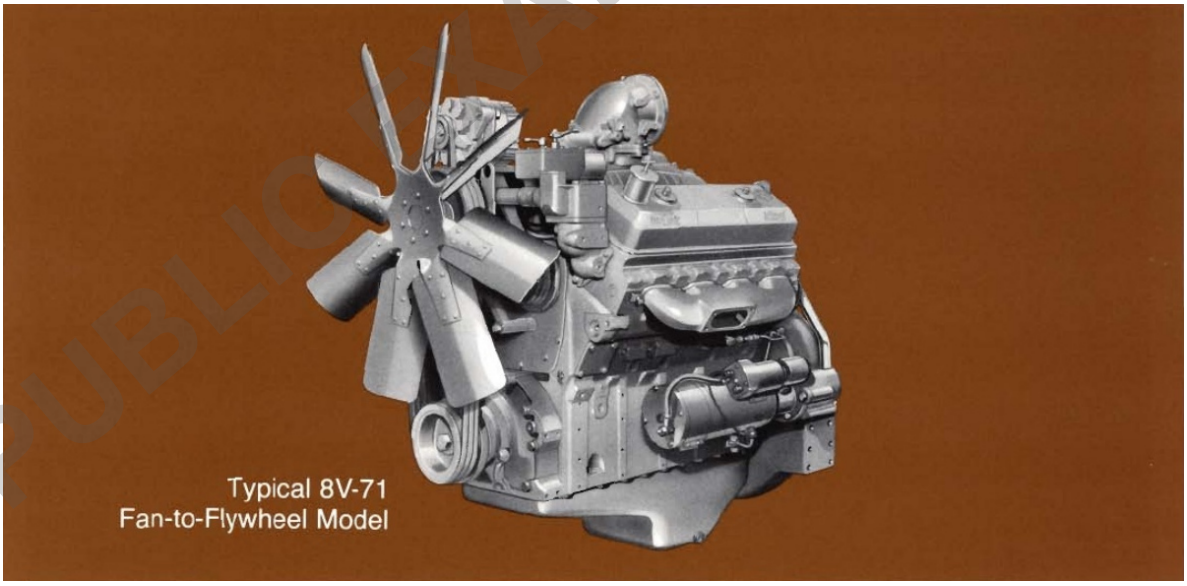


Figure B.2. M03 — Typical 8V71 industrial engine. Manufacturer brochure photograph, with radiator fan: a family reference, not an engine removed from *Fredrikstad* and not its marine cooling arrangement. [P02] Source record: M03. Source image: M03.

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B.2.6 Identification and rotation

The manufacturer identification chart decodes 7082 as an eight-cylinder V71 marine application. Its worked example, 7082-7201, includes right-hand rotation, a specified accessory arrangement and a four-valve cylinder head. A sample serial begins 08VA. The full number matters; 8V71 is not sufficient for ordering configuration-specific parts. [P03]

Detroit's chart defines engine rotation from the front and cylinder-bank position from the flywheel end. A propeller's handedness cannot be inferred from these labels without tracing the transmission and its conventions. No evidence presently establishes the yacht's gearbox make, reduction ratio, clutch type, shaft diameter, stern-bearing arrangement, or current propeller diameter and pitch.

B.2.7 A useful next record

A readable photograph of both engine and gearbox plates, plus injector markings and the actual governed full-load rpm, would do more to resolve the power and torque question than another generic 8V71 advertisement. Overhaul invoices would separately establish work performed and dates; external appearance cannot do that.

B.2.8 Torque: calculated possibilities, not a recovered curve

Torque follows power and speed: T (N·m) = 9,549.3 × P (kW) / rpm. The table assumes mechanical horsepower, measured at the engine crankshaft. Each entry is a conditional calculation for one engine; neither assumed speed is confirmed for *Fredrikstad*. It is not a statement that either engine produces constant rated power at every listed speed.

Assumed output	Assumed rpm	Calculated torque	Equivalent
225 bhp (167.8 kW)	1800	890 N·m	657 lb-ft
225 bhp (167.8 kW)	2100	763 N·m	563 lb-ft
250 bhp (186.4 kW)	1800	989 N·m	729 lb-ft
250 bhp (186.4 kW)	2100	848 N·m	625 lb-ft

Table B.9. Conditional per-engine torque calculations

For example, 250 bhp at 1,800 rpm implies about 989 N·m; the same power at 2,100 rpm implies about 848 N·m. That difference explains why an unqualified torque number would mislead. A gearbox multiplies output torque approximately by its reduction ratio, less losses; the unknown ratio prevents a defensible shaft-torque figure.

Two engines give two separate torque paths. Adding their crankshaft torques does not describe torque in either individual propeller shaft. Nor does maximum family torque establish bollard pull: propeller geometry, shaft speed, hull interaction and loading are also required.

B.2.9 Cooling, fuel and auxiliaries

The V71 manual discusses both radiator/fan and heat-exchanger cooling. It is not evidence that the radiator-equipped industrial photograph represents a marine installation. *Fredrikstad*'s exact seawater circuit, heat exchangers and any keel-cooling arrangements remain to be traced from installation drawings or a survey. [P01]

The vessel inventory separately reports Racor filters, an Alfa Laval separator and transfer pumps; Chapter 8 gives the exact advertised models. Those are ship-level fuel-treatment

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components, distinct from the engine's unit injectors. Fraser reports Kohler and Northern Lights generators at 20 kW each. Their electrical ratings are not additional main-engine horsepower. [S19,S31]

B.2.10 A partly legible machinery-space marking

The sharper engine-room photograph shows a partly obscured black marking with visible numerals appearing to read 182371 and 78.50. This is retained as a possible registration/tonnage research lead, not identified as an engine serial number or proof of a particular registry. Pipework obscures the lettering. [S63, p. 10]

Unresolved: actual installed serial numbers, injectors, marine duty rating, rated rpm, gearbox data, fuel-burn trials, propeller specification, shaft drawing, and independently documented overhaul history. No generic family specification is substituted for those missing vessel records.

B.2.11 GM, Detroit Diesel and the wider family

The manufacturer's historical account traces the Series 71 to 1938 and describes its use in coaches, stationary equipment, landing craft and tanks. It distinguishes the later Series 53 and Series 92 from the Series 71. The 8V71 belongs to that long-lived two-cycle lineage; this history does not establish when *Fredrikstad*'s particular engines were manufactured or whether their major components have been replaced. [P05]

The manufacturer's article, published in 2014, describes then-current new military eight-cylinder production and remanufactured long-block kits. Those dated support statements should not be converted into a guarantee of every part's availability in 2026. Parts and overhaul support need to be checked against the installed model and serial numbers. [P05]

B.2.12 Supplementary reading and its limits

Murray's overview covers the higher-output 8V71TI, model-number interpretation, blower and turbo operation, Allison transmissions, service concerns and examples of yacht installations. It offers useful subjects to investigate, particularly the distinction between basic engine family and marinized configuration. It does not identify *Fredrikstad*, her engine serial numbers, gearboxes or a measured performance trial. [P04]

The TI power and torque figures are not imported into *Fredrikstad*'s specification. Nor is its yacht speed/fuel table used to estimate her range: it does not identify a hull or trial behind those figures. The article also contains unresolved citation placeholders. Its absolute claims of immunity to electrical failures and unlimited rebuildability are not adopted. [P04]

Its advice to crank an engine suspected of containing water is not reproduced as an operating procedure. A fuel-stop control prevents fuel delivery; it does not remove the mechanical risk of compressing trapped liquid. Model-specific manufacturer procedures and diagnosis must govern any such operation. The article's rotation-conversion and thermostat suggestions likewise remain unverified leads, not instructions for this yacht.

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Appendix C Plans, drawings and custody

No complete original design, construction or as-built set has been recovered. The inventory distinguishes useful published illustrations and arrangements from engineering sheets. Possible custodians are identified without claiming that an individual *Fredrikstad* file has been located. [S02,S59]

C.1 Drawings inventory and possible custody

Item / status	Recovered content or holding	Custody / next evidence
General arrangement / recovered	Fraser brochure p.17; source Plate 098 retained privately. [S63]	Not reproduced in the public edition. Its factual accommodation account is summarized with the independently authored YP schematic in §8.4; no geometry is copied.
Class profiles / recovered	Five comparative published variants; S02, printed p. 92; five variants recovered, four insufficiently legible for reproduction. The final variant is illustrated in §4.1.3. [S02]	Operator history; illustrations, not a hull-lines/construction/shaft drawing.
Plate 014 / recovered	Published side-profile illustration.	Dotted apparent bilge keel and stern arrangement are leads; geometry/status unverified.
Engine section / recovered	Typical V71 manufacturer cross sections; M02 / P01.	Engine-family reference, not a machinery installation drawing.
Historical measurement drawings / collection lead	Norwegian Skipsmålingen collection, 1845–1971; submitted-drawings series identified. [S59]	Confirmed collection scope; no individual *Fredrikstad* file located. Principal could request RS 77/JXRR/1968 and builder cross-search.
Original design/construction sets / unlocated	Lines, offsets, scantlings, structure, general arrangement, machinery, shaft/rudder and systems.	Seek original operator, Gjerver-related/successor holdings, Smedvik/Håkonsens records and relevant Norwegian archives; specific custody not confirmed.
Conversion/refit sets / unlocated	Penzance/Freivokh and later Pendennis, Spanopoulos, La Spezia work.	Principal could ask for dated/revisioned design, construction and as-built sheets, approval letters and job files. No inquiries made.

Table C.1. Recovered drawings and possible custodians

Published comparisons and missing engineering records are distinguished in §4.1.3. Possible custody is not confirmed custody of an individual *Fredrikstad* sheet. A recovered drawing requires its title, number, date, revision, scale, provenance and configuration to be established. [S02,S59]

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Appendix D Sources, Methods and Illustration Use

D.1 Research basis and interpretation

The research draws on dated and archived brokerage pages, original operator records, contemporary articles, designer and yard accounts, crew websites, public photographs, historical AIS visits, federal waiver material and secondary registration databases. Discontinued pages were recovered through web archives. A capture or indexed URL establishes neither an event date nor proof that a linked document was read; unsuccessful recovery does not prove a record never existed.

The recorded Lloyd's Register investigation did not establish a matching classed-yacht entry. This is a limited negative finding, not proof she was never listed or classed. The published class history explicitly names Det norske Veritas. Current DNV name searches returned no match; neither that nor the Lloyd's result proves absence of a historical class file. These registers are not a substitute for Norwegian, US, Swiss or Maltese title records. [S02,S66]

The Shipspotting Burriana page supplies a dated sighting but its image download was blocked during recovery. No verified underwater photograph of *Fredrikstad*, propeller specification or shaft-arrangement drawing is included. The separate class illustrations have a different, explicitly labelled evidential status. No social-media account, owner or unnamed person in photographs has been identified by conjecture.

The discontinued NYM yacht page survives, but its nine linked images were not recovered. A separate academy profile photograph is retained as Figure 5.6 (source Plate 099). No academy buyer, authenticated haul-out sequence, current propeller specification or shaft arrangement was established. The original MARAD application also remains unrecovered; radio and academy records cannot supply the missing legal transfers.

Three recovered academy Enterprise issues—Fall 2008, Fall 2009 and Spring 2010—were searched for vessel-name variants. The foundation's 2008 report and FY2009 audited statements were also recovered and examined with OCR. No specific donor, sale or named transaction for *Fredrikstad* was established from this bounded set; the finding does not cover the academy's entire archive. [S71; S72]

This Appendix D update of 22 November 2026 adds no interviews, external contact, paid acquisitions, physical inspection or fresh position check. Historical evidence dates and limitations remain as stated. A historical account, photographic interpretation and conditional engineering discussion do not constitute a current survey, an authenticated as-built specification or certification of current title or operating capability.

D.2 Illustrations, source materials and fair use

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Illustrations are selected for their contribution to the investigation and its narrative. Yacht Provenance does not include documentary images merely to assemble a complete gallery. Where multiple views are included, they provide distinct information or support a

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meaningful comparison. Documentary illustrations placed in appendices are subject to the same selection principle.

Clearly identified decorative artwork serves a separate presentation purpose and is not represented as a historical photograph or an authenticated plan. Explanatory diagrams and reconstructions are identified according to their actual nature and evidentiary limitations.

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D.3 Title illustration and corporate credits

The approved title-page decorative artwork is identified by Illustration credit: S81. The linked source record preserves the Legal-approved creation and treatment wording. The artwork is decorative and is not represented as a historical photograph or authenticated plan. Corporate opening pages reproduce the approved Dossier_Front_Pages.pdf master; the brandmark's subject, Vigilant, is not evidence about *Fredrikstad*. [S81.]

D.4 Presentation-book evidence and unresolved interpretation

The supplied presentation-book page names Penzance Dry Dock and Engineering Co. Ltd, associates the project with Peter de Savary and describes a 16-month rebuild. Those statements support the conversion and hospitality discussion in §7.2; they do not independently fix the start or completion dates. [B01]

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Its luxury-brand comparisons are promotional rhetoric, not evidence of named suppliers or a technical assessment. The designer's name is blurred; Ken Freivokh's attribution rests on the independent conversion record, not a claimed certain reading of this page. [B01; S03]

The final paragraph and its apparent "founding member" phrase are insufficiently clear for a certified transcription or an additional ownership attribution. The screenshot is retained privately and is not reproduced in this public edition. This account paraphrases the readable factual content; it does not reconstruct uncertain promotional wording. [B01]

D.5 Edition-specific treatments and preserved records

This public website example is prepared solely for digital distribution, without a client dedication or an unassigned YP case identifier. PUBLIC EXAMPLE EDITION identifies the edition on every page; it is not a grant of rights in third-party material.

The presentation-book screenshot and selected peripheral or repetitive illustrations are not reproduced in this public edition. The arrangement graphic YP-F01 is an independently authored, non-traced explanatory schematic of documented functional relationships, not a recovered, measured, scale or as-built plan. Its source record states the evidentiary limits. The John Winfield / Geograph photograph retains its attribution and the CC BY-SA 2.0 license link; that license does not apply to the dossier as a whole. [B01; S26; S82.]

Unaltered source originals and the supplied title artwork remain in the private case record. No source originals, earlier dossiers or other files are embedded in this PDF. Unknown source creators and capture dates remain unknown; the Appendix D update does not establish permissions or copyright ownership.

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