

Alpha Zulu RoPAC

A Seaworthiness Case for a Purpose-Built Ocean-Going Commercial Trimaran

1. The fundamental proposition

Alpha Zulu RoPAC should be assessed on the basis of **purpose-built commercial marine engineering**, rather than by assuming that a trimaran is inherently less suitable for demanding ocean service than a conventional monohull or catamaran.

There is already compelling real-world evidence that large trimaran platforms can be engineered to operate safely across the world's most severe oceans.

The most powerful example is the **40-metre Maxi Banque Populaire V**. Designed by VPLP and constructed in carbon fibre, it was 40 m long, 23 m beam and 5 foot draft. VPLP expressly describes its design objective as creating a 40-metre racing multihull that a crew could “**sail anywhere in the world**” while retaining extreme performance. It subsequently completed the Jules Verne Trophy in 45 days, 13 hours, 42 minutes and 53 seconds, covering

29,002 nautical miles. ([VPLP Design](#))

This was not a sheltered-water demonstration. The Jules Verne Trophy requires a non-stop circumnavigation via the great capes, including prolonged exposure to the Southern Ocean.

The earlier **31.5-metre Groupama 3**, subsequently Banque Populaire VII and IDEC SPORT, provides an even smaller-scale precedent. The vessel was 31.5 m long and 22.5 m beam and completed the Jules Verne Trophy in 48 days, 7 hours, 44 minutes and 52 seconds. As IDEC SPORT it subsequently completed another circumnavigation in 40 days, 23 hours and 30

minutes. ([Wikipedia](#))

These vessels therefore provide empirical evidence—not merely theoretical naval-architectural opinion—that a **30–40 metre trimaran platform can be engineered to withstand prolonged exposure to severe open-ocean conditions**.

2. The Southern and Eastern Caribbean is a demanding marine environment

The case for Alpha Zulu should not, however, be based upon an assumption that Caribbean waters are benign.

The Parliament of Trinidad and Tobago has itself recorded the demanding nature of the waters in the region.

During Senate proceedings in November 1994, then Minister Senator R. Huggins stated specifically, in response to a question concerning the waters between Trinidad and Tobago and Grenada:

“Some of the roughest waters you would get are between Trinidad and Tobago and Grenada.”

That statement appears in the official Parliamentary record. ([Parliament of Trinidad and](#)

[Tobago](#))

This is significant because the Trinidad–Grenada corridor is representative of the wider Southern/Eastern Caribbean operating environment in which Alpha Zulu is intended to operate.

Accordingly, the engineering proposition should **not** be that Alpha Zulu can operate because the Caribbean is calm.

The proposition should be the opposite:

Alpha Zulu is being designed because the Caribbean is a demanding maritime environment requiring a vessel specifically engineered for it.

3. The regional evidence is consistent with demanding sea states

Available Caribbean metocean research reinforces the Parliamentary observation.

A regional study of Caribbean marine hazards found that significant wave heights can reach approximately **4 m around St Vincent** during major storm events and approximately **6 m around western Grenada** during Hurricane Ivan. The study further found that enhanced

hurricane scenarios can produce substantially higher waves offshore. ([ResearchGate](#))

This distinction is important.

A vessel intended for reliable inter-island transportation cannot be designed merely around the average day's sea state.

It must be designed around:

- prevailing trade-wind seas;
- swell;
- opposing wind and current;
- rapidly deteriorating weather;
- tropical storm conditions;
- extreme wave events;
- route-specific bathymetry;
- cross-seas;
- vessel motions;
- structural fatigue; and
- safe return/diversion procedures.

The appropriate engineering response is therefore **route-specific metocean analysis**, not reliance upon an assumed generic Caribbean sea state.

4. What the maxi-trimaran record demonstrates

The relevance of Banque Populaire V and Groupama 3 is not that Alpha Zulu would operate like a racing yacht.

It is precisely the opposite.

These vessels demonstrate that the **three-hull architecture itself is capable of surviving extreme ocean exposure** when properly engineered.

Banque Populaire V was:

- 40 m long;
- 23 m beam;
- 5.8 m draft;
- carbon construction;
- approximately 1,000 m² sail area;
- capable of sustained speeds exceeding 25 knots;
- and successfully circumnavigated the world through the Southern Ocean. ([VPLP](#))

[Design](#))

The vessel's operating loads were extraordinary.

It was designed for extreme sailing speeds, enormous sail loads and the dynamic loading associated with a very lightweight high-performance platform.

Yet it successfully completed its circumnavigation.

The Groupama 3/IDEC SPORT lineage provides a second independent demonstration at only 31.5 m length. Its record includes repeated ocean crossings and two Jules Verne Trophy

circumnavigations. ([Wikipedia](#))

This establishes a remarkably strong engineering precedent:

30–40 m trimarans have already demonstrated their ability to operate continuously in oceans considerably more severe than the normal operating environment contemplated for a Caribbean inter-island ferry.

5. Alpha Zulu is a fundamentally different design proposition

The comparison becomes even more compelling when the design philosophies are understood.

The maxi racing trimarans were optimized for:

- minimum structural weight;
- maximum speed;
- maximum sail power;
- extreme performance;
- racing records;
- minimal accommodation;
- and highly specialized professional crews.

Alpha Zulu RoPAC would be optimized for almost the opposite objectives.

It would be designed around:

STRUCTURAL ROBUSTNESS

A commercial vessel can deliberately carry significantly greater structural mass than an ocean-racing trimaran, providing increased structural margins and durability.

LOWER OPERATING SPEED

Alpha Zulu does not need to travel at 25–30 knots to fulfil its mission. A substantially lower operating speed reduces dynamic loading and allows greater flexibility in adverse conditions.

PASSENGER SAFETY

The vessel is designed around passengers rather than racing crew, with appropriate evacuation, lifesaving, fire protection, accessibility and passenger-space requirements.

CARGO SAFETY

RoPAC incorporates cargo as an integral part of the operating mission, with appropriate securing, loading and stability provisions.

REDUNDANCY

Propulsion, electrical generation, steering, navigation, communications and essential services can be configured with commercial redundancy rather than racing-boat minimalism.

RESERVE BUOYANCY

The three-hull configuration provides substantial separated buoyant volumes and the opportunity to develop significant reserve buoyancy and damage-survivability characteristics.

WEATHER ROUTING

Alpha Zulu can operate as part of an integrated transport system in which route selection, departure timing and speed are continuously informed by weather and sea-state information.

6. The correct comparison is therefore not “trimaran versus ferry”

The relevant comparison is:

extreme ocean-going trimaran technology

versus

purpose-built commercial ocean-going trimaran technology.

The racing vessels provide the empirical proof that the architecture can withstand extreme ocean conditions.

Alpha Zulu applies that architecture to a substantially more conservative operating envelope.

It is therefore reasonable to argue:

If a 31.5-metre trimaran can repeatedly cross the Southern Ocean and complete a circumnavigation of the planet, and a 40-metre trimaran can complete a 29,002-nautical-mile circumnavigation through the world’s great oceans, then the fundamental seaworthiness of the trimaran architecture at this scale is no longer a matter of speculation. The engineering task for Alpha Zulu is to translate that proven architecture into a heavily built, commercially certified, passenger-and-cargo vessel designed specifically for the Southern and Eastern Caribbean.

That is the much stronger proposition.

7. Alpha Zulu should be designed to the environment—not the average conditions

The Parliamentary evidence should therefore be treated as an important **design-driver**, rather than merely promotional evidence.

The statement that some of the roughest waters encountered in the region occur between Trinidad and Tobago and Grenada establishes the need for a rigorous route-specific marine

assessment. ([Parliament of Trinidad and Tobago](#))

Alpha Zulu’s design development should consequently establish, for each proposed route:

1. significant wave height;

2. maximum expected wave height;
3. wave period;
4. wave direction;
5. prevailing wind;
6. extreme wind;
7. current velocity and direction;
8. opposing wind/current conditions;
9. tropical-storm exposure;
10. route-specific bathymetry;
11. seasonal variation;
12. probability of adverse conditions;
13. vessel motions;
14. structural loads;
15. passenger comfort;
16. propulsion performance in adverse conditions; and
17. safe operating and weather-diversion limits.

These should become formal **Alpha Zulu Design Environmental Conditions**.

8. A particularly important distinction: survival versus reliability

There is an important difference between proving that a vessel **can survive** a particular sea condition and proving that it can provide a **reliable scheduled service** in that condition.

Alpha Zulu's objective is the latter.

A ferry system is successful when it provides predictable transportation—not merely when its vessel survives an extreme event.

Therefore Alpha Zulu should be designed around a hierarchy:

Normal conditions → **full scheduled operation**

Adverse conditions → **reduced speed / modified route**

Severe conditions → **weather avoidance / delayed departure**

Extreme conditions → **safe refuge / suspension of service**

This is fundamentally different from an ocean-racing programme, where the objective is to continue racing through whatever conditions the skipper encounters.

9. The strongest safety argument for Alpha Zulu

The Alpha Zulu proposition can consequently be summarized as follows:

Alpha Zulu RoPAC is not a lightly constructed racing trimaran adapted for ferry service. It is a purpose-designed commercial RoPAC platform using an ocean-going multihull architecture whose seaworthiness at approximately 30–40 metres has already been demonstrated by repeated successful ocean crossings and circumnavigations.

The 40-metre Banque Populaire V and 31.5-metre Groupama 3/IDEC SPORT provide particularly powerful empirical precedents. Both were required to operate across the world's oceans, including the Southern Ocean, under conditions vastly more demanding

than ordinary inter-island service. Banque Populaire V completed its 29,002-nautical-mile circumnavigation in 45 days, 13 hours, 42 minutes and 53 seconds. ([Trophée Jules Verne](#)^[OBJ.])

Alpha Zulu would operate at substantially lower speeds and can be designed with considerably greater structural mass, reserve buoyancy, redundancy and commercial safety margins. Its design would therefore use the proven multihull architecture while deliberately avoiding the extreme lightweight and extreme-speed characteristics of racing trimarans.

This is particularly relevant to the Southern and Eastern Caribbean, where the Trinidad and Tobago Parliament has itself acknowledged that some of the region's roughest waters occur between Trinidad and Tobago and Grenada. ([Parliament of Trinidad and Tobago](#)^[OBJ.])

Alpha Zulu should consequently be viewed not as an experimental vessel being asked to prove that a trimaran can survive the Caribbean, but as the proposed next step: a purpose-built, heavily constructed, commercially engineered RoPAC designed specifically to provide safe, reliable and fossil-fuel-free inter-island passenger and cargo transportation in the actual sea conditions of the region.

10. Strategic conclusion

There is therefore a strong case for **commissioning Alpha Zulu as a new class of Caribbean strategic maritime infrastructure**, subject of course to the normal naval-architecture, stability, structural, machinery, safety and classification processes.

The evidence supports three propositions:

First — the architecture is proven.

31.5–40 m ocean-going trimarans have repeatedly demonstrated their ability to operate in extreme open-ocean conditions and to complete circumnavigations through the Southern

Ocean. ([VPLP Design](#))

Second — the Caribbean requires serious ocean-going capability.

The official Trinidad and Tobago Parliamentary record explicitly recognizes the rough-water character of the Trinidad–Grenada corridor. ([Parliament of Trinidad and Tobago](#))

Third — Alpha Zulu can be engineered with a substantially more conservative commercial operating philosophy.

Unlike the record-breaking vessels, Alpha Zulu's mission does not require extreme speed. Its structure, displacement, redundancy, reserve buoyancy and operating limits can therefore be deliberately optimized for **safety, reliability, passenger comfort and cargo security**.

The result is a compelling engineering proposition:

Alpha Zulu takes a multihull architecture proven in the world's most demanding oceans and re-engineers it for the practical needs of the Southern and Eastern Caribbean—more heavily built, slower, more redundant, commercially focused and designed from the outset as a passenger-and-cargo RoPAC rather than as a racing machine.

That is the basis on which its seaworthiness should be evaluated.