



2021 *Transpacific Yacht Race*

NOTICE OF RACE

Amendment #5 – May 27th, 2021

Incorporating existing NOR Amendments #1-#4 into this document, changes to original NOR in Green

The Organizing Authority (OA) for this race will be the Transpacific Yacht Club (TPYC).

1 RULES

- 1.1 ~~The race will be governed by the current Racing Rules of Sailing (RRS) including US SAILING prescriptions and the US Safety Equipment Requirements (SER) for Ocean races (SER 1.01 – similar to World Sailing Offshore Special Regulations Category 1 races). The SERs can be viewed at US Sailing SER (except as any of these are changed by the Notice of Race [NOR] or the Sailing Instructions [SI]).~~

The race will be governed by the current rules as defined by the Racing Rules of Sailing (RRS) including US SAILING prescriptions and the US Safety Equipment Requirements (SER) for Ocean races (SER 1.01 2021.0 – similar to World Sailing Offshore Special Regulations Category 1 races) and the Transpacific Yacht Club's Covid-19 Protocols located on the Transpac Notice Board.

- 1.2 The US SAILING prescriptions to ~~RRS 63.2 and 63.4~~ **RRS 63.1 and 63.2** are excluded and are not in effect.
- 1.3 ~~For determination of the right of way between contestants, Part 2 of the racing rules shall govern, except between sunset and sunrise the following shall be substituted for Rule 17: "When two yachts are on the same tack and within three overall lengths of the larger yacht, the yacht being overtaken shall maintain her proper course. The overtaking yacht shall keep clear and neither yacht shall bear away toward or luff the other."~~

RRS Appendix RV, Reduced Visibility available on the **Transpac Notice Board** will apply between sunset and sunrise for determination of the right of way between boats.

RRS Appendix TS, version 1, Section A applies to the following TSS Los Angeles Long Beach Precautionary Area and Los Angeles Long Beach Western Approach. Appendix TS is available on the available on the **Transpac Notice Board**.





- 1.4 Movement of sails not in use while racing is allowed; however, all gear and sails not being flown shall remain within a yacht's lifelines. This modifies RRS 51 only as to the movement of sails.
- 1.5 Per Offshore Racing Rule (ORR) Appendix 7 monohull yachts are permitted to declare, be rated with and use movable and/or variable ballast. All ballast systems shall be capable of manual operation if powered systems are inoperable.
- 1.6 Per ORR Rule 4.08 for monohulls and ORR-MH 4.09 for multihulls, yachts are permitted to declare, receive a rating adjustment for and then use stored energy for sail hoisting, trimming, reefing, furling or dousing, and adjustment of backstays and running rigging. Power winches shall NOT be used to induce surfing or planing.
- 1.7 Auto pilot use is only permitted for double handed yachts.
- 1.8 All rules associated with the yacht's valid ORR certificate shall apply except for those rules modified in this NOR. In addition, if a yacht is racing in a special class, those class rules shall also apply; however, ORR shall prevail in the event of conflict.
- 1.9 The 2021 TPYC race pennant, class flag, and any sanctioned special class flag shall be displayed as noted in the Sailing Instructions.
- 1.10 For monohulls there is no limitation on the number of light staysails and spinnakers that may be carried. The number of headsails and mainsail shall comply with ORR 10.02.1. This modifies ORR Rule 10.02.1. Per RRS 87 ORR has issued Transpac permission to make this change. Note that ORR Rule 10.02.1 permits only one large roach headsail (mid-girth less than 75% of the foot).
- 1.11 There is no limitation on crew weight. This modifies ORR Rule 4.02 and ORR-MH 4.02. Per RRS 87 ORR has issued Transpac permission to make this change.
- 1.12 Irrespective of a specific class rule there may be temporary rigging to support the mast near the spinnaker pole when the spinnaker is set.
- 1.13 The official notice board for the race will be located at Transpac Website. Courtesy copies of all notices may be posted at Shoreline Yacht Club in Long Beach, California and at the Transpac Shack in the parking lot at Ala Wai Harbor, Honolulu, Hawaii.
- 1.14 ~~RRS Rule 55 is changed by adding the following sentence to the rule: "However, a boat that discards biodegradable sail stops when setting a sail or discards biodegradable table scraps shall be exonerated from breaking this rule."~~

For the purposes of RRS 47, Trash Disposal there will be no penalty for losing biodegradable sail stops overboard used for reasons of safety or proper seamanship, or discarding biodegradable table scraps overboard.

- 1.15 Under World Sailing Test Rule DR21-01, change the definition Start as follows:





Start A boat starts when her hull having been entirely on the pre-start side of the starting line, and having complied with rule 30.1 if it applies, any part of her hull crosses the starting line from the pre-start side to the course side either

- (a) at or after her starting signal, or
- (b) during the last 4 minutes before her starting signal

~~1.15 — TPYC reserves the right to amend this notice. Amendments to this notice will be e-mailed to all owners whose entries have been accepted and posted per NOR 1.14.~~

1.16 TPYC reserves the right to amend this notice. Amendments to this notice will be e-mailed to all owners whose entries have been accepted and posted per NOR 1.13.

2 ADVERTISING

Yachts who intend to display advertising must so indicate on their entry forms and provide a brief description of the content. Per RRS 80, a boat and her crew shall comply with World Sailing Regulation 20. Advertising not compliant with World Sailing Regulation 20.2.4. (generally accepted ethical and moral standards) shall be grounds for the rejection of entry into the race.

Each yacht shall display the event sponsor's backstay flags in accordance with this NOR and the Sailing Instructions (World Sailing Regulation 20.4.1.3). See NOR 1.9.

Each yacht shall display the race backstay flag, which will be supplied by TPYC, before leaving the dock immediately prior to starting the race until one hour after starting, and one hour before finishing and after finishing.

3 ELIGIBILITY

- 3.1 The race is open to monohull and multihull yachts that meet the requirements of the US SER for Ocean races. Because the race is an Ocean race yachts must be completely self-sufficient for extended periods of time, capable of withstanding heavy storms and prepared to meet serious emergencies without the expectation of outside assistance. **The SERs can be viewed at [US Sailing SER](#)**

Fleets: Monohull and multihull yachts will each race in their own fleet.

Aloha Class. This class, racing within the monohull fleet, is open to heavy traditional cruising-type yachts. A numerical screen, the "Aloha Class Qualifier" has been created to determine those monohull yachts which will qualify for the Aloha Class. TPYC will use this Aloha Class Qualifier as a guide and reserves the right to determine whether any particular yacht may race in the Aloha





Class. The Aloha Class yachts will normally come from 1 to 2 divisions of the Monohull Fleet and be assigned to the first start. Larger and faster Aloha Class yachts may be assigned a later start date. Further information regarding Aloha class eligibility is available from the Entry Chairman and online at the TPYC website.

- 3.2 In addition to racing within a division and competing against the fleet overall, yachts may be entered in a special class based on common characteristics or interests. Such special classes may include yachts from one division or may include yachts from several divisions. These special classes can be formed either by owners petitioning TPYC or by TPYC's own initiative. A yacht may only be entered in one special class. TPYC may include or exclude any yacht from a special class.

3.3 **All Yachts**

To be eligible to enter the 2021 Transpac, yachts must meet the following requirements:

- 3.3.1 All yachts must be launched, sailed in their Transpac race configuration, and have submitted final data for their rating certificate to US Sailing (Offshore@ussailing.org) by Friday May 31, 2021 5:00 pm EDT (2:00 pm PDT). See Sections 7.4 and 13 for late penalties.
- 3.3.2 TPYC's technical committee may review a yacht's eligibility or configuration limitations and make recommendations to the TPYC Board of Directors. The TPYC Board has the final authority to accept or reject a yacht's entry even though it may or may not meet the requirements of the NOR.

3.4 **Monohull Yachts**

- 3.4.1 All monohull yachts shall have valid ORR ratings issued by US Sailing and shall be eligible for the overall monohull fleet corrected time trophies.
- 3.4.2 After the close of entries, yachts shall be divided into divisions and assigned start days. TPYC Rating, factors including whether a monohull declares stored energy for sail handling under ORR 4.08 or is rated with movable or variable ballast under Appendix 7, and other factors may be considered in determining division assignments and start days.
- 3.4.3 There shall be no rating limit for shortest elapsed time or course record contenders.
- 3.4.4 No yacht whose predicted Transpac rating is faster than the Transpac rating for the STP 65 "Rosebud" in her 2007 Transpac configuration shall have a LOA greater than 100 feet (30.48 meters). The minimum LOA shall be 30 feet.
- 3.4.5 All yachts must have a Transpac rating greater than or equal to 0.7090 This is comparable to a Catalina 36.

3.4.6 **Stability**





- A) Each fixed ballast yacht shall have an ORR Capsize Screen of 115° or greater or demonstrate compliance with the current version of ISO 12217-2 for Category A or those yachts that meet the requirements of 3.4.4 may show they hold and sail in compliance with a current USCG Stability Letter permitting operation on Exposed Waters.
- B) Each moveable or variable ballast yacht shall comply with US SER Appendix K.

3.5 **Multihull Yachts**

- 3.5.1 Multihulls are unrestricted both in maximum length and rating.
- 3.5.2 Multihull ratings for Multihull handicap awards shall be based on the ORR Multihull rating rule, ORR-MH. Each multihull yacht shall have a valid ORR-MH rating certificate. The measurements, measurement procedures and certificate information required to generate and issue an ORR-MH certificate can be obtained by emailing ora.rating.services@gmail.com
- 3.5.3 The number of multihulls required to qualify the fleet is 2; the TPYC Board may waive this requirement depending on entries.
- 3.5.4 The minimum Multihull length is 45 feet; however, consideration may be given to slightly smaller Multihulls that meet recognized multihull stability standards defined in ISO 12217 Category A and hull construction standards of ISO 12215 Category A.
- 3.5.5 Yachts must carry on board a copy of the valid 2021 ORR MH certificate which they submitted for purposes of assignment of their TPYC rating. This certificate must be signed by the owner, and charterer if applicable, attesting to the accuracy of the input data. Note that ORR MH Rule 3.01 holds the owner/charterer responsible for the accuracy of the data input to the certificate.

4 **ENTRY**

- 4.1 The on-line entry form can be found at [Transpac Website](#).

4.2 **Chartered Yachts**

If a yacht is entered by other than the owner, TPYC must be given a copy of the Charter Agreement and the yacht's measurement certificate must also be signed by the charterer. A charterer must meet the same requirements as the yacht owner. See RRS 75.

4.3 **Race Entry Requirements**

Race Entry is complete only when all items in this section (4.3) have been received and acknowledged by the Transpac Entry Chairman. When completed, the Entry Chairman will inform the competitor that race entry is complete.

4.3.1 **Items are submitted via the on-line entry system:**

- A) Full yacht and owner/skipper/charterer information as required by the online entry system.





- B) Crew List with addresses, phone numbers, email addresses, emergency contacts as required by the online entry system. It will be the responsibility of the owner or charterer to maintain and update the current crew list and contact numbers.
- C) Signed waiver, release and indemnification by Owner/Skipper/Charterer and all crew members as recorded on the online entry system.
- D) Media Rights Waiver form signed by Owner/Skipper/Charterer and all crew members.
- E) Documentation of completion of the crew qualification requirements per NOR 8.1.
- F) Documentation of completion confirming that the crew safety at sea training requirement has been met per NOR 8.1.3 and 8.1.4.
- G) Documentation of the completion of Man Overboard procedures defined in NOR 8.9.
- H) The yacht's on-board email address.
- I) The yacht's Satphone number.
- J) Provide a phone contact and email address in Hawaii that must be active from the day the yacht arrives in Hawaii until the awards ceremony.
- K) Full payment of the appropriate Entry Fee listed below in NOR 5.
- L) **LIABILITY INSURANCE** Provide proof of insurance with minimum \$1MM (one million USD) liability insurance naming Transpacific Yacht Club as additional insured.

4.3.2 **Completed during the Transpac Inspection Process (NOR 9)**

- A) Demonstrate compliance with the US SERs for an Ocean race as modified by this NOR.
- B) Produce a signed copy of the valid 2021 ORR or ORR-MH certificate.

4.3.3 **Submitted to the Entry Chairman**

A color photograph of the yacht under sail. This shall be submitted electronically and shall be 4" X 4" or larger with a resolution absolutely no less than 300 dpi. The maximum file size should not exceed 2MB. This photo will be used for various TPYC promotions and the brochure. *(Note: A picture of a rubber duck will be used for any yacht that fails to submit a suitable photo.)*

4.3.4 **Submitted via email to the Transpac Race Committee**

Using the same system as will be used during the race (see NOR 14.1), each yacht shall send a position report via email or text messaging to the Transpac 2021 Position Report email address posreport@transpacyc.com and receive an acknowledging email. The window for email and text contact opens June 1, 2021 and closes two days before the yacht's scheduled start date. Yachts failing to complete this requirement prior to two days before their scheduled start date shall be protested by the Race Committee and subject to a penalty determined by the Protest Committee.

Contact the Entry Chairman listed below for assistance in completing the on-line entry form.

entry@transpacyc.com.





5 FEES

5.1 Application Fee

The online entry process requires a non-refundable \$250 (USD) Application Fee. Upon completion of the Application for Entry and receipt of the \$250 Application Fee, the Entry Chairman will list the yacht's entry on the [Transpac Website](#). The Standard Entry Fee (see NOR 5.2) will then be due. The Late Entry Fee will apply if the full amount of the Standard Entry fee is not paid by ~~March 4, 2021~~ **April 30, 2021**.

5.2 Entry Fees

5.2.1 Standard Entry Fees are stated in US Dollars per foot length overall (LOA) and must be received by **April 30, 2021**. This is in addition to the Application Fee.

5.2.2 Late Entry Fees are stated in US Dollars per foot LOA and applies to payments received after **April 30, 2021 and received by May 31, 2021**. Submission of entry payment after May 31, 2021 requires TPYC Board approval.

5.2.3 Table of Entry Fees by LOA in feet:

	Standard Entry Must be Paid by April 30, 2021	Late Entry Must be Paid by June 4, 2021
Under 42 Feet LOA*	\$45 per foot LOA	\$57 per foot LOA
Under 60 Feet LOA*	\$60 per foot LOA	\$77 per foot LOA
Under 80 Feet LOA*	\$70 per foot LOA	\$90 per foot LOA
Over 80 feet LOA*	\$85 per foot LOA	\$110 per foot LOA

* LOA as listed on ORR certificate

5.3 Discounts

A \$50 discount will apply to the entry fee of an owner/charterer who is a current member of US Sailing. In addition, a \$50 discount will apply to current members of the Transpacific Yacht Club.

5.4 Forfeiture

No entry fee will be returned by reason of withdrawal after **June 4, 2021** ~~May 31, 2021~~.

5.5 Transponders





Transponders will be used for position reports. Yachts are not responsible for the rental fee but are required to enter into a rental agreement with the transponder rental company. TPLYC shall require an equipment deposit via credit card from the yacht. Credit card deposit will be required at time of transponder pickup (See NOR 6 Schedule of Events).

6 SCHEDULE OF 2021 EVENTS

The full schedule of events will be published as soon as possible.

Last Date for Standard Entry fee payment	Friday	April 30, 2021
Last Date to pay Late Entry Fee	Friday	June 4, 2021
Deadline for Submitting Final Rating Data ¹	Friday	June 4, 2021 1700EDT
Deadline for "As-Built" Sails Certificate ²	Friday	June 25, 2021
Deadline for Safety Inspection Completion (See NOR 9 for details)	Two days before start	
Last Date for Complete Race Entry Process (See NOR 9 for details)	Two days before start	
Check in and pickups TBD	Saturday	July 10, 2021
Mandatory Yacht Check-in and —transponder distribution see 5.5³		
Mandatory Person In Charge Meeting Virtual Zoom Webinar, time TBD	Saturday	July 10, 2021
Aloha Send-off Party	Saturday	July 10, 2021
First Transpac Race Start	Tuesday	July 13, 2021
Second Transpac Race Start	Friday	July 16, 2021
Third Transpac Race Start	Saturday	July 17, 2021
Fast Multihull and/or Fast Monohull —Yacht Start	TBD (if needed)	
Navigator's De-Brief Meeting	TBD	TBD
Honolulu Awards Ceremony	Friday	July 30, 2021





¹ A penalty may be assessed against yachts submitting late Rating Data see NOR 7.3.

² See provisions of NOR 7.

~~³ The skipper's yacht check-ins will be held the morning of the Person in Charge Meeting. The check-in process will include distributing Skipper's Binders, confirming completion of all entry requirements including yacht email and phone contact confirmation, and distributing transponders. The skipper's package consists of the Skippers Race Information Handbook, Hawaii check-in information and race gifts.~~

~~⁴ The Mandatory meeting for a Person in Charge will be held after check-in and before the Aloha Send-Off party on Saturday, July 10, 2021. Attendance shall be confirmed by a roll-call. Yachts whose Person in Charge is not at this meeting may be subject to protest by the Race Committee and may incur an elapsed time penalty of up to three hours pending the findings of the Protest Committee. The meeting time and location will be published in the Sailing Instructions.~~

7 TRANSPAC RATING AND MEASUREMENT

7.1 Multihulls – See NOR 3.5.2.

7.2 Monohulls

7.2.1 TPYC uses TPYC ratings as the best way to fairly handicap a wide variety of monohull racing yachts. The TPYC rating is in the Time-on-Time format (ToT) and is based on the mainly downwind Transpac Wind Matrix (see Appendix A) and a Pacific Swell adjustment.

7.2.2 Each monohull yacht shall have a TPYC rating found on the ORR certificate issued by US Sailing. Yachts with unusual design features may require use of the “Special ORR VPP” and assessed an additional charge of \$750.

7.2.3 Yachts with a TPYC Rating equal to or faster than a Santa Cruz 50 (Transpac Rating => 0.9260) must have a valid Fully Measured ORR certificate. Yachts having a valid ORC (Offshore Sailing Congress) International certificate may qualify for an ORR Fully Measured certificate pending completion of an ORR application, payment of ORR certificate fee and Measurer verification. Any yacht entering with a One-Design Class ORR certificate must also submit a valid 2021 One-Design class certificate. All other monohull yachts must submit a valid Partial Measurement ORR certificate subject to the following conditions:

A) The TPYC yacht ratings shall be calculated using the Transpac default crew weight (83.3% of ORR default weight).

B) For yachts seeking a Partial Measurement ORR certificate, but for which there is no standard hull, the yacht shall be surveyed with a Hull Measurement Instrument (HMI), ORR approved





laser scanning device, or shall submit designer hull lines. These yachts shall either be weighed with a calibrated scale in the presence of an ORR measurer or have freeboard to centerline vertical measurements made and have the freeboards measured when in measurement trim. Spot checks on appendage's dimensions may also be required. All these data and other Partial Measurement ORR data shall be performed by a certified ORR or UMS Measurer. Contact the Offshore Office of US Sailing at Offshore@ussailing.org to find a measurer near you.

- C) To obtain a Partial Measurement ORR certificate, the following information must be provided:
- 1) Freeboards must be measured by a US Sailing or UMS certified measurer. For nonstandard hulls or standard hulls with significant freeboard variation, the measurer shall also provide righting moment. An in-water measurement check list can be found at [US Sailing ORR Rating](#)
 - 2) Rig (Spar) dimensions may be owner declared.
 - 3) Sails submitted for inclusion in an ORR Certificate shall have sail certificates measured and signed by a US-UMS certified measurer for UMS measurer for the mainsail, largest jib, large roach headsail, and symmetrical and asymmetrical spinnaker(s) with the largest area. The dimensions described in ORR Rule 10 shall be provided for the largest sails. For yachts with roller furling jibs, make sure the longest jib luff is entered.
 - 4) All other information required for the ORR certificate may be owner declared.
 - 5) Yachts that already have an IMS (International Measurement System) or ORC International certificate, even if expired, issued by a national authority may qualify for an ORR certificate that meets the Partial Measurement ORR requirement. That ORR certificate may be obtained through US SAILING (Offshore@ussailing.org) by completing an ORR application and submitting the IMS or ORCi certificate and if nothing has changed, by submitting a letter to that effect. If there are changes, they shall be verified by a certified measurer and reported to US Sailing as required above for an ORR certificate.

- 7.3 The deadline for submitting final rating data to US Sailing is shown in NOR 6. The receipt of this final data must be acknowledged by US Sailing. Any yacht failing to submit final rating data by the deadline shall be penalized ten (10) minutes of elapsed time for every day the final rating data is late past the deadline. Yachts subject to the above elapsed time penalty shall be protested by the Race Committee at the conclusion of the Transpac. The Partial Measurement sail measurements (NOR 7.2.3 B) may be declared and submitted in advance of measuring the sails. US Sailing must receive sail certificates confirming that no sail exceeds the declared measurements prior to 1700 EDT, June 30, 2021.





- 7.4 Any yacht that suffers a catastrophic gear failure requiring submittal of new rating data after the rating submittal deadline may petition the TPHYC Board for a waiver of penalty, provided that for other than the catastrophic failure, she would have in all respects been able to comply with the dates specified in this paragraph. Should the Board grant a waiver of penalty the yacht must submit all rating data not affected by the catastrophic failure and the anticipated effected rating data prior to the rating submittal deadline (see NOR 6) such that an experimental certificate based on those data can be issued.
- 7.5 Yachts must carry on board a copy of the valid 2021 ORR certificate which they submitted for purposes of assignment of their TPHYC rating. This certificate must be signed by the owner, and charterer if applicable, attesting to the accuracy of the input data. Note that ORR Rule 3.01 holds the owner/charter responsible for the accuracy of the data input to the certificate.
- 7.6 Whisker poles and outriggers to leeward. Transpac elects to allow entrants to be ORR rated for and use non-Large Roach Headsails set to leeward connected to Whisker Poles or Outriggers as described in 2021 ORR 10.05(f) & (g). This changes the 2021-2024 RRS 55.3 (a).

Background information supplied by ORR:

Whisker poles and outriggers to leeward

- 1) For 2021 ORR will offer the option to race organizers to allow boats to measure with and use whisker poles and/or outriggers set to leeward for headsails, but not for Large Roach Headsails (LRHs). The reason is that an LRH, in its largest form can be almost a spinnaker, and what is intended is only to allow whisker poles and/or outriggers set to leeward for typically upwind headsails.
- 2) A whisker pole, which is attached to the mast and connected to the headsail clew, is already legal under the RRS, but hasn't been allowed by 2020 and earlier ORR class rules.
- 3) An outrigger attached to the hull or deck and connected to a headsail clew is not currently allowed under RRS 50.3. Note that starting in 2021 this rule will be renumbered to 55.3. Even though the other rating rules do not permit outriggers, many ORR boats have overlapping headsails and an outrigger attached to the boat near the clew of those sails is similar to a whisker pole attached to the mast of a boat with non-overlapping jibs. Allowing outriggers with overlapping headsails continues ORR's goal of not favoring a specific type form. ORR, as a class rule, will specifically modify RRS 55.3 to permit outriggers for this purpose, and only this purpose.





- 4) The length of the whisker pole/outrigger is effectively self-limited by the size of the headsail, so there is no need to measure or restrict its length. (ORR may want to measure them just to archive that information for possible later use.)
- 5) Boats choosing to rate with a leeward whisker pole/outrigger must declare that as part of the certificate application process. The rating assessment will not make a distinction between leeward whisker pole or outrigger, it will just put the headsail clew in the best position for the point of sail.
- 6) For the purpose of protecting the fleet, ORR's intent is that the rating assessment for a leeward whisker pole/outrigger will beat the upper end of their maximum potential performance benefit.
- 7) ORR rule 10.05 will be modified to revise 10.05.f), add provision 10.05.g) and renumber current g) as h).

10.05.f) Headsails may be sheeted to any part of the deck or rail, but to no fixed point higher than $0.05 \cdot B$ above the deck or coach roof, or to the main boom, within the measurement limits (see 9.10.2) or to the spinnaker or whisker pole when the pole is set on the opposite side from the main boom. Headsails may not be sheeted to any spar or outrigger set to leeward unless both the Race Organizer elects to allow their use and they are declared and rated under 10.05.g). This changes RRS 50.3 (c) and ERS F.1.4 (d) ii.

(g) Race Organizers may elect to allow entrants to be rated for and use non-Large Roach Headsails set to leeward connected to Whisker Poles or Outriggers. This changes ORR 10.05 (f) and RRS 55.3 (a).

The ORR certificate will be event specific and shall display this statement:

This certificate reflects the use of leeward outriggers and/or whisker poles to trim headsails. However, they may only be used in events for which the Organizing Authority has specifically permitted their use in the Notice of Race

8 SPECIAL REQUIREMENTS

8.1 Yacht and Crew Qualifications

The Transpac Race is a challenging race for very experienced sailors on well-equipped yachts where weather conditions and sea state can be unpredictable. Racing from Los Angeles to Honolulu while enjoying the Eastern Pacific trade winds can result in conditions that range from





pleasantly exhilarating to serious tests of seamanship. Crews must be prepared to deal with poor conditions, injuries, and potential equipment failures without the prospect of immediate assistance or rescue. For these reasons TPYC requires that all crews and yachts satisfy the following qualification requirements:

8.1.1 Yacht Race/Passage Qualification

Each yacht shall have completed a 150-nautical mile or longer sailing race or sailing passage (no motoring) prior to two days before its Transpac Race start. Yachts launched after 1 January 2021 shall complete this requirement by 16 June 2021.

8.1.2 Crew Seamanship and Passage Making

Each Owner/Charterer and Navigator must have completed an offshore race or ocean sailing passage as specified by either a) or b) below and submit documentation on the Transpac Offshore Experience Form to that effect. This qualifying passage and documentation must be completed prior to two days before the yacht's Transpac Race start.

- A) The Owner/Charter and Navigator must have completed a Transpac, Pacific Cup, Newport-Bermuda, Sydney-Hobart, Fastnet or comparable ocean race within the past four years in their respective capacities; or
- B) The Owner/Charterer, Navigator, and at least one Watch Captain must have completed a minimum 150 nautical mile sailing race or ocean sailing passage on the yacht they are entering within a year and prior to two days before the yacht's Transpac Race start. If this event takes place after July 5, 2021 at least 50% of the crew must be on board.

The qualifying race or ocean sailing passage shall be documented with the Offshore Experience Form, available online at [Transpac Website](#).

8.1.3 Crew General Safety Training

At least 60% of a yacht's crew including the Person in Charge and watch captains shall have a valid certificate for:

- a) A US Sailing International Offshore Safety at Sea with Hands-on Training Course, or
- b) The combination of a US Sailing Hands-On Safety at Sea Course and the US Sailing Offshore Safety at Sea Online Supplemental Course both taken in the same calendar year, or
- c) The combination of a US Sailing Hands-On Safety at Sea Course and a US Sailing On-Line Offshore Safety at Sea course both taken in the same calendar year; or
- d) A World Sailing (ISAF) Approved Offshore Personal Survival Training Course certificate issued by another country, or





- e) The US Sailing Offshore Safety at Sea Course (in-person), or
- f) The US Sailing Online Offshore Safety at Sea Course (Units 1-15)

For double-handed entries both crew members must meet this requirement.

Note: Normally these certificates are valid for five years from course completion. Due to the Covid-19 pandemic US Sailing has extended the validity of certificates with Hands-On training earned in 2015 and 2016 through the end of 2021. With the online course available for recertification, the certificates in e) and f) do not have extended valid dates.

More information on online training [US Sailing Safety at Sea](#)

8.1.4 Additional Training

At least two members of the crew must have current CPR and First Aid training certificates. A list of approved courses can be found at the bottom of this page [US Safety at Sea](#)

- 8.2 The minimum number of crew for yachts not racing double handed is four.
- 8.3 Propellers may not be banded or restrained in any way. All yachts must power to the starting line and into harbor after finishing. If any damage or other circumstance prevents motoring to the start or from the finish, the circumstances must be logged and reported to the Race Committee. The inability to power to the start or from the finish line may constitute grounds for protest by the Race Committee. Yachts so protested shall be subject to a time penalty.
- 8.4 At least one gallon of potable water for each crew member shall be carried in sealed portable containers for emergency use. If any of this water is used during the race, the circumstances must be logged and reported to the Race Committee. Emergency water use during the race or failure to properly report emergency water use as noted above shall constitute grounds for protest by the Race Committee. Yachts so protested may be subject to a time penalty. Any water packed within the life raft will not count with respect to this requirement because it cannot be reasonably inspected. Yachts so protested may be subject to a time penalty if the protest committee finds that the use of the emergency water was necessitated by poor planning or poor seamanship.
- 8.5 All used and empty fluid containers must be carried on board until the yacht is moored in Honolulu. TPYC is sensitive to and encourages a clean marine environment. All skippers are reminded of the prohibitions contained in [Annex V of the Marpol Treaty](#) regarding the discharge of trash in US or International waters, **and RRS 47**





- 8.6 Inboard power shall be in accordance with SER 2.7.1. An exception is provided for power by outboard motor providing ALL the following five conditions are met:
- 8.6.1 The outboard motor shall be stored in the location from which it will be deployed, such that the only action required to deploy it is to lower it into the water. The mounting clamps must remain tight during deployment. Retractable hull fairing is permitted in the area where the propeller is retracted. Such fairing must be in place for measurement and while racing.
- 8.6.2 The outboard motor must be mounted in an inboard location. Transom mounting does not meet the requirement.
- 8.6.3 There shall be a separate, permanently installed electrical generating and storage system sufficient to meet all electrical needs including running lights, emergency communications and those described in NOR 14, which may include fossil fuel generator that complies with OSR 3.28.2, wind generator, hydro generator and/or solar generator.
- 8.6.4 Fuel for both outboard motor and any generator fulfilling the requirements of NOR 8.6.3 shall be stored in permanently installed fuel system(s), which comply with SER 2.7.3.
- 8.6.5 The speed under power shall be no less than that required for inboard power.
- 8.7 Halyard locks are permitted, but only when capable of being reliably released from deck level.
- 8.8 **Drinking Water Not Stored in Permanent Tank**
- 8.8.1 Any drinking water not in permanent tanks (other than the emergency drinking water required under NOR 8.4) shall be stored in rigid container(s) not exceeding 5 gallons each that are securely tied or strapped down, and
- 8.8.2 Stored in locations as required under NOR 10.2.
- 8.9 **Man Overboard Procedures**
- Each yacht with two thirds of the 2021 Transpac crew members shall:
- 8.9.1 Demonstrate functionality of the Man Overboard recording device (SER 3.15) by dropping an object overboard, activating the alarm, and motoring/sailing out of sight and then successfully return to and retrieve that object.
- 8.9.2 Demonstrate a method of hoisting a crewmember back on deck, or other consistent means of reboarding the crewmember. This may be done in shark-free waters or at the dock.
- 8.9.3 For Double Handed entrees each crew member shall demonstrate recovery of the other crew member.





8.9.4 A certification form (available on Transpac 2021 Website) confirming completion of Man Overboard Procedures in 8.9 herein shall be completed and signed by all the captain and all members of the crew aboard at the time of the practice. Certification will be turned in at time of pre-race inspection.

8.10 With respect to cockpit volume, SER 2.1.5.2 (Coastal race) shall apply.

8.11 Fire Extinguishers

SER 3.4 is modified to read “Fire extinguishers, at least two and no fewer than required by the yacht's country of registry, readily accessible in suitable and different parts of the yacht.”

8.12 Lifelines

Monohull lifelines shall be stainless steel. Multihull lifelines shall be either HMPE or stainless steel.

8.13 Equipment Location Charts

Safety equipment and through-hull location chart or charts in durable waterproof material shall be displayed in the main accommodation where it can best be seen, clearly marked with the location of all principal safety equipment and through-hulls.

9 INSPECTION

9.1 Race Entry (NOR 4.3.2) requires all yachts to be inspected to verify compliance with:

9.1.1 US Safety Equipment Requirements (SER) for Ocean races except as modified by this NOR (SER Ocean is similar to World Sailing Offshore Special Regulations Category 1 races);

9.1.2 A signed copy of the valid 2021 ORR certificate is on-board; and

9.1.3 Special Requirement NOR 8.9 – Man Overboard Procedures – either by a Transpac inspector witnessing them or submitting a signed affidavit available at [Transpac Website](#)

9.2 Initial Inspection shall be completed no later than seven days prior to the yacht's scheduled start.

9.2.1 Corrections to resolve inspection deficiencies and completion of the MOB procedures (NOR 8.9) shall be completed no later than two days prior to the yacht's scheduled start.

9.2.2 Initial inspections may be scheduled starting May 1, 2021.

10 TRANSPAC CONFIGURATION LIMITATIONS

10.1 TPYC Board realizes most of the Race is on starboard tack and configuring a yacht to optimize performance on starboard is advantageous. However, TPYC requires all yachts to be designed and built with no list including life rafts, excluding the effects of the movement of sails as allowed by NOR 1.4 and the storage of stores and liquids as described in NOR 10.2 and 10.3, and the effects of crew. Protests of this rule will be resolved by the protest committee in consultation with the US SAILING Offshore Director per RRS 64.3(b).





10.2 Tankage

10.2.1 Competitors are reminded that this NOR only amends RRS 51 for movement of sails not in use and for declared and rated movable ballast. If yachts systematically make, move or use fluids or stores in such a way as to increase stability as they tack or gybe, or adjust trim in different conditions; that will be considered movable ballast under RRS 51 and must be declared and rated on the ORR or ORR MH Certificate. A yacht failing to declare movable ballast to increase stability or adjust trim breaks RRS 51 and shall be protested and penalized.

10.2.2 Water tanks in monohulls located more than 0.2xMB outboard of centerline must not have their top surfaces more than 0.30m (1.0ft) above the waterline except that tanks existing prior to and unmodified after June 12, 2012 may have their top surfaces no more than 0.40m (1.3ft) above the waterline.

10.2.3 Before racing up to 7 US gallons of potable water per crew member may be stored asymmetrically in permanent water tanks that meet the requirements of 10.2.2.

10.2.4 ~~While racing total potable liquids more than 7 US gallons per crew member must be stowed symmetrically about the yacht's centerline and must be below the height of the lowest berth (with the yacht level).~~

While racing total potable liquids more than 7 US gallons per crew member **and any potable liquids not in permanent tanks** must be stowed symmetrically about the yacht's centerline and must be below the height of the lowest berth (with the yacht level).

10.3 All fuel not burned by legitimate ships purposes and stores not consumed by personal consumption during the race must be continuously stored in its original location and carried to the finish.

10.4 Water ballast tanks shall be within the hull.

11 SAILING INSTRUCTIONS

Sailing Instructions will be available by June 1, 2021.

12 COURSE

The course will be from the starting line located near Point Fermin, California, leaving Santa Catalina Island to port, thence to the finish line near Diamond Head, Oahu, Hawaii. The Sailing Instructions may specify restricted areas that must be avoided.

13 PENALTIES

The first sentence of rule 64.1 is changed to: "When the protest committee decides a yacht that is a party to a protest hearing has broken a rule and is not exonerated, it may impose an elapsed time penalty or impose no penalty at all." If an elapsed time penalty is imposed, its magnitude will be at the protest committee's discretion unless otherwise





specified in the NOR or SIs. This penalty also is applied to elapsed time, Class and Fleet standing trophies. However,

- 13.1 If the yacht caused injury or damage to another yacht that affected the other's racing ability or, despite taking a Two-Turns Penalty, gained a significant advantage in the race by her breach, she will be disqualified.
- 13.2 If the yacht is found to have broken rule 69.1(a), the protest committee shall follow rule 69.2(c). Willfully reporting a false position or false weather will be considered gross misconduct and dealt with under rule 69.2.
- 13.2 If the protest committee decides that a breach of rule 41 was committed to insure the safety of a yacht or her crew, the protest committee will impose no penalty.
- ~~13.3 A yacht will receive an elapsed time penalty of two hours if the protest committee determines that she:~~

~~The first sentence of rule 64.1 64.2 is changed to: "When the protest committee decides a yacht that is a party to a protest hearing has broken a rule and is not exonerated, it may impose an elapsed time penalty or impose no penalty at all."~~

- ~~13.3.1 Is on the course side of the starting line at her starting signal and does not return to the pre-start side of the line and start, or~~

~~Yacht Is on the course side of the starting line at her starting signal and does not return to the pre-start side of the line and start, or Touches a starting or finishing line mark and does not take a One-Turn Penalty as described in rule 44.2. This changes Rule 64.1 Rule 64.2.~~

- ~~13.3.2 Touches a starting or finishing line mark and does not take a One-Turn Penalty as described in rule 44.2. This changes Rule 64.1.~~

~~Touches a starting or finishing line mark and does not take a One-Turn Penalty as described in rule 44.2. This changes Rule 64.1 Rule 64.2~~

- 13.3 When a boat starts in accordance with item (b) of the definition Start, she may return to the pre-start side of the line to comply with item (a) of the definition of Start, but, if she does not the starting penalty shall be two hours added to her elapsed time.
- 13.4 [DP] When a boat touches a starting or finishing line mark and does not take a One-Turn Penalty as described in rule 44.2, the penalty shall be two hours added to her elapsed time.

14 COMMUNICATIONS

14.1 Communication Requirements





14.1.1 **VHF** – Yachts shall be equipped with a VHF FM radio transceiver of at least 25 watts of power. The VHF antenna must be mounted atop the main mast. VHF 16 shall be monitored while racing. As a minimum requirement, the following frequencies are: VHF Channels 6, 16, 68, and 71

14.1.2 **Satphone** – All yachts shall carry on-board a satellite phone (Satphone). The satellite phone shall have coverage for the duration of the race and be connected to main power or have a spare battery. Satphones shall be powered on while racing. Yachts shall provide the Satphone number to the Race Committee.

14.1.3 **SSB** – If a SSB is present, the SSB antenna must be a permanently installed but may include a detachable link for yachts with no standing backstay (SSB is not monitored by Transpac Race Committee.)

14.1.4 **Email** – All yachts must be equipped to send and receive e-mail communications.

14.2 **Daily Roll Call**

Daily Roll Call is considered a routine test of regular and emergency communications equipment. Roll Call and radio communication procedures are covered in detail in the Sailing Instructions.

14.3 **Communication Restrictions**

Competitors may only utilize weather information that is routinely available throughout the year to the general public without charge, and whose availability is publicly indexed. For example: Competitors may NOT arrange for routers or meteorologists to provide them with advice, custom data, or compilations of public data during the race, no matter how that information is communicated. Competitors may receive regularly scheduled weather broadcasts or weather fax transmissions (e.g. from NOAA, USCG, WWV, NMC, KVM70). Competitors may receive imagery from satellites (e.g. NOAA, APT satellites). Competitors may use any means to retrieve data from the Internet (e.g. from the web, from ftp sites, from email responders), provided those data are intended for public use without charge, are routinely available for free throughout the year, and are publicly indexed (e.g. can be found via Google). Prior to their preparatory signal, there is no limitation on private services or any other source of data or consulting, except a competitor that has started may not provide weather information to another competitor that has started, or to a competitor that has not yet started except through the information provided to or from Transpac Race Communications. This amends and clarifies RRS 41 (c).

14.4 Rule 41 is changed to add: “e) Communications via phone or email with a yacht builder, designer or engineer when the integrity of the vessel is at stake is not a violation of the intent of rule 41 provided they are reported to the Race Committee within 4 hours of each occurrence.”





15 MOORINGS

15.1 Mainland

Yachts are responsible for making their own mooring arrangements prior to the start of the race. However:

15.1.1 The Mainland Committee is again working to be able to provide berthing for participants and will post a notice on our web site if we are successful. Participants are to contact PortCaptain@TranspacYC.com for assistance in arranging berthing.

15.1.2 If mooring is needed prior to July 1, 2021 contact PortCaptain@TranspacYC.com. (Please monitor [Transpac Website](#) for posting of this date.) Transpac will try to accommodate participants on a first come first served as available basis.

15.1.3 All yachts shall have four (4) mooring lines, four (4) fenders (adequately sized to your yacht) and an anchor with suitable chain and rode to support Med Mooring if necessary. TPYC will not be able to furnish or lend any mooring gear. Yachts shall be equipped and prepared to Med Moor if requested.

15.2 Honolulu

15.2.1 Escort vessels

For vessel and crew safety and coral reef environmental protection, all finishing vessels will be met at the Diamond Head finish line by an assigned escort vessel. Owners/skippers will be hailed via VHF 68 and instructed to follow the escort vessel to its assigned mooring area which may be Ala Wai Small Boat Harbor, Kewalo Basin or Honolulu Harbor. Escort vessels are not available to tow competitors to slip/moorage. If needed, a commercial tow should be pre-arranged.

15.2.2 Ala Wai Small Boat Harbor

A) Honolulu Committee Pier-Operations will provide mooring instructions to skippers as vessels reach their assigned mooring area. Upon finishing each yacht will be assigned a mooring space. All yachts shall carry on board during the race four (4) mooring lines, four (4) fenders (adequately sized to your yacht) and an anchor with suitable chain and rode to support Med Mooring if necessary. Neither TPYC nor its Pier-Operations committee will be able to furnish or lend any mooring gear. Yachts should be equipped and prepared to Med Moor in Honolulu if required by the TPYC Honolulu Committee. As part of the Race Entry each yacht must complete a waiver and authorization for the yacht to be moved, in the absence of the availability of owner/charterer or crew, if needed, to accommodate berthing of other competitors. The boat movement and waiver authorization will require a 24/7 cell phone





contact numbers for the race person in charge and the delivery person in charge. Yachts not complying with these requirements will be denied mooring in Ala Wai Harbor.

- B) Mooring provided to the yachts in the Ala Wai Small Boat Harbor, including Row 500 (“Transpac Row”), Hawaii Yacht Club, Waikiki Yacht Club and fuel dock (construction permitting) are by invitation only and are subject to further regulation by the State of Hawaii.
- C) Oversized or Deep Draft Yachts**

~~TYPC leases public~~ arranges for moorings in Ala Wai Harbor and at local Yacht Clubs for a maximum 14 days. ~~The Ala Wai Harbor~~ moorings are provided at no charge until this period expires and not all yachts will receive the maximum 14 days of free mooring. The 14-day period is projected to start on July 22, 2021 and end on August 4, 2021 but may be adjusted based on weather and sailing conditions. Yachts deemed too large to be accommodated in Ala Wai Harbor will be assigned to Kewalo Basin Harbor or Honolulu Harbor; please refer to Section 15.2.3 below for more information. ~~Limited mooring is available on a space available basis from Waikiki Yacht Club and Hawaii Yacht Club and Owner/Skippers are responsible for making arrangements directly with the respective Port Captains.~~

- D) Transient mooring privileges desired longer than this period must be arranged directly either with the Ala Wai Harbor Master or Port Captains of Waikiki and/or Hawaii yacht clubs.
- E) Mooring privileges may be suspended or canceled at any time for any infraction of applicable mooring rules or misconduct of any kind.

15.2.3 Oversized or Deep Draft Yachts

~~Yachts that cannot be accommodated in Ala Wai due to length, draft or beam should be notified by June 30, 2021 and will be moored in either Kewalo Basin or Honolulu Harbor. Large multihulls will likely be moored in Kewalo Basin, and Owners are responsible for all mooring charges and fees. Deep draft monohulls will be moored in Honolulu Harbor.~~ For vessels required to use Honolulu Harbor, owners are responsible for hiring a harbor agent, and for all associated mooring, port and security fees. The harbor agent will handle all invoicing and the harbor agent’s invoice must be paid in full prior to a vessel’s departure from Honolulu Harbor. Mooring at Kewalo Basin is by invitation only via referral by Honolulu Pier Ops to Kewalo Harbor Master and is subject to further regulation by the State of Hawaii, the Hawaii Community Development Corporation, Howard Hughes Corporation, and its contracted marina manager. Mooring at Honolulu Harbor, a restricted commercial harbor, is subject to regulation by the State of Hawaii Department of Transportation, the United States Coast Guard and United States Homeland Security.

16 CREW CONDUCT





Each owner/charterer shall be responsible for the conduct of his or her crew before, during and after the race. Crews are guests of the Transpacific Yacht Club, Hawaii Yacht Club, Waikiki Yacht Club, Kaneohe Yacht Club and the Ala Wai Marina, Honolulu Harbor and Kewalo Basin respective Harbor Masters. Crew failure to observe yacht club and harbor rules and regulations and/or direction from authorized representatives or engage in uninvited attendance of other yacht welcoming parties will lead to revocation of crew guest privileges and ouster from the club or party facility. Due to State of Hawaii laws, no alcohol may be carried out of or consumed outside of Transpac "Party Island", Waikiki Yacht Club, Hawaii Yacht Club or Kaneohe Yacht Club. Gross crewmember misconduct may be subject to a report to the Protest Committee for violation of Racing Rules of Sailing rule 69.

17 TROPHIES

Monohull Yachts All yachts will be eligible for overall and division trophies. These fleets and divisions are defined in NOR Section 3.1 and 3.2. Trophies will be awarded to special classes, in addition to division and overall trophies.

King Kalakaua Trophy – Awarded to the First Corrected Time Overall yacht.

Barn Door Trophy – Awarded to first Monohull yacht to finish.

New Course Record Trophy (Roy E. Disney Clock Trophy) – Awarded if a new Record is set for the fastest elapsed time by a Monohull yacht.

Merlin Trophy – Intended to honor the long history of boats with fixed ballast, manual sail handling, and with only the most simple of appendages. That is a yacht just like Merlin when she set the 1977 record. Awarded to the Monohull with the fastest elapsed time which meets all of the requirements listed in the [Trophy FAQ](#)

First Corrected Overall Time, by start date

There will be trophies for the first corrected time overall for yachts in each separate start date, for those yachts whose start date did not include the winner of the King Kalakaua Trophy.

Multihull Yachts - All yachts will be eligible for overall and division trophies. These fleets and divisions are defined in NOR Section 3.5

Rudy Choi Trophy – Awarded to the Multihull with the Fastest Elapsed Time.

Corrected Time Multihull Trophy.... To be announced

Special Trophies





Mark S. Rudiger Celestial Navigation Trophy – Awarded to the navigator who submits celestial navigation worksheets or evidence of traditional navigation to the finish inspectors immediately after finishing, and whose work is selected as the "best" by an impartial panel of judges.

Nash Family Corinthian Trophy – Awarded to the yacht with an all “non professional ” Corinthian crew with the Fasted Corrected Time Overall. Yacht entries from all monohull classes are eligible for this Corinthian Trophy. See Trophy FAQ for details on entry requirements.

Storm Trysail Club Trophy – This is an award to recognize the best performance of a team of three yachts in any division. See Trophy FAQ for details on entry requirements.

The Ronald L. Burla Trophy for Media Excellence –

Awarded to the entry that provides the most creative and original media content related to their on-board experience while sailing in Transpac. See Trophy FAQ for details on entry requirements.

*Entries wishing to compete for “Special Trophies” such as the Nash Family Corinthian Trophy, Ronald L. Burla Trophy, Mark S. Rudiger Celestial Navigation Trophy, Storm Trysail Club Trophy, etc. **must notify Race Committee by July 1, 2021** at trophy@transpacyc.com to be considered for these Transpac 2021 trophies. Please see [Trophy FAQ](#) at [Transpacific Yacht Club website](#) at and race information link for more information.*

18 MEDIA RIGHTS

Competitors grant TPYC, and its official sponsors, the unrestricted right and permission to use their name and the image for any text, photograph or video footage of either themselves or the yacht they are sailing during the event, to be published or broadcast in any media whatsoever (including but not limited to Press and TV advertisements or Internet), for either editorial or advertising purposes or to be used in press information. In this respect, competitors' names and any biographical material of themselves may also be used or reproduced in any way known. As part of the registration process, each individual participating crewmember will be required to sign a declaration accepting this waiver of rights.

19 PROTEST COMMITTEE

TPYC will appoint a Protest Committee. The Protest Committee will be named at the time of publishing the Sailing Instructions.

20 INFORMATION

For additional information visit <https://Transpac Website> or contact any TPYC Officer.





Appendix A Transpac 2021 Wind Matrix

TWA	TWS 6	TWS 8	TWS 10	TWS 12	TWS 14	TWS 16	TWS 20	TWS 24
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.007	0.011	0.000	0.000	0.008	0.000	0.001	0.000
10	0.011	0.011	0.003	0.004	0.008	0.000	0.000	0.000
15	0.011	0.013	0.011	0.011	0.009	0.000	0.002	0.000
20	0.016	0.021	0.018	0.018	0.012	0.000	0.005	0.000
25	0.043	0.031	0.021	0.019	0.013	0.000	0.008	0.000
30	0.083	0.046	0.028	0.022	0.013	0.002	0.007	0.000
35	0.099	0.075	0.057	0.050	0.031	0.009	0.011	0.000
40	0.093	0.125	0.118	0.120	0.086	0.029	0.026	0.000
45	0.135	0.195	0.198	0.205	0.157	0.062	0.054	0.010
50	0.283	0.280	0.278	0.268	0.206	0.104	0.091	0.035
55	0.415	0.342	0.337	0.301	0.218	0.150	0.132	0.058
60	0.391	0.342	0.353	0.311	0.213	0.192	0.172	0.062
65	0.275	0.297	0.331	0.305	0.211	0.225	0.208	0.059
70	0.176	0.257	0.294	0.288	0.214	0.246	0.237	0.071
75	0.131	0.240	0.261	0.263	0.218	0.252	0.258	0.098
80	0.125	0.227	0.245	0.246	0.226	0.247	0.271	0.125
85	0.140	0.210	0.253	0.257	0.238	0.238	0.276	0.135
90	0.159	0.207	0.274	0.288	0.255	0.239	0.274	0.117
95	0.169	0.233	0.297	0.318	0.265	0.258	0.285	0.071
100	0.172	0.272	0.322	0.341	0.260	0.292	0.343	0.034
105	0.171	0.298	0.358	0.392	0.299	0.341	0.459	0.037
110	0.163	0.326	0.427	0.506	0.517	0.447	0.541	0.050
115	0.142	0.401	0.567	0.689	0.964	0.707	0.525	0.028
120	0.113	0.499	0.770	0.934	1.200	1.151	0.485	0.000
125	0.090	0.493	0.896	1.201	1.253	1.438	0.581	0.000
130	0.078	0.349	0.823	1.420	1.561	1.627	1.152	0.000
135	0.070	0.184	0.623	1.486	2.028	2.434	1.704	0.101
140	0.058	0.087	0.407	1.264	1.997	2.743	2.015	0.278
145	0.043	0.044	0.236	0.863	1.634	2.397	1.913	0.405
150	0.030	0.024	0.137	0.565	1.251	2.020	1.639	0.377
155	0.018	0.016	0.088	0.391	0.962	1.753	1.409	0.259
160	0.010	0.013	0.059	0.293	0.766	1.499	1.209	0.174
165	0.005	0.012	0.042	0.242	0.623	1.224	1.043	0.160
170	0.003	0.012	0.049	0.219	0.497	0.980	0.922	0.168
175	0.002	0.012	0.067	0.199	0.362	0.761	0.810	0.152
180	0.000	0.010	0.045	0.136	0.206	0.381	0.463	0.092
TWA	6 TWS	8 TWS	10 TWS	12 TWS	14 TWS	16 TWS	20 TWS	24 TWS

