

# BJRC PERFORMANCE ANALYSIS 2019 AND HANDICAPS FOR 2020

## Report of the Performance Analysis Group

### Additional explanations for Main Committee in red, 20 June

The overall approach of the Performance Analysis Group (PAG) should be fairly familiar by now, but bearing in mind the absence of a face to face Handicap Committee meeting, more accurate descriptions of areas of the spreadsheets are given here.

The PAG carries out the calculations, provides initial interpretation of how boats performed in 2019, and makes suggestions as to what their starting handicaps for 2020 might be, and why.

The Handicap Committee (HC) reviews these suggestions and agrees starting handicaps for the coming season, considering whether a boat is likely to achieve a similar performance in the coming year, and the effect of declared changes in configuration, including new sails.

The analysis uses Elapsed Times (ETs) and is independent of race results. Calculations are based on the average performance of a Core Fleet of 11 boats, of medium speed, generally medium displacement, mostly with known BJRC racing history, finishing at least five races in 2019, and expected to finish within a half hour period, so generally in the same conditions of wind and tide.

## TABLE 1 - PARTICIPATION AND RACE WEATHER 2019

Only eight races were sailed. Two were cancelled due to heavy weather and only one of these was resailed. 14 boats finished 5 or more races. The lightest Core boat, Playboys, won races 1 and 4 in light and variable winds, with beating starts, while Caroline, the heaviest, won races 5 and 8 in winds of Force 4+, with reaching starts. 3 races were won by mid range all rounders, and one by Soprano, in heavier weather, but benefitting from a favourable handicap from 2018.

## TABLE 2c - FINISHING ORDER AND ELAPSED TIME DIFFERENCES

This table gives a general picture, and gives warnings about oddities; boats finishing in the 'wrong' order, or unusually large time gaps. This Table uses the actual ETs; amendments for delays only appear in Table 3.

**Row 5** The Core Range of start PNs is 76. This means that if Blue Moon, the middle boat in the list, finishes in 6 1/2 hours, then Caroline should finish 9 minutes earlier, and Playboys 21 minutes later, a total range of 30 minutes, which meets our target.

**Column B** The order in which boats are expected to finish, according to their starting PNs in column C. Core 11 boats have 'personal' colours.

**Rows 8 - 27** The finishing order, and the time intervals between boats. Intervals longer than 10 minutes are in bold type, and probably indicate a change in wind strength or direction which split the fleet, or a missed tide gate, as with 4 boats in race 4.

Comparisons between pairs of boats can be made by inspection, For example, Easi Rider beat Dan Dare 6 times, Dan Dare beat Easi Rider once.

Consistency can also be seen, the most extreme being Moon Shadow, with 4 races at the head of the fleet, and 2 races finishing behind a large number of boats considered slower.

**Row 23** In race 4, Rocket is so far behind the rest of the core that she would drag the core Average ET off course, so she will be omitted from the core calculations in this race in Table 3. In previous years there have been one or two similar occurrences.

**Row 29** 4 races had 10 or 11 core boats present, so as good as we are likely to get, races 4 and 8 had fewer, and are less reliable for several other reasons.

**Row 31** 3 short races, others about what we are aiming for - 6 1/2 hours for mid fleet.

**Rows 32 - 34** Core finishing range is usually a bit longer than the 30 minute target, but comes down if usual tail enders Rocket, Soprano, Evolution are excluded. Both Rocket and Evolution have performed much better in previous years, but suffered in predominantly light weather.

**Row 37** Start times may indicate possible effect of sea breezes. There was only one late start in 2019 - race 4, and that one still had variable wind and calm patches.

**Rows 39 - 42** This repeats information from Table 1.

## **TABLE 3q - ELAPSED TIME PERFORMANCE ANALYSIS AND PROPOSED START PNs FOR 2020**

**Rows 5, 40 - 45** ETs have been amended for known delays. For clarity, the average race start PNs and race ETs have been hidden - cols H, K, N etc., but the blue PNIs indicate which ETs were amended. The columns can be unhidden if desired.

**Row 6, Rows 18 - 28** Performance, the Indicative PN (PNI) is calculated as boat ET x Core race fleet average start PN / Core race fleet average ET. Boxed PNIs are more than 3% better or worse than a boat's average of all races (col. AR), generally equivalent to 12 minutes in a 6 1/2 hour race. Only Rocket's race 4 result, **at +8.6%, already flagged up in Table 2**, is bad enough to be excluded from the PNI calculation for that race - tests have shown that excluding those around 4% has little effect, **as it's 'diluted' over the number of boats in the race**.

## **CORE FLEET OF 11 BOATS**

**Col. B. Rows 18 - 28 Displacement** 8 boats are in the mid range of displacement, between 2150 and 2932kg, but Caroline is significantly heavier, at 3700kg, while Evolution and Playboys are very much lighter, Playboys being about half the weight of the First 25.7s.

**Cols. AH - AQ, rows 18 - 28 Core boats Best Block. Notes in cells AH 9 - 10 and AH 40 - 44.** PNIs are listed in descending order of speed. The pink cells **show the Block used for the average**. Eight out of 11 core boats use the full five race block, the number counted for the series. **Boats finishing only 5 races would not normally have a poor fifth race included in their Block, as this would give them an advantageous average relative to those with more races.**

**Col. AT, rows 18 - 28 Core Block range.** A consistent boat will have a Block Range for 5 races between 30 and 40, with an even progression of PNIs. Boats with larger Block Ranges, or with significant jumps between successive PNIs are less consistent, and the most representative Best Block is chosen by inspection - see below for individual boats.

## **PAG summary cols AV - AX**

The realignment between cols. AU and AV is to ensure that the average PNIs in col. AV are directly comparable with the start PNs in col. F, by having the same Core group total, cells F30 and AV 30. In column AX, 6 of 11 Core boats have average Best Block PNIs below or around 1% difference from their start PNs - around 4 minutes in a 6 1/2 hour race, which suggests the start PNs derived from the 2018 analysis were not far off. Larger percentage changes may indicate that performance has changed, or that the start PNs based on 2018 performance were wide of the mark. We would not normally include a new boat, Playboys, in the Core, but we knew she would be consistently well sailed, and she finished 7 races. Her -2.9% is largely balanced by McGregor's +2.1, and Moon Shadow and Evolution also balance out, so no boat is dragging the general average off course.

Non core boats Crazy Suzy and Poohstick are also not far off, albeit with block counts below 5.

### **Byron comparison cols AZ - BB**

Byron is a measurement system, like IRC, and assumes a perfectly prepared boat, with a full crew of top sailors, no tide, and courses which keep boats in broadly the same conditions of wind. These are neither our boats nor our conditions, so we can expect some variation, mostly negative, and can see why. If we can get a few reliable boats realigned within a reasonable relationship with Byron that can be a help in setting start PNs for new boats, as well as a general yardstick, and that's why we upgraded all PNs last year. In 2019, col. BB, Caroline, Aloha, and Blue Moon were just below their Byron, Easi Rider and Evolution not too far above, so the realignment looks consistent with that, and remembering the generally light weather last year suggests why most of the others fell out as they did; Dan Dare is usually the slowest of the First 25.5s, First 285s have poor keels, so not good upwind in light weather; not much excuse for McGregor, with a good hull and keel, masthead rig; Playboys was quickly up to hull speed in those conditions, with a good crew. Moon Shadow's ByPN is unrealistic in our conditions, as the large asymmetric spinnaker can't be used to the full on our courses.

## **PAG SUGGESTED START PNs for 2020. COLUMNS BG - BJ**

### **CORE 11 BOATS**

**Playboys, Blue Moon, and Aloha** The 3 leading boats from 2019 - yellow cells - should start as analysed. Playboys takes a large cut, but while her excellent results owed a good deal to light weather beats, she was also capable in other conditions, so no reason to consider the analysed figure too harsh. **Blue Moon has a high Block Count of 52, with a jump of 24 between races 2 and 3, but is very consistent thereafter, so no convincing reason to reduce her block.**

#### **Easi Rider**

The start PN for Easi Rider, derived from 2018 analysis, was the same as Aloha, and she beat Aloha once on the water in 2019, so she is known to be more capable than a 15 point difference. A 6 point difference is suggested = 974. See also the 4 year history below in Table 4.

#### **Dan Dare**

The 15 point difference in performance from Easi Rider in 2019 is nearly the same as the 16 point difference from 2018, which appears reasonable, both boats having shown themselves better in previous years. Suggest 988, 14 points above Easi Rider, no change from year start.

#### **Evolution**

2 good races, then a jump of 27 before 3 consistent races of a lower standard. Has done much better in previous years, still capable, with 2 good races before falling off - not easily explicable. **No good reason not to have a block of 5.** Suggest 1020.

#### **Rocket**

One good race, probably stronger wind, then a jump of 20. Has done better in previous years, not so good in a predominantly light year. Suggest 1020.

#### **Soprano**

One good race, as Rocket. Usually a bit slower than Rocket, but still capable of beating her on the water. 2019 start handicap possibly over generous due to a poor 2018. Suggest 2025.

#### **McGregor III**

Wide variation in performance, but 3 best races consistent. **Based on 2018 performance, she started 2019 one point behind Easi Rider, then beat her twice on the water, Easi Rider beating her 3 times, Suggest she remains on 973.**

### **Caroline**

Jump of 21 between races 4 and 5, so reducing her block to 4 brings it down to 38, with gaps of 8, 10, and 11, and this looks a fair representation of what she's capable of, as there is likely to be quite a difference between light and heavy days. Analysed at 952 seems correct, but a new 130% genoa is rated by Byron as giving her a 16 point improvement. This is a lot more than the 4 points Byron gave Evolution for a similar change in 2018, but the effect on Evolution appeared much greater than 4. Compromise on 12 points, giving 940?

### **Moon Shadow**

Four good consistent finishes, and two very poor - what we have come to expect of this boat, who needs a lot of wind to get going. The analysed PNI on a Block of 4 seems correct.

## **FAST NON CORE BOATS**

### **Silver Fox**

A vast range of performance, only one anywhere near where she should be. The power ratios, displacement, and keel configuration suggest there are no excuses for such poor performances. Suggest 929, as 2019 start, best PNI + 9.

### **Tigo IV**

Only one race, as usual, a heavy boat on a light day. Suggest no change - 929

### **Crazy Suzy**

Three good races, then a big drop off, not untypical for a known heavier boat with good power ratios. Suggest as analysed, 942.

### **Steorra**

Still an unknown quantity, but a great deal slower than might be expected. Suggest 1025, best PN + 6, but Committee should keep a close eye on her, crew numbers etc.

## **SLOW NON CORE BOATS**

### **Sundance**

Two reasonable races, two very poor. Crew of two. Suggest as analysed, 1050.

### **Poohstick**

Three reasonable races, then a big tail off. Suggest as analysed, 1049.

### **Carolanti**

Only 2 races finished. Known boat, historically more capable. Suggest no change from 2019 start - 1060.

### **Sophie**

2 consistent races, one poor. Known boat, historically more capable. Suggest no change from 2019 start - 1094.

### **Moondance**

Only one race finished. Suggest no change from 2019 start - 1094.

## **NEW BOATS ALREADY REGISTERED FOR 2020**

### **Good Hope**

Trevor Holder. Sadler 25 fin keel. Byron specific PN of 1059. Displacement 1814kg, fixed 2 blade prop. nearest in displacement are Sophie, 1800kg., Sundance 1880kg., Carolanti 1955kg. Power ratios are nearer Sundance, masthead rig, now on 1050. 1059 may be a bit hard. **Has now realised genoa is smaller than declared, Byron reassessment pending.**

### **Layla Too**

Richard Rankin. Hunter Channel 27 twin keel, displacement 2590kg. 2 blade fixed prop., asymmetric only, size not known, has been asked to submit Byron webform. Byron list 1101 with folding prop. and 'standard' spinnaker. Will struggle, and very likely be hit by tide gates.

## **TABLE 4a - 4 YEAR START PN AND PERFORMANCE HISTORY**

Last year we drew attention to the way the start PNs had drifted down over the years, and all analysis derived PNs were uplifted by 3.25% for 2019, to restore them to something like the 2012 level, the last year of RYA official Portsmouth Numbers for cruisers, and comparable with current Byron PNs. With such a drift, meaningful comparisons of actual start PNs are not possible.

However, longer past history can be useful in reviewing recent performance, so this table realigns 4 years of start PNs onto the same basis - the average 2019 PNs of 4 boats with long history and consistent mid fleet performance - Aloha, Easi Rider, Blue Moon, and Dan Dare. 3 of these are of the same class - First 25.7s, so that should be an added element of consistency. Row 46.

Inspection of this table will suggest many ideas, but some examples are given in Rows 49 - 53, which show the differences between the start PNs of pairs of boats over the years, bearing in mind that Start PNs generally reflect the previous season's performance:

- Easi Rider's PN relative to Aloha reduced steadily over 4 years from 23 points to zero, then shot up to 15 in the analysis of 2019. PAG therefore took the view that 15 was untypical, and prudence suggested a smaller difference of +6 points.

Conclusions are seldom simple, and much depends on the weather, but any such comparisons need to take into account the wider picture of results, and the PNs of other boats. Also, don't overlook changes made to boats' configuration - larger genoas etc.

27 May 2020

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Revised with additional explanation 22 June