CHIPS3 & Rinderele B
High Point Scoring Systems

Denver Sailing Association (DSA) will be using a high-point system for our Series scoring starting in 2015. (Regatta scoring will remain the same, using a standard 2013-2016 RRS Appendix A, Low Point Scoring system.) High Point Scoring systems have become widely accepted over the past 10 years, advocated by US Sailing for long series scoring and offer significant advantages. High-point systems are useful in long, disassociated race series, because they reduce the work of scoring those who did not compete. During a long series, the number of "DNC" boats in a particular event is often greater than those who did compete.

Over the years, our local sailing association; the Sailing Association of Intermountain Lakes (SAIL) has experimented with a number of various scoring systems for the SAIL Tour yearend trophies and has made CHIPS3 the scoring system of choice for its season-long Championship Tours. Some clubs in the SAIL Area have adopted CHIPS for their long series scoring as well.

CHIPS Scoring System

The Chipstead System, or CHIPS, scoring system was developed/refined in Chipstead Lake, Chipstead near Sevenoaks, Kent UK TN13 2SD in 2005 to replace the Rinderle B system for long series. It is now in its third version, **CHIPS3**. A lengthy, detailed description of its evolution is at "All about CHIPS" on the Chipstead, UK Sailing Club website.

CHIPS3 is a system implemented in SailWave, a widely used computer-scoring program. It recognizes a "percentage of excellence" in performance over an entire season, rewarding the sailor with the ability to finish in the highest percentage position all season long.

Key Features of CHIPS (High Point Scoring)

- Scores are related to Performance against the whole fleet. Performance in a large fleet is representative of the skills within the overall club/fleet and can be presented meaningfully as a percentage score.
- For finishing in any particular position in a race, scoring basis is consistent:
  - Score more points for beating more boats
  - Score fewer points if beaten by more boats.
- The highest overall points score wins the Series. Scores accumulate immediately, starting from the first race, competitors can see their positions in the fleet any time, throughout the series.
- A boat that does not sail scores zero points
- A Disqualification scores zero points.
- Boats that do not start and/or do not finish are allocated a RTD score equivalent to finishing in “last plus one” place
- Ties are rarely encountered. (In Low Point Scoring ties occur frequently, particularly with the use of throw-outs and are too often not resolved in a fair manner, usually requiring the adoption of some arbitrary and unsatisfactorily tie-resolution method, such as determining the winner from relative positions in the last race).
- Treats race-to race variations in fleet size in a much fairer manner than Low Point Scoring.

Illustrative Table:

The table below illustrates approximately how Chips 3 scoring works.

	Competitors									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Place										
1	86.1	88.2	90.0	91.5	92.7	93.8	94.8	95.5	96.2	96.8
2		74.6	77.5	80.0	82.1	83.9	85.5	86.9	88.1	89.1
3			65.0	68.5	71.4	74.0	76.2	78.2	79.9	81.5
4				57.0	60.7	64.0	66.9	69.5	71.8	73.8
5					50.1	54.1	57.7	60.8	63.7	66.2
6						44.2	48.4	52.2	55.5	58.5
7							39.1	43.5	47.4	50.9
8								34.8	39.3	43.2
9									31.1	35.6
10										27.9

Formula-based:

CHIPS3 scoring is based on a mathematical formula, which is entered into SailWave:

$S_{p,n}$ = 95*[((n+1-p)/n)*(1-0.986682*e^-0.1622*n) + 0.81475*e^-0.1622*n] + 5

$$S_{p,n} = 95 \times \left[\frac{(n+1-p)}{n} \left(1 - 0.986682e^{-0.1622n}\right) + 0.81475e^{-0.1622n} \right] + 5$$

The equation above is a simplified, computational form of:

$$S_{p,n} = (100-d) \times \left(\underbrace{\frac{n-p+1}{n}}_{3t_1} \times \underbrace{\left(1 - \kappa e^{-c(n-1)}\right)}_{3t_2} + \underbrace{\kappa e^{-c(n-1)}}_{3t_3} - \underbrace{e^{-b-cn}}_{3t_4} \right) + d$$

- **$S_{p,n}$** = the score for a specific place and a given number of competitors
- **n** = the number of competitors,
- **p** = the place for a specific competitor,
- **d** = 5, a number found by many trials & which avoids "DNF" receiving no points,
- ***e*** = the root for natural logarithms, approx. ~2.78,
- **k, b, & c** are constants replaced with numbers in the computational form.

The same formula may be entered into a computer spreadsheet if not using Sailwave.

Explanation:

This system starts by assuming:

- That first place can never attain a score higher than 100 & that the score should approach 100 only with sufficiently large fleets,
- That the differences between places should decrease as the number of competitors increase (2nd out of 10 is better than 2nd out of 3), &
- That last place scores should be higher for smaller fleets than bigger (2nd out of 2 is better than 20th out of 20).

In effect, CHIPS3 starts by determining a score for a place one better than 1st ("Place Zero") and a spread between places, both based on the number of competitors. The actual scores are then calculated by multiplying the place times the spread and subtracting the product from the Place = Zero score.

An advantage of CHIPS3 is that mid-fleet scores (2nd of 3, 3rd of 5, 4th of 7, etc.) are all near 50 points. Mid-fleet racers are not punished as much as by other systems.

Rinderle B History

Chips developed as a refinement from the Rinderle B scoring system, a high-point system whose origins are hazy, but which has been used, and is still used, by the Gulf of Maine Racing Association (GMRA). It's thought that the system was devised in the early 1980s by a 'Jim Rinderle of Marblehead' with these goals:

- Preserve a bonus for winning;
- A scoring system that reflects the fact that it is harder to be first among 8 than to be first among 4;
- Have a scoring system that reflects the fact that it is more difficult for an average racer to achieve a mid-fleet finish in a small fleet because small fleets usually include a large fraction of the best sailors (e.g. bad weather results in a small fleet because the weaker sailors stay at home);
- Create a scoring system that makes an incentive to race.

Perceived problems with the Rinderle system were:

- It did not fulfill the "incentive to race" goal; 2nd out of 2 competitors gets the same points (10.5) as 25th out of 25. Last place finishers received the same score, independent of fleet size.
- Mid-fleet finishers were insufficiently rewarded.
- It was entirely a table-based lookup system & not adapted to computerized scoring.

TMD: Sat, 07 Mar 2015