

Negotiating Tidal Passages & understanding current tables

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The information contained in this paper is based on direct experience and technical data which is specific to the tidal rapids within the Discovery Islands area only. References to tidal rapids are limited to the passages of Surge Narrows and the west entrance to Hole-in-the-Wall. While the theory of reading and applying current table information remains the same, the author has little direct experience with other tidal passages in this area. All of the tidal rapids here are potentially fatal and the author can not be held accountable for any misunderstanding of this information or acts of outright stupidity.

Forward

The tides and ocean currents of the world are created by gravitational effect of the moon on water. The larger the body of water, the greater the effect. We can observe the gravitational effect of the moon when we go to the edge of the sea. There, notice the "Intertidal zone", the area of land between the high tide and low tide of the day. There are **tide tables** published by the Canadian government which predict the movement of the tide.

Tide Tables

Tide tables are relatively easy to read. Please note that there are two sets of tides per day; A major tide exhibiting a wider spread between low and high tide and a minor tide, with a lesser discrepancy. Tides change roughly every 6-1/2 hours: This is to say the tides **ebbs** (drops) for about 6-1/2 hours then **floods** (rises) for about 6-1/2 hours, then repeats the pattern approximately every 24 hours & 80 minutes. The tide pattern cycles every 28 days, in sync with the phase of the moon.

CAMPBELL RIVER PST Z+8							
July-juillet							
Day	Time	Feet	Metres	jour	heure	pieds	metres
1	0040	13.8	4.2	16	0805	4.9	1.5
	0900	3.9	1.2		1435	11.5	3.5
SU	1505	11.8	3.6	MO	1815	10.5	3.2
DI	1850	10.5	3.2	LU			
2	0115	13.5	4.1	17	0015	13.5	4.1
	0940	3.3	1.0		0840	3.6	1.1
MO	1605	12.5	3.8	TU	1530	12.1	3.7
LU	1940	11.2	3.4	MA	1915	11.2	3.4
3	0155	13.1	4.0	18	0100	13.5	4.1
	1020	3.0	0.9		0915	2.6	0.8
TU	1650	12.8	3.9	WE	1615	12.8	3.9
MA	2140	11.5	3.5	ME	2005	11.5	3.5
4	0235	13.1	4.0	19	0150	13.8	4.2
	1055	2.6	0.8		0955	2.0	0.6
WE	1725	13.1	4.0	TH	1700	13.1	4.0
ME	2235	11.5	3.5	JE	2055	11.5	3.5
5	0315	12.8	3.9	20	0245	13.8	4.2
	1125	2.6	0.8		1040	1.3	0.4
TH	1805	13.1	4.0	FR	1745	13.5	4.1
JE	2320	11.5	3.5	VE	2145	11.2	3.4

Tide Table

Tide and Current tables published by the Canadian government are international aids to navigation. They are listed in **local Standard Time** and in Greenwich mean time only. (Note the **PST Z+ 8**) at the top of the page). Daylight Saving time is not used.

Two important notes:

1) You must remember to add one hour to the times posted in the tables between the end of May and the end of October when this region is on Daylight Savings time.

2) You can not use tide tables to predict the movement of current. Use only current tables. There is little useful correlation between tide and current tables.

Tidal Rapids

Charts published by the Canadian Government contain cautions which refer to tidal rapids as **Heavy Tidal Overfall**. We will be referring to them simply as Tidal Rapids. Essentially, a tidal rapid is a tidal event whereby millions of tons of water are forced through small openings in a land mass in a fixed period of time. During times of major tidal activity, conditions within the boundaries of a rapid are extremely turbulent and erratic. Because of huge volumes of water, varying depths, and constantly changing flow rates, it is difficult to predict what the water will do. Surface water speeds can exceed 13 knots, standing waves in excess of 3 meters are not unusual and there are known whirlpools which have capsized and pulled under, commercial fishing vessels and tugs. Clearly, this is no place for a sea kayak!

Because Tidal Rapids are linked to the movement of the tide, they are cyclical in nature and calm periods can be predicted by using the Canadian Tides and Current Tables. For this region you will need ***Volume 6/Barkley Sound and Discovery Passage to Dixon Entrance***.

In the Discovery Islands, there are 6 distinct sets of tidal rapids some of which are considered to be the most powerful in the world. They are listed below in roughly the order of severity.

Yuculta Rapids
Dent Rapids
Hole in the Wall
Upper and Lower Rapids of the Okisollo
Surge Narrows (Beazley Passage)
Arran Rapids

Use the appropriate Current tables to predict the movement of all the rapids in this area.



A white water kayaker catches a ride on a 3 meter standing wave in the Okisollo Tidal Rapids

Getting Through a Tidal Passage (Tidal Rapid)

For most of the regions tidal passages, there is a one hour window of opportunity to get through. Even on the biggest summer tides, most rapids are safe 1/2 hour before the current turns and 1/2 hour after. In terms of distance, you can easily paddle through any of the rapids within a half hour. Usually, 15 minutes is ample time. One exception to this is Hole In The Wall, between Maurelle Island and Sonora Island. Here, the kayaker must be prompt in going and coming through. On a large summer flood tide even 1/2 hour after slack on a big summer flood tide can be unmanagable for the kayaker.

Beware the Flood tide

Even there is no difference in the actual quantity of water moved in an ebb or flood tide, you'll notice that the flood tide always generates higher current speeds than the same ebb current in the same set. This has to do with the momentum of the water as it moves across the globe and collides with this shore. On an equal Ebb tide, There is no associated momentum so the current velocities are not as great.

How to Read the Current Table

Find the correct date and remember to add one hour to the published times during Daylight Savings Time (May-Nov).

Under the column "Turns", the bold face type under the sub-title "Time" indicates slack or no current movement—the time of safe passage.

Under the column marked "Maximum" see the sub-title "Time", note the time of the maximum current speed for the tide. Next to that see "Knots" indicating the maximum rate of the current.

Quite important is the +/- next to the maximum speed which indicates whether the tide is ebbing or flooding. This is useful information when planning a trip through a tidal passage. You can use the current just before or just after slack for a push through. In other words, going through with the current .

Turns		Maximum	
Day	Time	Time	Knots
1	0030	0400	-6.7
	0710	1030	+8.5
SU	1355	1700	-6.3
DI	2000	2250	+5.2
2	0125	0455	-6.7
	0800	1125	+8.9
MO	1445	1800	-6.7
LU	2100	2340	+5.1

A Current Table

When Current Tables "Aren't Right"

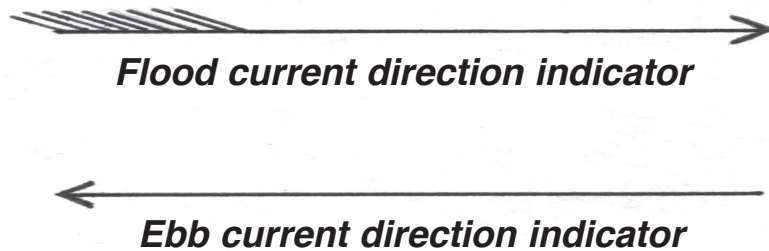
Since tide & current tables are based on the movement of astronomical bodies, they can be predicted with great accuracy well in advance. However, there are local, short term factors which can disrupt current & tide movements. Any significant meteorological event such as gale force winds will have the effect of delaying or speeding up the onset of slack tide or current depending on wind direction. These events result in the compression or decompression of even the largest bodies of water. To safeguard against these tidal aberrations, you need to find out what the wind conditions are like-- not only in the immediate area but in the greater geographic region since distant off-shore storms can still effect the predictability of tide & current movements. In the event extreme weather, arriving at tidal passages early and waiting until movement subsides will be the best course of action.

Identifying The Tidal Passage

Typically, the actual tidal passage or area of concern is quite short--usually only a few hundred meters in length. Marine charts can be misleading in this regard. Take **Hole-in-the-Wall** for example. The entire channel between Maurelle and Sonora Island is called "Hole -in-the-Wall" . It is about 4 km long and has two narrow entrances. While the entire channel is subject to light current of up to 2-3 knots, only the west entrance near the Octopus Islands is subject to heavy tidal overfall-- the area referred to by the current tables. The actual tidal passage at the west entrance is only about 400 meters long.

Finding the Current Direction

In order to use current flow through a tidal passage to your advantage, you need to know the direction of the flood or ebb tide for the particular tidal passage you wish to negotiate. Direction of the flood and ebb tides are expressed as a compass bearing at the bottom of the page of your current table but an easier method for determining the direction are the tide direction indicators on the Marine chart itself. Look at a detailed chart of the tidal passage and note these two different arrows. One denotes the direction of the current during flood and the other during ebb flow.



The Canoe Pass, one of several passages through Surge Narrows, shown here running at about 6 knots

The Rule of Thirds—50-/90/100

To help you estimate current speed in any Tidal Passage, use the Rule of Thirds. The Rule of Thirds breaks the Flood or Ebb tides into three 1 hour (approx) segments and attributes a current speed for each hour. Essentially, the current builds up to Maximum speed for 3 hours and then decreases back down to slack for 3 hours. The Rule of Thirds states that of the total maximum current speed, the current jumps 50% the first hour, 90% the second hour, 100% the third hour, and then descends to slack in the same order.

For example: If we expect a 12 knot tide at max speed, then by the first and last hour of the tide we can expect current speeds to be at 50% of the maximum speed or 6 knots. After one hour then, the current will be running at 6 knots. By the end of the second hour, the tide will have reached 90% of the maximum current speed or just over 10 knots.

Hour zero-- 0% slack tide

Hour one-- 50% increasing current speed

Hour two-- 90% increasing current speed

Hour three-- 100% or Max current speed

Hour four-- 90% decreasing current speed

Hour five-- 50% decreasing current speed

Hour six-- 0% slack tide

Conclusion

For the inexperienced recreational paddler, dealing with tidal rapids is an intimidating experience and rightfully so. The consequences of getting it completely wrong are potentially fatal. Yet, if the Current tables are read and applied correctly, getting through a tidal passage is completely safe--even boring. Look at this way: If you drive a car, chances are you drive through traffic light directed intersections everyday. If you choose to ignore the traffic signal, the consequences are horrific, yet most of us drive through intersections everyday without a second thought. Why? because we obey traffic signals. Look on tidal passages the same way. The current tables are your traffic light. Go when it is safe to go.

If after having read this you are still unclear, then seek the advice of an experienced kayaker.