



## Timber Cruising in BC: The Sky is the Limit

### **HISTORICALLY, CRUISERS RECORDED THEIR CRUISE DATA ONTO CRUISE**

Tally cards. Ugly weather and swarming insects were not always conducive to 'neat' hand writing. Not to mention having to flip back and forth to plot radius, age and slope correction tables in our notebooks in order to determine whether a tree was in or out and how old it was. When we finished the plot, we chained on to the next one. No matter what lay ahead, we traversed a straight line to the next sample point. These were the good old days!

Technology advanced to the point that rugged outdoor PDAs became small and reliable. It was now time for a change! In 2000, CruiseMate software was developed. This eliminated the need for hand-written cruise cards, correction tables and third-party data entry. In a few years, most cruisers in BC were using CruiseMate software. And, in 2007 we received the Northern British Columbia Business & Technology award for being Technology Provider of the year. However, with the availability of affordable sub-metre real-time GPS receivers, technology had much more to offer.

The story goes like this: a fellow cruiser dragged his chain across a road on the way to the next plot. He heard an ATV coming up the road, so he ran out to pull the chain out of harm's way. The ATV driver stopped and waited patiently. He then asked the cruiser: "What is that rope thingy for?" The cruiser explained in detail how he used it to find his way around the woods. The ATV operator chuckled, pulled out his GPS unit and asked: "haven't you ever seen one of these?" Our honour as forest professionals had now been challenged. We needed a solution.

In January 2010 we started developing a process for using GPS to locate cruise plots for appraisal purposes. We knew that the plot centre could be located accurately by setting the coordinates into a GPS unit and going directly to that point. And, we also knew that when using real-time GPS, the point position will 'drift' as the coordinates are continually updated and re-calculated. This 'drifting' presented the perception that the final plot centre location could be influenced or chosen by the cruiser.

Therefore, our goal was to create an open, transparent, audit-able and repeatable procedure that meets the current ministry check-cruising standards by placing the cruise sample point as close as possible to its intended location on the cruise plan map. And, to provide the timber cruiser with a process that contributed to the 'integrity' of that sample point location. Our goal was accomplished by developing a simple procedure dubbed as TPP - True Point Position - and by programming that procedure into our CruiseMate software. This simple and easy to use application provides the

cruiser with the satisfaction of knowing that they are locating the sample point very close to its true position as presented on the Cruise Plan Map while maintaining sample point integrity.

CruiseMateGPS imports the Cruise Plan Plot Point shape file and produces a Plot Reference Point Table and displays the Cruise Plan map. From the Cruise Map on the handheld, the cruiser selects the plot to traverse to. The bearing and distance is displayed. With a compass, the cruising crew makes their way to the sample point around instead of through obstacles. CruiseMate warns the cruiser when he/she is within 15m of the cruise plan plot location. At that point, the cruiser is prompted to find a fixed reference point (small tree, rock, stump, windfall root, etc) and establish the PRP (Plot reference point). At the PRP, 50 individual GPS coords ('hits') are taken, CruiseMateGPS averages the hits and calculates the final bearing and distance from the PRP to the actual Cruise Plan Plot location. The cruiser then traverses from the PRP to the Plot Centre with loggers tape and compass and establishes the plot. All of the PRP data (e.g. PDOP, number of hits, statistics, coordinates of PRP and PC, etc) is locked into the CruiseMate Data file and stamped with the satellite time and date. When the card is created, this locked PRP data is also sent to the plot card and is printed on the card. This produces two sets of data to compare with the physical marking for verification and auditing.

To ensure that the process, software and equipment were sound, we were able to re-establish our plots well within the acceptable tolerance from the original sample point establishment over a period of weeks, regardless what direction we chose to come from.

Using GPS to establish plots also reduces the risk of injury, as the cruiser can avoid obstacles instead of having to pull a chain straight through whatever is on bearing. And, since there is no wasted time associated with conventional traversing, productivity is increased substantially.

In looking back to those good old days and at my first cruise plot as a summer student in 1976, technology has definitely made our job easier. It has also helped us to increase productivity, accuracy and safety in the ever changing environment that we work in as forest professionals. At the end of the day, cruising is the foundation of the appraisal process. Therefore, as professional cruisers we understand the importance of having the right tools, and the assurance that the data produced with the help of these tools is auditable, open and transparent. 🌲

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