

SCOUTS-L

**ORIENTEERING
& COMPASS**

Date: Mon, 7 Aug 1995 08:00:15 GMT
From: Rodger Morris <rodger@FISHNET.NET>
Subject: Navigation Techniques (Long)

Bert Austin wrote:

>... At the poles, where there is only
>one longitudinal direction, or at extremely high latitudes what methods
>are used to determine a specific direction? Although most of us may
>never have occasion to need this information, it certainly would be
>interesting information to pass along during map, compass and
>orienteering discussions.
>

Currently, there are several methods one may use for determining one's position:

- 1) Global Positioning System (accurate to within meters)
- 2) LORAN C (accuracy varies, may not work at all in some locations; generally accurate to within a mile)
- 3) Omega (7 very low frequency transmitters, 1 mile day/2 mile night accuracy; coverage does not extend to the Antarctic)
- 4) U.S. Navy Very Low Frequency (VLF) (21 transmitters, scattered around the world; used as backup by Omega receivers)
- 5) Grid navigation (used by the U.S. Air Force; requires special navigation charts and manual resetting of aircraft equipment upon entering and leaving this mode of navigation)
- 6) Inertial Navigation System (INS) (accuracy varies; degrades over time; needs to be updated on long flights)
- 7) Celestial navigation
- 8) Deduced reckoning, aka "dead reckoning" (DR), a corruption of "ded reckoning" (accuracy varies; degrades over time; must be updated)

I was not trained in grid navigation, as this was generally used by the Strategic Air Command (SAC), and to a lesser extent by the Military Airlift Command (MAC), of the U.S. Air Force. Had I been assigned to Fleet Antarctic Support Squadron 6 (VXE-6, "The Puckered Penguins"), I would have been trained in this technique.

Of these, GPS, Omega, Navy VLF, LORAN C, and INS generally give both a true heading and true course readout. Grid navigation gives one a grid heading, which may be converted to a true heading.

Celestial navigation can give one a "line of position" (LOP) or multiple LOPs, but not a true course or true heading, per se. For the purposes of ground navigation, one may then determine the number of degrees to offset in order to find true north or one's desired direction of travel. In the high latitudes during the day, one may need to make at least 3 "sun shots" in order to fix one's position.

Celestial navigation was the technique of choice before the advent of electronically based navigation systems. It was used by Muslims about 700-800 years ago to navigate across the deserts.

I hope that this information is of some interest to people on SCOUTS-L.

As an observation related to this thread, the use of a piece of rope or string, coupled with a map, can produce a good DR position if one is hiking along a trail. Before the hike, determine the length of your Scout pace. For most people, this approximates 5 feet on level ground and 4 feet going uphill or downhill (about 150cm and 120cm respectively, for you metric users out there).

Every 1/10 mile, make an overhand knot in the cord you are carrying. Upon completing every mile, make a double knot. If you have done so, you can tell how much distance you have covered at any given point or time in your hike. This was known as "counting the quipu" in U.S. Navy land survival training.

The English word "mile" derives from the Latin word "milum". A milum was 1000 paces (pasos), or about 5000 feet. Thus, on level ground, if one walks 100 paces, one has covered about 1/10 mile over the ground. Uphill and downhill, 1/10 mile is about 125 paces. If one is hiking on a trail, the trail serves as an LOP. If you have kept track of how far you have gone, you can then apply that distance to the map along the trail LOP to ascertain your DR position.

At that point, you have an orientation point with which to take two or more compass LOPs from the surrounding terrain and plot them on your map to arrive at a navigational fix.

Try it out!

Yours in Scouting,

Rodger

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"I used to be a Beaver..."

Date: Wed, 08 May 96 10:00:47 EST

From: pfarnham@ASBMB.FASEB.ORG

To: ncac-l@tagus.com

Subject: Orienteering

Sharon,

Saw your post on NCAC-L and on Scouts-L. I'm sure there must be an orienteering club in the area; I'd just check the phone book.

However, if you know enough about map and compass to teach it yourself, I'd recommend Prince William Forest Park, near Quantico, as a great place for an outing. This park (an NPS facility) has an excellent permanent orienteering course. When you check in at the ranger station, they give you maps and compasses, with a course description on the back of the map. It is basically a self-guiding course, and there are a number of different courses in the park, varying in length and complexity.

I took my troop out on February and we did the basic one--about a mile and a half long on a map already oriented toward magnetic north (you didn't have to do the declination, although you do in other courses at the park of greater difficulty). You had to find five orange posts in the woods, which were marked on the map. You had to use compass skills, keep a pace count for distance, and study the topography in order to find them. All my boys got a lot of experience with map and compass that weekend, and the next weekend we took a five-mile hike with self-drawn maps and compasses, and it went like a breeze. All got their second class requirement signed off with no sweat.

Hope this helps. You can find the park through Quantico information.

YiS,

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