

GPS Waypoints

Hi. You're back with Carl and Aaron, the GPS guys. I'm Carl. My sidekick Aaron is off screen. He's gonna be pushing the buttons on the GPS receiver as we go through this section about waypoints. In this segment we're going to be covering waypoints. We'll start by covering how to prepare your receiver before you head out into the field, and we'll show you how to view and sort a list of your existing waypoints. We'll show you how to capture waypoints including how to average the location of a waypoint for a more accurate position. Furthermore, we'll show you how to name your waypoints and then give them different symbols so that you can differentiate between them pretty easily. Next we'll show you how to move waypoints that you already have established, how to manually enter waypoints from hand-written coordinates, and how to project a waypoint without actually having to travel to that location.

Alright! For a prefield prep, usually it's a really good idea to delete all the waypoints that you don't need on your GPS receiver. You may have waypoints that you've captured the last several days or the last several weeks, and if those aren't needed any longer it's a good idea to delete those just to reduce the screen clutter on your GPS receiver. The way to clear out those old waypoints is to press the find button. That will bring up the menu that has waypoints as one of the items that we can find, so we'll press enter again. That brings us to our list of waypoints. You can see that we have a fire tower, a helispot, and two pump waypoints already listed there. You'll notice that those waypoints have different symbols. For instance, the fire tower has kind of a large red circle symbol

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whereas the other waypoints have a small green circle symbol. In this list you'll notice that those waypoints are listed alphabetically. One of the neat features on a GPS receiver is you can also list those waypoints in order of their distance from you. So for instance, if you would press on the menu key and one of the items on that menu is find nearest, so if you select that with the rocker key and press enter, then you'll notice that those waypoints are listed in order of their distance from you. Remember, in the first shot the helispot was on top because that comes first in the alphabet, and now pump #4 is listed first because that's the waypoint that is the actual closest to us. Either of those two ways are ways that you can actually view the waypoints that you have in your list. You may have noticed that when Aaron switched to find by nearest that one of those waypoints went away. It's still in memory, but the GPS receiver just does not consider that as a waypoint near you. So if you're looking at your list of waypoints and you have waypoints that aren't showing up on that list, go back to menu and to find by name, and that will restore the full list in alphabetical order. So, either of those methods of finding waypoints is a good way to go.

Alright! So how do you actually delete waypoints that you don't want? If we press the menu key again to expose the menu for the waypoint page, down at the bottom we'll notice that there is an item there called delete. Select that with the rocker key and press enter. Then we get a couple of options here. We can delete all the symbols, which means that we can get rid of all the waypoints, we can get rid of only the waypoints that have that small green symbol, or we can

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get rid of the waypoints that have the big red dot symbol. So this sort of brings up a strategy that you might use if you have waypoints that you want to maintain as permanent waypoints and other waypoints that are sort of temporary or kind of junk waypoints that you want to be able to get rid of easily. This way it's real easy to get rid of all the junk waypoints if you've given them the same symbol and keep all of the permanent waypoints if they all have the same symbol.

So let's back up a step there Aaron. In this example we're just gonna get rid of one waypoint, our fire tower waypoint. And then if we press on enter that will get rid of the waypoints with that big red dot symbol so we're just back to three. Now we've cleaned out all the waypoints that we don't want and we still have the waypoints that we do want.

Alright! So how would you actually create a waypoint when you were in the field? Well, a waypoint is really a GPS representation of some sort of a point feature like a trail head or a spot fire or a stock tank or just some feature that you want to be able to navigate back to, but we want to be able to capture that on our GPS receiver. Well it's really pretty easy to do that. All you need to do is press and hold on the enter key, and as Aaron was holding that down it brings up a mark waypoint screen. So what has happened is your GPS receiver has grabbed the first set of GPS coordinates that came along and has put those into this waypoint, which is sort of in the temporary pending stage right now. So, since this waypoint was created with just a single set of coordinates, it's probably pretty

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close to our actual location, but if you remember from the introduction, you probably remember that all GPS positions are not absolute. So, what that means is they're not always quite exactly in the same spot even though you might be stationary, but what the GPS receiver gives us the option of doing is something called averaging. There's a little button in the lower left-hand corner of that screen, if I could have Aaron navigate or use the rocker key to go over to that average and press enter, now there's a field there called measurement count, and that is starting to click up. It's at 5, then 6, then 7 positions. So what your receiver is doing now is it's collecting a whole series of individual GPS positions, and when Aaron presses save it will average all of those down to a single average GPS position. Perfect. So now what we have is a GPS waypoint that is the average combination of 22 individual GPS positions, and if you've taken any statistic classes in the past you know that the bigger your sample size, probably the better your average is. Sometimes folks ask me how many GPS positions do you average, and I usually do somewhere between 20 and 30. It seems like a good round number. I think after 30 you probably get to a point of diminishing returns I guess is the term.

Okay. So there are several things that we were able to do on this waypoint page. We can give that waypoint an actual name. Right now when a waypoint gets created it just has a generic name given to it, 003, but that's not very handy, so since we're here at the BLM National Training Center I'm going to have Aaron name that NTC. So what he did was with the rocker key he moved up to that

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field and pressed enter, and that exposes this ridiculously tiny little keyboard here, and so he's gonna spell out NTC and give that waypoint a label that we can actually make some sense out of. Perfect. One other thing that you may notice on the screen there is there's an up arrow, and that up arrow will let you shift back and forth between uppercase letters and lowercase letters and between numbers and symbols so you can kind of tailor those labels to whatever you want them to be. Okay. So once we've got that label how we want it, you select okay and press enter.

The next thing that we might want to check is just to the left of NTC, which is where we can select that symbol. So Aaron used the rocker key to move over there and pressed enter, and now we get this whole palate of marker symbols that we can select. So we can scroll down through the list and find one that suits your particular needs. I'll just let Aaron pick one that suits him. There are a lot of them in there so there's a pretty good variety really. Alright. Very good. Okay. That's our first waypoint. That's a waypoint that actually marks this location.

Alright! Say that we had some other waypoints that those features have since moved. Say for instance if you had a mark 3 pump out sitting at a pond somewhere and that mark 3 pump was moved to some other location because the fire where that mark 3 pump was had been mopped up and now we're gonna move that mark 3 pump somewhere else. Well instead of recreating a new waypoint for that mark 3 pump complete with its ID number from the cache, we

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can just basically suck that point from wherever it is to wherever we are standing at now. So I'm gonna have Aaron select pump #3 and press enter, and that brings us to the waypoint page for that pump. Once again, remember, if you press on the menu key that exposes the menu for that page, and one of the options, in fact it's the top option, is average location. So when we press that, basically what's gonna happen is that it's gonna re-average a new position where we're standing now. So if we're standing at the new location of the pump it will reposition that waypoint from where the pump used to be to where we are standing at now. A great way to update existing information that you already have. One other real practical application of this is if you're a guy who goes to the field every day and you park your truck somewhere and you have to spend a couple hours walking around and doing some sort of recon, it's nice to know where your truck is, and if you just have a waypoint called truck, all you have to do is update that every day and you can always get straight back to your vehicle and not have to wander around too far to find it. Perfect. So now if you notice down on the very bottom of that screen it's gonna say that that waypoint is now 2 feet away from our current location. Previously it was over a mile away from our current location. So great tool!

Alright! The next thing we're going to discuss is how to create a waypoint manual. So for instance, let's say that I'm enjoying a beverage at the world-famous Sultana Bar in Williams, Arizona and somebody gives me a cocktail napkin that has coordinates on it to where the pot of gold is, I'm gonna want to be

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able to put those coordinates into my GPS receiver and go find the pot of gold. Remember from our previous discussions though is that when you receive hand-written coordinates or verbal coordinates from somebody, you have to ask them a very important question, and that question is what datum are these coordinates referenced to. So when this guy gives me the cocktail napkin, I'm gonna be sure to find out whether it's NAD 83, NAD 27, WGS 84, and whether they are latitude and longitude coordinates or UTM coordinates. Before I enter those coordinates I'm going to make sure that my receiver is set to match the format and the map datum of those coordinates. So how I would do that just to double check is press menu menu, go to setup, and go down to units. Perfect. So I can see that right now the GPS receiver is set to degrees/minutes/seconds and NAD 83. Well this gentleman has given me the cocktail napkin reference to decimal degrees, WGS 84, so I'm gonna have Aaron change that to decimal degrees and change the map datum to WGS 84. It's at the bottom of a long list. Perfect. Now I am ready to take my cocktail napkin and put those coordinates into my GPS receiver. So the best way to do that is just press and hold on the enter key, and that will create kind of a temporary or a dummy waypoint. Now you notice that there's a field there called location right in the middle of the screen, and I'm gonna have Aaron use the rocker key to move up to that location, press enter, and now he gets a little keyboard where he can edit the coordinates in that location to match the coordinates that are on my cocktail napkin to where the pot of gold is. So Aaron, why don't you set that to – well I guess just modify that so we can get an idea of how those numbers could be changed? Alright, well done! So before I

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actually press okay I'm gonna double check the coordinates that are on the GPS screen with the coordinates on my cocktail napkin so that I'm sure I'm going to the right place. Once I'm satisfied that they're good, I'm gonna rock the key down to – well, since I am pretty clever I'm not gonna put pot of gold as the name for the waypoint cuz I don't want anyone else to know where that is, so I'm just gonna go straight down to okay and head out and see iff I can find it. Very good.

Okay. The last topic that we're gonna cover in waypoints is how to create a waypoint by projecting an existing waypoint. This is a feature that our fire guys really like because when the fire tower calls in a smoke report our fire guys already have the locations of the fire towers as waypoints in their GPS receivers and they can project the location of those waypoints out to the position where the fire tower is calling the smoke at. So for instance, if the fire tower says that I have smoke at 135 degrees, 2.5 miles, I could go to my fire tower waypoint. I don't think I have a fire tower waypoint, but we'll just pick one. Okay. So from the list there – yeah, we'll go from the helispot. That's good, Aaron. Alright. Well once again, everything is in the menu, so I'll press the menu key again, and down at the bottom, or I guess the second item there called project waypoint, select that and press the enter key, and notice down at the very bottom it's gonna say from, and that gives me the opportunity to put in both the azimuth and the distance to that projected waypoint. So I'm gonna have Aaron put an azimuth in of like 135 degrees and a distance of 2 1/2 miles. Perfect. Well done. So at this point we could go to the map page and see if some of our waypoints are showing

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up there. There's the helispot waypoint, and at 135 degrees – there it is. The moral of that story is that you can create waypoints based on the location of some other waypoint.

Alright, great! So in conclusion, we've learned a whole series of things about waypoints, how to collect them using GPS positions, how to create them manually from entering waypoints, assigning names, projecting them from the locations of a known location. Remember, in most instances if it's important enough to collect a waypoint you might as well take a few extra seconds to do that averaging. You've probably spent a half an hour walking or driving through a location, you might as well spend an extra 30 seconds just to get a good average position there. And remember, if you're manually entering a coordinate from that cocktail napkin, be sure that you get the information from that person about what the map datum is and what those coordinates are referenced to so that you can enter those correctly. In our next segment we're going to be demonstrating how to collect track logs.