

## New Job with 10,000, 10,000 at Section Corner, Match East Line Bearing with Ground Distances

Date: 13 August, 2020

Filename: SurvXX\_FAQ\_TwoPointArbitraryBearing.docx

*Note: this example is applicable to both SurvCE and SurvPC. The screens were captured from version 6.07.*

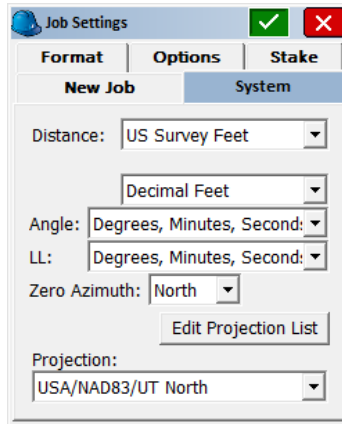
### Description

Setup a Base at a random location near the center of a section. Assign the coordinate 10,000, 10,000 to the Southeast corner of the section, rotate our basis of bearings match the East line of the section and apply the correct Combined Scale Factor so that reported distances are true 'Ground Distances'.

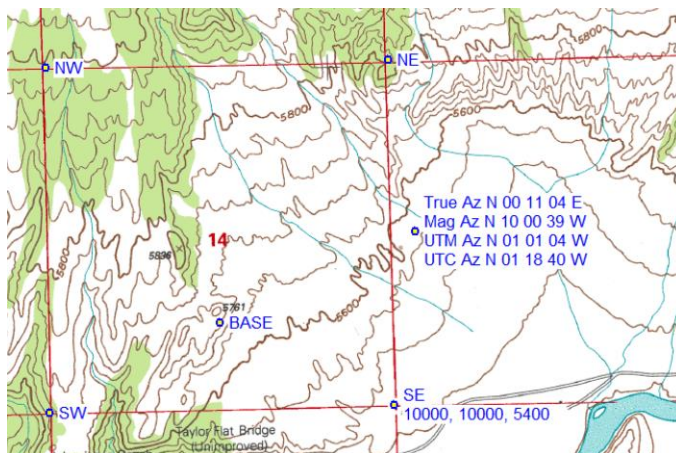
See also: [ [SurvXX\\_FAQ\\_SimpleGroundJob\\_002.pdf](#) ]

### Solution

This survey is in the 'Utah North' state plane zone, so we make a new job and select 'Utah North' as the underlying projection with 'US Survey Feet' distance units:



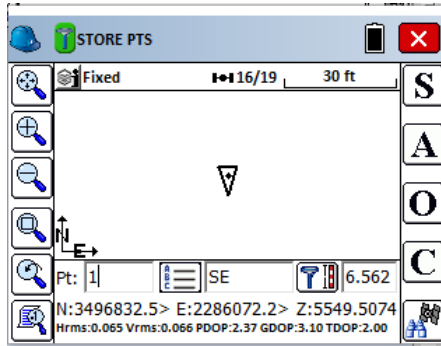
Here is map showing section 14 where I want to work:



Setup the Base on the bluff (shown above as 'BASE') with a 'Read GPS' (autonomous) position.

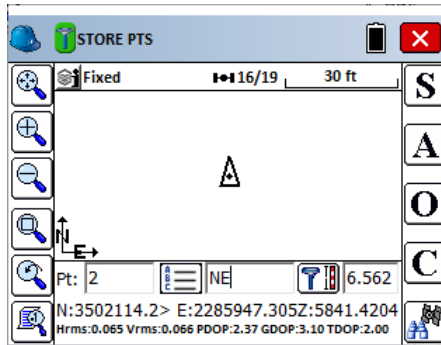
Drive to the Southeast corner of section, find the BLM resurvey aluminum cap alongside the original stone monument.

Set the receiver on a 2-meter rod at the center of X marked on the BLM aluminum cap using bipod to hold receiver exactly level. From the main menu, select “Survey: Store Points”



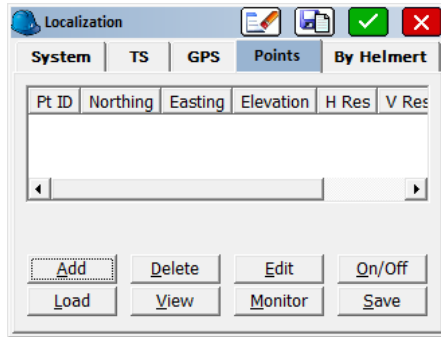
2

Set the description to 'SE' and click on the 'S' button to store the SE corner location as point 1. Travel to the Northeast corner of the section:

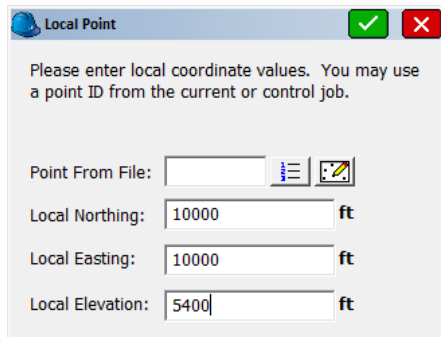


Localize the Southeast Corner

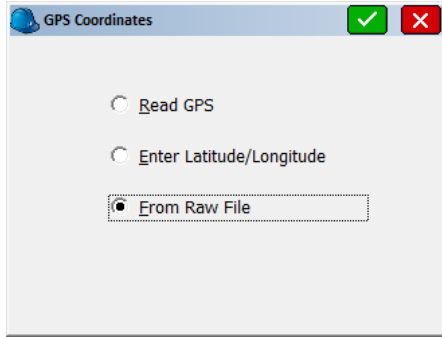
From the main menu, click on 'Equip: Localization', then click on the 'Points' tab:



Click on the 'Add' button:

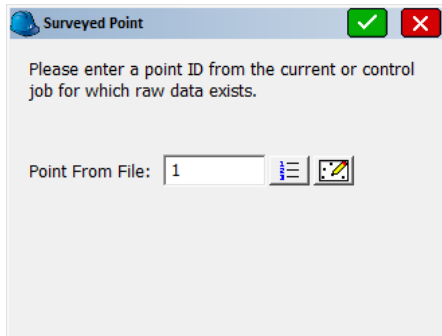


Enter the local Northing, Easting and Height (10,000 10,000 5,400) then click on the green checkmark. SurvXX will ask where to find the Latitude and Longitude for this point:

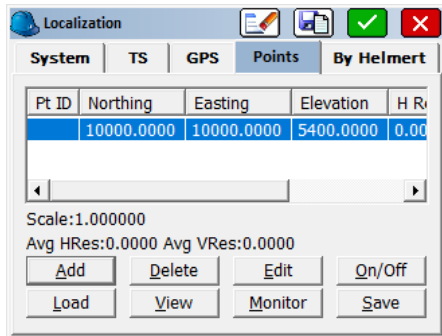


3

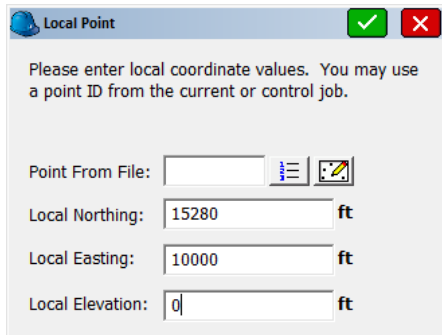
Select 'From Raw File' then click on the green checkmark. SurvXX will request the point number where it can find the raw data:



Enter '1' and then click on the green check mark.

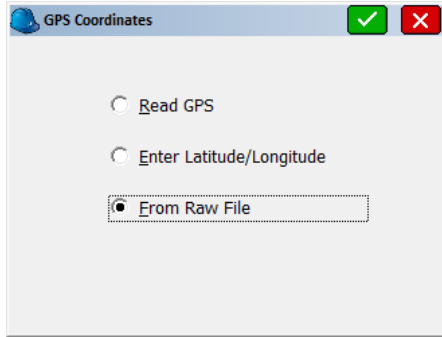


The base point will be shown. Click the 'Add' button to add the second point:



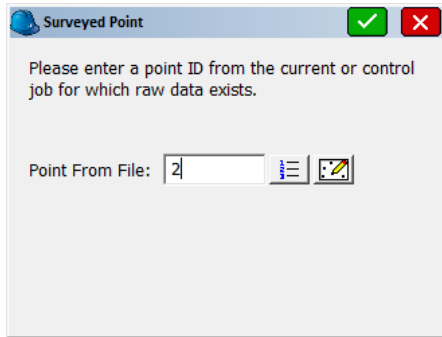
If the local coordinate system is aligned to match the East line of the section, then the local northing for the Northeast corner will be 'about'  $10,000 + 5,280 = 15,280$  and the Easting will exactly match the Southeast corner.

Click on the green checkmark. SurvXX will request the source of the latitude and longitude for the Northeast corner:

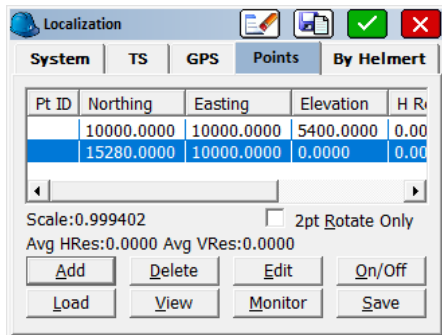


4

Select 'From Raw File' and then click on the green checkmark. SurvXX will ask for the point ID of the matching point:

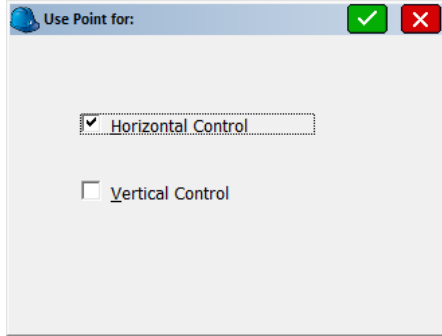


Enter 2, then click on the green checkmark.

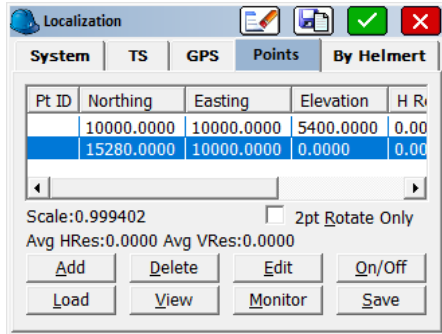


Both control points will be listed.

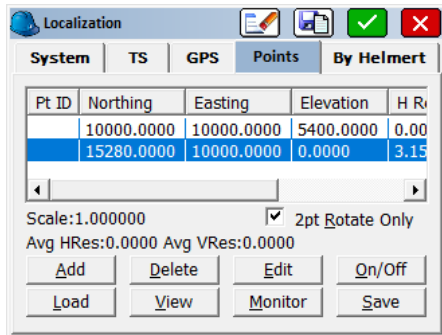
First, turn off vertical control on the second point. Click on 'On/Off':



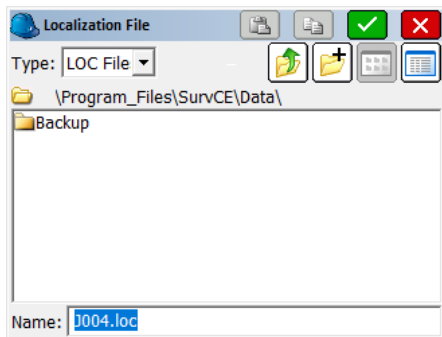
Make sure that 'Vertical Control' is unchecked, then click on the green checkmark. From the Points menu:



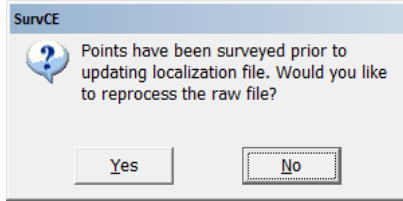
Check the '2pt Rotate Only' button:



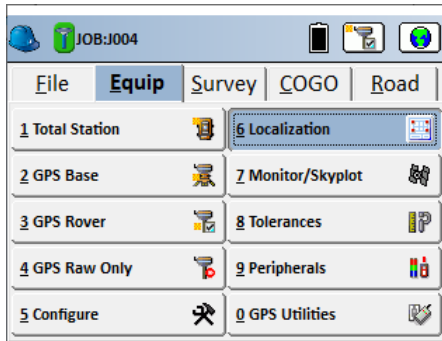
Click on the green checkmark.



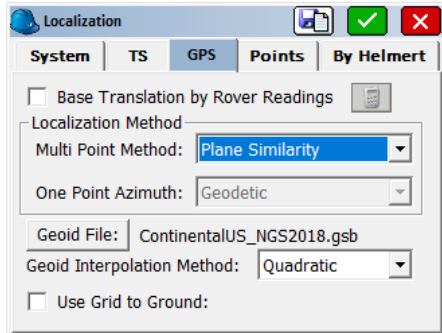
Accept the default filename for the localization file. Then click the green check mark. SurvXX will ask if we want to reprocess the raw file:



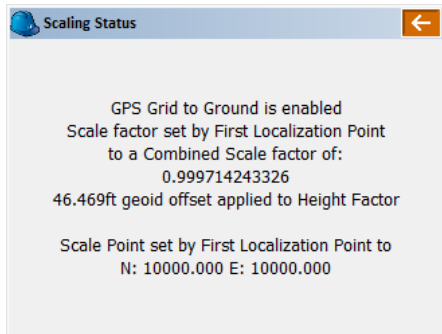
Click on 'No', we will process the raw file after entering a combined scale factor. SurvXX will return to the Main Menu:



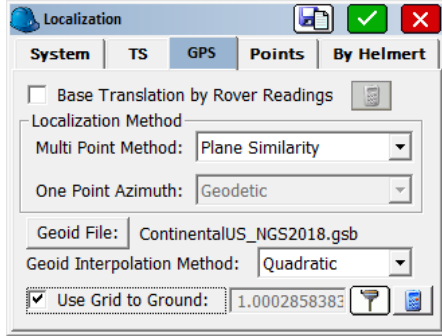
Click on 'Localization' again, then select the 'GPS' tab:



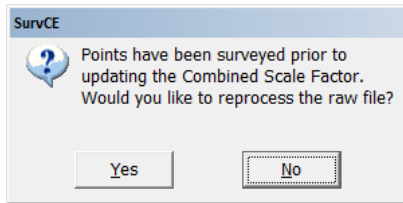
Click on the 'Use Grid to Ground' checkmark, SurvXX will automatically compute the correct Combined Scale Factor for the first localization point, the Southeast corner of the Section:



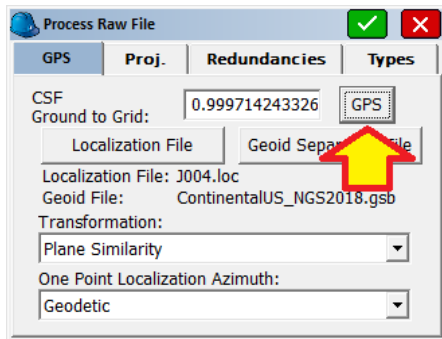
Click on the red back button:



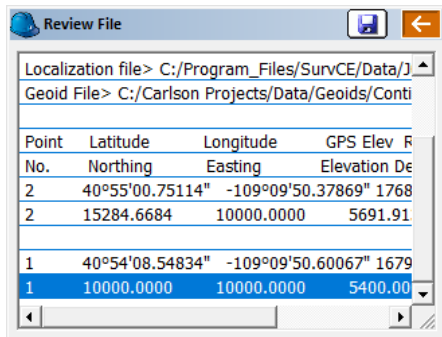
Click on the green checkmark. SurvXX will again ask if we want to reprocess the raw file:



Click on 'Yes':



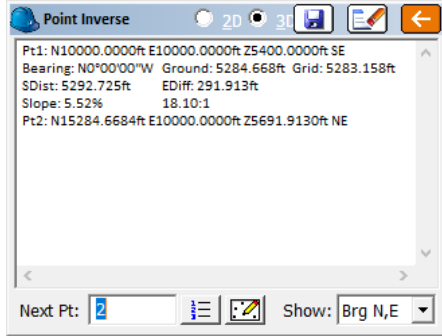
Click on the 'GPS' button to load the Combined Scale Factor, then click on the green checkmark in the upper right corner. SurvXX will recompute the two points to match our localization:



Click the red back button to return to the Main Menu.

### Further Discussion

Now we can use the Inverse function to compute the distance between the points. From the Main Menu, click on 'COGO: Inverse':



Enter 1, then 2. SurvXX reports:

*Bearing: N0°00'00"W Ground: 5284.668ft Grid: 5283.158ft*

We have successfully aligned our coordinate system to the East line of the section and the reported Ground distance reflects the CSF at the SE corner of the section.