

Open DC file in TBC. View the Coordinate System:

Project Settings			×
盲 General Information	Project Location		
🚞 Coordinate System	Latitude:	N39°48'23.56682"	
Datum Transformation	Longitude:	W111°51'10.54840"	
Local Site	Height:	4974.583 ft	
Projection			
···· Shift Grid	Ground Coordinates		
Site Calibration	Use ground coordinates:	Yes	
Network Adjustment Transform	Ground scale factor:	1.0003384916	
RTX Datum	- Coordinate Display		
View	Falca porthing offset	0.000 #	
Computations	False casting offset	0.000 #	
Baseline Processing	Faise easting offset:	0.000 ft	
E RTX Post-Processing			
🚞 Network Adjustment			
🚞 Default Standard Errors			
🚞 Feature Code Processing			
Abbreviations			
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			OK Cancel

It is a Single Point Localization.

eneral Information	Projection	
oordinate System	Name:	Lambert Conformal Conic Two Parallel
atum Transformation	Origin latitude:	N38°20'00.00000"
cal Site	Origin longitude:	W111°30'00.00000"
ection	False northing:	6561666.667 ft
ft Grid	False easting:	1640416.667 ft
e Calibration	Parallel 1:	N40°39'00.00000"
twork Adjustment Transform	Parallel 2:	N39°01'00.00000"
vite	South azimuth system:	No
w.	Positive coordinate direction:	North / Fast
mputations		
line Processing		
Post-Processing		
/ork Adjustment		
ault Standard Errors		
ure Code Processing		
reviations		
• III	Change	

The underlying projection is Utah Central.

Gage

Seneral Information	Geoid Model & Vertical Datum			
Coordinate System	Geoid model:	GEOID99 (Conus)		
actum Transformation	Geoid model file name:	g99us.ggf		
ocal Site	Geoid model quality:	Survey quality		
rojection hift Grid	– Vertical Datum			
ite Calibration	Vertical datum:			
etwork Adjustment Transform TX Datum				
Jnits				
/iew				
Computations				
aseline Processing				
TX Post-Processing				
letwork Adjustment				
Default Standard Errors				
eature Code Processing				
Abbreviations				
•	Change			
			OK Ca	

The DC projection uses Geoid 1999 which is obsolete. There should be no issues switching to Geoid18, and it would be irresponsible to not do so.

The projected coordinates of the local point are:

Point Information					
Point ID:	300				
Coordinate					
Northing:	7098455.013	Å			
Easting:	1541270.516	Λ			
Elevation:	5031.602	Λ			
Status:	Enabled				

In LandStar, make a new job with Utah Central NAD83 and Geoid18 as the base system:

Ellipsoid	Projection	Datum trans	Horz. adjustment	Vert. adjustme
Туре	Lambert cont	formal conic 2-SP		×
			Get o	entral meridian
Central meridian	111°30'00.00	0000" W		
	dd.mmssssss			
Origin latitude	38°20'00.000	000" N		
	dd.mmssssss			
First standard lat	40°39'00.000	000" N		
	dd.mmssssss			
Standard parallel 2	39°01'00.000	000" N		
	dd.mmssssss			
False easting	500000.0000	l m		
False northing	2000000.000	10 m		
Average latitude	000°00'00.00	0000" N		
	dd.mmssssss			
Projection height	0.000 m			

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÷		cs-Coordinate system					
Name	USA NA	D83 Utah Central					
Ellipsoid	Projection	Datum trans	Horz. adjustment	Vert. adjustment			
Туре	No adju	stment	×				
Geoid file	Geoid20	Geoid2018US.CGD					
Interpolation method	Bi-linear		~				

Next enter the base point, using the Lat/Lon/EllipsoidHeight:

Normal	Attributes	Multimedia	
Name	1		
Code		>	
Description	project base		
Туре	Enter	~	
Format	Local Lat/Lon/H		
Local Lat	39°48'23.566820" N		
Local Lon	111°51'10.548400" W		
Local H (ellipsoid)	4974.583 USft		
Survey time	2024-02-12 09:43:41		

Go to: Project > Single Point Localization:

Use single point localization I Project GNSS Base Point	
Project GNSS Base Point	
	<u>⇔</u> 📇 🖽 🗮
Local Lat	
39°48'23.566820" N	
dd.mmssssss	
Local Lon	
111°51'10.548400" W	
dd.mmssssss	
Local H (ellipsoid)	
4974.583 USft	
Project Base Local Coordinate	CAD
North (N)	
7098455.0127 USft	
East (E)	
1541270.5164 USft	
Elevation	
5032.076 USft	
Basis of Bearings	
O Geodetic(True North)	
Grid north	
() Manual	
Results	
Elevation SF	
0.999762063558	
Grid SF	
0.999898943364	
Combined SF	
Grid to ground	
1.000339083972	
Ground to grid	
0.999661030967	
Calculate	Accept



Use the top list button \equiv to recall the Origin point #1 Lat/Lon/ellipsoid height.

Use the bottom list button \equiv to recall the Origin point #1 projected position (this is the State Plane Coordinate System value.)

Click Calculate at the bottom. Click Accept to enter the Single Point Localization system.

Notice that LS8 computes the Grid to Ground Scale factor slightly differently than Trimble:

1.000339083972 1.0003384916 -0.000000592

LS8 is correct, it appears that Trimble is using an Ellipsoid Reduction Factor that does not match the NGS method.

Converted Coordinate						
Reference F	rame:NAD83(2011)					
La	at-Lon-Height		SPC	UT	M/USNG	XYZ (m)
Latitude	N39° 48' 23.56682'	Zone	UT C-4302	Zone	12 🚔	X -1,826,752.617
	N394823.56682 39.8065463389	Northing	2,163,613.415 (m) 7 098 455 013 (usft)	Northing (m)	4,406,634.037	Y -4,554,999.226
Longitude	E248° 08' 49.45160'		7,098,469.210 (ift)	Easting (m)	426,988.610	Z 4,062,478.596
	W1115110.54840 -111.8529301111	Easting	469,780.193 (m) 1.541,270,516 (usft)	Convergence (dms)	-00 32 45.84	
Ellipsoid	4974.583		1,541,273.599 (ift)	Scale factor	0.99966563	
Height (usft)	Convergence (dms)	-00 13 33.89	Combined factor	0.99942789		
		Scale factor Combined factor	0.99989894 0.99966115	USNG	12SVK2698906634	

The difference results in a 0.0031 foot difference per mile. If this is an issue, you can hand enter the Trimble value.

You can verify that this system is identical by entering a point at a random distance from the origin point.

– Grid Coordinate		
Northing:	7118455.013	?
Easting:	1541270.516	?
Elevation:	5045.000	?
Local Coordinate		
Latitude:	N39°51'41.17090"	?
Longitude:	W111°51'11.56017"	?
Height:	4987.942	



Then hand enter this point as a second point in LandStar:

÷	cs-Add point	
Name	3	
Code		>
Туре	Enter	~
Coordinate format	Local Lat/Lon (dd.mmssssss)	~
Local Lat	39.5141170900 N	
Local Lon	111.5111560170 W	
Local H (ellipsoid)	4987.942 USft	
Description	test pt Ilh	٢

Viewing the resulting projected location:

÷			cs-Points	(3)			
		Points		Points to stake			
All 🔻	Name 🔻						
	Name	North (N)[USft]	East (E)[USft]	Elevation[USft]	Description	Code	
\mathcal{C}	1	7098455.0127	1541270.5164	5032.076	project base		
\mathcal{C}	2	7118455.0130	1541270.5160	5045.000	test pnt		
G	3	7118455.0248	1541270.5161	5045.340	test pt Ilh		

The difference in scale factor over 20,000 feet is exposed.

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