

SurvCE Version 3.0 Raw File records

1) Antenna Type: [RTK GPS Antenna+Receiver], RA0.0000m,SHMP0.0000m,L10.1135m,L20.0941m,--APS-3

These are the 4 generic GPS antenna variables for Radius, Slant Height Measure Point, L1 offset, L2 offset and the description

2) RTK Method: RTCM V3.0, Device: Internal GSM, Network: NTRIP RTCM3_MAX

This is your values used in Equip / GPS Rover / RTK tab

3) Entered HR: 6.5620, Vertical

This is the hand entered value typed in by the customer in Equip / GPS Rover / Receiver tab along with the method selected {i.e. – Slant or Vertical}

4) HSDV:0.034, VSDV:0.075

This is a GPS variable similar to “HRMS / VRMS” for the Horizontal Standard Deviation and the Vertical Standard Deviation

5) BP, PN733,LA30.160894090052,LN-97.471343999946,EL175.4530,AG2.000,PA0.114,--

The BP record is the Base Point record. The AG is the “Antenna to Ground” value and the PA is the “Phase Center to Antenna” value. You can add them together to get the Phase Center to Ground value. THE UNITS OF THE ELLIPSOID ELEVATION, PA AND AG ARE ALWAYS IN METERS.

6) GT, PN27, SW-522,ST-259200000,EW-522,ET-259200000

This is the GPS Time stamp for RW5 file if you have “Store GPS Accuracy” turned on.

GT - GPS time, PN point ID, SW start week, ST Start time, EW - End week, ET - End time

7) DZ, PN405,DZ11.0396

This record is only shown when your using a Depth Sounder peripheral

DZ – Depth record, PN - point ID, DZ - depth of water in units of the job,WE – water elevation
WE will only be displayed if the Water Elevation feature is used

GPS VECTOR RECORDS

The rod height of the rover comes from the LS record prior to the vector records. The LS,HR value is from phase center to the ground, we do not show the antenna offset in this record.

!!! WARNING: THE UNITS CAN BE FEET OR METERS; YOU WILL HAVE TO LOOK AT THE MO RECORD (UN) TO TELL. “UN1” is Metric and “UN2” is for US Feet

The vector information is in the G records:

G0 - Date, time, Base ID

G1 - Base point number, Rover point number, Delta X, Delta Y, Delta Z

G2 - Variance X, Variance Y, Variance Z

G3 - Covariance XY, Covariance XZ, Covariance YZ

The DX, DY and DZ values are phase center to phase center. ALL THE VALUES ARE ALWAYS IN METERS.

Here is a sample of the top part of the RW5 Raw File from Version 2.50:

```
JB,NMTERRYHSE,DT01-25-2010,TM15:16:11
MO,AD0,UN2,SF1.00000000,EC0,EO0.0,AU0
--SurvCE Version 2.50
--CRD: Alphanumeric
--TX Central NAD83
--Equipment: APS-3
--Antenna Type: [RTK GPS
Antenna+Receiver],RA0.0000m,SHMP0.0000m,L10.1135m,L20.0941m,--APS-3
--Localization File: None
--Geoid Separation File: None
--GPS Scale: 1.00000000
--RTK Method: RTCM V3.0, Device: Internal GSM, Network: NTRIP RTCM3_MAX
BP,PN733,LA30.160894090052,LN-97.471343999946,EL175.4530,AG2.000,PA0.114,--
--Entered HR: 6.5620, Vertical
LS,HR6.9344
GPS,PNBWC1+A,LA30.241617091114,LN-97.441679812958,EL231.637722,--PK NAIL
--GS,PNBWC1+A,N 10120391.5553,E 3114671.1420,EL837.6091,--PK NAIL
G0,01/25/2010 20:53:02,(Average) - Base ID read at rover: 733
G1,BP733,PNBWC1+A,DX5692.192,DY6823.564,DZ12978.073
G2,VX0.00863666,VY0.02219784,VZ0.01231287
G3,XY0.00006689,XZ-0.00001147,YZ-0.00017120
--HSDV:0.034, VSDV:0.075, STATUS:FIXED, SATS:10, PDOP:1.773, HDOP:0.860,
VDOP:1.550
--DT01-25-2010
--TM14:57:08
GPS,PN3,LA42.214176546000,LN-71.095340522000,EL-8.227500,--base
--GS,PN3,N 5.4159,E 4.9849,EL10.0046,--base
--GT,PN3,SW-522,ST-259200000,EW-522,ET-259200000
--HRMS:0.013, VRMS:0.019, STATUS:FIXED, SATS:8, PDOP:1.800, HDOP:1.000,
VDOP:1.500
```

February 9, 2006

SurvCE Raw Data File Format (*.RW5)

- ***Introduction***
- ***Format Structure***
- ***Alphabetical Listing of Record Types***
- ***Alphabetical Listing of Field Headers***

Introduction

This document outlines the Carlson SurvCE RW5 format in detail. The format is a comma separated ASCII file containing record types, headers, recorded data and comments and is based on the RW5 raw data specification with the exception of angle sets. Angle sets are recorded as BD, BR, FD and FR records to allow reduction of all possible data that can be recorded by Carlson SurvCE using the "Set Collection" routine. Essentially, these records are identical to a Sideshot record.

With the exception of the aforementioned angle set records, if the RW5 specification is modified to provide enhanced functionality, the added or modified data will reside in comment records to avoid incompatibility with existing software.

Format Structure

Backsight Record

Record type: BK

Field headers:

OP Occupy Point

BP Back Point

BS Backsight

BC Back Circle

Sample(s):

BK,OP1,BP2,BS315.0000,BC0.0044

Job Record

Record type: JB

Field headers:

NM Job Name

DT Date

TM Time

Sample(s):

JB,NMSAMPLE,DT06-27-2003,TM14:21:53

Line of Sight Record

Record type: LS

Field headers:

HI Height of Instrument

HR Height of Rod

*GPS heights may be recorded to phase center or ARP depending on GPS make.

Sample(s):

LS,HI5.000000,HR6.000000

LS,HR4.000000

Format Structure (Continued)

Mode Setup Record

The mode setup will be recorded at the beginning of the raw data file.

Record type: MO

Field headers:

AD Azimuth Direction (0 for North, 1 for South)

UN Distance Unit (0 for feet, 1 for meter)

SF Scale Factor

EC Earth Curvature (0 for off, 1 for on)

EO EDM Offset (inch)

Sample(s):

MO,AD0,UN0,SF1.00000000,EC1,EO0.0,AU0

Occupy Record

Record type: OC

Field headers:

OP Occupy Point

N Northing (the header is N space)

E Easting (the header is E space)

EL Elevation

-- Note

Sample(s):

OC,OP1,N 5000.00000,E 5000.00000,EL100.000,--CP

Off Center Shot Record

Record type: OF

Field headers:

AR Angle right

ZE Zenith (actual)

SD Slope Distance

Sample(s):

OF,AR90.3333,ZE90.0000,SD25.550000

OF,ZE90.3333,--Vert Angle Offset

Store Point Record

Record type: SP

Field headers:

PN Point Name

N Northing

E Easting

EL Elevation

-- Note

Sample(s):

SP,PN100,N 5002.0000,E 5000.0000,EL100.0000,--PP

Format Structure (Continued)

Traverse / Sideshot Record / Backsight Direct / Backsight Reverse / Foresight Direct / Foresight Reverse

Record type: TR / SS / BD / BR / FD / FR

Field headers:

OP Occupy Point

FP Foresight Point

(one of the following)

AZ Azimuth

BR Bearing

AR Angle-Right

AL Angle-Left

DR Deflection-Right

DL Deflection-Left

(one of the following)

ZE Zenith

VA Vertical angle

CE Change Elevation

(one of the following)

SD Slope Distance

HD Horizontal Distance

-- Note

Sample(s):

TR,OP1,FP4,AR90.3333,ZE90.3333,SD25.550000,--CP

SS,OP1,FP2,AR0.0044,ZE86.0133,SD10.313750,--CP

BD,OP1,FP2,AR0.0055,ZE86.0126,SD10.320000,--CP

BR,OP1,FP2,AR180.0037,ZE273.5826,SD10.315000,--CP

FD,OP1,FP3,AR57.1630,ZE89.4305,SD7.393000,--CP

FR,OP1,FP3,AR237.1612,ZE270.1548,SD7.395000,--CP

GPS

Record type: GPS

Field headers:

PN Point Name

LA Latitude (WGS84)

LN Longitude (WGS84, negative for West)

EL Ellipsoid Elevation (meters)

-- Note

*GPS heights may be recorded to phase center or ARP depending on GPS make.

Sample(s):

GPS,PN701,LA42.214630920,LN-71.081409184,EL-21.8459,--CP /Brass Disk

Alphabetical Listing of Record Types

BD Backsight Direct
BK Backsight
BR Backsight Reverse
FD Foresight Direct
FR Foresight Reverse
GPS GPS Position in Lat(dd.mmss) Lon(dd.mmss - Negative for West) and WGS84 Ellipsoid
Elv(meters)
JB Job
LS Line of Sight
MO Mode Setup
OC Occupy
OF Off Center Shot
SP Store Point
SS Side Shot
TR Traverse
-- Note Record

Alphabetical Listing of Field Headers

AD Azimuth Direction (0 for North, 1 for South)
AL Angle-Left
AR Angle-Right
AZ Azimuth
BC Back Circle
BP Back Point
BR Bearing (this field will be recorded as N123.4500W)
BS Backsight (when back point is not defined)
CE Change Elevation
DL Deflection-Left
DR Deflection-Right
DT Local Date (MM-DD-YYYY)
E Easting (the header is E space)
EC Earth Curvature (0 for off, 1 for on)
EL Elevation (GPS value is ellipsoid elevation in meters)
EO EDM Offset
FE Foresight Elevation
FP Foresight Point
HD Horizontal Distance
HI Height of Instrument
HR Height of Rod
LA Latitude
LN Longitude
N Northing (the header is N space)
OC Occupy
OP Occupy Point
PN Point Name
SD Slope Distance
SF Scale Factor
TM Local Time (HH:MM:SS)
UN Distance Unit (0 for feet, 1 for meter, 2 for US feet)
VA Vertical Angle
ZE Zenith