

RANGE TRUTH DATA

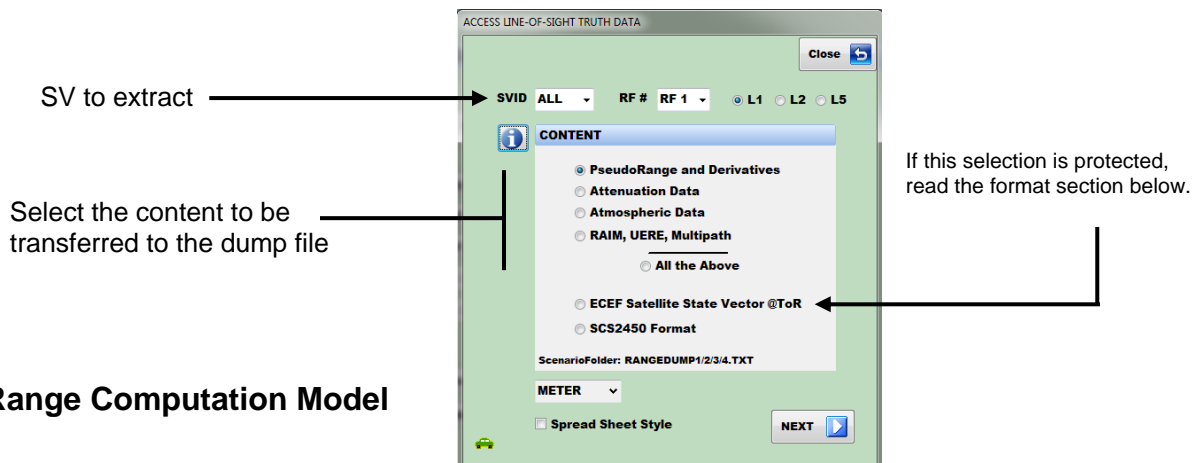


NOTE

The **binary** Range Truth File is nominally written at 1 Hz.
If a higher data rate is desired see;
TapControl.ini set RangeTruthFileRate = 1, 10,100 Hz.

Line-Of-Sight [LOS] Pseudo Range Truth:

Selection of this item presents the following data form:



Tapestry Pseudo Range Computation Model

$$\rho_{T_{UE}}^{OUT} = \rho_G + Sv_{CB} + \tau_T + \tau_I + \tau_{UERE} + \tau_{SA} + \tau_{SW_MP} + \tau_{HW_MP} + \tau_{RAIM} + \tau_{GD} + \tau_B$$

$$\rho_{T_{UE}}^{OUT} = \text{Output pseudorange at time of reception } T_{UE} \text{ (m).}$$

ρ_G = Geometric Range per IS-GPS-200D Table 30-II (m).

Sv_{CB} = Computed Satellite Clock Bias per Legacy SubFrame 1 (m).

τ_T = Troposphere delay (m).

τ_I = Ionosphere delay (m).

τ_{uere} = Applied delay resulting from UERE [model](#) via a 2nd order Gauss Markov process (m).

τ_{SA} = Applied delay resulting from SAAS model as defined in RTCA-DO-208 (*unclassified*) (m).

τ_{SWMP} = Applied Multipath delay resulting from a software-implemented *statistical* [model](#) (m).

τ_{HWMP} = Applied Multipath delay (replicated channel) as described [here](#) (m).

τ_{RAIM} = Applied RAIM delay as described [here](#) (m).

τ_{GD} = Applied delay due to inter-signal group delay as contained in Legacy SubFrame 1 (m).

τ_B = Applied delay based on user input table described [here](#) (m).

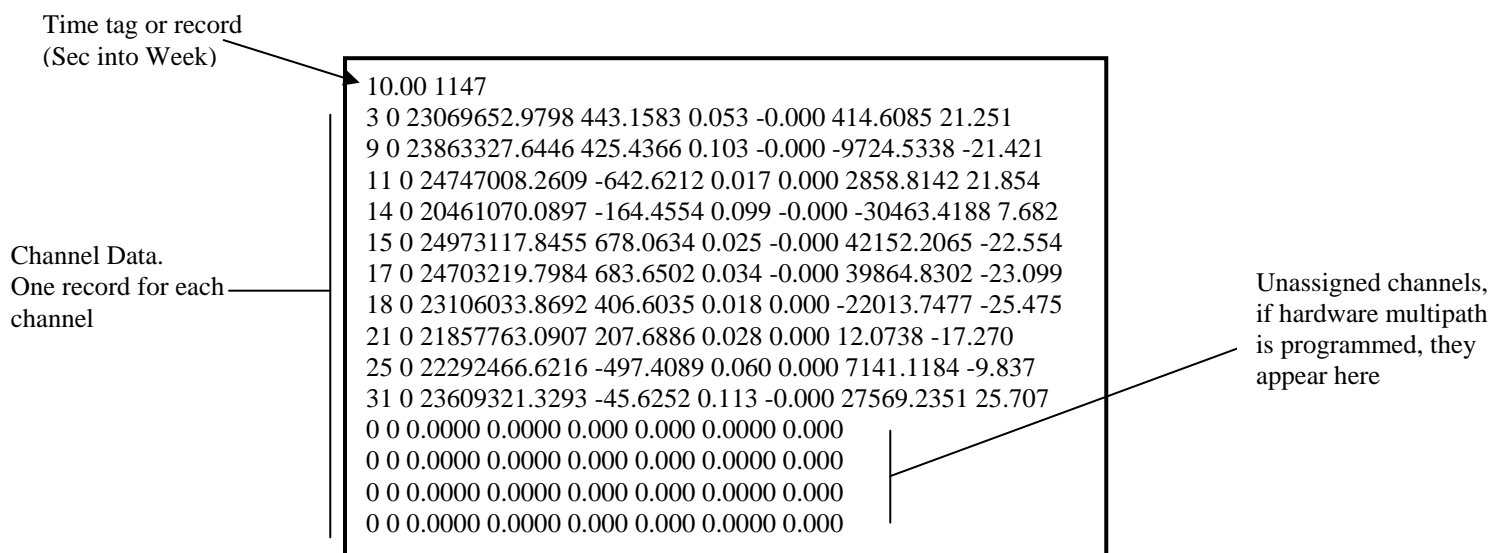
The data content of the various selections is described below. When extracted, these models are dumped into a space delimited time sequential data file **RANGEDUMP.TXT** located within the scenario folder.

It is important to note; however you access the pseudorange truth data, the output is ρ_{TUE}^{OUT}

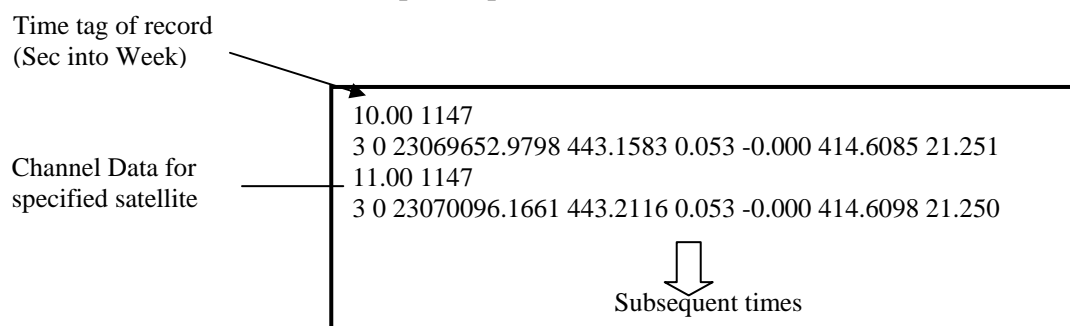
PseudoRange and Derivatives

• Pseudo Range and Derivatives

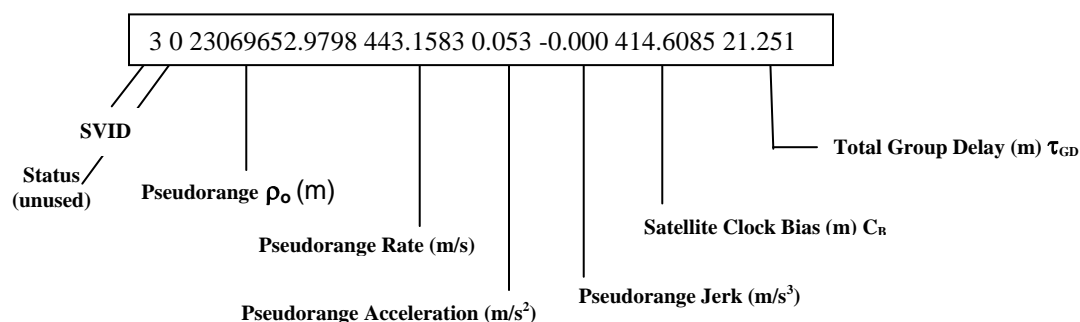
All Satellites Selected



One Satellite Selected [SV=3]



In both instances;

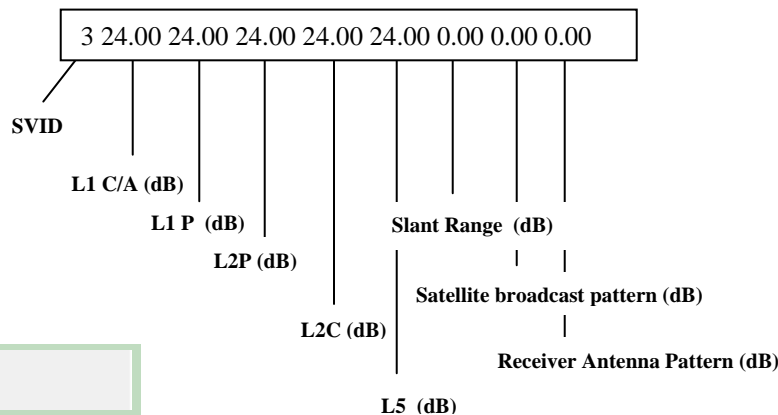




Attenuation Data

- Attenuation Data

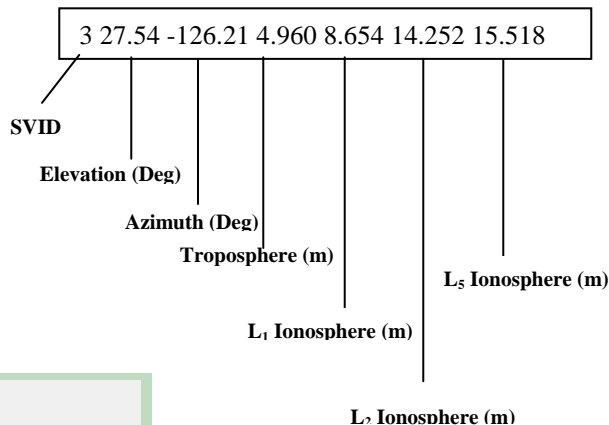
The attenuation records within the RANGEDUMP.TXT file are as follows



Atmospheric Data

- Atmospheric Model

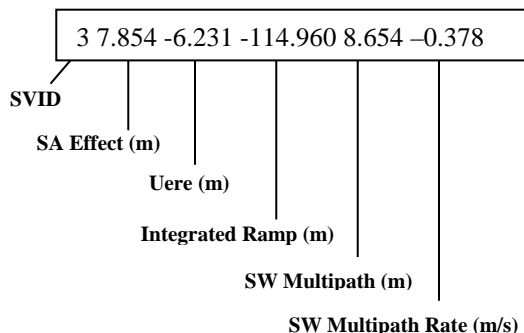
These records within the RANGEDUMP.TXT file are formatted as follows



All Model Data

- All Models

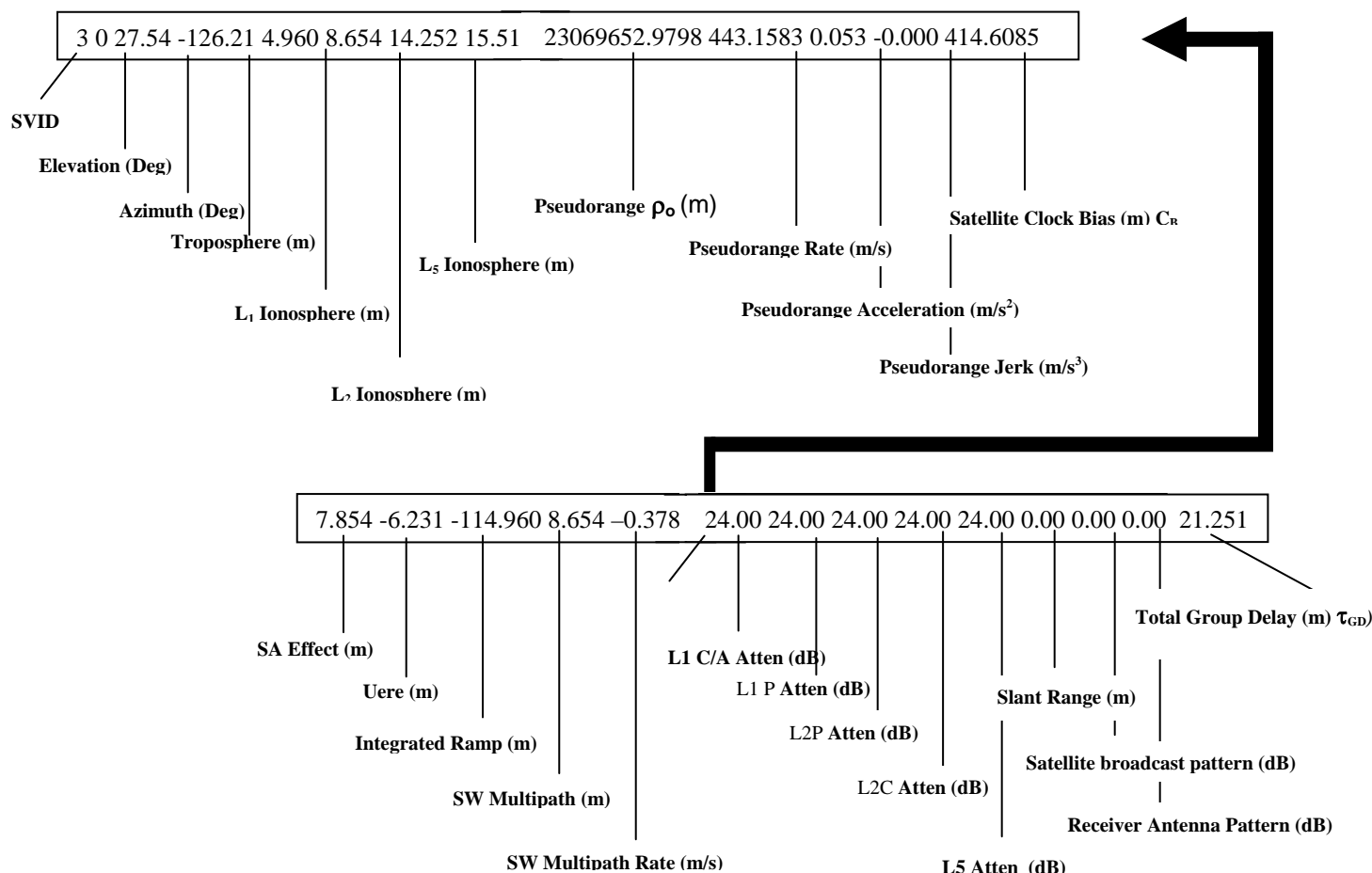
These records dump all of the applied errors from the Markov processes, applied Multipath (model), and RAIM errors. The records in the RANGEDUMP.TXT file are formatted as follows



All the above

- All of the above (with the exception of the SV state vector)

Details of one of the records:



ECEF Satellite State Vector @ToR

- ECEF Satellite State Vector

The binary ECEF Satellite State Vector file contains the State Vector – comprised of ECEF Satellite Position, Velocity, and Acceleration at the Time of Reception – for the generated satellites. By default, this item is NOT output into the scenario folder. If you want this output use **TapControl.ini** set **GenerateRangeDebug** = [0 = No File : 1 = File]

Contents of these models are dumped into a space delimited time sequential data file **RANGEDUMP.TXT** located within the scenario folder:

