1. Substation field RG – does this include shield wire or not? Is it Effective Ground Grid Resistance?

NERC Application Guide: The equivalent resistance of the substation ground grid (including the effects of any transmission line overhead shield wires and/or distribution multi-grounded neutral conductors if applicable) to remote earth must be included in the model.

1. Does the PSSE Activity that helps designate Vector Group create the IEC or ANSI version? What version does that PSSE expect?
2. How does PSSE convert AC resistance to DC resistance for transformers and lines?

* Non-transformer branch X/R ratio

Activity GIC uses branch resistance specified in power flow data as branch DC resistance. For those branches whose R value is not specified, this branch X/R is used to determine branch resistance value. However, for accurate GIC calculations, branch DC resistance with its skin effect accounted should be used. If this information is available, using PSSE automation files change branch resistance accordingly before performing GIC analysis. In a Swedish Master Thesis by Linus Khosravi and Erik Johansson titled: Evaluation of the GIC module in PSS/E Section 4.2.2 Comparison between AC and DC branch data showed the average difference in reactive power loss between using AC- and DC-resistance values for branches were 6.8%.

* Transformer X/R ratio

Activity GIC uses transformer winding DC resistance specified in GIC data file. If these resistance values are not specified, it calculates winding resistance values from resistance values specified in power flow data. In this case, for those transformers whose resistance value is not specified, this X/R is used to determine their resistance value. Again, for accurate GIC calculations provide transformer winding DC resistance in GIC data file.

1. What does Branch INDUCEDV represent and when do you use it?
2. Does it matter which voltage branch of an autotransformer is listed first (winding 1) in the model?

Procedural Manual: The transformer specified by buses I, J, K, CKT must exist in power flow data. Also, the winding bus order must be the same as in SSWG base case data.

1. Do you need latitude and longitude for all stations even if there is no Wye-Ground transformer?

NERC Application guide: To obtain accurate values for the distance between substations (and to be consistent with substation latitudes and longitudes obtained from GPS measurements) it is necessary to take into account the non-spherical shape of the earth.

1. Does module change station numbers each time a case is created?
2. Can we give Chapter 7, Geomagnetically Induced Currents to Transmission Planners or Generators who do not have a PSSE license?

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