Below are some hints on performing fatigue analysis in SWS. If these don’t make sense to you, then you likely haven’t done enough self-learning yet.

1. All fatigue analysis are based upon static simulations that were already performed. Static analysis are of specific magnitudes, while the fatigue analysis make them repeat. Be careful as to the magnitudes used in each simulation as you might wind up applying more than you think (superimposing from static and dynamic)
2. In order to do anything out of the ordinary, you must use “variable amplitude loading” (VAL) option
3. One must define an S-N curve for the material of interest
4. The easiest way to implement a variable amplitude loading waveform is to create a file containing the waveform discretized in time and upload those X-Y pairs to SWS.
5. When doing multiple fatigue load applications (seismic and motion system) run each independently. SWS won’t allow for life estimation (S-N) from multiple VAL waveforms.
6. When viewing results, the % damage is the percent of the life used from that one analysis. Death occurs at 100%. One can use superposition so sum % damage from any number of fatigue events.
7. When viewing results, if you specified VAL your life results will be in “life blocks.” The plot tells you how many of these VAL “blocks” you can apply before death occurs.