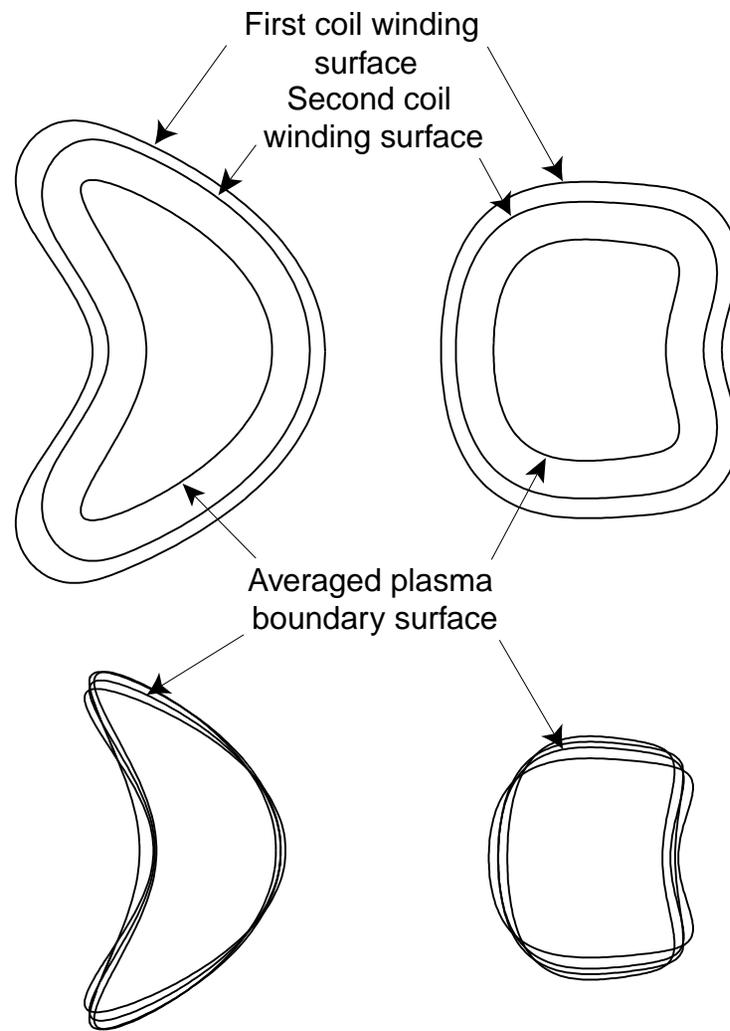


Flexibility and the GA

W.H. Miner. Jr. and the Coil Group

- Select several equilibria from a single plasma configuration
 - Vary plasma beta
 - Vary pressure profile width
- Compute the weighted average plasma boundary
- Generate a single current carrying surface



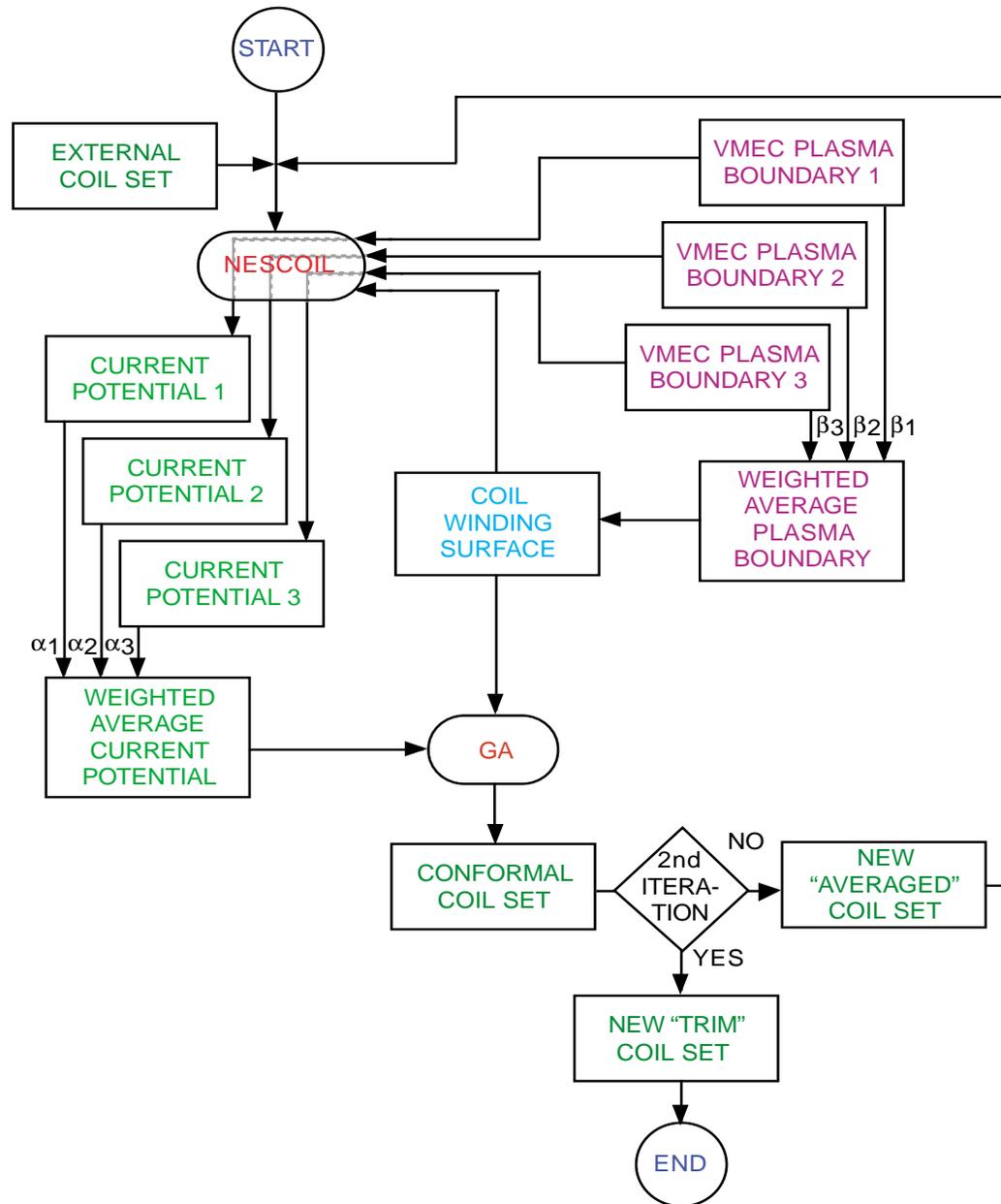
Multiple plasma boundary surfaces from different equilibria

- For each equilibrium, run NESCOIL to produce a set of surface current potentials
- Compute the weighted average surface current potential
- Give the GA the average potential and cut a set of coils
- Rerun NESCOIL for each equilibrium with the computed coil set as a background coil set
- Iterate as before to obtain a trim coil set

- With the background coils fixed, target each equilibrium with the full set of trim coils and use the SVD to determine their currents
- Depending on the magnitude of the currents some coils may be eliminated
- The variation in the “retained” coil set currents shows how to get from one equilibrium to the other

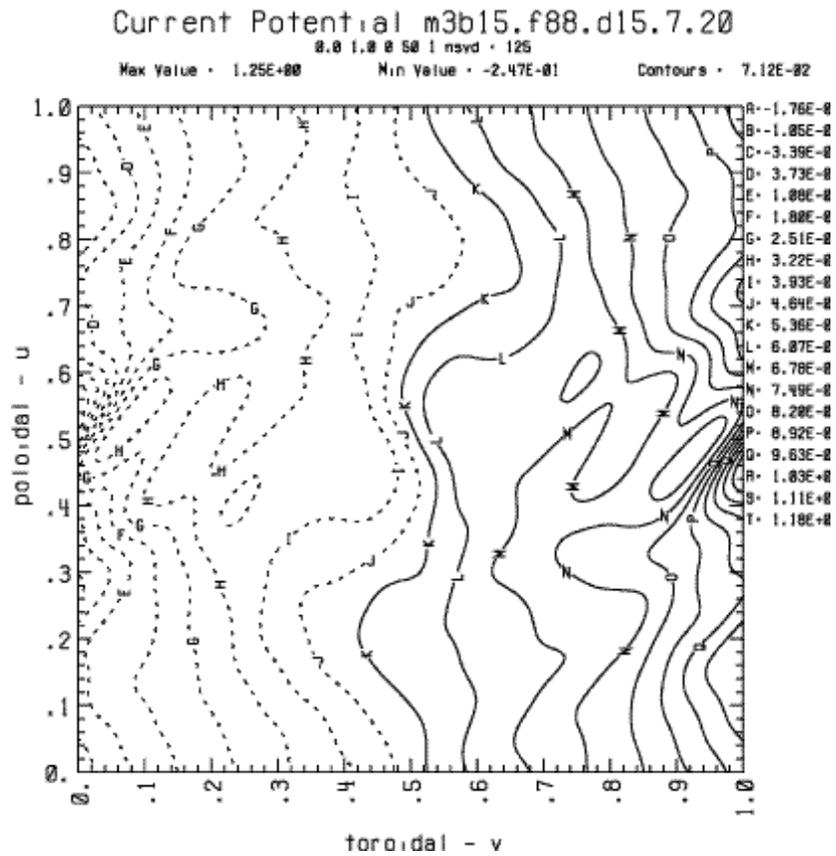
- Notes

- At any stage human intervention may be necessary to reduce the number of coils in a set
- A weighted average is used to reduce the effects of undesirable features
- There is only a practical limit to the number of equilibrium to be included in the calculation



Miner

Initial Surface Current Potential



Residual Surface Current Potential

