Simultaneous Feasibility Test (SFT) Process Overview – Page 1

Additional Information

- Report error message to CLU
- Register availability with the MDB to receive a new case to be studied

- Breaker switching schedules
- Close forced closed breakers (TOPPER and SFTCOB modes)
- Reactive profiles (non-TOPPER modes)
- Thermal branch limit calculation based on Latta calculation and overall branch limit is the minimum of the static and thermal limits (non-TOPPER modes)
- If applicable, quadratic offload curve coefficients calculated using specified offload time and conductor characteristics (non-TOPPER modes)

- Report network topology via MSSNET csv files
- Register availability with the MDB to receive a new case to be studied

- Report unsolved status
- Register availability with the MDB to receive a new case to be studied

- Convert the network representation into the bus-branch model that VSAT recognises.
- Exports the state of the solution
- The same network toplogy as SFTCheck is used

- VSAT determines the transfer limit on predefined interfaces based on defined scenarios.

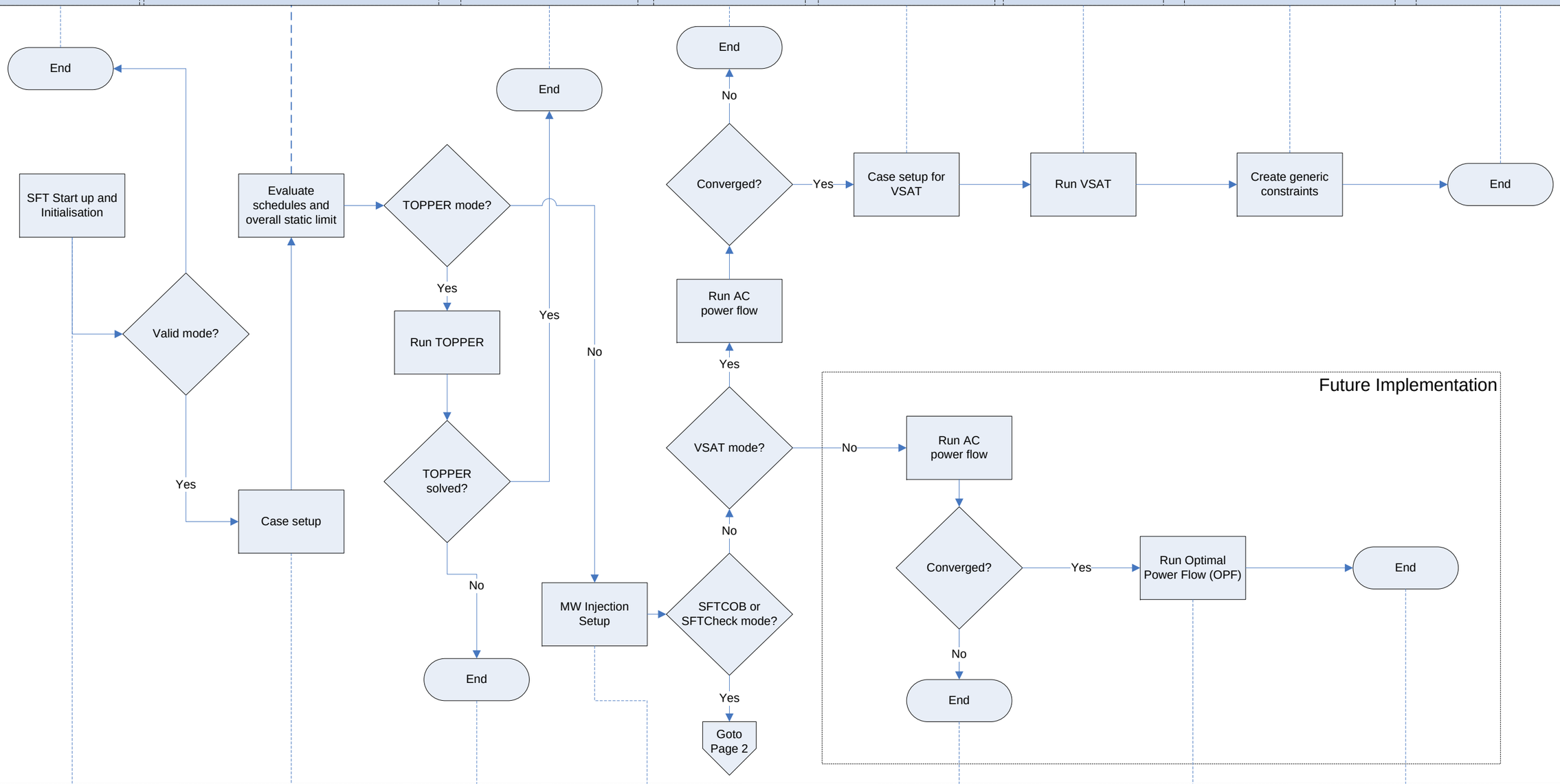
- Generic constraints of the following form are created:

$$A_1 \times P_1 + A_2 \times P_2 + \ldots \leq INT_{fl}$$

Where A_1, A_2,… are the branch flow coefficitients, P_1, P_2,… is the branch flow and INT_{fl} is the interface flow limit as determined by VSAT

- VSAT identified violations, load limits and transfer limits are reported
- VSAT constraints are reported in csv files
- Register availability with the MDB to receive a new case to be studied

Simultaneous Feasibility Test (SFT)



Additional Information

- MDB assigns case
- MDB specifies mode for SFT (TOPPER, SFTCOB, SFTCheck, VSAT or OPF)

- Retrieve network model
- Retrieve contingency data (if applicable)
- Determine static branch limits based on specified summer/winter limits (non-TOPPER modes)
- AC decoupled power flow options
- Retrieve DCP model (VSAT only)
- Retrieve control model (OPF only)

- Report TOPPER failure
- Register availability with the MDB to receive a new case to be studied

- MW injection (generation, load and HVDC dispatch) and reserves from SPD
- Expand unit limits if exceeded by SPD energy and reserve dispatch
- If Unit Reallocation option is set allocate the MW at station to minimum number of units

- Report unsolved status
- Register availability with the MDB to receive a new case to be studied

- Determine voltage-var control movements to alleviate/ reduce voltage violations.

- Report voltage-var control recommendations
- Register availability with the MDB to receive a new case to be studied

Simultaneous Feasibility Test (SFT) Process Overview – Page 2

Additional Information

- Use fast decoupled algorithm

- Base case violations reported in the SFT Check solution file.
- Displayed in the Market Operator Interface.

- Produce csv file that contains created constraints to be used in the next SPD iteration, unsolved or partially solved contingencies and voltage violations.
- Indication of AC or DC solve.
- If SFTCheck mode then csv file contains base case and contingency violations, sensitivity factors for SPD monitored constraints, forced close breaker that are open voltage violations
- Register availability with the MDB to receive a new case to be studied

- Create sensitivity factors for constraints specified by SPD
- Sensitivity factors indicate the change in the constraint output given a change in a generator output.
- Sensitivity used by the Block/ Station constraint processing application in the MDB.

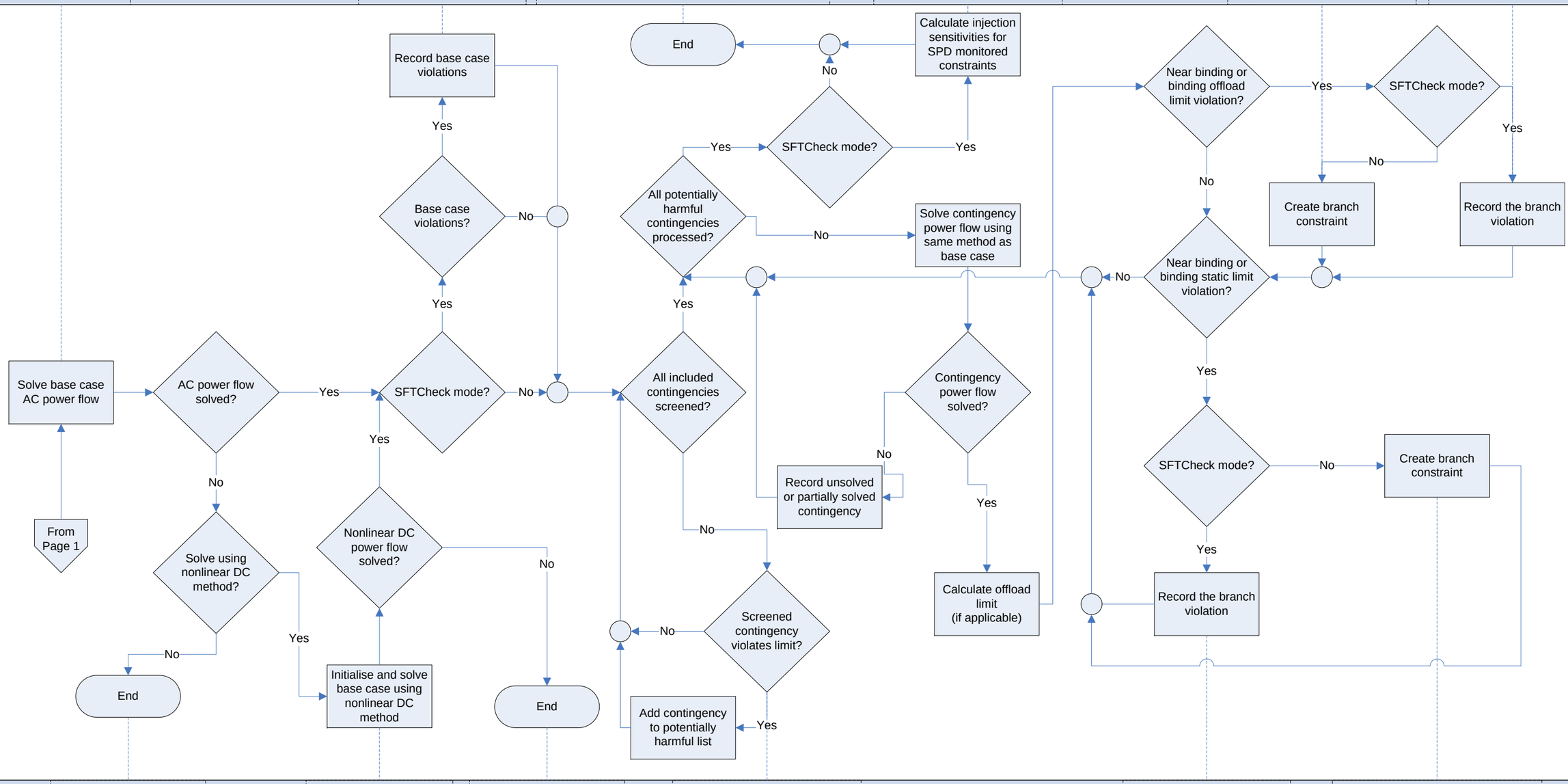
- Constraint of the generic form:

$$K_1 P_m + K_2 P_c \leq c$$

K_1 and K_2 are constraint coefficients;
P_m and P_c are the pre-contingency power flow on the monitored and contingent branches respectively;
- c is the RHS of the constraint

- Record branch and voltage violation.
- Calculate offload time to manage constraint if applicable.

Simultaneous Feasibility Test (SFT)



Additional Information

- Return solve failure status
- Register availability with the MDB to receive a new case to be studied

- Flat start voltage
- Large tolerance on the MVAr convergence
- No voltage magnitude update
- MVAr component of branch flows are zeroed after convergence

- Return solve failure status
- Register availability with the MDB to receive a new case to be studied

- Screening based on single iteration of decoupled power flow.
- Angle difference across the branch is compared to an angle difference limit.
- Angle difference limit based on active base case branch limit adjusted with a screening tolerance.

- Record branch and voltage violation.
- Calculate offload time to manage constraint if applicable.

- Constraint of the generic form:

$$K_1 P_m + K_2 P_c \leq c$$

K_1 and K_2 are constraint coefficients;
P_m and P_c are the pre-contingency power flow on the monitored and contingent branches respectively;
- c is the RHS of the constraint