

### Estimated Schedule for Commissioning of UNITROL 6080:

#### Prerequisites for the commissioning completed by the client, as:

Time to suit others

- All cabling and wiring external to the excitation cubicles completed, connected & checked (point by point) according to the diagram. This applies especially to ct's, pt's. and protection circuits.
- AC- and DC-supplies available and ready for switching on.
- If generator and protection primary tests are foreseen: excitation transformer is ready for temporary connection on the HV side to the auxiliary network.
- Other components as protection, turbine regulator, substation / HV lines, auxiliary services, turbine and generator should be ready for operation within the next few days.
- Safety conditions ready.

#### General:

- Travel x h
- Hold meeting with client ~ 4 h
  - Work place preparation (table, chair, lighting, set out tools etc.)
  - Carry out any modifications, if necessary

#### Pre-Commissioning Tests and Checks with a Stationary Machine:

~ 20 h

- Check internal wiring according to the drawing
- Energise AC and DC circuits from external supplies
- Down load software and parameter list
- Verify parameter list
- Check control functions, field breaker, field flashing etc. and operation from the panel
- Check digital and analog inputs and outputs
- Check trip circuits and generator breaker (output and feedback)
- Program the transducers
- Check pt's and ct's
- Measure the field resistor
- Clarify with the client, the adjustments which are to be made to the limiters, using the power capability chart
- Test spare parts whenever it is appropriate

#### Generator Short Circuit Test: (if required)

Time to suit others

- Check pt's and ct's
- Calibrate Ig (If no short circuit test, carry out tests in no load)

#### No Load Tests:

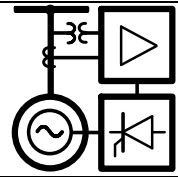
~ 8 h

- Field Flashing and de-excitation in manual channel with both shunt and auxiliary supplies
- Optimise the manual channel control
- Measurements calibrations
- Change over to auto
- Optimise the auto channel control
- In auto channel: Field flashing, soft start and de-excitation
- Test changeovers: Auto↔Manual ; Channel 1↔ Channel 2 ; Follow-up Control
- Test PT fail monitoring
- Test V/Hz Limiter
- Various measurements and records



# ABB Industrie AG

Excitation Systems, Voltage Regulators  
and Synchronizing Equipment



## Synchronising Tests: (if required)

- First synchronising to be carried out in manual channel

Time to suit others

## Load Tests:

### Low load: ~ 10 % or minimum

~ 4 h

- Stator current measurement, internal P and Q measuring
- Optimise the manual channel control
- Optimise the auto channel control
- Load rejection overexcited ( $Q = +0.4\text{pu}$ ) and under excited  $Q = -0.4\text{pu}$  (together with the load rejections of the turbine / governor (If required))
- Optimise Q(P) limiter
- Optimise the manual restrict  $I_e(P)$
- Various measurements and records
- Superimposed Regulation (Option), stability, range of ref. value

### Load: ~ 25 %

~ 1 h

- Optimise Q(P) limiter
- Optimise the manual restrict  $I_e(P)$
- Various measurements and records

### Load: ~ 50 %

~ 2 h

- Optimise Q(P) limiter
- Optimise the manual restrict  $I_e(P)$
- Optimise excitation current limiter
- Optimise Stator current limiter in overexcited mode
- Optimise Rotor Temperature Monitoring
- Various measurements and records

### Maximum load:

~ 4 h

- Optimise Q(P) limiter
- Optimise the manual restrict  $I_e(P)$
- Optimise Rotor Temperature Monitoring
- Various measurements and records
- PSS Tests (if required ~ 2h)

### Final Work:

~ 4 h

- Upload and save Parameters and SW
- Adjust spare parts SW
- Mount covers and doors, tidy up
- Fill in all test procedures and time report

### Remark:

The above mentioned approximate times are valid under the following conditions:

- Prerequisites for the commissioning (see above) are completed by the client.
- During the mentioned time the unit is at the AVR-engineers disposal, that means no other test may be carried out e.g. generator-, protection-, turbine tests.
- No waiting times.
- Normal network condition; generator operation in the whole range of the power chart limits.

The above mentioned approximate times are only an estimation and cannot be used as an ABB commitment

File	Dokument Nr.	Sprache	Änd. Ind.	Seite
ABB Industrie AG	UN6080	EN		2