

## CIGRE Study committee B3

### PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

#### WG B3.69

##### NAME OF THE CONVENOR

Becker George (UNITED STATES OF AMERICA)

##### TITLE

Process Requirements for Commissioning and Inspection of Air Insulated Substations (AIS) and Gas Insulated Substations (GIS)

#### THE WG APPLIES TO DISTRIBUTION NETWORKS: YES

##### ENERGY TRANSITION

1 / Storage  
5 / Grids and Flexibility  
6 / Solar PV and Wind  
8 / Sector Integration

##### POTENTIAL BENEFIT OF WG WORK

5 / Guide or survey on techniques, or updates on past work or brochures

##### STRATEGIC DIRECTION

1 / The electrical power system of the future reinforcing the End-to-End nature of CIGRE: respond to speed of changes in the industry by preparing and disseminating state-of-the-art technological advances  
2 / Making the best use of the existing systems

##### SUSTAINABLE DEVELOPMENT GOAL

0 / Other SDGs or not applied  
7 / Affordable and clean energy

#### BACKGROUND :

More and more substations are being designed and constructed by consultants and contractors. There are many cases where the purchaser is unsure of the quality and the level of documentation required of a newly built substation. Regulatory and contractual compliance also requires proper inspection and testing to insure proper warranty of substation facilities and equipment. For example, the completion of the construction hand off requires some type of commissioning document. This brochure could be used as a template to structure such a document. The added advantage would be a ready-made inspection document that would detail required maintenance and test information.

The objective of this WG is to review current practices and to produce a set of guidelines and a template for acceptance of new AIS, GIS modifications or additions to existing substations. This brochure would cover commissioning for new work and a process for inspecting a substation for maintenance purposes, etc.

#### PURPOSE / OBJECTIVE / BENEFIT OF THIS WORK :

Practices for substation commissioning and inspection while in service vary from company to company without a standard or a defined best practice. The Brochure would be the collection of best utility practices that would outline new work but also cover topics such as damage from copper theft/vandalism, environmental impacts, adverse system conditions (i.e. faults, emergency loading, reactive switching) as part of existing inspections. Contractors and new workers are tasked with inspection, this brochure will be an appreciated guide to the industry and asset owners.

## SCOPE :

1. Review the various practices applied in the utilities regarding the following aspects.

(a) Commissioning of substation

- What data is required
- Define the division of responsibility between the owner and the equipment manufacturers
- Define responsibility for maintenance and inspection
- Define check list or punch list structure
- Document test information required.
- Define areas of acceptance related to project work
- Define List of Items for follow up
- Define As built construction and Protection and Control
- Define all hardware, firmware and software versions
- Produce a sample “ready-for-energization” report

(b) Inspection of substation

- Define physical equipment to be inspected
- Define acceptance criteria and required test reports
- Define cycle of operation required to meet qualification
- Define tests necessary to maintain equipment warranties
- Define how documentation will be recorded etc.

2. Summarize the points to be considered in commissioning and inspecting of the substation at each stage of the project, engineering, basic design, production of equipment, construction, testing, commissioning, etc.

3. Provide a detailed checklist of inspection and test activities required for determining if a substation is “ready for energization” or if an existing substation needs maintenance. A review of regulatory requirements for inspection and details on certifications will be researched and summarised as many countries and locations have specific requirements and permits.

## Remarks:

This Working Group will focus on pointing out the issues related to substation commissioning and what factors improve reliability from equipment monitoring and inspection. The WG will cover all types of new and existing AIS or GIS. There will be an emphasis in the brochure to add substations connecting renewable resources to the grid.

## DELIVERABLES AND EVENTS

### Deliverables Types

Annual progress and activity report to Study Committee  
Technical Brochure and Executive Summary in Electra  
Tutorial  
Webinar

### Time schedule

Q1 2025 · Recruit members (National Committees, WiE, NGN)

Q2 2025 · Develop final work plan

Q2 2026 · Draft TB for Study Committee Review

Q4 2026 · Final TB

Q2 2027 · Tutorial

Q4 2027 · Webinar

**APPROVAL BY TECHNICAL COUNCIL CHAIRMAN:**

Rannveig S. J. Løken

February 18th, 2025