Minutes for C37.30.7 - HVDC Switches
April 2, 2023
Spring 2024 Meeting – Ft. Lauderdale

- The working group met for two sessions on April 2nd.
- 26 participants were in attendance for the first meeting. 23 participants were in attendance for the second meeting. 9 of 11 members were in attendance for both sessions. See the attached attendance roster.
- Attendees introduced themselves and stated their affiliations.
- WG Chair Bill Hurst reviewed the Patent and SA Copyright slides with working group.
    - No participants stated any patent conflicts with the WG.
- WG Chair reviewed the minutes from the previous Fall meeting.
- Draft 5 is the newest version of the document.
- PAR expires at the end of 2024
    - Will need to file for a 2 year extension but included in that PAR extension will also request the following changes:
        - Change the document scope from voltages above 1000 Vdc to voltages above 3200 Vdc. This was agreed upon last meeting and aligns the document with the HVDC circuit breaker standard.
        - Confirm that C37.30.7 gets accredited by ANSI
    - Other notes about the scope of the document:
        - The description in the scope and abstract was copied from the AC switch standard. The types of switches mentioned in the scope of the standard are generic.
        - WG Chair suggested that we do not list the specific switch types as part of the scope (so they're not included in the PAR), but add them to the introduction of the document, which the WG can modify anytime. This allows the WG to wait until the document is further developed to list specific switch types that are covered.
        - For further clarification, a diagram will be added to the annex to show the different types of switches that the document covers and where they are used.
    - WG voted to submit the PAR extension and to make the change to voltage to 3200 Vdc
        - 9/11 WG members present and voted yes
        - 2 year extension, get to ballot by 2026
- WG continued work on Draft 5 of the document.
    - Voltage ranges
        - IEC 62271-5 dropped lower voltage range and now starts at 100kV
        - IEEE HVDC Circuit Breaker standard is keeping the two ranges, but made some changes to the ratings
        - WG Chair proposed for 37.30.7 to keep the lower voltage rating table to align with the HVDC circuit breaker standard. No one in the WG verbally opposed.
        - Tables 1 and 2 (voltage ratings) were reviewed in comparison to the HVDC circuit breaker voltage tables.
            - Proposal: In Draft 5 of HVDC Switch document 37.30.7, adopt what the HVDC CB standard has adopted for voltage ranges. There were no WG objections to this proposal; changes will be made to the tables for Draft 5
            - The changes included: a) In Table 1, change the system voltages to 5 and 10 instead of 6 and 12. b) Move 100kV from Table 2 to Table 1. The max voltage/tolerance on Table 1 is 10% above nominal voltage. The max

voltage/tolerance for voltages listed in Table 2 is 5% above nominal. c) In Table 2, 150kV was changed to 160kV.

- Current and short circuit ratings
  - IEC 62271-5 follows the R 10 series for current and short circuit ratings.
  - HVDC circuit breaker standard is also going to follow the R 10 series.
  - Note: DC projects are all unique to the need. 37.30.7 standard needs to provide the user (utility) with what options are available (standard values). Once the user determines what ratings are needed, they can have standard options to choose from.
  - Danny Hoss, WG member, asked if 37.30.7 should have AC short circuit test values listed that correspond with the DC ratings since labs are unable to test DC short circuit values.
    - WG Chair proposed: Follow HVDC CB group ratings (R 10 series) and then provide an annex that includes the relationship between DC and AC testing and ratings - informative table
    - Note: There are two scenarios that this standard will be used: 1) HVAC switch correlation/qualification for HVDC applications 2) New development of HVDC switches
  - Suggested that a Task Force form to further investigate the DC short circuit ratings and testing and how to apply the AC switch ratings and testing.
    - IEC 62271-5 provides a section describing how to test in AC for DC ratings.
    - Volunteers for task force: Peter Mapp, Danny Hoss, Riyad Kechroud, Pete Kowalik, Chris Ekpoudom
    - Task Force Lead: Riyad volunteered
    - TF will have a virtual meeting before the fall IEEE meeting
    - Ratings should match HVDC CB ratings

- Session 1 ended on 4/2/2024 at 9:45am.
- Session 2 began on 4/2/2024 at 10:15am.
  - Switching impulse and Lightning Impulse across open gap
    - Switching Impulse: In Draft 4 of the document, the switching impulse voltage across the open gap is 10% more than pole-to-ground, and then the bias voltage is added
    - IEC doesn't have the 10% increase added to the open gap for the switching impulse voltage, just the lightning impulse
    - 37.30.1 doesn't have the 10% increase on the switching impulse voltage
    - Pete Kowalik: Motion to remove the 10% higher voltage across the open gap for switching impulse; Danny Hoss seconded motion
      - WG member vote - 8 votes yes; none opposed
      - Note: The switching impulse voltage values in this table will align with IEC values and will still be greater values than in 37.30.1 for AC switches
  - Next meeting in Oklahoma City, week of October 13th
  - Peter Mapp requested membership to the working group; WG Chair approved
  - Motion to Adjourn: John Kaminski; Second: Pete Kowalik
  - The second session adjourned on 4/2/2024 at 11:06am.

<u>Action Items for Fall 2024 Meeting:</u>

- Draft 5 of the document will be updated as follows: Modifications to voltage ratings will be made as voted by the WG (nominal voltage ranges in Tables 1 & 2 and switching impulse open gap voltages)

- Short circuit values will be reviewed by the Task Force and a recommendation made to the WG
- PAR extension will be filed by the WG Chair for 2 more years and the PAR will also be revised to update the scope from 1000 Vdc to 3200 Vdc.
- WG Chair will send out a copy of Draft 5 to the working group.

Thank you,
Laura Reid
WG Vice Chair

WG PC37.30.7 S24 Attendance

Last Name	First Name	Company	Role	4/2/2024 1of2	4/2/2024 2of2
Andreyo	Joe	Southern States LLC	Guest	X	
Berner	Brian	Power Grid Components	Guest	X	X
Blake	Jacob	Hubbell Power Systems	Member	X	X
Boles	Brett	Southern Company	Member	X	X
Castillo	Pedro	ABB	Guest	X	X
Cook	Tim	Pascor Atlantic	Guest	X	X
Davies	Stacey	Siemens	Guest	X	X
Donahue	Steven	Royal Switchgear	Guest	X	X
Ekpoudom	Assian (Chris)	Southern States LLC	Guest	X	X
French	Chris	Beta Engineering	Guest	X	X
Gill	Juan	Southern States LLC	Guest	X	X
Gordish	Daniel	Cleaveland/Price Inc.	Guest		X
Harley	Jack	FirstPower Group LLC	Guest	X	
Hoss	Danny	Southern States LLC	Member	X	X
Hurst	Bill	GE Renewables	Chair	X	X
Kaminski	John	Siemens Industry	Member	X	X
Kechroud	Riyad	GE Grid Solutions	Member	X	X
Kowalik	Pete	Cleaveland/Price Inc.	Member	X	X
Lee	Michael	PG&E	Guest	X	
Mapp	Peter	EMSPEC	Guest	X	X
Moore	Jeremy	Pascor Atlantic	Guest	X	X
Morehead	Mollie	Pascor Atlantic	Guest	X	X
Reid	Laura	Hubbell Power Systems	Vice Chair	X	X
Ross	Rob	Cleaveland/Price Inc.	Guest	X	X
Thompson	Truett	Siemens	Guest	X	
Voyles	Adam	Ameren	Member	X	X
Zhang	Wei	Southern Company	Guest	X	X