### Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices 10:30 AM - 12:00 AM (EST), February 27, 2023 Virtual - TEAMS Meeting

1. Call Working Group (WG) meeting to order Meeting called to order at 10:01 am (EST).

Jack Harley

2. Introduction of Participants

Doug Edwards

Participants provided self-introductions with affiliations.

Attendees requested to enter name, employer, and affiliation into TEAMS Chat. Subsequent to meeting, TEAMS attendance report run and attendance verified.

3. Virtual Meeting Protocol

Doug Edwards

To enter discussion:

- If discussions are not overlapping, acceptable that person simply speaks-up.
- If ongoing discussions, enter into Chat: "Q" or similar
- If attending via phone and thus can enter "Q" in the Chat, wait turn and then speak-up.
- Request no side discussions in the Chat.
- May use Chat to provide specific text or details
- 4. Request for Membership (initial meeting)

Doug Edwards

To request voting membership in the WG, request attendees enter their name in Chat to request membership. Per <a href="Switchgear WG - Individual Basis P&P">Switchgear WG - Individual Basis P&P</a>, Section 4.1 Obtaining Membership in a WG, "Voting membership is granted to those participants attending the first meeting of a newly chartered WG upon their request to the WG Chair."

Voting Members are detailed in the Attendance at the end of these minutes.

#### Summary is:

Row Labels (see Key with Attendance)	Count of Participant Type
VM (Chair)	1
VM (Secretary)	1
VM (ExO)	1
VM	9
NVM	20
NVM (IEEE)	2
(blank) = Not in attendance	48
Grand Total	82

Approval of Meeting Agenda (provided prior to meeting)
 Motion by Keith Flowers: Approve meeting agenda as presented.
 Seconded by Jeff Ward

Jack Harley

Hearing no objections, motion was approved.

### Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices 10:30 AM - 12:00 AM (EST), February 27, 2023 Virtual - TEAMS Meeting

6. Policies & calls for (provided prior to meeting)

Jack Harley

- IEEE's Patent Policy
- IEEE's Copyright Policy
- IEEE's Participant behavior in IEEE-SA activities' Policy

No issues reported.

 Approval of previous meeting <u>Minutes (2022-10-18.R1)</u> Doug Edwards Motion by Ron Hartzel: Motion to approve meeting of last Task Force meeting as presented.

Seconded by Tony Ricciuti

Hearing no objections, motion was approved.

8. <u>PC37.100.8 PAR</u> Jack Harley

- PAR was approved 03 Dec 2022 and is available via IEEE myProject.
- Expiration date: 31 Dec 2026
- Expected Date of submission of draft to the IEEE SA for Initial SA Ballot: Oct 2025
- Scope reviewed
- 9. C37.100.8/D2 (attached to Meeting Invitation) future via IMeetCentral Jack Harley
  - Document in now in IEEE Template
  - Secretary working with IEEE to address IMeetCentral issues. Plans are to use IMeetCentral to share draft and to have common work areas. For now, WG Officers will collect draft material and input into IEEE Template draft.

# Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices 10:30 AM - 12:00 AM (EST), February 27, 2023 Virtual - TEAMS Meeting

10. Volunteers/Division of drafting responsibilities:

Topic	Lead	Discussions
3.1 Definitions	Later	After draft development or as identified as needed definition.
4. Service Conditions	Doug Edwards	Text already in Draft D2.
5. General considerations		
5.1 Lubricant types	Paul Shiller	
5.2 Causes of lubricant		
aging in various components	<u></u>	
5.3 Criteria for end-of-life		
for lubricants in components		
After mechanical endurance,		
meeting speed test.		
5.4 Impact of lubricants		
aging in equipment and		
components.		
5.5 Lubricant regimes		
5.6 Lubricant composition		
5.7 Compatibility – oils,		
thickeners, additives, and		
greases		
5.8 Shelf life	Also – Doug Edwards	
6 Equipment Types	-	Discussion: Group common areas for now instead of separating.
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS	Also – Doug Edwards  Lead: Darryl Moser Ted Burse	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.
6 Equipment Types Swgr Assemblies, including: • Bus Duct	Lead: Darryl Moser	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects,
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:	Lead: Darryl Moser Ted Burse	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV,	Lead: Darryl Moser Ted Burse Lead: Clint Carne Keith Flowers Brad Leccia	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices  Including:  Circuit breakers (HV, MV, & LV) grouped together	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices  Including:  Circuit breakers (HV, MV, & LV) grouped together	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices  Including:  Circuit breakers (HV, MV, & LV) grouped together	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation applications	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating components, e.g., switching mechanisms.
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation applications  7.2 Other methodologies	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid  Terry Hunt Doug Edwards	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation applications  7.2 Other methodologies e.g. Field experience	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid  Terry Hunt Doug Edwards	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating components, e.g., switching mechanisms.  Potential consideration of other methodologies such as:
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation applications  7.2 Other methodologies e.g. Field experience Combination Laboratory &	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid  Terry Hunt Doug Edwards	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating components, e.g., switching mechanisms.  Potential consideration of other methodologies such as:  Field experience
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation applications  7.2 Other methodologies e.g. Field experience Combination Laboratory & Field Experience	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid  Terry Hunt Doug Edwards	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating components, e.g., switching mechanisms.  Potential consideration of other methodologies such as:  Field experience  Combination of Laboratory & Field
6 Equipment Types  Swgr Assemblies, including:  Bus Duct  GIS  Switchgear devices Including:  Circuit breakers (HV, MV, & LV) grouped together  HVS  7. Test procedures  7.1 Arrhenius Equation applications  7.2 Other methodologies e.g. Field experience Combination Laboratory &	Lead: Darryl Moser Ted Burse  Lead: Clint Carne Keith Flowers Brad Leccia Doug Edwards Terry Hunt Ted Burse Christo Thomas Laura Reid  Terry Hunt Doug Edwards	instead of separating.  Target is the more stationary circuit elements – e.g., CB's primary disconnects, racking mechanisms.  Possible Title: Transmission & Distribution Switching Devices  Target is the items with operator mechanisms or high-speed operating components, e.g., switching mechanisms.  Potential consideration of other methodologies such as:  Field experience

Request draft text by 24 March 2023.

For structure of drafting text and formatting, reference provided to <u>IEEE Style Guide</u> with examples.

### Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices 10:30 AM - 12:00 AM (EST), February 27, 2023 Virtual - TEAMS Meeting

11. Next meeting – Results of <u>Doodle Poll</u>
April 3, 2023, 10:30 AM to 12:00PM (EDT) – Virtual TEAMS Meeting
April 18, 2023, 10:15 AM to 12:00 PM (EDT) – Spring 2023 Swgr Conf, Clearwater, FL

12. Adjourn Adjourned at 11:47 am (EST). Jack Harley

# Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices 10:30 AM - 12:00 AM (EST), February 27, 2023 Virtual - TEAMS Meeting

#### **Attendance**

Participant Type	LastName, FirstName	Company	2/27/2023 (Initial WG Meeting)
Voting Member (Chair)	Harley, John (Jack)	FirstPower Group LLC	VM (Chair)
Voting member (Secretary)	Edwards, Doug	Siemens Industry, Inc.	VM (Secretary)
Voting Member (Ex-Officio)	Swing, Donnie	Powell	VM (ExO)
Voting Member	Burse, Ted	Powell Industries, Inc	VM
Voting Member	Christian, Michael	ABB	VM
Voting Member	Flowers, Keith	Siemens Industry, Inc.	VM
Voting Member	Hunt, Terry	Westinghouse	VM
Voting Member	Leccia, Brad	Eaton	VM
Voting Member	Ricciuti, Anthony	Eaton Corporation	VM
Voting Member	Shiller, Paul	FirstPower Group LLC	VM
Voting Member	Thomas, Christo	Schneider Electric	VM
Voting Member	Webb, John	ABB	VM
Non-Voting Member	Alexander, Brian	S&C Electric Canada	
Non-Voting Member	Barfield III, Walter	Electric Power Research Institute	
Non-Voting Member	Blake, Randy	Hubbell	
Non-Voting Member	Boyce, Russell	Eaton	
Non-Voting Member	Bray, Elizabeth	Southern Company	
Non-Voting Member	Brunke, John	Power Engineers	
Non-Voting Member	Carne, Clint	Schneider Electric	NVM
Non-Voting Member	Di Lillo, Patrick	Consolidated Edison Co. of NY, Inc.	
Non-Voting Member	Duo Qiu	XJ Group Corpation	NVM
Non-Voting Member	Dwyer, Bernie	PECO	
Non-Voting Member	Eftink, Emily	Burns & McDonnell	
Non-Voting Member	Esco, Tanner	Eaton Corporation	
Non-Voting Member	French, Christopher	Eaton Corporation	
Non-Voting Member	Grahor, Lou	Eaton Corporation	NVM
Non-Voting Member	Grein, Paul	Group CBS	NVM
Non-Voting Member	Hall, John	Tennessee Valley Authority	
Non-Voting Member	Hartzel, Ronald	Eaton Corporation	NVM
Non-Voting Member	Hawkins, Tom	Siemens Industry, Inc.	
Non-Voting Member	Hensberger, Jeremy	MEPPI	NVM
Non-Voting Member	Hetzer, Matthew	PEPCO	
Non-Voting Member	Hohnstadt, Benjamin	DTE	
Non-Voting Member	Hook, Dan	Group CBS	
Non-Voting Member	Hutchins, Roy	Southern Company Services	NVM
Non-Voting Member	Irwin, Todd	GE Grid Solutions	
Non-Voting Member	Jala, Roopendra Hemanth	S&C Electric Company	
Non-Voting Member	Jarnigan, Christopher	Southern Company Services	
Non-Voting Member	Jingsong He	China Southern Power Grid	NVM
Non-Voting Member	Keels, Thomas	kEElectric Engineering	NVM
Non-Voting Member	Lanning, Scott	S&C Electric	
Non-Voting Member	Livshitz, Albert	Qualus Power Services	NVM
Non-Voting Member	Marzec, Peter	S&C Electric Co.	
Non-Voting Member	May, Steven	Southern Company	NVM
Non-Voting Member	Meyer, Peter	S&C Electric Company	NVM
Non-Voting Member	Monroe, Andrew	Southern Company	
Non-Voting Member	Moser, Darryl	ABB	
Non-Voting Member	Nenning, Andrew	Omicron Electronics	NVM
Non-Voting Member	Orosz, Miklos	CBT&S LLC	
Non-Voting Member	Owens, John	3M	
Non-Voting Member	Owens, Mary	Eaton	
Non-Voting Member	Parks, Owen	ABB	NVM
Non-Voting Member	Peterson, Alan	Utility Service Corporation	

# Guide for Methodologies to Demonstrate Expected Life of Lubricants Used in Switching Devices 10:30 AM - 12:00 AM (EST), February 27, 2023 Virtual - TEAMS Meeting

			2/27/2023
Participant Type	LastName, FirstName	Company	(Initial WG Meeting)
Non-Voting Member	Peterson, Andrew	ABB	
Non-Voting Member	Rakus, Paul	Eaton	
Non-Voting Member	Reid, Laura	Hubbell Power Systems	NVM
Non-Voting Member	Riffe, Dave	Westinghouse Electric Company	
Non-Voting Member	Salinas, Alex	Doble/Vanguard	NVM
Non-Voting Member	Sigmon, Hall	Siemens	
Non-Voting Member	Sippel, Kevin	Eaton Electric	
Non-Voting Member	Stemmerich, Joe	Trayer Engineering Corp.	
Non-Voting Member	Sullivan, Paul	Dupont	
Non-Voting Member	Ward, Jeffrey	Doble Engineering Company	NVM
Non-Voting Member	Weeks, Casey	Siemens Energy	NVM
Non-Voting Member	Weishuhn, William	ABB	
Non-Voting Member	Weisker, Jan	Siemens Energy	
Non-Voting Member	Wen, Jerry	BC Hydro	
Non-Voting Member	Wolfe, Dan	MEPPI	NVM
Non-Voting Member	Worthington, Charles	Hubbell Power Systems	
Non-Voting Member	Zaharko, Sam	MEPPI	
Non-Voting Member	Zehnder, Lukas	Hitachi	
Non-Voting Member	Zhang Shuai	China Southern Power Grid	NVM
Non-Voting Member	Zhang, Wei	Hitachi	
Non-Voting Member	Zia, Danish	UL LLC	
Non-Voting Member (IEEE Staff)	Jingjing Huang	IEEE (Staff)	NVM (IEEE)
Non-Voting Member (IEEE Staff)	Santulli, Jenn	IEEE (Staff)	NVM (IEEE)

Key: Participant Types

teyr runticipante rypes		
Participant Type	Abbreviation (in order of sorting)	
Voting Member (Chair)	VM (Chair)	
Voting member (Secretary)	VM (Secretary)	
Voting Member (Ex-Officio)	VM (ExO)	
Voting Member	VM	
Non-Voting Member	NVM	
Non-Voting Member (IEEE)	NVM (IEEE)	
Non-Member (Not shown)	NM	